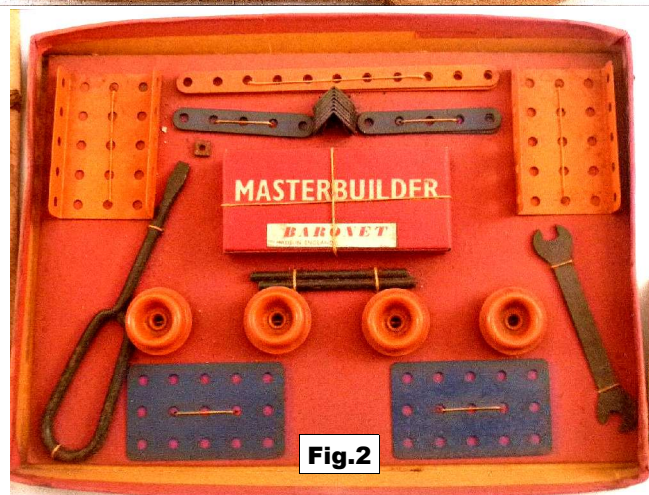
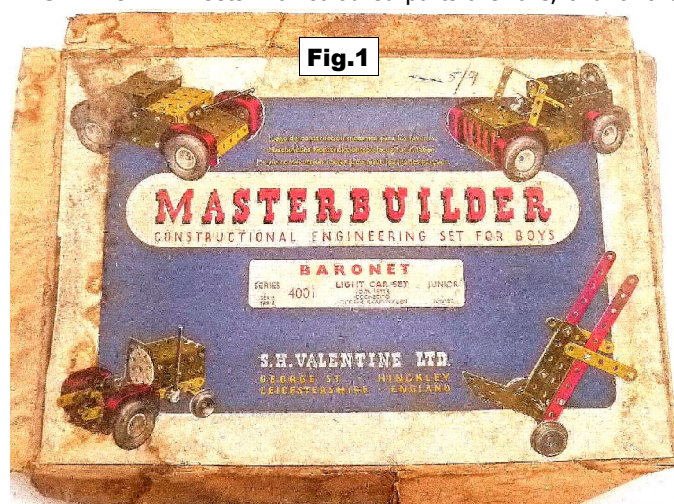


THIS NEWSLETTER IS SUPPLIED ON THE UNDERSTANDING THAT IT IS FOR THE PERSONAL USE OF THE RECIPIENT FOR RESEARCH PURPOSES ONLY

**EDITORIAL** Better late than never is I hope the way you feel about the ever increasing gap between Issues, especially those who don't get the PDF pages. And I'm afraid there is no prospect of improvement but I console myself that it can only be good to continue to record more about Other Systems, albeit slowly.

## Shorter NOTES, with thanks to all contributors.

1. **A MASTERBUILDER Baronet Outfit.** The later MASTERBUILDER sets with coloured parts are rare, & until the



Baronet set above was spotted on Ebay, only 2 out of the 10 listed in the only known manual (see 8/184) had been seen.

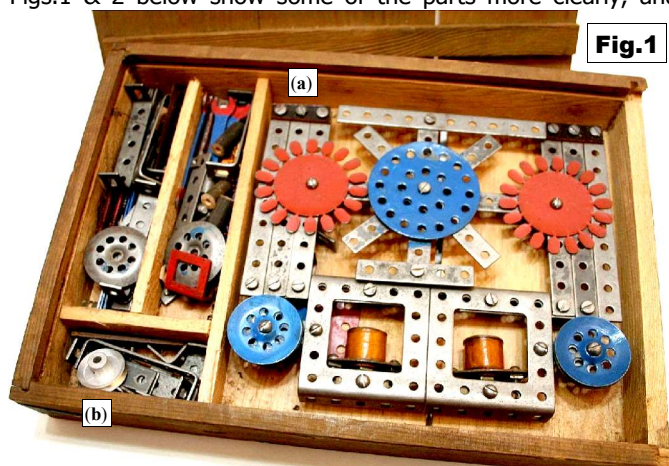
**OSN Subscription Rates, Printed Version** The price per Issue, including postage is £6.50 for UK; £8 by air to Europe & surface anywhere; £9 by air outside Europe. **Back Issues** For the zones above : OSN 1: £1.50/£4/£5; OSN 2,3: £3.50/£5.50/£6.50 each; OSN 4-27: £5/£7/£8.50 each; OSN 28 on: £7/£8.50/£9.50. (All colour & some B&W issues are on loose double-sided sheets.) Postage at cost on multiple orders. **OSN by PDF** The current Issue of OSN is also available as PDF files sent to subscribers as email attachments as pages become available. Their content is identical to the printed version. A £10 subscription covers the current & any later Issues. **Payments** Please make cheques etc payable to P.A.Knowles. Remittances must be in Pounds Sterling (GBP) or, as cash in Euros or US Dollars (£1=€1.25=\$1.50). Payments may also be made using PayPal (in Sterling please). **Small Ads** Short ads are free to subscribers (but repeats may not always be possible, please ask). Ads are sent by email to PDF subscribers.

The Baronet was the smallest set in the first group of 3, the others, the Carfax & Carrier both had similar lid labels (see the Carrier in 38/1136) which differed in style to the present Set. Another change is the S.H.VALENTINE LTD., George St., Hinckley address on the label: a new name in the MASTERBUILDER story, a retailer possibly or a late change of manufacturer. Like other MASTERBUILDER addresses, Hinckley is in Leicestershire. It remains to be seen if the present label was the original for Baronet or if there was a change, perhaps with Valentine's advent. Incidentally, of the 4 models on the Baronet's label only the Luggage Truck could be made with the set.

## MASTERBUILDER: S4

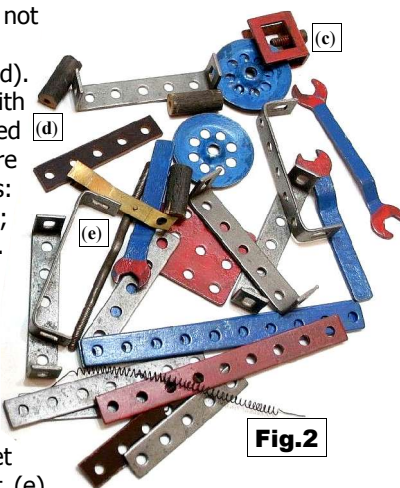
[53/1612]

2. **More STUDIO Parts.** A set seen on Ebay has the same box as Fig.2 of 44/1326 except that the lid is the batten type. Figs.1 & 2 below show some of the parts more clearly, and



those listed below were not seen before.

- 9h Strip (confirmed).
- Flanged Plate 5\*5h with 3\*3h cutout.
- 3\*3h red Perf. Plate.
- Nut, square (not shown here).
- Bolts: short and cheeseheaded; long and roundheaded.
- Spanner, with one straight, & one cranked, angled end.
- Silvery, bossed Pulley, at (b).
- 3h Insulating Strip, at (a).
- The red part at (c), a Mounting Bracket perhaps.
- Crankshaft, at (e).
- Brass Contact Strip at (e).
- Insulating Spacer, perhaps, at (d).



## STUDIO: S2

[53/1612]

SUBS: OSN Printed Version  
Your Credit Balance:  
was £                      after OSN 52  
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Please send at least £                      if you  
wish to receive the next Issue.  
SUBS: OSN PDF Subscribers:  
See panel left.



3. A 'New' Italian System: **BOMISA**. This 34 part, 1950s architectural system won't be new to those who have Jean-Pierre Guibert's *Encyclopédie*. The entry there has photos of a set, & a manual, plus small drawings of most of the parts.

Also some details such as the thread: M3;



& the 5 sets produced: Nos.1-3, 1A, & 2A.

The model above can be made with the largest outfit. The hole pitch varies as needed & the Panels are bolted together using aluminium fittings.

**STUDIO: S2**

[53/1613]

4. An **ARQUITECTURA Set**. Notes on this Spanish version of WENEBRIK, produced by Metaling in Spain in the 1930s, were



given in 13/334. The No.1 set above, in a box 19\*27½cm, was offered by [www.todocoleccion.net/](http://www.todocoleccion.net/). The colour scheme of most of the parts was similar to WENEBRIK with gold Bases, red Bricks, & darkish green Windows & Doors, but the Roof Tiles, and probably the Ridge Tiles, were dark blue instead of green.

**ARQUITECTURA METALING: S1**

[53/1613]

### 'New' System: **DE INGENIEUR**

Thanks to Jan Ringnalda for alerting me to this prewar Dutch system; to Hongs (<http://hongs.nl/>) for some details & permission to use their photos, and to Ton Werkhoven, Jack Huls, & R. Gremli who supplied said photos to Hongs. A translation of the note about DE INGENIEUR in Hongs is as follows.

'Known from a HEMA advertisement in Twentsch Dagblad Tubantia on November 25, 1932. This may be a Dutch version of the Technofix construction system produced by Kosmos in Germany from 1926 (see photo 6 and the strong similarities between the drawing on both boxes). On the front of the DE INGENIEUR lid is D.R.P., or Deutsches Reichs Patent, and at the bottom of the right-hand column supporting the bridge you will find 'Germany' in very small letters.'

The 'photo 6' mentioned above shows a TECHNOFIX lid identical to the one in 39/1173, and Fig.1 above right, the DE INGENIEUR equivalent, with a very similar Crane.

The few parts that can be seen in the box (Fig.2) match TECHNOFIX except that the latter's Pulley in OSN 39 has 4 cutouts in its face as well as the 4 holes.

Hongs also had, from a different source to the Set, a photo of part of the front of a Model Sheet. Most of it is shown right. Its heading means Standard (or perhaps Basic) Constructional Set. At top left: 'With 1 set, Models 1-17' & 'With 2 sets, Models 1-33'; so not a reference to there being Sets 1 & 2. At top right: versatile, strong, easy building without screws or tools. Some of the models are similar to ones seen in the TECHNOFIX manual.

There is no indication of a set number for the present set, nor of how many other DE INGENIEUR sets there were (TECHNOFIX had at least 5). Or whether at one time there was only one set, as perhaps implied by the Model Sheet listing models for 1 & 2 Standard Sets. Certainly if, as seems likely, the character of the Fig.3 models is typical of the remainder on the Sheet it is very unlikely that the Standard set would have been the Hongs one – the latter's parts, even if the Set were to have had only one Pulley, would have allowed more elaborate models.



**OSN 53/1613**

**DE INGENIEUR: S1**



## Snippet. An OPSET LETRIXMEC No.4 SET

A No.1 outfit from this Italian system was described in 26/759. Although some of its parts are missing in the No.4 described here (from an ebay offering), it is likely that the sets are progressive with all the No.1 parts in the No.4.

**The SET** The box scales at 45\*30cm; it is blue, as was the No.1, and the parts are again in a moulded tray (Fig.2). The lid label (Fig.1) is once more about the same size as the manual cover, 25\*18cm (Fig.4), but the No.1's label was identical in design to the manual cover.

**The PARTS** Apart from the structural parts from the



Fig.1

companion METALMEC system (described in 9/226 & 37/1108), the main electrical parts are the Bell Unit (Fig.3) as in the No.1, plus an Electromagnet (Fig.6), Morse Sender & Receiver Units (Fig.3), & a small Electric Motor (Fig.5).

The No.1 parts which are missing from the No.4 are the Flanged Plate pierced with standard & larger holes, the 2 Lamp Reflectors, the Push Switch, & the 2 Coils (or Connecting Wire). The Plate would have been housed in the rectangular recess at the top of the tray, the Reflectors in the circular recesses below the Curved Strips (the Pulleys there could sit in the circular recesses by the Bush Wheels), & the Switch in the recess to the left of the green Bush Wheel on the right side (replacing the Hook). There is no obvious home for the Coils but there would be room for them in



Fig.2

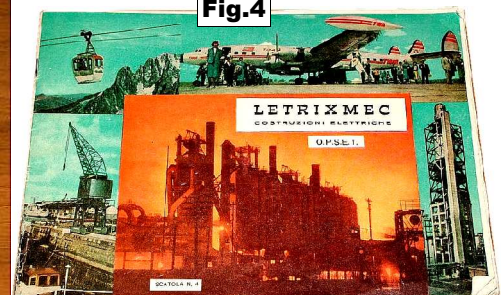


Fig.4



Fig.5

Fig.6 the well



Fig.3

under the Flanged Plate. The three shallow circular recesses, similar to the one with the Segmented Disc in it, probably contained similar size Discs – 4 are shown in one of the models in the Ebay photos, all segmented.

Of the other parts in the tray the 2-arm nickel part at the top was in the No.1 and is perhaps a Continuity Tester, the small parts in the well under the Flanged Plate include a number of Bulb Holders, the Hook near the tray's left edge in METALMEC pattern while the one next to the Bush Wheel on the right isn't, although a not dissimilar one is shown in Fig.7.

**The MANUAL** 8 pages were shown on Ebay: an Intro; notes on the Electromagnetic Telegraph; & 6 models. The latter: the Morse Units connected together; a simple Crane with the Electromagnet; the Motor with 1 of 4 Segmented Discs on its shaft; a similar model but with the Disc lit by a Bulb in a Reflector; the Bell Unit with added lights, operated by a built-up tapper key; & the Hoist with Lighting left. The latter, which can be made with Set 3, shows the Reflector, Flanged Plate, Electromagnet, and the 4.5v battery used in all the models needing power. And there are Connectors mounted in two of the large holes – the only use for them seen so far.

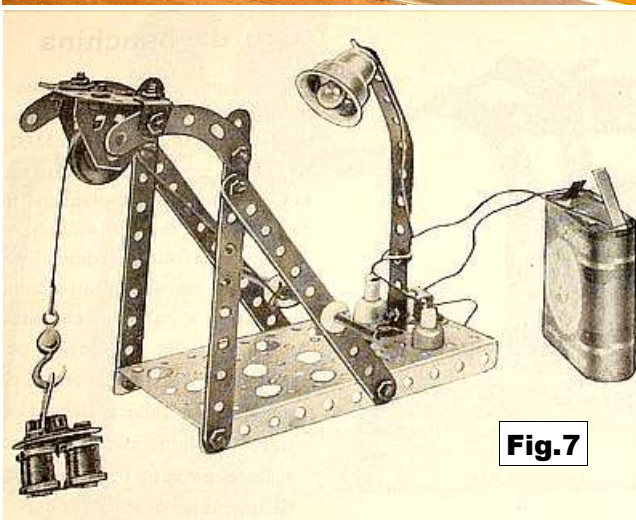


Fig.7

## Paranco con faro

Una interessante utilizzazione delle varie parti componenti la scatola "LETRIXMEC n. 3," è data dalla fotografia del modellino riprodotto. Dopo aver costruito il paranco con le strisce a 9 fori, si provvederà a montare il proiettore nella parte opposta della piastra. Sulla piastra stessa saranno montati due interruttori. Il primo comanderà l'accensione della lampadina del proiettore; il secondo l'immissione di corrente alla gru magnetica che sarà montata al gancio della gru stessa.

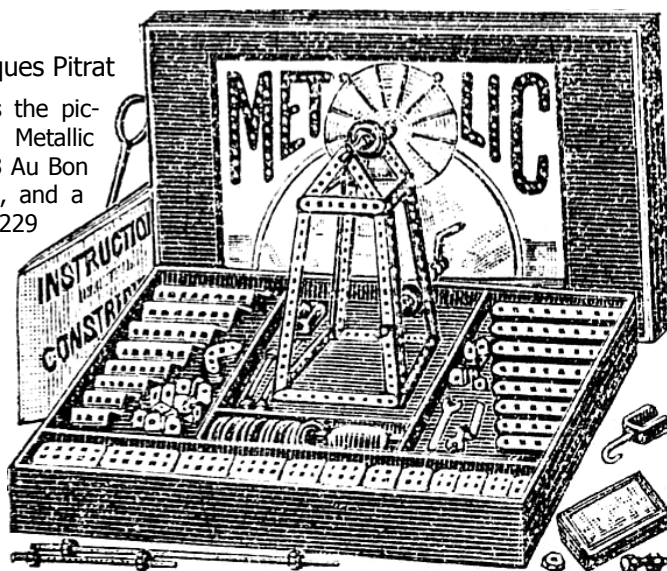


## METALLIC

by Jacques Pitrat

OSN 1/7 includes the picture (right) of a Metallic set from the 1913 Au Bon Marché catalogue, and a snippet on page 1229 of OSN 41 gives a little more information about a No.1 set, and the manual for Set 2 described later. The system has just the two sets; mine is the larger No.2. Sets are very rare; it does not seem that they were made before 1913, and no evidence is known that they were sold afterwards.

From the lid and the manual, this system was made in France by P.F. from Paris; no other information is given on the maker. It happens that, at that time, there was a Parisian toy manufacturer using these initials. Pintel & Godchaux founded a doll company in 1887 and



1925. **MÉTALLIC**, nouvelle construction en métal.  
13 modèles 2.90 20 mod. 5.90

Fig.1

working for some time for his father, started a new company in 1913, named Pintel Fils. He was manufacturing good quality products, mainly toy animals, but also some mechanical toys. He was very successful after WW1: in 1920, he was the first in France to produce Teddy Bears. His trademark included the initials PF; therefore, it is likely that he is the one referred to on the lid, although information on this firm does not mention that it ever made metal construction systems.

**The Set & Parts** The parts are strung to five inserts in a 36\*25\*5cm blue box (Fig.3). It was one of the first systems (with ERECTOR in the same year) where Strips & Girders are tied to the inserts. The picture on the lid (Fig.2) shows two children, a boy and a girl, building a model together. Although it looks like a model for Set No.1 (Fig.7), it could not be built even with Set 2: it includes four long A/Gs, which do not exist in either set. This could suggest the existence of a No.3 set with new parts. However, I would rather believe that it is due to the artist's creative freedom: it is not accurately drawn, some of these A/Gs have 15 holes, and others 17 holes. This is a habit for the illustrator: in the advertisement, the Windmill standing on the set is like a model for Set 1 (Fig.6), but all the parts are longer, with again 17h A/Gs. It would have been preferable to reproduce exactly the Windmill for Set No.2 (Fig.8), which is far better.

Most parts (Figs.4 & 4A) are tin plated steel; the Plates and a few Strips are still shiny, but the other parts are now dull. The pitch is 10.1mm, and the hole diameter 2.5mm; the width of the Strips is 9.3mm.

My set seems almost complete: with three exceptions (short Rods, 10h A/Gs, and N&B) the models in the manual can be built with its parts. In the list of parts below I indicate sizes by the number of holes, and the quantities of parts between parentheses:

**Flat Plates:** 10\*4 (2), 7\*4 (2), 6\*4 (2), 5\*4 (2), 4\*4 (4) & 3\*4 (6). For a bridge model, the manual indicates that it uses three 10\*4 plates; this is certainly a mistake, it is represented by letter 'J' in the picture, and one of the three 'J's' is, in fact, a 7x4 Plate.  
**Strips:** 10 (14), 9 (6), 8 (4), 7

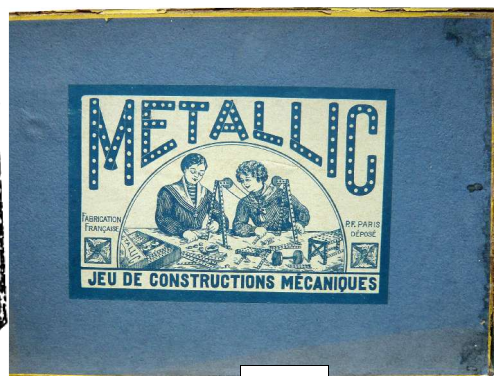


Fig.2

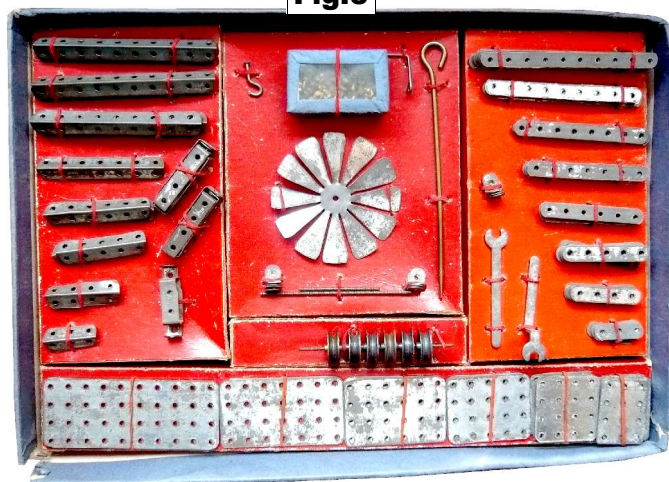


Fig.3

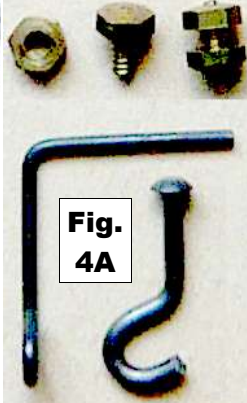


Fig.4A

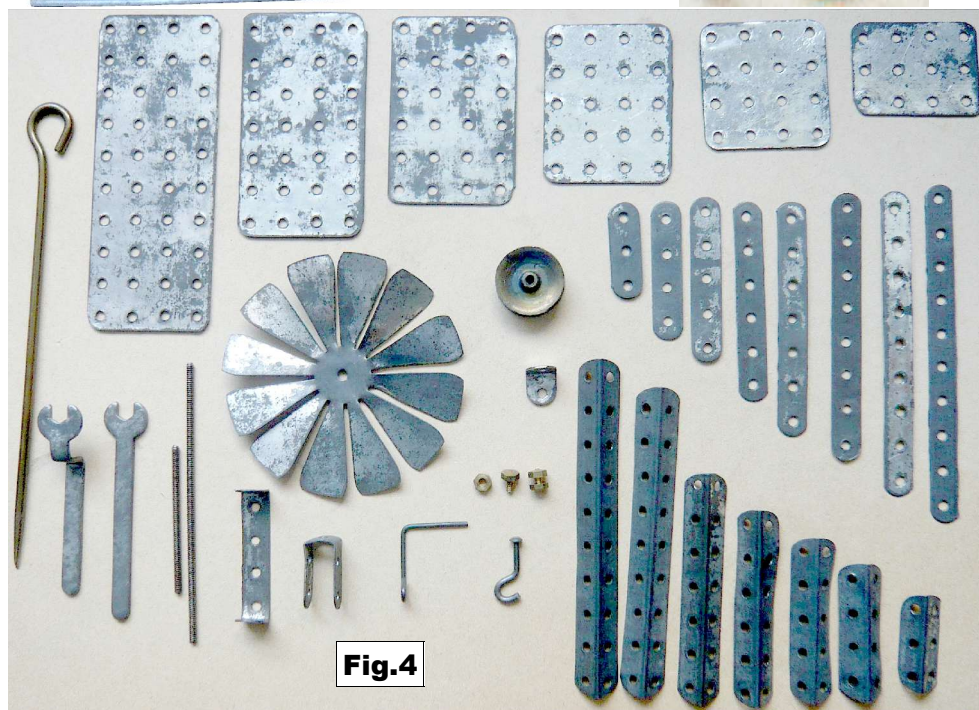


Fig.4



(7), 6 (11), 5 (12), 4 (8) & 3 (7). **A/Gs:** 10 (10), 9 (6), 7 (2), 6 (4), 5 (9), 4 (4) & 3 (2), but Figs.8 & 10 require sixteen 10h A/Gs. **DAS:** 1\*4\*1 (9). It is possible that there is one part too many: no model uses more than 8 DAS. **Single Bent Strip:** 2\*1\*2 (2). **Brackets** (12). Both holes are round. **Wheels,** diameter 20mm (6); the centre hole is threaded. **Threaded Rods:** 85mm (2) & 45mm (1); diameter 2.5mm. One small rod is certainly missing: several models, even for set No.1, use two of them (Figs.7 & 10). **Crank Arm** (1), with a loop for fastening it to a Threaded Rod with two Nuts. **Hook** (1). **Fan** (1), diameter 72mm, with 12 blades; only one model for each set (Figs.6 & 8) uses it. **Bolts** (45), brass, diameter 2.5mm, length of the threaded part 5mm, with a hexagonal head without a slot, the same size as the Nut. Some are missing: one model uses 50 of them. **Nuts** (53), hexagonal, brass, 2.5mm deep, 5.0mm between opposite sides. Some are probably missing: Nuts are also necessary for the Threaded Rods. **Tools:** Flat Spanner, length 65mm; Stepped Spanner, length 60mm; Drift, length 145mm.

**The Manual** The manual, in French, for Set No.2 (Fig.5), has 24 pages, 235\*158mm (three of them are blank), plus the blue covers. Two models from the manual are reprinted on the first and on the fourth cover (the model in Fig.10).

The first page presents the system, followed by 30 models, many more than the 20 mentioned in the ad. The manual does not indicate whether a model is for Set 1 or for Set 2; probably the first fifteen ones are for the No.1.

The models are clear and well made (Fig.9 for example). No explanation is provided to indicate how to build a model, but a list of the parts necessary for it is given under the drawing. Each type of part is represented by a letter, and this letter appears on the drawing, next to the corresponding part (Fig.10). Unfortunately, a part is not always represented by the same letter in the different models, except the Rods by 't', and the Nuts by 'x'. The first part on each list is associated with 'a', the second with 'b', etc. In that way, letter

'a' corresponds to 11 different parts for the 30 models: 7 lengths of Strip, and 4 lengths of A/G! This is not very easy for the builder, who has to refer constantly to each particular list of parts, rather than having a single reference.

**Who was the Maker?** At first sight, it is easy to answer: the lid, both covers and one page of the manual indicate P.F., followed by Paris on the lid. As we have seen, this is likely to correspond to a Parisian firm existing in 1913: Pintel Fils. Moreover, 'Fabrication Française' is claimed four times. If this is true, it would be the second metal construction system made in France, one year after L'INGÉNIEUR CONSTRUCTEUR.

However, the first time I saw my set I thought: this is a WALTHER'S INGENIEUR (WI) outfit, without wooden parts, but with Nuts & Bolts. Three kinds of Walther systems were sold in France under the ARTS ET MÉTIERS name. I have an ARTS ET MÉTIERS set No.82, which is the French version of WI No.12. As it also had a 10mm pitch, I compared the parts.

The number of holes in the parts is not always the same, but WI has also 3, 4, 5, 6, 7 & 9h strips, 5, 6, 7 & 9h A/Gs, and 3\*4h Flat Plates. Superposing these parts, they are almost identical, the pitch and the hole diameter are the same, but the width is slightly larger for METALLIC Strips. These comparisons are difficult because there are also slight differences between the WI parts themselves and in fact I had to be very careful not to replace a METALLIC part by a WI one! I find it quite improbable that different manufacturers could produce parts that are almost identical. Two other parts, the Drift and the Fan, have not exactly the same size, but apart

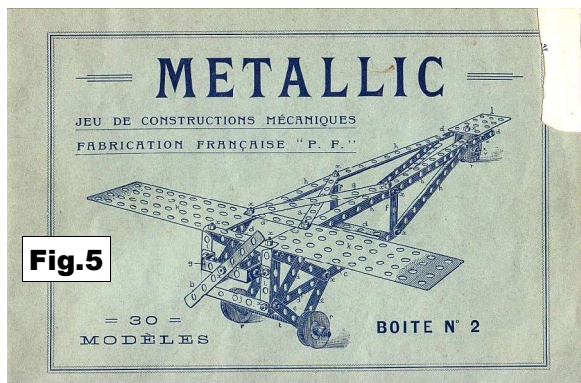


Fig.5

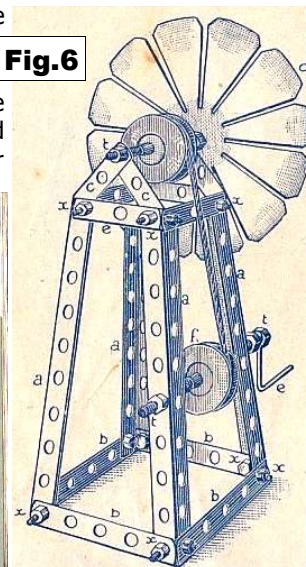


Fig.6

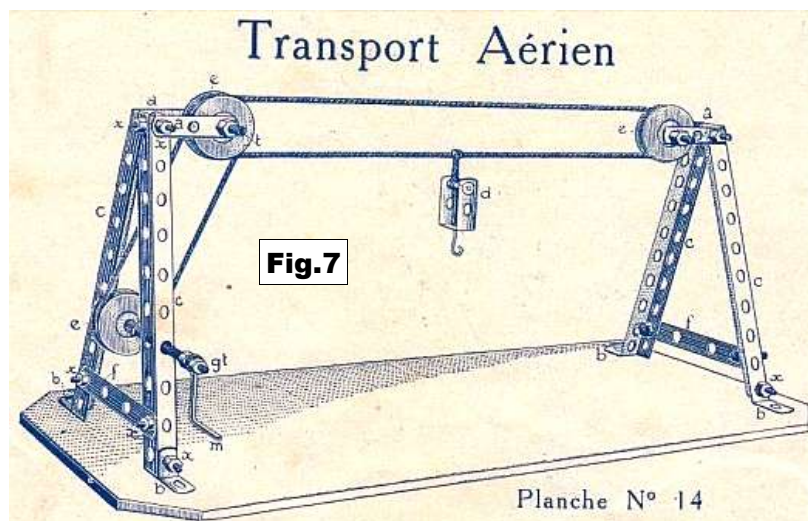


Fig.7

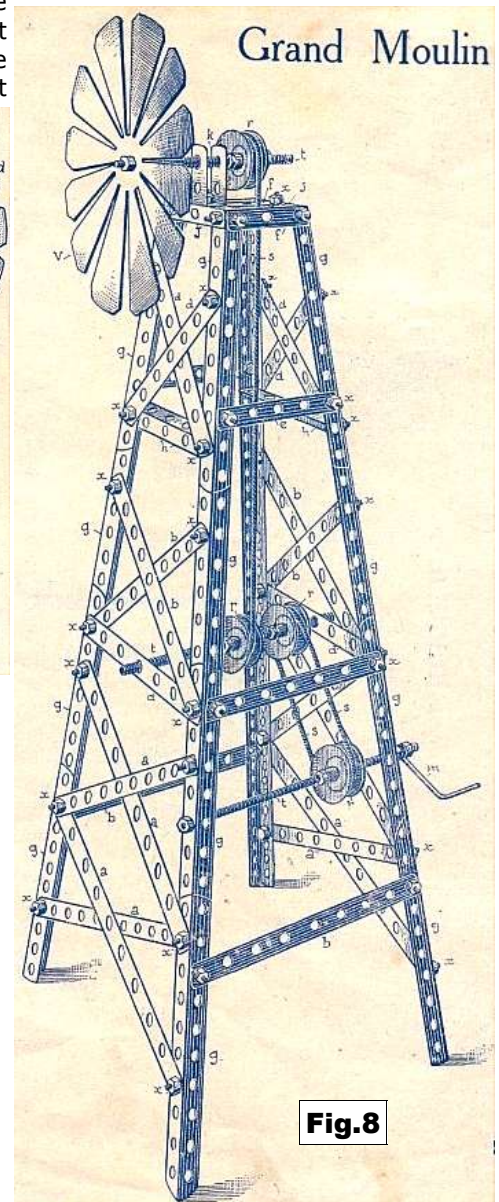


Fig.8



from METALLIC they were only included in Walther's systems.

Furthermore, a new company rarely produces a high quality manual of instructions, and many common points exist between this manual and the French version of the WI manuals. For instance, both are using letters to reference the parts in the drawings, the French names of the Strips and A/Gs are the same: 'fers plats', and 'fers cornières'. Adding 'fer' (iron) to 'cornière' (A/G) is normal for WI, which has wooden and metal parts; it is abnormal for METALLIC, which has only metal parts. In the same way, 'fer plat' is curious: since 1904, Hornby was using 'bande' for 'strip' in his French manuals, and his competitors, except WI, also used this word. Finally, using 'pièce cambrée' for the Bent Strip (only in METALLIC) is very strange, and does not support a French origin for this name. Naturally, the models are different from the WI ones: wooden parts are used in all the WI models.

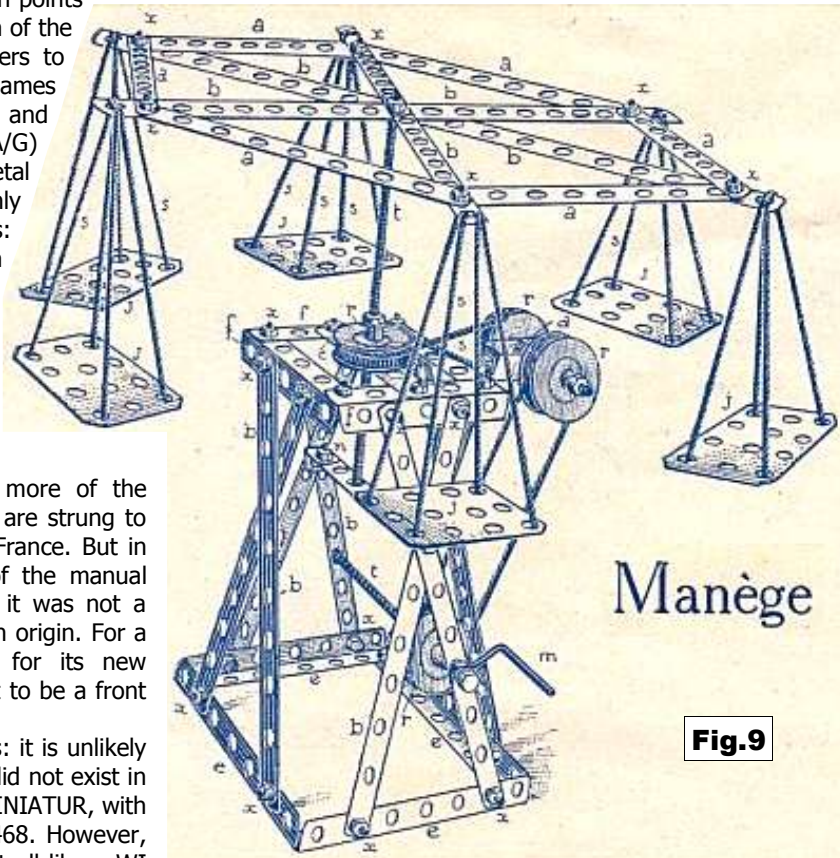
'Fabrication française' could mean one or more of the following: the box is made in France; the parts are strung to the inserts in France; the manual is printed in France. But in any case the parts themselves and the text of the manual could be coming from Germany. At that time, it was not a good selling point in France to indicate a German origin. For a startup such as Pintel Fils, seeking funding for its new ventures, it would have been tempting to accept to be a front manufacturer.

One can raise an objection to this hypothesis: it is unlikely that Walther would sell in France a system that did not exist in Germany. In 1914 he produced a new system, MINIATUR, with a 10mm pitch, described in MCS, and OSN 17/468. However, this system looks like a miniature STABIL, not at all like a WI without wooden parts: it has Flanged Plates, trapezoidal parts, a Screwdriver, only four lengths of Strip, and no A/Gs. Nevertheless, it is also possible that Walther tested in France a miniature system with a 10mm pitch, inspired by WI sets, then thought that it was better to start from STABIL parts, and reduce their pitch.

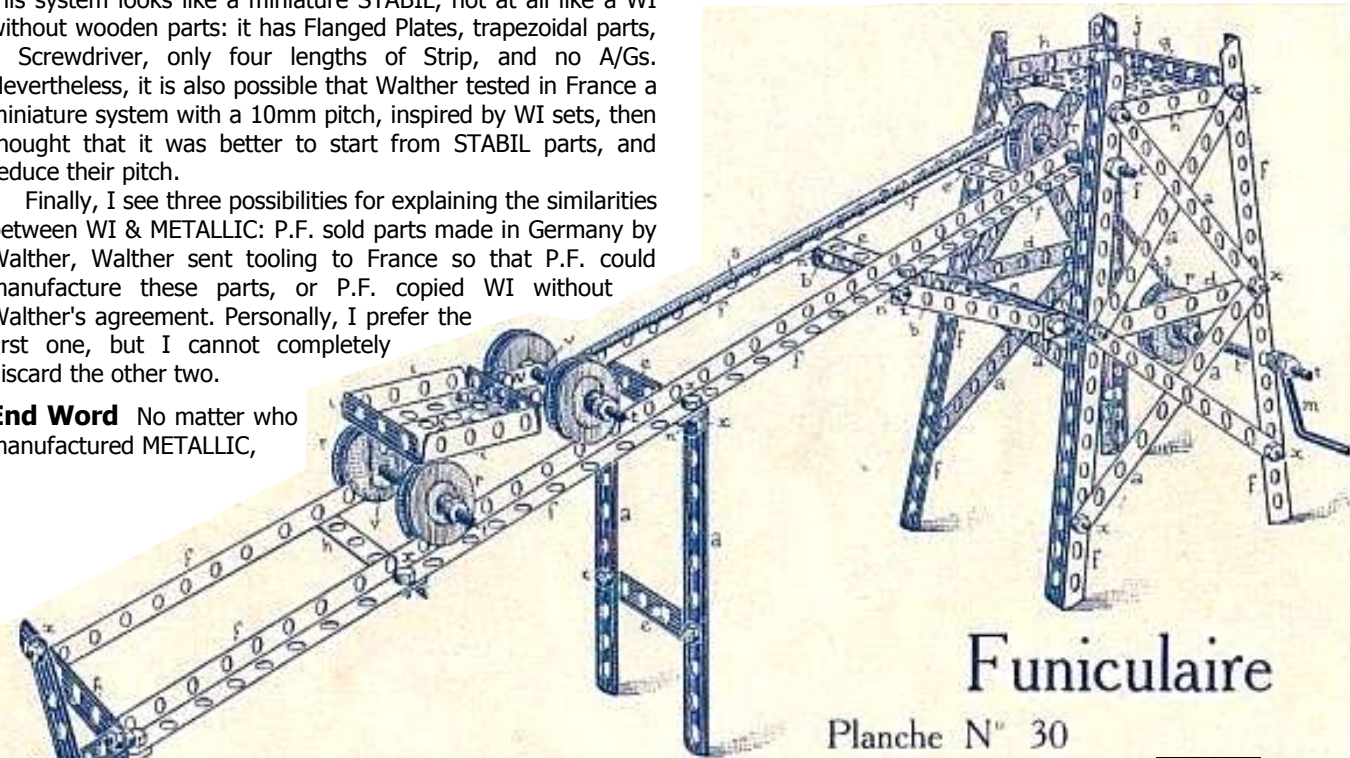
Finally, I see three possibilities for explaining the similarities between WI & METALLIC: P.F. sold parts made in Germany by Walther, Walther sent tooling to France so that P.F. could manufacture these parts, or P.F. copied WI without Walther's agreement. Personally, I prefer the first one, but I cannot completely discard the other two.

**End Word** No matter who manufactured METALLIC,

good quality parts & an excellent manual allow interesting models to be built with this small system.



**Fig.9**



**Fig.10**

*Pièces nécessaires à la construction de ce modèle*

A) 10 Fers plats 10 tr.	F) 16 Fers corn. 10 tr.	K) 1 Plaq. perl. 3 sur 4
B) 2 " " 8 "	G) 1 " " 7 "	L) 2 Fers corn. 3 tr.
C) 3 " " 7 "	H) 4 " " 5 "	M) 1 Manivelle
D) 2 " " 6 "	I) 2 " " 4 "	N) 6 Équerres
E) 4 " " 5 "	J) 1 Plaq. perl. 7 sur 4	R) 2 Grandes et 2 petite tiges
V) 2 Pièces cambrées	N) 6 Poulies	X) 45 Boulons et Écrous



## The Larger HASSIA Sets

The smallest Set, A, which had unpainted parts, was described in 38/1161, and a larger add-on set, Zusatzkasten B, with coloured parts was mentioned. There was also a Hauptkasten C, a set which had the parts in the A+B sets, but all in colour. Thank you to Urs Flammer & Ebay for what follows.

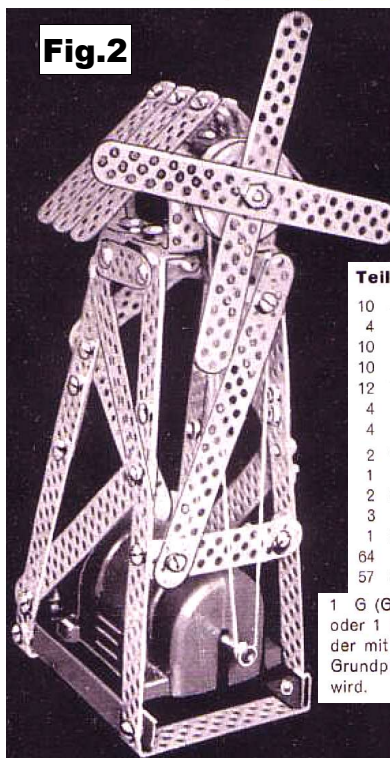
**Set A.** For convenience the Set A contents are: • 4,2,4,4x F, Strips, 17,13,9,5h. • 4x W1, A/B. • 2x W2, D/B. • 2x W3, DAS 3h long. • 4x R, Wheel Discs, 29mm o.d. 2,2x SK,SL, Screwed Rods, 30,50mm. • 1x K, Crane Hook (with 1 hole in its 'ball'). • 25x S, Bolt. • 30x M, Nut. • 3x U, Washer. • 2x Schl, Span'driver.

**Set B.** The box lid, 28½\* 25½cm, was shown in OSN 38 – its design is as the C lid in Fig.1: the words along the top are the maker's name & address, and the set's name is above the stripy logo. The parts in the box are shown below in Fig.4, with the Saw Blade, hidden under the small parts packet, inset. The contents, from the Manual '2' (described later) are: • 2,2,2x F, Strips, 17,9,5h. • 4x W1, A/B. • 2,2x L1,L2, narrow D/B, 1,2h high. • 2,2x W3,W4, DAS, 3,9h long. • 10x Sch, Pulley Discs (8 yellow, 2 green, 38mm scaled o.d.). 4x GR, Rubber Rings. • 1x G, Flanged Plate. 1x Sä, Saw Blade, 43mm scaled Ø. • 25x S, Bolt. • 30x M, Nut. 1x Schl, Span'driver.

**Set C.** Fig.1 shows the lid. The parts are painted in the same colours as those in Set B. Parts not in the B, the Wheel



**Fig.1**  
**Mühle für Wind- oder Elektroantrieb**  
**gebaut aus 2 Baukasten A und 1 Kasten B und 1 DURA-Spielzeug-Motor**



**Fig.2**

**Teile:**

10	S 17
4	S 13
10	S 9
10	S 5
12	W 1
4	W 2
4	W 3
2	W 9
1	L 1
2	Sch
3	U
1	SL
64	M
57	S

1 G (Grundplatte) oder 1 DURA-Motor, der mit passender Grundplatte geliefert wird.

Disc & Hook, are yellow.

**Modellheft 2.** This manual for the larger sets has 24 pages, and the cover was shown in OSN 38. The title page has Dezember 1948 on it. pp2-3 include a list of sets & their contents: A, B, C, & a Beutel [packet] of (50) N&B.

pp4-10 have 20 models for 1, or more in a few cases, A sets. All were in the 'basic' manual, from Spaten [Spade] to the Turm-Drehkran shown in OSN 38.

Then 10 A+B or C models from Schnell+hammer to Kinder-Karussell on p15. 6 are machine tools or related models, the rest 2 fairground models, a Crane & a Railway Signal with Crossing Gate. On the whole fair models considering that there were only 50 Bolts in a C outfit.

pp16-22 have 8 larger models from Elektrokarren [Electric Truck] to Brücke, including the 3 shown here.

The Excavator & the Fire Engine are the most ambitious models mechanically. The Windmill can be driven by a Dura electric motor, the only mention of it. It was supplied with its own Baseplate which would replace the G Flanged Plate in hand-powered version. The other models include a Lorry with (a long) Trailer, and a Bridge some 70+cm long made from 5A+4B sets.

p23 has the 10A Motorboot, as in the basic manual, and p24 just the printer, Kark Klose, Wetzlar.

## Feuerwehrauto

gebaut aus

3 Baukasten A

1 Baukasten B

1 Beutel S u. M

**Teile:**

10	S 17	1	L 1
4	S 13	2	L 2
14	S 9	10	Sch
14	S 5	6	SK
16	W 1	6	SL
6	W 2	76	S
8	W 3	140	M
2	W 9	1	G
4	GR		



**Fig.3**



**Fig.4**

## Löffelbagger

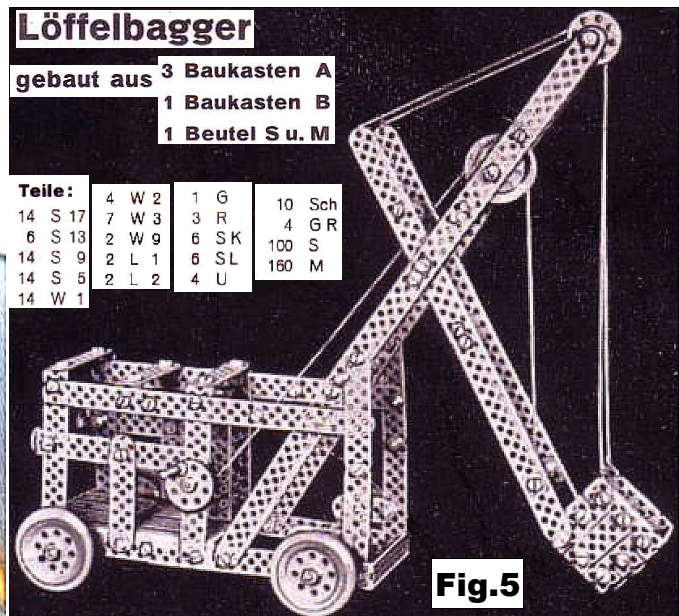
gebaut aus 3 Baukasten A

1 Baukasten B

1 Beutel S u. M

**Teile:**

14	S 17	4	W 2	1	G	10	Sch
6	S 13	7	W 3	3	R	4	GR
14	S 9	2	W 9	6	SK	100	S
14	S 5	2	L 1	6	SL	160	M
14	W 1	2	L 2	4	U		

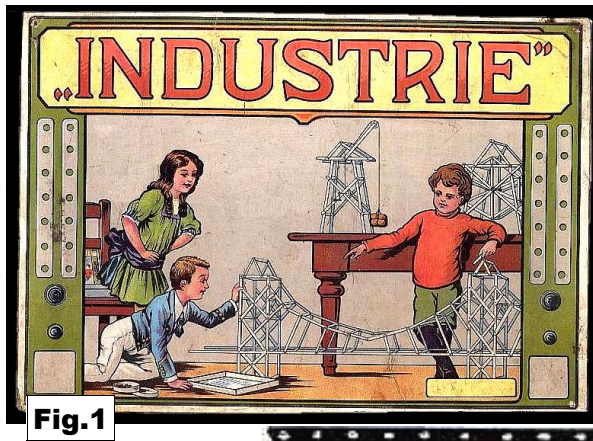


**Fig.5**

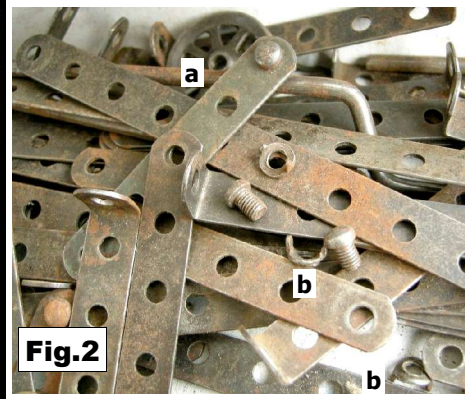


**INDUSTRIE** Since the brief note in 17/476 a little more about this simple 22-part 1920s German system has come to hand. It was made by Josef Falk GmbH of Nuremberg from 1919 until the closure of the company in 1935. At a glance most of the parts look similar to the slightly later PHANTASIE (PHA henceforth) made by a different company (see 15/417, 52/1610), and many of the manual models are the same, though redrawn. But there are significant differences, as noted below.

**The PARTS** All holes are round, 5.0mm Ø at 15.0mm pitch. All strip parts have a chemical black finish. Most parts can be seen in Figs. 2-6. **Strips** 3,5,7,11,21h, 12mm wide. (PHA 10mm). **A/G** 21h: Fig.3 is from a set in a 1930 Falk catalogue and all holes look round, but in Fig.4 from Ebay the end holes (at each end) look enlarged. (As far as is known there was no PHA equivalent and what look like A/Gs in some models would have to be made from Strips.) **A/B. DAS** 1\*5\*1, 1\*3\*1, 2\*3\*2, 3\*1\*3, 3\*5\*3h. The 1\*3\*1 appears to be used in the manual models but is not in any of the sets seen. **Axles** which scale at 30,65,105mm long. (Unlike the PHA rolled tubular Axles they look solid rods.) **Crank Handle. Pulley**, 8-spoke, cast with a



**Fig.1**



**Fig.2**



**Fig.5**

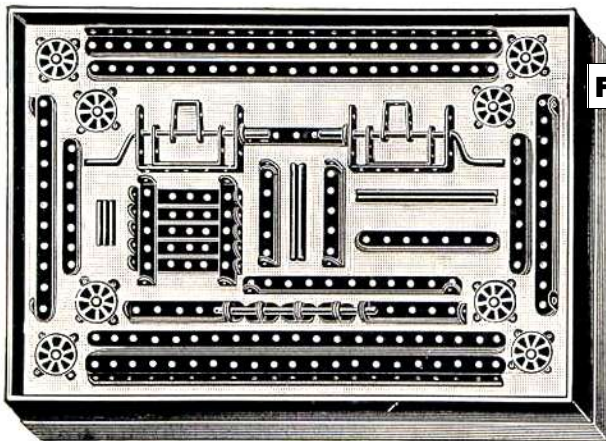
silvery look, about 32mm Ø.

**Fig.3**

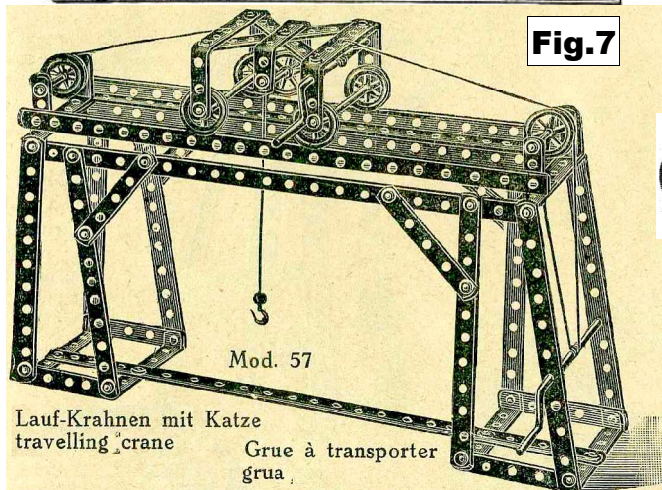


**Fig.4**

The manual says that thanks to a brass bush in the Pulley it will be fixed when placed anywhere along an Axle or Crank Handle. The gist of this is repeated in the 1930 Falk catalogue. What looks like the end of a brass bush can be seen in photos ('a' in Fig.2 for example) but how this allows a Pulley to be fixed on an Axle is unclear, unless like PHA, the Axles are tubular and their springiness secures the Pulley. (The PHA has no spokes.) **Hook**, wire or loaded, shown in several manual models but not seen otherwise. **Fixings**, originally by Press Studs (called Druckknöpfe, Snap-Button, in the manual). 3 thicknesses of Strips can be joined, or 2 plus a spacing Washer. Later by Bolt & Wing Nut as in Figs.2 & 6 (in Fig.2 Nuts are shown at 'b'; Bolt heads look to have no slots). **Tools**, the manual, which shows Press Studs in the models, and does not mention Wing Nuts, speaks of a Key (Schlüssel) used to open the Press Studs and secure the Pulleys ('lock-nuts' in the English text is a red herring). A set which probably included Press Studs (Fig.5), has a Tool either side of the Crank Handle but how does either secure a Pulley? A similar set with Wing Nuts (Fig.6) shown in a 1930 Falk

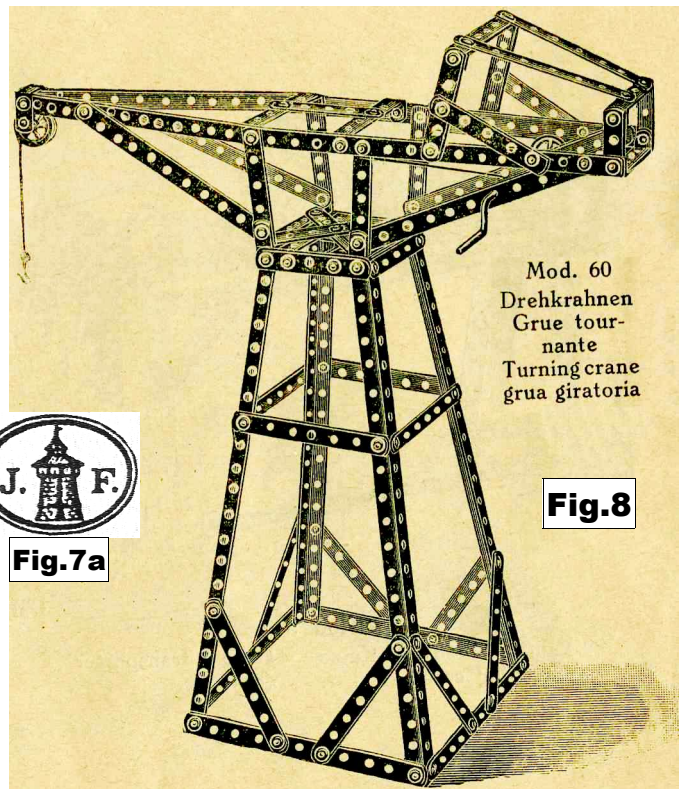


**Fig.6**



**Fig.7**

Mod. 57  
Lauf-Krahnen mit Katze  
travelling crane  
Grue à transporter  
grua



Mod. 60  
Drehkrahnen  
Grue tour-  
nante  
Turning crane  
grua giratoria



**Fig.7a**



catalogue has no Tools, and says that with the Wing Nuts none are needed. (PHA of course used Clips held by Wedges).

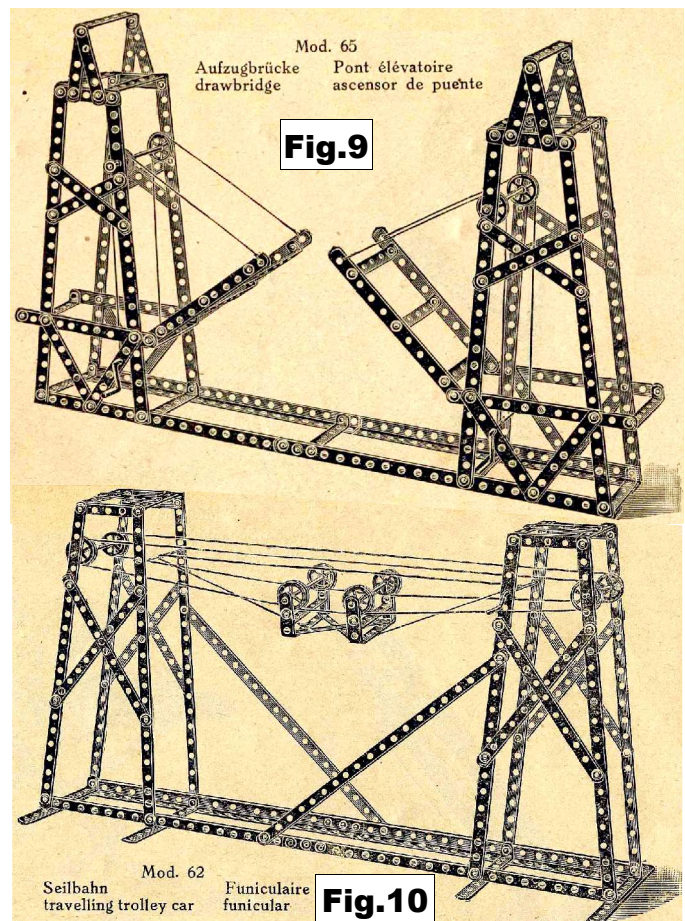
**The SETS** There were Nos.1-4 with no mention of linking outfits. The 1930 catalogue gives their parts count as 82, 122, 214, 303. Boxes are black, and all have the same label with Press Studs below the Strips (Fig.1), except that sometimes each of the small grey squares in the bottom corners has the company logo in it (Fig.7a), or is replaced by a black oval. Possible box sizes for Sets 1-4, from Ebay ads, are: 28\*20cm, 34\*28½\*3cm, 38\*25cm, 41\*28\*3cm. Fig.5 is probably a No.2 and Fig.6 a No.4 from the catalogue. A No.1 probably has 4 Pulleys like the No.2, but only 4x 1\*5\*1h DAS and fewer Strips; the No.3, 6 Pulleys, 9 or 10x 1\*5\*1h DAS, more Strips but no A/Gs (the No.4 has four). A No.1 set has printed on the lid's underside the 15 models given for the Set in the manual. In all the sets the parts are attached to a deep pink backing board probably by clips.

**The MANUAL** It has 32 pages, 223\*143mm, plus covers. Fig.11 shows C1. pp1 & 2 have 'Directions for use' in German, French, English, & Spanish, and p3 the 'Mod.' numbers for the 4 sets: 1-15,31,48,66. The models are all shaded line drawings, mostly clear, with their names in the 4 languages. They are I think good of their type given the parts available, though, as so often, the Pulleys are far too small to be used in the models needing road wheels. The No.1's models are on pp4-6 from Handwagen to Leiter (ladder); pp7-12 have the No.2's from Leitertreppe (step ladder) to Modell einer Windmühle; pp13-20 the No.3's from Wippschaukel (swing) to Werkstatt+engebäude mit Transmissions-Anlage (machine hall); & pp21-30 the No.4's from Güterhalle (goods station) to Bagger (bagger, but actually a type of dredger, cf Drague & draga in the other languages). pp31 & 32 are blank; likewise C2-4.



Fig.11

4 of the No.4 models are shown in Figs 7-10. Other



of the Sets's models include a Cable Railway & a Russische Schaukel (russian swing – actually a big wheel).

Of all the other manuals seen on Ebay there is nothing to indicate that the contents ever changed but some have a whitish or pale brown cover, usually with the name as Fig.11 but some have the Falk logo below it.

## INDUSTRIE: S2

OSN 53/1620

**Snippets. More MKA 'Der kleine Praktikant' Sets** A Nr.IIa set was described in 33/999, and since then 8 sets have been seen on Ebay: a Nr.I, 6 Nr.Ia, & a Nr.IIa. The IIa looked the same as the OSN 33 set but didn't have a manual. Xmas 1949 was written on its lid. The smaller sets differ from the IIa in having Screwed Rods as axles, Pulley Discs rather than bossed Pulleys, a Disc instead of a Face Plate, & a Perforated as well as, at least for the Nr.Ia, a Flanged Plate. Most of the 'new' parts can be seen in Fig.2.

**The Nr.Ia** The box is similar to the IIa's but smaller, it scales at 28\*19cm and is partitioned into 8 bays. The label is again similar except the models in Fig.1 (the Nr.1 label) replace the Lifting Bridge. The set contents are again shown on the inside of the lid, and are as follows, with notes on differences from the IIa parts, and quantities in curly brackets.

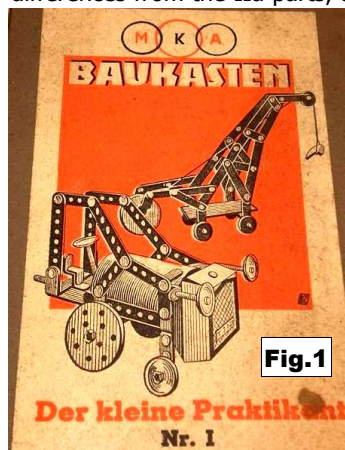


Fig.1



Fig.2

**#1-3, Pulleys Discs**, no face holes, 25,34,55mm Ø. {4,4,2}. **#4, Disc**, 55mm Ø, with rings of 4 & 8 holes. {2}. **#5, Perforated Plate**, 5\*9h, square corners. {2}. **#6, Flanged Plate**, 5\*11h. {1}. **#7-11, Strips**, 11,9,7,5,3h. Ends vary from radiused to near rounded. {6,6,6,6,6}. **#12, A/B**. {16}. **#13,14, N&B**, M4, hexagon Nuts, roundheaded Bolts about 10mm u/h. {50,40}. **#15,16, Screwed Rods**, short, long. The short scales at 25mm, the long at 90mm and is smooth with 25mm of thread at each end. {2,2}.

The manual cover is as in OSN 33 but with Nr.Ia instead of Nr.II. It was said to contain 7 models as follows (with possible meanings): Bank [Bench], Übergangssteg mit Signalmaast [Railway Footbridge with Signals], Traktor, Gans [Goose], Windmühle (Vorder- und Rückansicht) [Windmill, front & rear views], Traktor mit Anhänger [Tractor with Trailer].

**The Nr.I** Figs.1 & 2 left show the Nr.I's lid label & open box. The lid is dark brown and scales at 9½\*17½cm; the label is similar to the Ia's. The parts that can be seen are like the Ia's except the A/B looks to have 2 holes in one arm, and the Bolts have cheeseheads. It's possible that the Rods below the Plate of the right side have threaded ends and if so may be genuine, but their thread length is only about half that of the Nr.Ia's parts.

The box looks large enough to hold the contents of the Nr.Ia and given that the quantities of Perforated Plates, Discs, Brackets, & probably Pulley Discs, that can be seen in Fig.2 match those in the Ia, any differences between the sets rests with the other parts including the Strips & the Flanged Plate. So it is still unclear what the 'a' designation means but it certainly doesn't indicate a linking set.



**FANTASIE "R"** This German system, made by Gebr. Fleischmann in the 1930s, was noted in 15/413, with details of the UK patent in 18/521 & 21/618. The "R" probably stands for Röhren [Tubes], the system's basic structural parts. They are joined by pairs of semi-circular rubber Connecting Strips which push into their ends. Now more details have come to light, mainly thanks to Urs Flammer for details of the FANTASIE manual, and to Wilbert Swinkels for a reference to his web page, [wiswin.nl/News%202015%202%20Viertel.html](http://wiswin.nl/News%202015%202%20Viertel.html), & permission to reproduce photos from it. The web page shows the ad which announced FANTASIE 'R'

The system was launched in March 1932 & it is not in Fleischmann's 1936 catalogue. It's said that the name was changed to ROHR-BAU or ROBA (from Röhren Baukasten?) at some stage – perhaps there was confusion with PHANTASIE, Fleischmann's other metal system of the time. However no mention of either alternative name has appeared as yet in sets, manuals, ads, dates, etc. But bear in mind that the manual described later is the only known evidence for FANTASIE, & it was the only item seen on Ebay in the last 25 years.

**The LAUNCH AD** It listed a basic Set 1 with 114 parts for 109 models, and add-on sets 1Z, 2, & 2Z. 1Z had 98 structural parts, No.2 was a Wheel set with 84 parts, & 2Z a Gear set with 165 parts including a Worm. Each set cost 50 Pfg & a 25 Pfg manual had 65 pages with 168 models. TRIX Units also cost 50 Pfg at the time.

5 models were shown in the launch ad, a simple Sledge (Fig.2), & an Eccentric Press (Fig.12), both of which are Set 1 models in the manual; a Reversing Mechanism (Fig.6) which needs Sets 1,1Z,&2Z; and two large, complicated models, including Fig.3, neither of which are in the manual. Without knowing the names of the larger models it is not perhaps too clear what they actually do, but the 5 models shown seem to indicate that FANTASIE 'R' was projected as a serious system and that a wide range of realistic models was possible.

**The MANUAL** Fig.1 shows the front cover, probably about A5 size; the other covers are blank except for the printer's 'RK' logo on C4. Inside, 64 pages printed in black on paper now yellowed with age. All the text is in German, English, French, Italian, & Spanish. p1 is the title page: 'Book 1 for Sets 1; 1Z; 2; 2Z'.

pp2-6 have Intros listing the sets & their scope. pp7-9: Intros to Groups A-G of Basic Constructions. p10-15 have Constructions A1-4, joining Tubes in a straight line; B5-29, joining Tubes at an angle; C30-43, creating bearings; D44-46, crankshafts; E47-53,

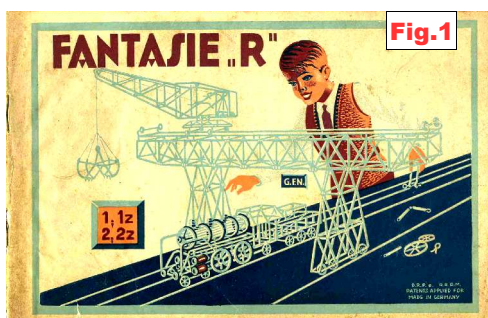


Fig.1

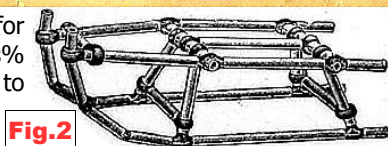


Fig.2

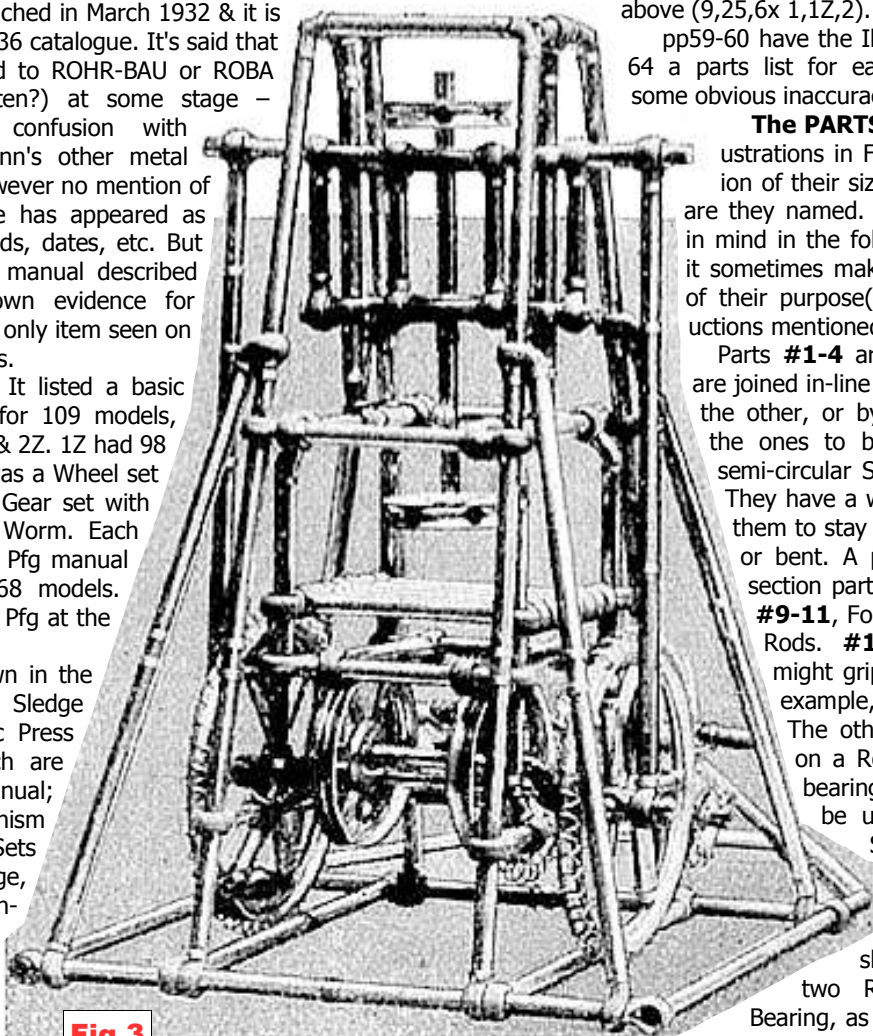


Fig.3

wheels & gears; F54-70, various including the Worm (#29 in Fig.9), uses of the Spiral (#28 in Fig.9), a universal joint, see F68 in Fig.5, & uses of the wire in the Strip, see F54,55,66 in Fig.5; G71-75, attaching sheet cardboard (G73 in Fig.5 is one way).

pp16-58 show 168 models, with a shaded line drawing of each. 1-109 on pp16-36 can be made with Set 1, from Schraubenzwinge, Screw clamp, to Elektrokarren, Trolley car. Models 110-168 on pp37-58 need the set(s) specified for them, from Vielflächner, Polyhedron (1x Set 1Z) to Verladeanlage mit oben laufendem Drehkran, Loading plant with rotary crane above (9,25,6x 1,1Z,2).

pp59-60 have the Illustrated Parts; pp61-64 a parts list for each model (there are some obvious inaccuracies).

**The PARTS**, from the manual illustrations in Figs.4 & 9. No indication of their size is given and neither are they named. This should be borne in mind in the following notes because it sometimes makes it hard to be sure of their purpose(s). The Basic Constructions mentioned are all in Fig.5.

Parts #1-4 are rolled Tubes which are joined in-line by pushing one inside the other, or by a short sleeve over the ones to be joined. #5-8, the semi-circular Straight Rubber Strips. They have a wire core which allows them to stay in shape when curved or bent. A pair, giving a circular section part, will be called a Rod.

#9-11, Formed Rubber Strips or Rods. #12-13, Sleeves. One might grip a Rod, and thus for example, form an end to it. The other Sleeve might slide on a Rod, and could form a bearing. The 2 types might be used in C35. #14, a

Spring Coil which can be used to grip the end of the Strips in a Rod, or over a short Tube used to join two Rods (A3). #15, a Bearing, as in D46, or C43. #16, use not positively identified but per-

haps a thick, flexible rubber band which is used to connect 2 parts together. Examples are F66 & the attachment of bearings for the winding handle & jib in Fig.8. #17-19, Pulleys. #20-21, Rims for larger pulleys. E49,50. #22-26, Gear Rings to fit over #17-21. E51. Though drawn differently #22's teeth look the same as the others in other illustrations, see Fig.6. The Gears can mesh together at any angle. #27, Short Spiral, perhaps uses as an axle stop, as in F60. #28, Long Spiral, used for example as cord guide on a crank handle made from a Rod, F60. See also F61, the Rods' rubber is stripped off and the wire cores formed to engage the Spiral, as in F54,55,66. #29, Worm Gear which

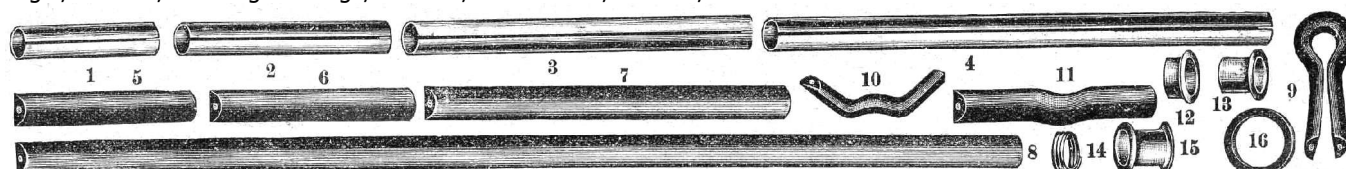
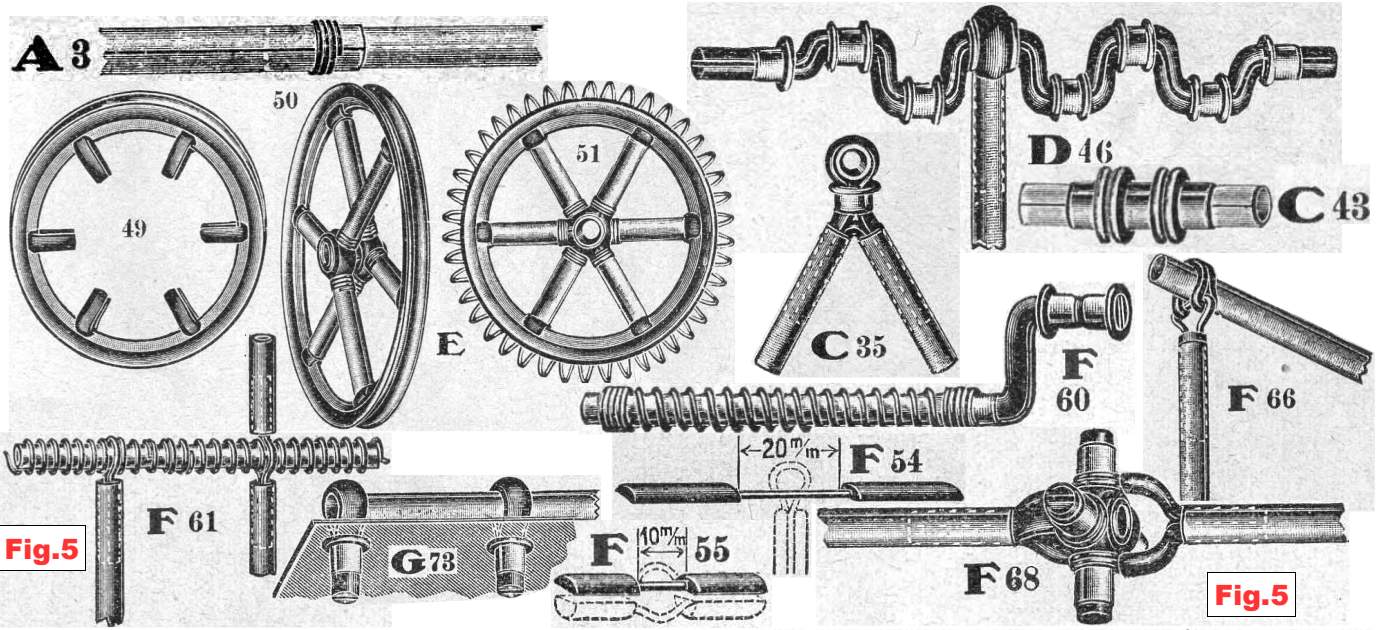


Fig.4





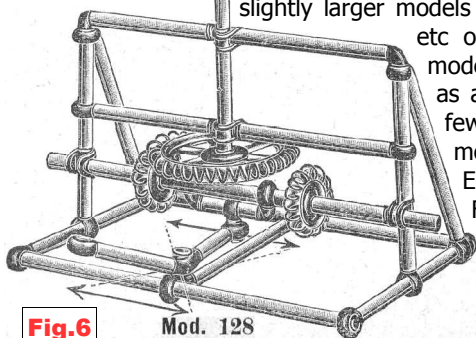
meshes with the Gears (Fig.10).

**SET 1** Its inventory, from the parts listed as needed by the models, is: 8,8,8x #1,2,3; 6,5,8x #4,5,6; 4,24,6x #7,9,11; 6,6,6x 12,13,14; 4,4,4x 15,16,18.

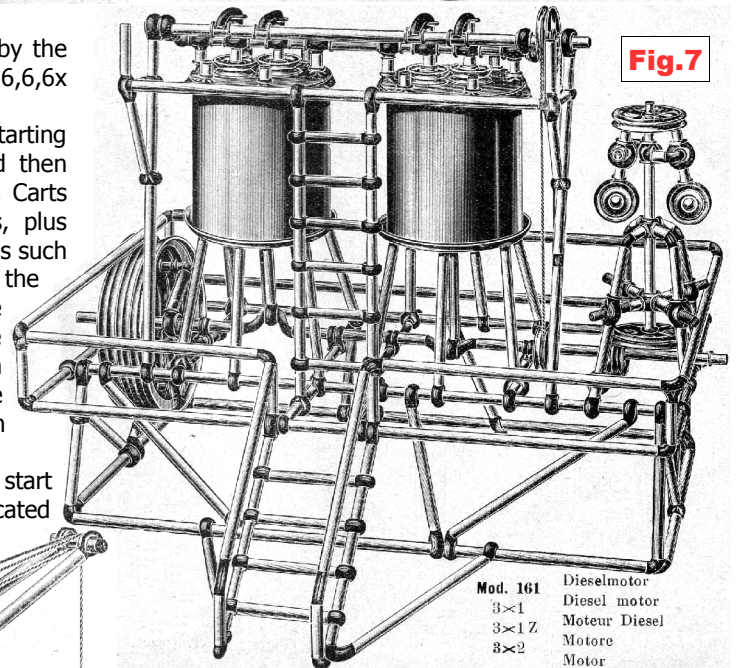
**The MODELS** Most of those for Set 1 are quite small, starting with simple frameworks for domestic items etc, and then slightly larger models including Scooters, Carts

etc on up to 4 Wheels, plus models with pulley drives such as a Windmill. Among the few larger models, the most complex is the Eccentric Press in Fig.12, one of the five models shown in the launch Ad.

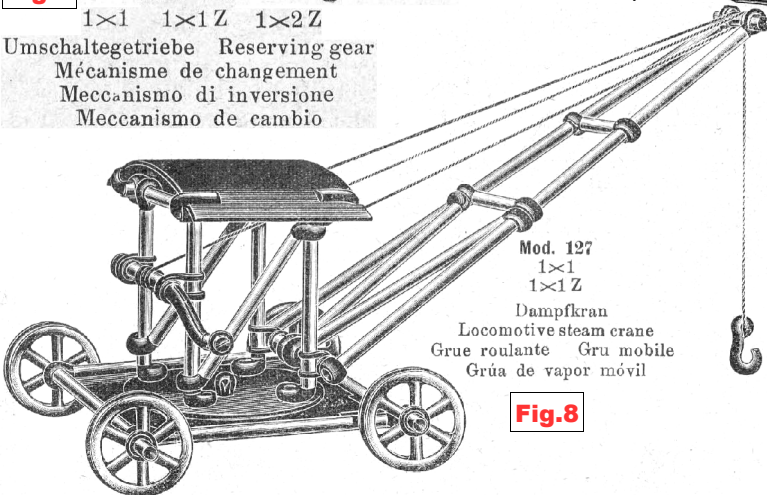
The later models start with some complicated



**Fig.6** Mod. 128  
1x1 1x1Z 1x2Z  
Umschaltegetriebe Reserving gear  
Mécanisme de changement  
Meccanismo di inversione  
Meccanismo de cambio



**Fig.7** Mod. 161  
Dieselmotor  
Diesel motor  
Moteur Diesel  
Motore  
Motor



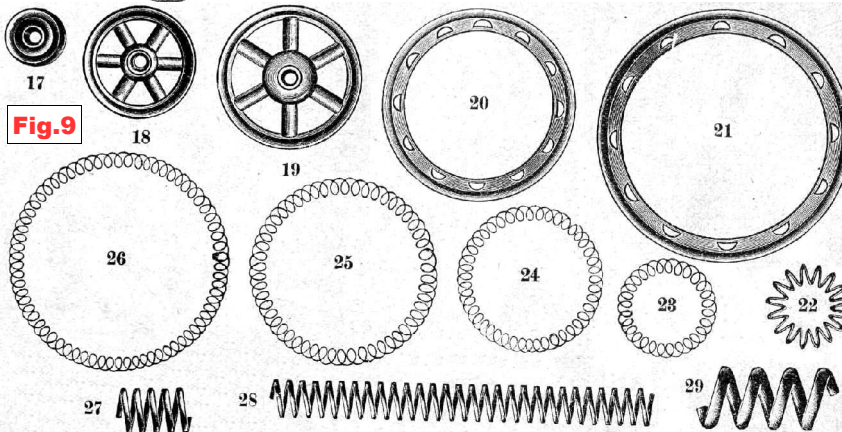
**Fig.8** Mod. 127  
1x1  
1x1Z  
Dampfkran  
Locomotive steam crane  
Grue roulante Gru mobile  
Grúa de vapor móvil

geometric frameworks, followed by a good variety of rather larger models such as the the Crane left. Larger and more complex models then start to appear, including machine tools, agricultural machinery, and the Motorcycle & Sidecar in Fig.13.

Finally 9 'supermodels', 4 of which are shown in Figs.7,11,14,15. The others are a 4-4-2 Loco, a 6-Wheel Tender for it, a Big Wheel, & a Hammerhead Crane.

Generally the models look quite attractive but only one small aircraft is included & only one modern road vehicle, a small, very simple Lorry. And apart from demonstrating them, few of the models use the Gears, and only basic mechanical drives are used. Some of the Carts etc have centre-pivot steering, and from its front wheels the Tractor looks as if it has steering but I can't see how it is achieved. Some of the models use cardboard to improve their appearance & in a few cases to allow a mechanical movement. For example if the Crane in Fig.8 can slew it is thanks to the its cardboard parts.

The presentation of the models is satisfactory for the small and many of the medium size models but much is often left to the builder to decide in the larger ones. The size of the model illustrations here compared with those in the (assumed) A5 size





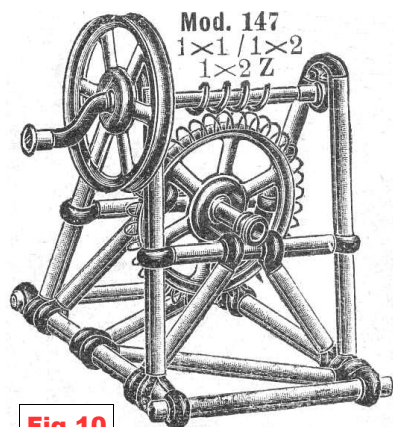


Fig. 10

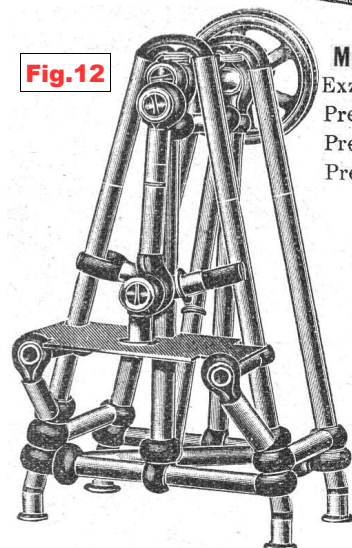


Fig. 12

Mod. 106  
Exzenterpresse Eccentric press  
Presse à excentrique  
Pressa ad eccentrico  
Prensa excéntrica

manual are given by Fig. 15.

FANTASIE seems to have been reasonably priced but its short life suggests that either it was too difficult to use the parts, or that for some reason the rubber Strips didn't live up to expectations. It would be interesting to have some parts to play with but suspect that building one small to med-

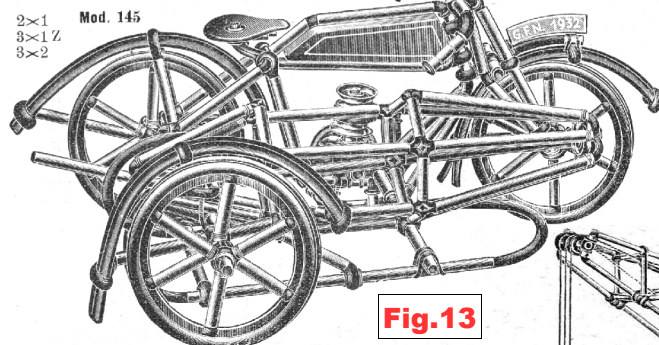


Fig. 13

Motorrad mit Beiwagen / Motor bicycle with side carriage  
Motocyclette avec voiturette de côté / Motocicletta con carrozzetta laterale / Motocicleta con cochecillo al lado

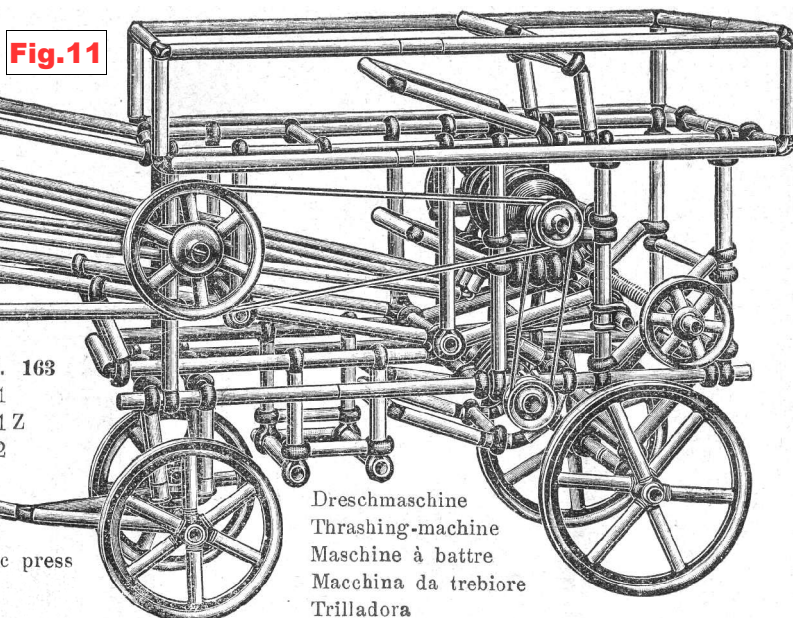


Fig. 11

Dreschmaschine  
Thrashing-machine  
Machine à battre  
Macchina da trebiore  
Trilladora

ium size model would not inspire undertaking more complex ones, let alone designing new ones. And in any case it's most likely that after 80 years the rubber would have deteriorated.

**The German PATENT** No. 592725, dated 12 Aug. 1931. It covers the same ground as the UK patent (see 21/6180) and though redrawn, the figures are similar except that the Strips in Fig. 1 are shown curved as well as straight. And this patent is in the company name: Gebr. Fleischmann, Metallwarenfabrik, Nürnberg.

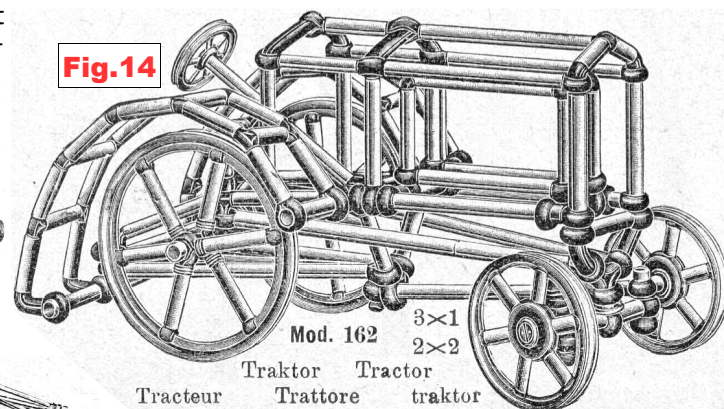


Fig. 14

Mod. 162  
Traktor Tractor  
Trattore trattore traktor

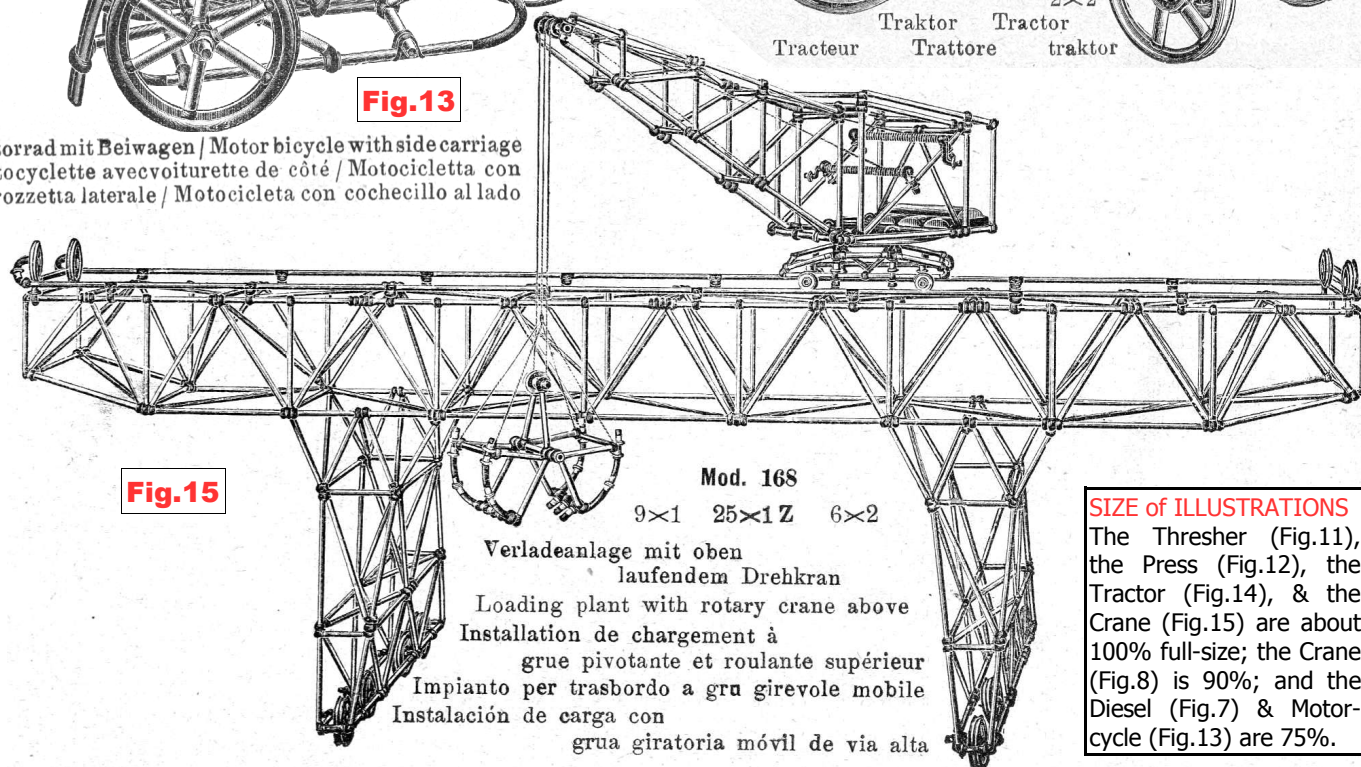


Fig. 15

Mod. 168  
9x1 25x1 Z 6x2  
Verladeanlage mit oben  
laufendem Drehkran  
Loading plant with rotary crane above  
Installation de chargement à  
grue pivotante et roulante supérieur  
Impianto per trasbordo a gru girevole mobile  
Instalación de carga con  
grúa giratoria móvil de vía alta

#### SIZE of ILLUSTRATIONS

The Thresher (Fig. 11), the Press (Fig. 12), the Tractor (Fig. 14), & the Crane (Fig. 15) are about 100% full-size; the Crane (Fig. 8) is 90%; and the Diesel (Fig. 7) & Motor-cycle (Fig. 13) are 75%.



**과학상자 JEIL Again** Until now the last news of this South Korean system was in 1998 (see 19/554 & earlier). This update started with a set offered on a New Zealand auction site, a No.6 in a hinged box similar to the larger ones right. The main name on its label was in Korean, as in the title above, and on the Sets 1-6 reviewed in OSN. It translated (all translations thanks to Google or Bing) as Science Box.

Under the name was a Korean web-site: [www.jeilsience.co.kr](http://www.jeilsience.co.kr). It has a history of the system, some details of the sets, often with their contents, and a list of all the parts in the main outfits. Also, many of the manuals can be downloaded.

**The History.** 1982. Jeil Precision Industry Co. Ltd was involved in government-funded R&D under the Ministry of Science & Technology Research Institute & the Korean

Association of Machinery. This led in 1983 to the launch of Science Boxes 1-5, and in 1993 to Box 6. Then Robobox sets appeared in 2007; 'after school' Science Box sets in 2016; & 'Science Box model block program (coding) for the development of a smart Board for sale' in 2017. The sets are sold by the Science Box Co. Ltd.

Along the way there was a 'strategic partnership agreement' with a Beijing 'resell co.' in 2014, and since then there have been regular model competitions.

**The Science Boxes.** Nos.1-3 & 5-6 are shown in Fig.1. The range is completed by a 'Next' set in the same packaging as the 5 & 6, but with a purple label. No details, and no mention of a No.4, originally the Army set.

The Parts List has items up to #177 with some additions to those in the OSN 19 No.6 manual, & a few parts have disappeared. But most changes relate to new electrical/electronic parts of one sort or another. Individual parts can be bought online.

Where comparisons of set contents with earlier outfits can be made Set 3 has some changes but overall is much the same, No.5 is larger with more parts & additional types, while the No.6 has pluses & minuses, a few new parts, but only 185 Bolts against 250.

The models in the later manuals are new with most, as for the original No.6, distinctly different in style compared with those for the original MECCANO-like Sets 1-3 & 5. They include more Robots: 3 of the 6 models in the No.5, and 2 of the 6 for the No.6. The other No.5's are a Helicopter, a Racing Car, & a Frog. All fair models especially mechanically but perhaps a little 'clunky' in appearance. The No.6's are a Mobile Catapult, a Missile Launcher, and the Figs.2 & 4 models. The Tower Crane has a hoist Motor, and one to raise & lower the inner tower by a Sprocket on a Chain, steadied by cords. The Queen Ant's one Motor drives the legs, head, wings, & tail, all together. A video shows it in action.

**The 13 Robo Sets.** 9 are various, smallish 'Robots', remotely controlled or with that capability. The other sets are a Robot Controller Kit RS; a Robot Control Kit R7 in a Set 5/6 style box with a black label at each end; & two sets called Big Storm & Eagle Fighter. These are single model sets for the Tank in Fig.6 (taken from the box lid) & the Helicopter in Fig.7. The Tank is radio controlled, & has a Motor for each track. The turret rotates by hand but the gun doesn't elevate. Nor despite the lid does it fire (or even go bang). The Helicopter has a Motor driving the main & tail rotors, plus nose guns & a hatch behind the rotor which can be moved by hand.

**Coding Boards.** These are circuit boards with components to allow control/programming of motors, etc, etc.

**More Sets** are shown as follows. • **Science Box** Levels 1-4, listed as Instructional Material. The lids, with, unlike other sets, the name in English, each shows a small, simple, vehicle or mechanical model, except Level 3 (Fig.3) which has the Lion from the the set's 8 models. The others are 5 other 'Animals', a Bird, & a Flower, all Motor driven. • **6 Basic Model Sets** for small but interesting single models including the Rubber Band Gun in Fig.5. It is labelled 'Hit'.



Fig.1



Fig.2

**Remark.** It's good to see 'MECCANO' alive in Korea, encouraged by the government, & still being developed.



Fig.3

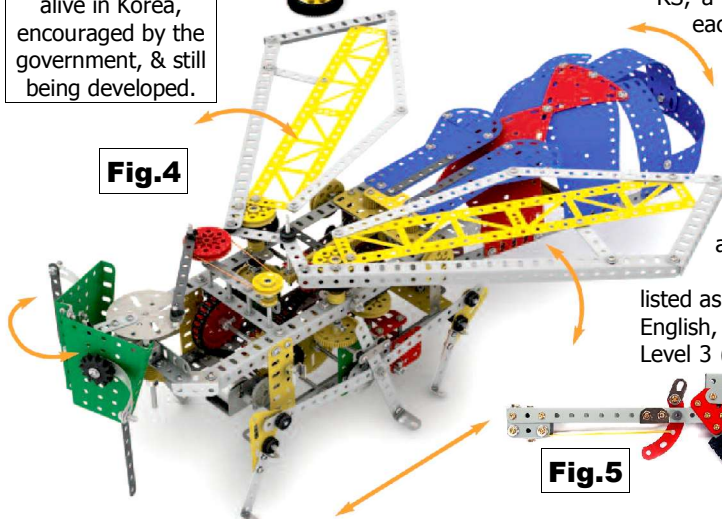


Fig.4



Fig.5



Fig.6

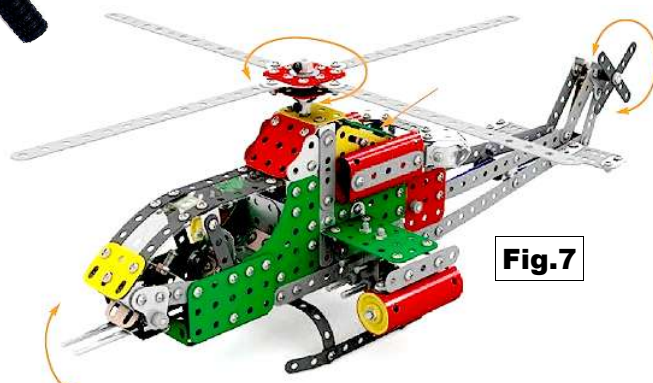


Fig.7



MEWEKA (from Metall-Werk-Kasten: box for working with metal) is a German DIY system. OSN 12/321 indicates that it was patented in 1932 by Julius Frommerherz from Ettingen, Baden, but that production began only in 1953, more than twenty years later. The first edition of the manual mentions that it was made by Reichmann & Co., Maschinenfabrik, of Wuppertal-Barmen, Handelstr. 66; the patentee's name did not appear in this edition. However, in a later manual, Reichmann's name & address were replaced by: Julius Frommerherz, Meweka Kassel-Wilh., Weissensteinstrasse 50 (Wilh. stands for Wilhelmshöhe).

Eisenzeit has a paragraph about this system on p.66 in & there is another on p.156 in Bäumkasten, with a photo of the set and an indication of c1960 as the end of the production. OSN includes six photos of the Press, taken from the manual, showing it carrying out six of the operations described later.

A DIY system can manufacture parts from raw material; usually it can produce only some of the parts: for instance, FORGEACIER & JUNEERO can drill, bend, and cut Strips, but one must buy Wheels, Gears, Cranks, Axle Rods, Nuts, Bolts, and so on. Here, MEWEKA starts from aluminium Plates & Strips; axles, wheels, pulleys, gears, strips, girders, & various components are made from these Plates. In addition to these one has only to add Nuts, Bolts, Collars, and Tyres. Moreover, the importance of the N&B is reduced: as the models are not intended to be taken apart in order to reuse their parts, N&B are not used for assembling them. For this tabs are formed and inserted through slots in another part, then bent over. One can even have a part which is a double-ended tab (Fig.9, called Klammern) to join two stacked pieces. Several models use no Bolts at all, while the model with the highest number of Bolts needs only nine of them. Bolts are often used as stub axles. The ultimate goal of the inventor seems to be that no specialized part will be included in this system. To show how far he could go, the system has no motor but one of the models is a working Electric Motor (Fig.11)!

### THE SETS

All but one set seen are in a wooden box similar to mine. The latter, Fig.2 (with the Press on top of it) measures 33.7\*17.7\*11.5cm. No label is on the top of my box, but later sets have one (Fig.1, but in some the blue background behind the Press is black). Inside the box (Fig.3), several Tools are attached to a wooden board inside the lid (Fig.3a), and the aluminium Plates are under it.



Fig.1

The Dies etc are kept in the bottom of the box (Fig.3b); along with the Tyres & Strips, while the Collars, Nuts, & Bolts are in a box next to the Dies with three compartments and a sliding lid.

The exception (Fig.2a) is a set in a cardboard box which is deeper but narrower in plan, just wide enough to take the board. It has a separate, shallower lid with the Fig.1 label on it.

As far as can be seen the contents of all sets is the same and the only main differences are the Press's colour, and the wording cast into its body. These are detailed in the next section.

### THE PARTS

These are shown in Figs.3 & 4. The Press, Dies, and some other parts are in the bottom of the box; the other parts are held on a Board in the lid.

#### Parts in the Bottom of the Box.

**The Press** is shown in Fig.5. In my set it has just GERMANY on the bottom of the base's front face. Of the other black Presses the one in the 'cardboard' set has MEWEKA on the side of the body, and in the other sets it is MEWEKA PATENT MADE IN GERMANY. This last form continued on later Presses which are painted green.

There are two diagonally opposite mounting holes in the base and the wooden board in the lid has holes in it which would allow the Press to be attached to it using the Threaded Rods & large circular Nuts which hold the Tools. But all the pictures in the manual show the Press fixed to a much larger wooden support.

The Press's arm can be moved downwards to the right or the left and the cam at its inner end varies the stroke of the die holder depending on which way it is moved.

A Set Screw holds an Upper Die in a 6mm diameter bore in the Press' ram, and the mating Lower Die sits in a 12mm diameter hole in the table, held by the Set Screw which can be seen on the table's front edge.

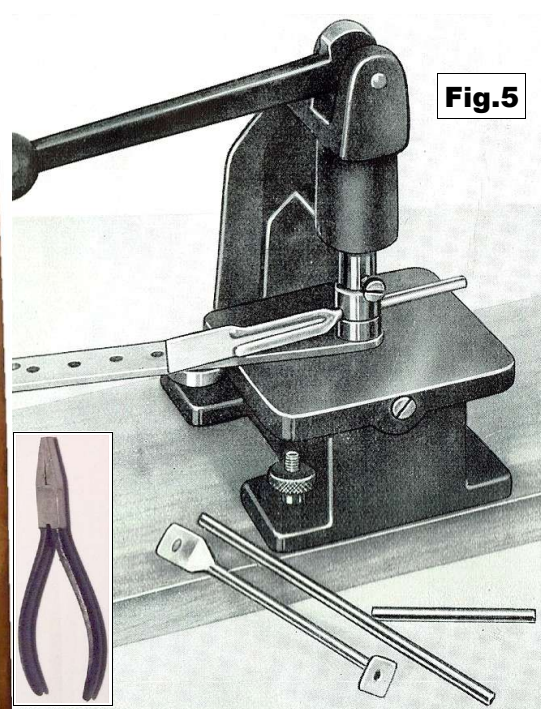
**The Dies** 16 Dies (8 pairs) for the Press, in 4 rows, push into a sturdy Card (Fig.4, with their PNs inset). For each pair the Upper Die is just below its Lower associate, and each pair has consecutive numbers.

**Other Parts: Workpiece Holders #17 & 18** These are under the 16 Dies and they are used to position a workpiece for the required operation. #17's body is 6mm diameter, 7.5mm long, with a spigot 4mm diameter, 3mm long on its base, and a 6mm long, 4mm diameter extension on top. #18 has a 12mm body with a similar spigot and has lips 12.5mm apart on its top face. The spigots push into the Card, or when in use, into, say, a hole in the Strip S described later. #17 is used to hold, for example, the central hole of a plate which will be made into a disc, and #18 to hold in place a Strip which is to be formed. **Strip B, Bracket C with Threaded Pin.** These are above the Dies in Fig.4. B has three 3mm holes at 12.5mm pitch, and at one end a 4mm hole at 20mm pitch from the outer 3mm hole. Bracket C has a 3mm threaded hole and the Threaded Pin screws into it. The Pin's end is turned down to 2mm diameter so that it can engage the Indexing Plate described below. **Tools.** Two double-ended Spanners (on the Card) and a Pair of Pliers for bending the tabs (largely hidden under the Press & the Card in Fig.3b; a similar Pair is inset in Fig.5).

#### Parts on the Board in the Box Lid (Fig.3a).

**The Indexing Plate, D.** Semi-circular in shape, it has three semi-circles of 11, 21, and 31 holes, diameter 2mm. Also a 6mm hole at the centre, and three 4mm diameter radial holes. As explained later it is used in cutting gears.





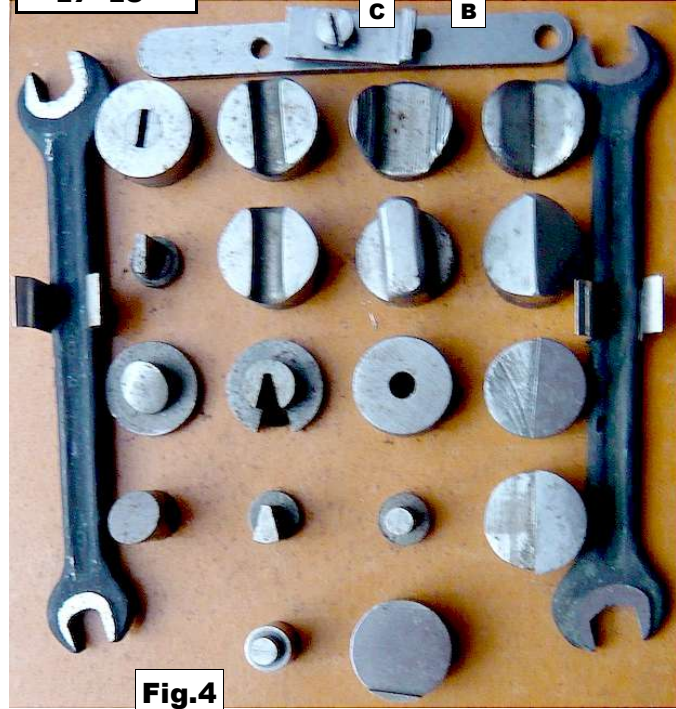
**Fig.5**

**Raw Materials.**

**A Strip S** sitting on top of the Indexing Plate. It is 179.5mm long and 16mm wide. Two holes, 12mm in diameter, called O and Z, are at the ends; 12 holes, diameter 4 mm, are between O and Z. Their pitch is 12.5mm, except 13.75mm between one end hole and Z. It is often used on the table to locate the workpiece relative to the Dies. As the diameter of both O and Z is 12mm, the Strip can be put on the table with either hole on the body of the Lower Die (see Fig.5). The Instructions say which hole is to be used depending on which part is to be made. Then as both #17 and 18 have a 4mm spigot, either may be inserted into one of S's small holes and carry any suitable workpiece. For working on a circular piece, its centre hole is usually positioned on Strip S using Part 17; therefore, the tool will work at a fixed and known distance from its centre.

15	13	11	9
16	14	12	10
7	5	3	1
8	6	4	2
17	18		

**Hand Tools.** A File for deburring, a Screwdriver, and a hook-shaped Cutting Tool (called Reißhaken in the manual).



**Fig.4**

All the parts used are made from aluminum. The sizes are given in millimeters in the following order: length, width, & thickness. Thickness is very important, and it is always indicated with the description of the parts; there are four possible values: 0.7, 1, 1.5, and 2mm.

**Plates**, one of each kind: 250\*150\*0.7, 250\*80\*0.7, 250\*150\*1, 250\*80\*1, 250\*80\*2.

**Strips**, ten for each of two widths: 150\*10.5\*1, 150\*12\*1; the first size is useful for manufacturing axles.

A few items are not included in the set: they include the wire for the Electric Motor, and its insulating washers (to be made with paper).

My set is almost complete, only one 10.5mm wide strip is missing. Sometimes, I wonder if the first owner tried to manufacture an axle; given the difficulty of making it, he stopped using the set, which remained in near mint condition.

**Parts that cannot be Made.**

**Collars** (Stellringe), steel, 8.5mm diameter x 4mm, with a M3 Pan headed Set Screw (20 off).

**N&B** are steel, M3.5. Bolts: length 8mm (30), 12mm (20), 15mm (10). Hexagonal Nuts (60).

**Tyres**, 42mm to fit 28mm pulleys (6); in later sets, two of these were replaced by larger 75mm tyres for 53mm pulleys.

We have already seen that this system does not generally use Nuts & Bolts for assembling parts; therefore, models use few of them. Naturally, the Collars are used as ordinary Collars, but also instead of bosses for circular parts. Ordinary bosses cannot be made by the system; this important issue will be discussed further.

**MAKING THE PARTS FOR MODELS**

With this Press it is impossible to work with a large aluminum plate. One must first cut a rectangular plate a little larger than the piece to be manufactured. To do that, the user takes the Cutting Tool, and guided by a rule, makes as many strokes with it as needed to cut right through.

Now, we will consider the eight operations that can be made with the eight pairs of tools; I indicate their numbers between parentheses.

**1. To press out a hole (3-4).** Its diameter is 4 mm, so that it is possible to insert axles and Bolts. It also allows positioning the part on Strip S using #17.

**2. To pierce a slot (15-16) for a tab.** The slot is 6mm long and 1.5mm wide.



**3. To form a Strip into a U section (11-12).** It is possible to do this for only part of its length, as in the Trolley (Fig.9), where only the handles are formed.

**4. To manufacture a tubular axle (13-14).** See Fig.5. One starts from a 10.5mm Strip, already formed into a 'U' by the preceding method. Both Dies 13 & 14 have a semicircular form, less deep than #11. The manual explains that it is necessary to use the Press action many times, turning the workpiece back & forth, before both sides of the axle are perfectly joined together. Once completed, the axle fits into the Collars.

**5. To make a cut (1-2).** This is achieved by shearing the metal as the Dies close together. Naturally it is necessary to position them carefully to line them up exactly. The final shape of the workpiece depends on its orientation when the Press is operated. This is certainly not easy to do when the shape of the piece must be defined with a high degree of accuracy. For instance, the tabs of the 'Querstege' of the Trolley (Fig.9) must be positioned exactly so that it can be inserted through the slots in the handles and one must use the Press several times while moving & turning the piece a little between each stroke.

To make a disc one starts with a square a little larger than the future disc and forms a hole in the centre of it. Then, with the appropriate end hole of S (O or Z) on the Lower Die, one puts this square on #17, which is inserted into the hole of S that will give the desired diameter. The possible diameters are 27.5, 52.5, & 77.5mm using hole Z, and 2.5mm less for each with hole O.

Lowering the arm starts to cut the disc, and then one slightly rotates the square before the next cutting stroke, and continues until the circle is complete, giving a disc. Later, other actions will convert discs into wheels, pulleys, or gears.

**6. To make 90° bends (9-10).** Using these Dies it is possible to form a Strip into an angle girder, or even part of it as the arms of the Trolley (Fig.9). One can also do it crosswise: with four steps, one has a double bent strip. In the model plans a fold is indicated with a dashed line.

**7. To flange a disc (7-8).** Both Dies are angled at 45°. The disc is positioned on Strip S with #17, at the same place as when it was made. With two flanged discs, one makes a pulley, the #12 in the Eccentric Press for instance (Fig.10). As a wheel the pulley 'V' can carry a Tyre (Fig.9).

**8. To cut a gear (5-6).** The number of teeth is 20, 40, or 60, for the three disc sizes. The Upper Die 6 shears out the area between two teeth. The disc is rotated between strokes using the Indexing Plate, D. Referring now to the picture on the manual cover (Fig.6 right). The Holder #17 in Strip S carries the disc with the Strip B above it, and Plate D below (using its 6mm hole). Bracket C is bolted under B by the Threaded Pin in the appropriate 3mm tapped hole so that the end of C reaches the disc and locks the disc and Strip B together. The 2mm end of the Bolt engages with one of the 2mm holes in Plate D. Also a Bolt is used to lock D to S (its head can be seen in Fig.6 to the left of the disc, and half hidden by it). Thus all the parts, B, C, D, S are solidly held together. Then after one stroke, Strip B and the disc are rotated relative to the Indexing Plate and the 2mm pin moved to the next hole in said Plate.

Note though that as far as can be seen S could still rotate

about the Lower Die and any such movement would cause an error in the spacing of two adjacent gear teeth. Even if S is not locked to the Press in any way, it would possibly be unlikely to move unless knocked inadvertently, and so perhaps this would not be a problem in practice. Nothing is said in the Manual on the need for care on this point.

As mentioned later a ratchet wheel had been added to the right of the 3 gears on the cover of a late edition manual. It is shown inset in Fig.6. I do not know how its inclined teeth could be produced.

OSN indicates that the use of an Indexing Plate was not in the original patent, it was only patented in 1953.

## MANUALS and MODELS

The manual (right), in German, bears

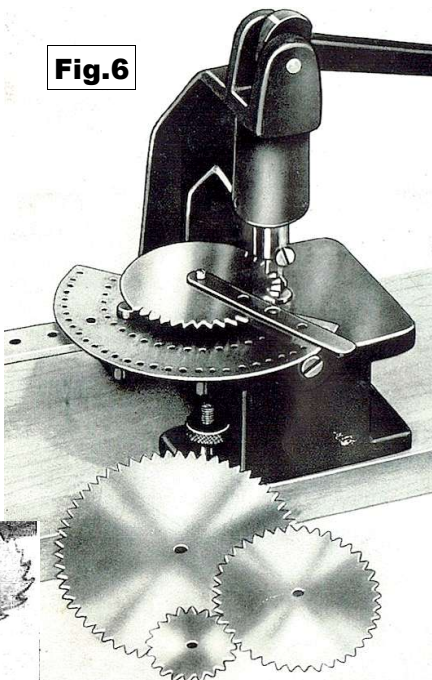
only on manufacturing pieces: it includes no models. As can be seen this first edition was entitled 'Anleitungsbuch mit Vorlagen', that is 'manual with models'.

This erroneous reference disappeared in the later edition, leaving only 'Anleitungsbuch'. Also the Reichmann details were changed to become 'JULIUS FROMMHERZ, MEWEKA | KASSEL-WILH., WEISSENSTEINSTRASSE 50'. Another change was, as mentioned earlier, the addition of a ratchet wheel to the right of the 3 gears, as shown inset in Fig.6.

The manual has 20 pages, 212\*148mm, plus covers, but only the first cover is printed. After an introduction, three pages describe the Press & other parts; then the Press is shown using all the Dies in succession, and finally a few words of advice on how to use the system.

One point of particular importance is how to fasten the circular parts to the axles. The system cannot manufacture bosses; the method consists in putting a Collar on each side of the discs (see Fig.8). The Collar tapping is not exactly in the middle, and the Set Screw has a large pan head. Therefore, its head slightly overhangs the side of the Collar on one side, but not on the other. If one wants to fasten a circular part, such as a pulley or a gear wheel, to its axle, both Collars are positioned so that the Set Screws are against the disc on both sides. For this to work, one must also drill another hole in the disc near the central hole: the sides of the Set Screws' head penetrates into it, and will drive the disc in rotation. In Fig.10 we can see such a hole in parts 10, 11, & 12. If the disc is to be loose, no hole is drilled, and the Collars are put on the other way around. In Fig.8, two pulleys are on the same axle; the one to the left is fastened to the axle, and the other is loose. In only one model another

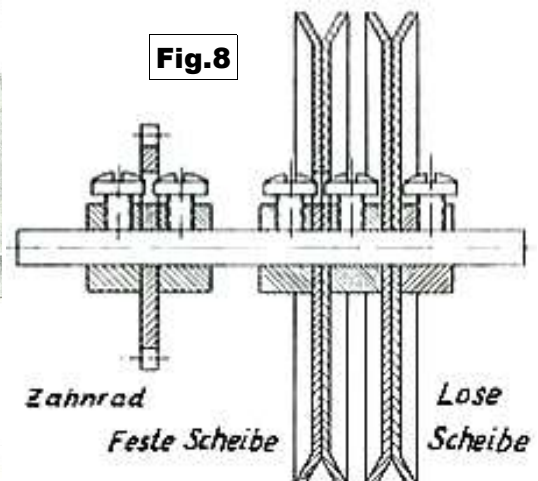
**Fig.6**



**Fig.7**



**Fig.8**



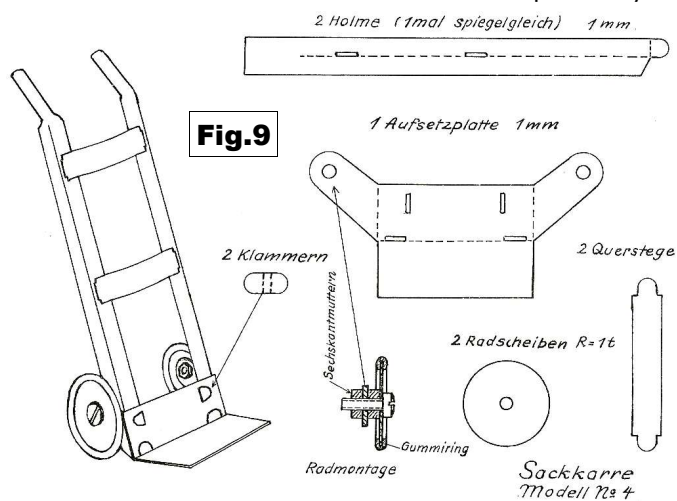


method allows disc 8 (Fig.10) to be fastened to an axle using disc 9 which is bent. A Set Screw holds its short arm on a Collar and then the other arm is bolted to the disc (a small figure top right explains how it works).

Ten models are described on separate sheets. Four of them, rather simple, including the Trolley in Fig.9, are on 208\*146mm sheets. Six are on larger sheets, each of which is a different size but folded to the same size as the simple ones. For Fig.10, the size of the unfolded sheet is 418\*295mm. One of each of the parts that must be made is shown full-size; on the large sheets, each has a part number. There is also a view of the completed model and, for the large models, a table showing the part number of each part, how many of it must be made, its name, its thickness, & its length for axles. A bend in a part is represented by a dashed line. If necessary, a small figure details a difficult sub-assembly.

The six large models are a Forklift Truck, an Eccentric Press (Fig.10), a Lathe, a Shaping Machine, an Electric Motor, and a 4-Engined Aircraft. The latter is by far the most complex model and 2 sheets are needed to describe it. Fig.12 overleaf shows one of them, with some of the illustrations from the second, and notes on the construction.

In later sets the Plane & Motor were replaced by a



Conveyor Belt, and a Tractor which requires two large Tyres.

It is noteworthy that three of the models are machine tools. Unfortunately, one cannot use them for manufacturing parts: the Lathe has no gearbox, and no tools for turning parts. Moreover, their aluminum structures are too weak to support the stress of machining metal parts. However, we can dream of a super-DIY system that could produce more parts to enhance the system.

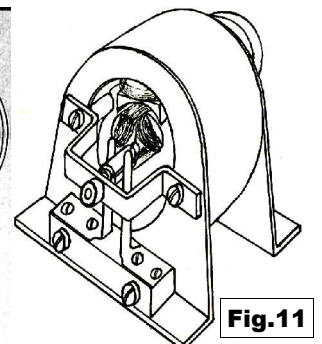
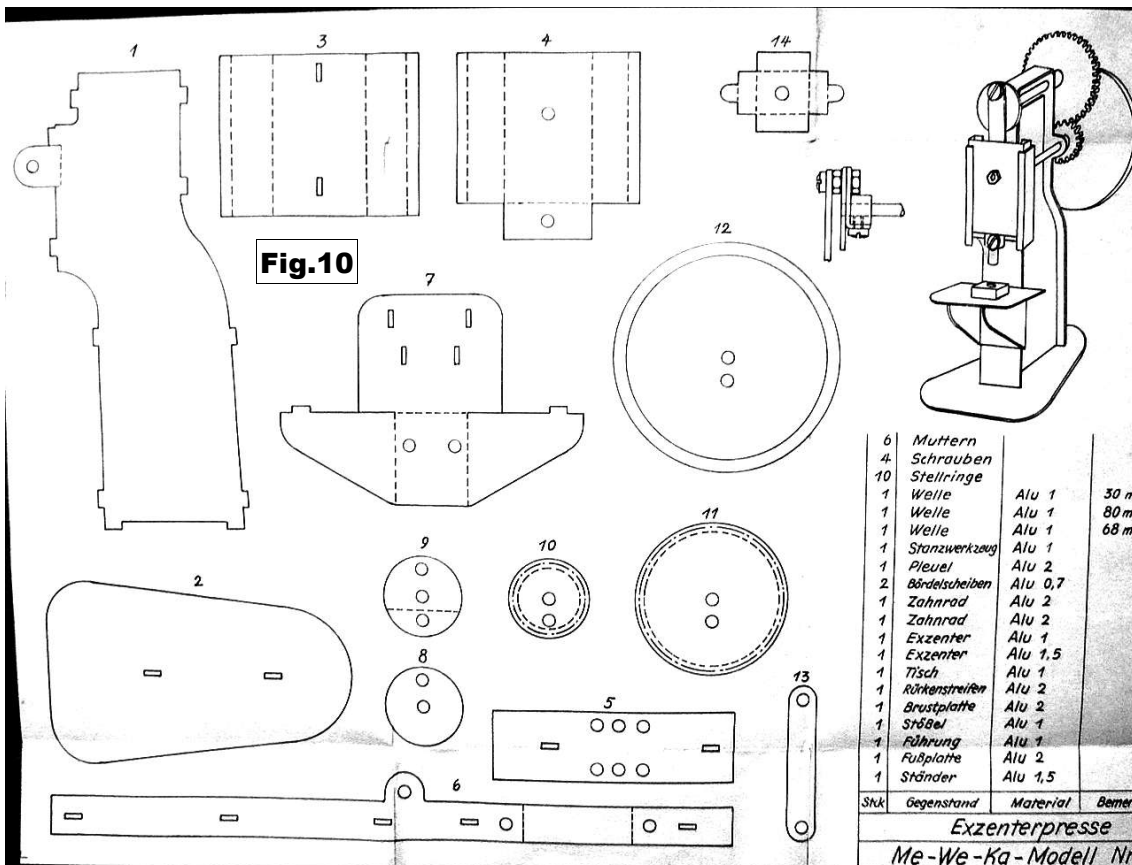
The manual gives some pieces of advice, but I could sum up several of them as follows: 'try and try again, and again'; this is not very useful. All the operations on discs are clearly explained, and it seems easy to do them with good accuracy. On the contrary, it is not clearly explained how various cutting or drilling operations can be carried out with a good precision. If one wants to connect two parts with a tab and a slot, both must be made at the correct place. Perhaps, one could cut the part from the model sheet, glue it on its aluminum blank, and then use it for positioning the part on the table of the Press. However, this is not mentioned in the manual, and no other method is proposed.

## END WORD

This high-quality system is very ambitious, and a trained specialist can produce outstanding achievements: OSN mentions a 4m long model of the famous Wuppertaler overhead railway. However, it is not easy for a beginner to manufacture the parts for a model; the manual would be difficult to use for a child if he has no professional support. Cutting the parts that are not circular to the right dimensions is a difficult task. In my opinion, this system would be suitable for a technical school, where the teachers could help the students deal with its most challenging aspects. Furthermore, the way discs are fastened to the axles is rather odd.

If it may be difficult to build a model, it is much more difficult to design a new one. How could a teenager invent an original model that does not look like a shoe box? It must be made up of small parts, one has to draw them and determine how to connect them. This is especially hard for a mechanical model with moving parts.

If this system was designed for technical schools, it is



Stk	Gegenstand	Material	Bemerkung	Nr.
6	Muttern			20
4	Schrauben			19
10	Stellringe			18
1	Welle	Alu 1	30 mm lang	17
1	Welle	Alu 1	80 mm lang	16
1	Welle	Alu 1	68 mm lang	15
1	Stanzwerkzeug	Alu 1		14
1	Pleuel	Alu 2		13
2	Bördelscheiben	Alu 0,7		12
1	Zahnrad	Alu 2		11
1	Zahnrad	Alu 2		10
1	Exzenter	Alu 1		9
1	Exzenter	Alu 1,5		8
1	Tisch	Alu 1		7
1	Rückenscheiben	Alu 2		6
1	Brustplatte	Alu 2		5
1	Stößel	Alu 1		4
1	Rührung	Alu 1		3
1	Fußplatte	Alu 2		2
1	Ständer	Alu 1,5		1
Exzenterpresse				
Me-We-Ka-Modell Nr. 6				

excellent; however, the manual indicates that its author expected other purchasers. Using this system was probably a daunting challenge for teenagers left to themselves. This explains why it was not successful, although it lasted several years & was based on many excellent original ideas: its sets are very rare.

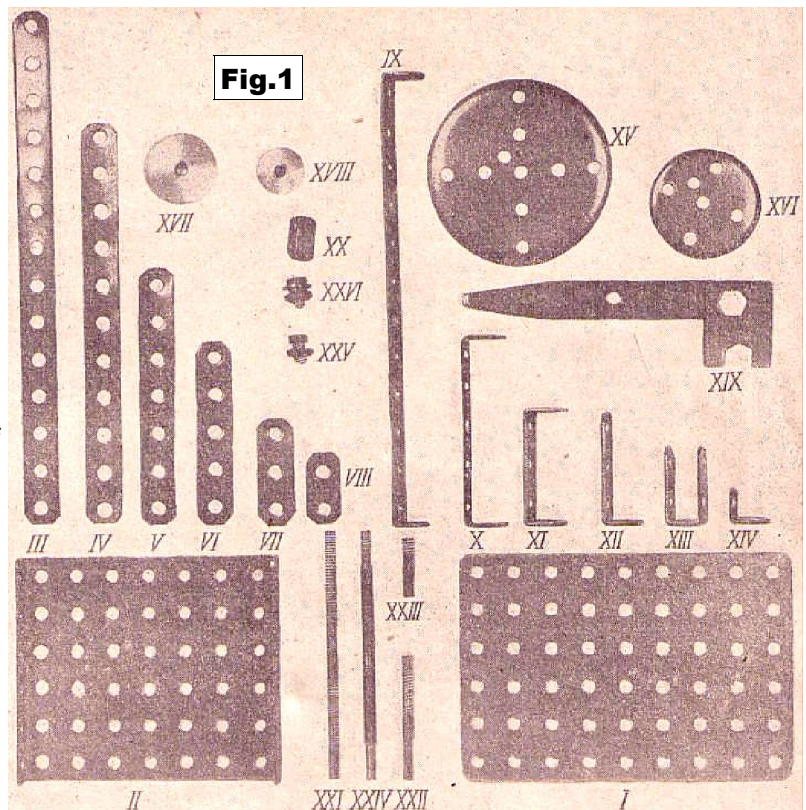


The fuselage is made from identical right & left halves (shown at 'a'), formed to match the 3 bulkheads 'b', and joined by them. They are bent up as shown at 'b' to provide the necessary tabs. The slots for said tabs seem not to be shown, and also it's not clear how the cockpit windows are to be represented.

The fin & tailplane are made along similar lines with pivoted rudder & elevators.

**MEWEKA: S5**

The contents of Sets 1 & 2 are, with the part names as in OSN 36, and additional details in red: • #1 **Flanged Plate 7\*6h**, 84\*72mm {0; 1}; • #2 **Perf. Plate 9\*6h**, 108\*75mm {1; 1}; • #3-8 **Strips**, 14,11,7,5,3,2h {4,6,6, 10,4,4; 8,6,6,12,6,6}; • #9-11 **DAS**, 1\*12,5,3\*1h {0,4,4;

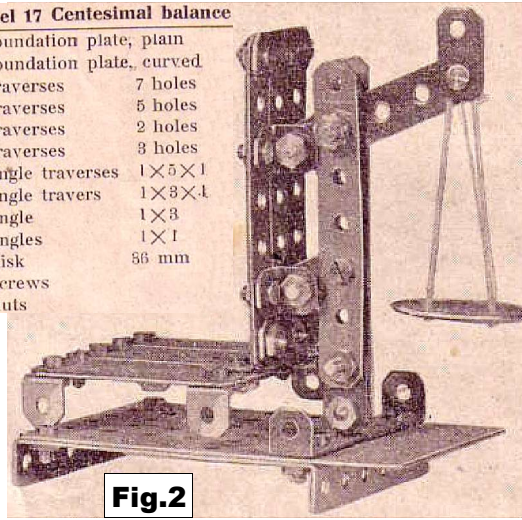
**FERROX: S5**



4,4,4}; • #14-16 Brackets, 1\*3h, 2\*1\*2h, 1\*1h {0,2,9; 4,4,12}; • #15,16 Flanged Discs, 60, 36mm {2,4; 4,8}; • #17,18 Loose Pulleys, 24\*4, 17\*4mm {1,2; 2,4}; • #19 Span'driver {1;2}. • #20 Threaded Coupling, hexagonal, 8\*10mm {1; 2}; • #21-23 Screwed Rods, 80,40, 20mm {1,2,2; 2,4,4}; • #24 Axle with Screwed Ends, 80mm o/a with 10mm threaded {1; 2}; • #25 Bolt, 6\*8mm [possibly the cheesehead's diameter & the length u/h] {40; 50}; • #26 Nut, 8\*2mm [probably the size A/F & thickness] {40; 60}; & also • #26, Washer {10; 20}; • Model book [no PN] {1; 1}.

#### Model 17 Centesimal balance

1 foundation plate, plain	
1 foundation plate, curved	
5 traverses	7 holes
6 traverses	5 holes
6 traverses	2 holes
2 traverses	3 holes
2 angle traverses	1×5×1
1 angle travers	1×3×1
1 angle	1×3
6 angles	1×1
1 disk	36 mm
30 screws	
36 nuts	



**Fig.2**

There is a good range of models but on the whole they are very ordinary. Some, mostly the more advanced ones can be

seen in Figs.3 & 5. 2 of the 3 models in MCS are the Band Saw & Railway Signals in Fig.5. Apart from the neat linkage in the Weighing Scales left, the only mechanical features are a few pulley/cord drives. And some models lack essential features, for example the Drilling Machine (Fig.5) has the spindle driven but with no means of raising/lowering the drill bit or work piece.

A few items offered on Ebay show pages from manuals and all models are shown as line drawings rather than halftones. And virtually all the models, even those in the 'Phase 3 manual' (Fig.3b in OSN 36) are in the present one. The only exception is the Trip Hammer in MCS, taking from the Fig.3b

**Snippet. An 'ABC' OUTFIT** The set's name, Das Metallbau - ABC, might I suppose be translated as The ABC of Metal Building.

The parts in the set are shown in Fig.4 and the backing card is extended upwards & downwards by folding flaps, each with a selection of models on it (Figs.3 & 5). These fold over the parts as in Fig.6 leaving various Bolt heads & clips showing on the underside of the package. So perhaps it was originally enclosed in a box. If not one might expect a label on the top face but there is no evidence that there ever was one.

Turning to the parts, the holes in the larger Flanged Disc are the Phase 2 pattern, but given the Road Wheels & a few other painted parts, the Set is no doubt from early in Phase 3. Parts not seen before are the Wire Hook (on a 5h Strip below the red Flanged Plate), & the green Wheel Discs. The latter would replace the smaller size of Flanged Disc.

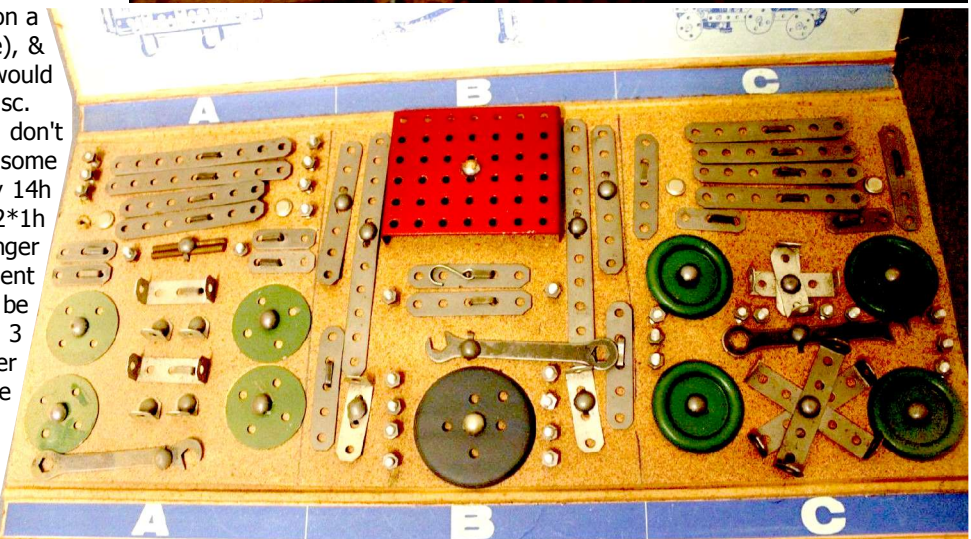
Mostly the quantities of the parts don't match those in the Phase 1 sets and some parts are missing altogether: notably 14h Strips, the Perforated Plate, the 1\*12\*1h DAS, the 2 Loose Pulleys, & the longer Screwed Rods. The neat arrangement of the parts looks as if it could be original although it's odd to have 3 Spanners & no Screwdriver. Longer Screwed Rods could replace the centre Spanner.

The 11 models on the flaps are all in the Phase 1 manual but most need parts not in the ABC. Strange and one starts to wonder if there was originally a second card of parts. The only possible clue that can be seen is the 4 shiny, round, flat heads on either side of the 7h Strips near the top of panels A & C. They differ from the heads of the clips used to attach some parts, & seem to serve no obvious purpose.

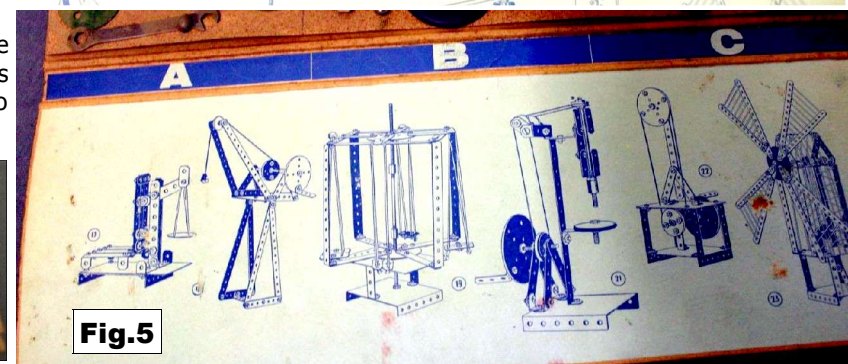
**Fig.6**



**Fig.3**



**Fig.4**



**Fig.5**



**'New System: MULTI-MAKE** This account thanks to Jean-Pierre Guilbert. Despite its name MULTI-MAKE is French, made by a company, name unknown, but with the logo right. Under MULTI-MAKE on the lid below: CONSTRUCTION NOUVELLE à Combinaisons illimitées. And a patent was claimed along the bottom of the lid, 'Modèle Breveté S.G.D.G.'

There were 6 outfits and they are described, in an introductory sheet (in French & English) that was with the No.3 set described later, as follows.

The No.6 contained 50m of Rod in various lengths; 5 types



**Fig.2**



**Fig.1**



of Connector (40 Double, 85 Straight ('Simples'), 35x 90°; 40 Obtuse; 15 Rod Connectors); 15 Curved Tubes; 70 N&B; & a Spanner. All those parts are in the bottom of the box; in a tray above are 3 made-up fabric items to cover a 'hangar' ('shelter' in the English text); to cover an Aircraft's wing; & to provide a 'housse/envelope' for a Speedboat.

Accessories were a Pilot with Seat for the Aircraft or Boat; 2 Axles & 2 Wheels; 2 Propellers & Rubber Motors which allowed the Aircraft or Boat to run out of the Shelter; & Flags for decoration. These may have been in the No.6. Some 30 parts in all.

The No.5 was as the No.6 but with only the covering for the Shelter. The No.4 as the No.5 but without the tray and any of the parts therein.

The Nos.3, 2 & 1 are as the No.4 but with fewer parts, except that the No.3 has a fabric cover for a small Shelter.

**The Actual No.3.** The box, 46\*33.5\*3cm, is shown in Figs.2 & 3, with the metal parts again in Fig.4, from a different photo. The Rods are 6mm Ø wood lacquered yellow in 10 different lengths: 4, 5.7, 9, 10.5, 17, 20, 23, 28, 34.5, 37cm. Their PN's are 1-10, with #1 the shortest. The Connectors are aluminium. The Straight Connectors are 7.2/6.4mm o.d & i.d; the Curved Tubes 6.1/5.2. The N&B are brass with a 3mm Ø thread, pitch .6mm. The Nut is hexagonal; the Bolt looks to have a thin, circular head.

Figs.5 & 6 show the 2 model sheets, 25\*30cm, that were with the Set. The numbers in the registration mark (if that is what it is) are '812\_2290'. The parts in the models are labelled with their PN's (but what are those labelled 'PR'?) and in most the overall dimensions are given. The 'Birdcage' (with the Flag) is 75cm high and the Bed 70cm long (though those dimensions seem rather longer than the parts used in them). But anyway quite good size models, some of them quite elegant, but would they set a young lad's heart a-leaping? Perhaps the Hanger/Shelter is the 'shed' bottom left on the lid.

**Dates** No firm date is known. The 1911 ad for MULTIMAKE (no hyphen) in 41/1230 has not been confirmed but seems credible with its wording (Fig.7) having echoes of that on the lid.

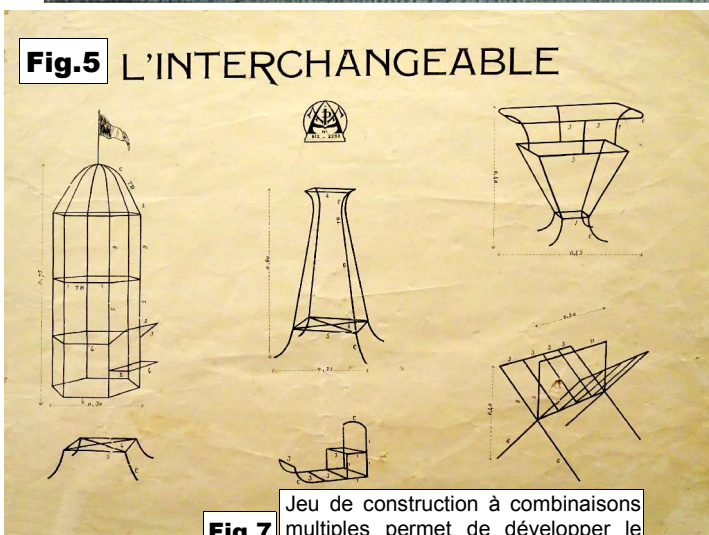
**Fig.3**

Also there is the '812' in the 'registration'. Otherwise the 1920s has been suggested. One thought, the biplane top right on the lid has a distinctly pre-1914 look to it.

**Fig.4**



**Fig.5** L'INTERCHANGEABLE

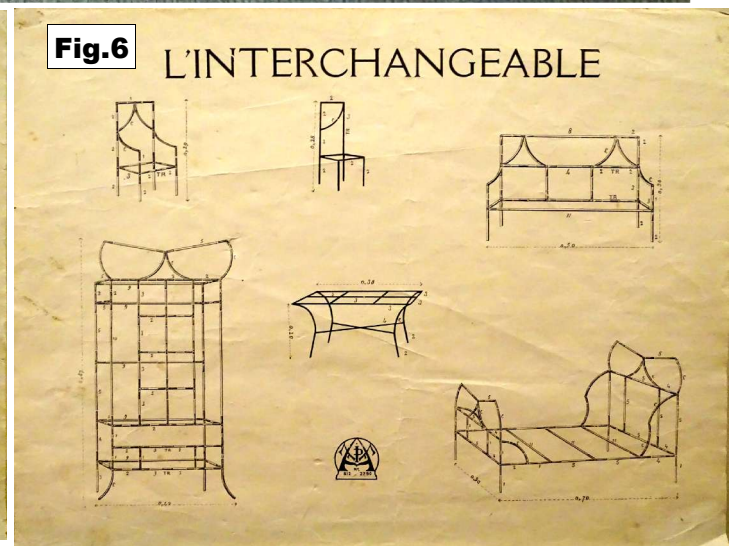


**Fig.7**

Jeu de construction à combinaisons multiples permet de développer le goût de la mécanique aux enfants. - Boîtes de 1 à 6.

**Fig.6**

L'INTERCHANGEABLE





**'New' System: MOCO** All that is known of this small system is a No.2 Set manual, and possibly some Road Wheels. Both were offered by the same UK Ebay seller. Some of the parts look similar to VOGUE. One other set, a No.3, is mentioned in the manual. No maker is mentioned; the printer was ALPHA C.T. but nothing is known of it.

**The MANUAL** is mostly bilingual, in English & Dutch, except that the outer covers are only in English. It has 24 unnumbered pages, 222\*139mm, plus covers. Above C1, C2 has an Introduction, & p1 a list of parts, plus some constructional hints. pp2-24 has the models, 41 in all, from SCALE/



Fig.1

SKAAL to the BREAKDOWN VAN in Fig.2. For each a good-sized halftone & some constructional notes, but no Parts List. C3 shows an untitled shoulder wing, cabin Monoplane which could be built with Set 3, & Fig.4, from C4, illustrations of most of the parts.

**The PARTS** The parts listed below are those on p2 plus, in red, 4 others from C4.

- #1-5, Flat Strips, 5,7,9,11, 25h. • #6-9, A/Gs, 5,7,11,17h;
- #10, 1h A/B; • #10a, 2h Flat Strip; • #11, 2h Double A/B;
- #11a, 5h Double A/B [=1\*5\*1h DAS]; • #11b, 1\*1\*1h D/B;
- #12, 3h Tee Plate; • #13,14, 5h Angle, Flat Trunnion; • #15, 10\*5h Flanged Base Plate; • #16-16c, 10\*5,3, 5\*5,3 Flexible Plates; • #17, 1" Pulley with boss; • #18, 1 3/8" Bush Wheel;
- #18a, 4h Wheel Disc; • #19, 1 3/4" Ø Wheel;
- #20, Hook; • #21, Collar; • #22, 1/4"/32" Bolt; • #23, 5/32" Nut; • #24, Springclip;
- #25, Spanner/Screwdriver; • #26-29, Axle Rods 5 1/2, 4, 3, 2"; • #29a, Axle Rod 1 1/2"; • #30, Crank Handle; • #31, 1" Ø Rubber Belt. • #32, Hank of Cord. • #34, Rev. A/B.

No doubt the thread is 5/32" BSW and it would be surprising if the hole pitch isn't 1/2". The Strip parts look black on C1 but are shown cross-hatched on C4. As already mentioned some of the parts look similar to

VOGUE: Strips etc with angled corners, 10h long Plates, a 1\*2\*1h DAS (if that is what #11 is), the lengths of the Strips & A/Gs, the Span'driver, the 90° bends in the Crank Handle, & the 4h Bush Wheel. The Wheel, 1 3/4" Ø, also looks like the VOGUE balloon-type part and it is shown on all the manual models. So the one offered on Ebay (Fig.5), with a boss & only 1 1/2" Ø is doubtful. The most obvious non-VOGUE parts are the 5h wide Trunnions, the fully perforated Flexible Plates, & the Curved Strip. Also the Flat Bracket & Reverse A/B, both useful parts with a slotted hole. It would be an advance on VOGUE if the A/Gs have slotted holes. In Fig.4 the flange holes in the Flanged Plate & the lugs of the DAS look round but in the models they are clearly slotted.

**The MODELS** They include 9 simple ones and the rest offer a good variety, including 4 (very average) Cranes, 4 railway items (one is a Level Crossing Gate with interlinked Signal), 3 machine tools (one a nice Lathe), & 8 commercial & industrial vehicles (one a Fork Lift Truck). Others include a Cableway, Yacht, Diving Board, Motor-cycle & Sidecar, Helicopter (with a Cord drive to the tail rotor – full marks for that), a (poor) Steam Engine, & the Car in Fig.3. Some look like the part, others are only average. The Curved & 25h Strip are not used in any of the models. Mechanical features are confined to Cord drives and centre-pivot steering.

**THOUGHTS** • Given that the outside covers are only in English, COMO can be assumed British. And the Helicopter model points to post-WW2. • Although there are inconsistencies, perhaps the parts on C4 were meant to be those in the Sets and those on p2 the full range. None of the non-C4 parts are used in the No.3 Monoplane.

#### BREAKDOWN VAN

The 5-hole flat strips carrying the back axle rod are bolted to the flanged baseplate at A. The 11-hole flat strip bolted to the flange of the flanged baseplate supports the door at B as well as the hood. Two 5 x 5-hole flexible plates C are bolted one after the other to the baseplate. The driver's seat consists of an angle trunnion D. Another angle trunnion is bolted to the bush-wheel E.

#### NOODHULPDIENSWA

Die plat strook met 5 gate wat die agterste assang dra word teen die voetstuk met die rand vasgebout soos deur A aangedui. Die plat strook met 11 gate wat teen die rand van die voetstuk vasgebout word is die stut vir die deur soos deur B aangedui sowel as die kap. Die buigbare plate met 5 x 5 gate soos deur C aangedui word een vir een teen die voetstuk vasgebout. Die bestuurder se sitplek bestaan uit 'n hoekspil deur D aangedui. 'n Tweede hoekspil word teen die buswiel vasgebout soos deur E aangedui.

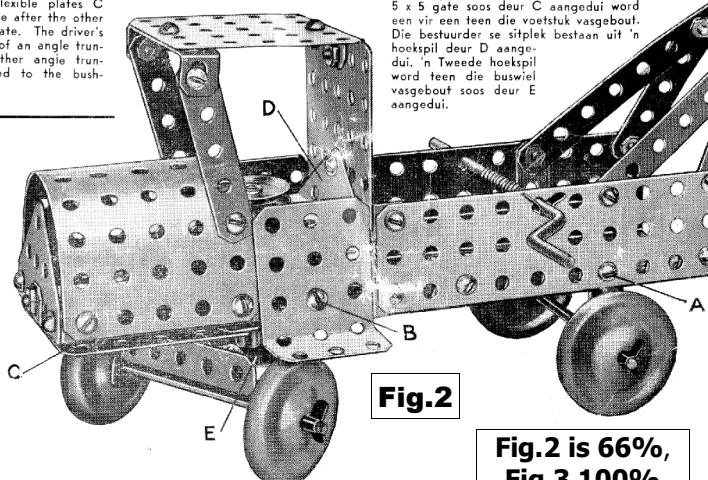


Fig.2

Fig.2 is 66%,  
Fig.3 100%  
of original size

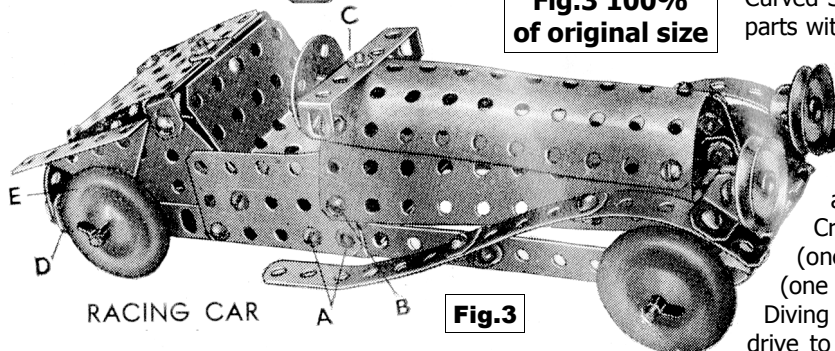


Fig.3

RACING CAR

#### LIST OF PARTS WITH KEY NUMBERS

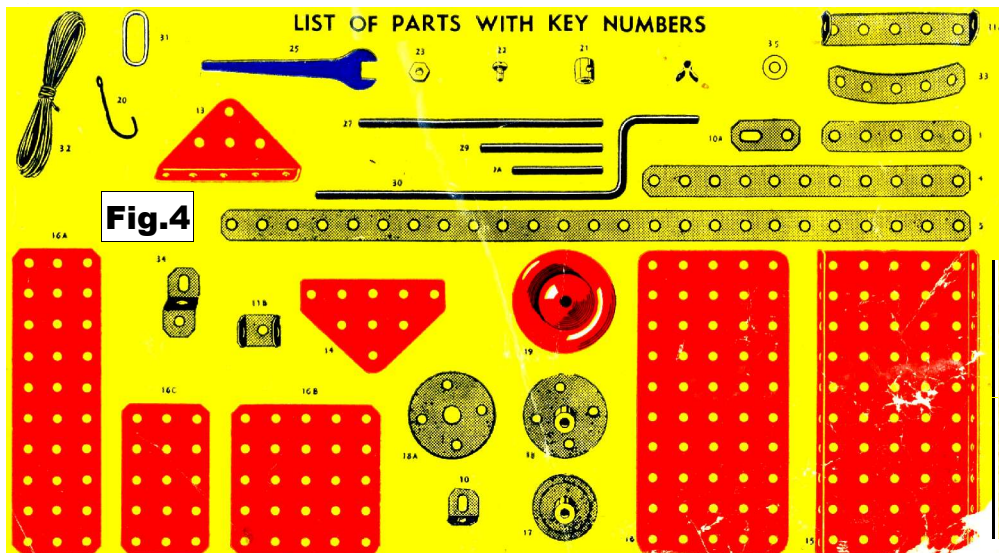


Fig.4



Fig.5



## METALING & Spanish MECCANO.

The subject is a big one and it is hoped that more detailed accounts of the story's different phases will follow. These notes are based on the material to hand, various items already published, Ebay photos, and a few sets & manuals. In many cases it is not based on first-hand knowledge and so corrections & further information would be very welcome. What follows is the sequence of sets & events in chronological order.

Thank you to all who have sent information, and in particular to the late Josep Bernal for many copies of paperwork, and to Richard Gilbert for lending me his Spanish sets.

### 1920 MECCANO

MECCANO from Liverpool had been in Spanish shops before 1920 but in that year Palouzié Juguets S.A. of Séneca 15, Barcelona was appointed the sole MECCANO agent for Spain. The company continued in this role until the end, and also acted for METALING.

### 1930 METALING

METALING was launched. It was made by Novelades Poch S.A. [I'll refer to it as Poch], a toy manufacturer of Galileo 49, Barcelona 14, to compete with MECCANO. Mr Poch was the son-in-law of the MECCANO agent. Novedades might mean novelties or innovations. The parts were replicas of 1930 red/green MECCANO but with only those needed for the largest set to be produced, the No.6. The only noticeable difference compared with MECCANO was that the diameter of the bosses, Collar, & Couplings was slightly greater. The full range of sets was 000 to 6 plus linking outfits. The lid label was similar to the manual cover in Fig.1. The contents of the 00 was identical to the 1930 Liverpool set but there were some variations in the larger sets, particularly in the No.6. But the main difference was that 4x 1" Tyres were included from Set 0 upwards & 4x 3" from the No.1. The colours scheme was said to be as the Liverpool 1930. The models in the manuals were mostly copies of MECCANO but redrawn as B&W line drawings. A good many had minor, and a few more extensive changes. A few had a MÄRKLIN look to them, and a few might possibly be original.

### 1932 MECCANO

Frank Hornby came to Barcelona in 1931 and perhaps fearing lengthy copyright infringement proceedings, reached an agreement allowing Poch to produce MECCANO under licence. METALING was withdrawn in 1932 or thereabouts and Poch produced red/green MECCANO using the METALING machinery, so the parts were identical. The colours were generally a lightish red, medium green, and a dark, sometimes very dark blue for Pulleys etc. The range of sets was again 000 to No.6, with the appropriate linking sets, but their contents and manual models were changed to the Liverpool standard. Various Liverpool style lid labels were used, Fig.2 for example.



Fig.2

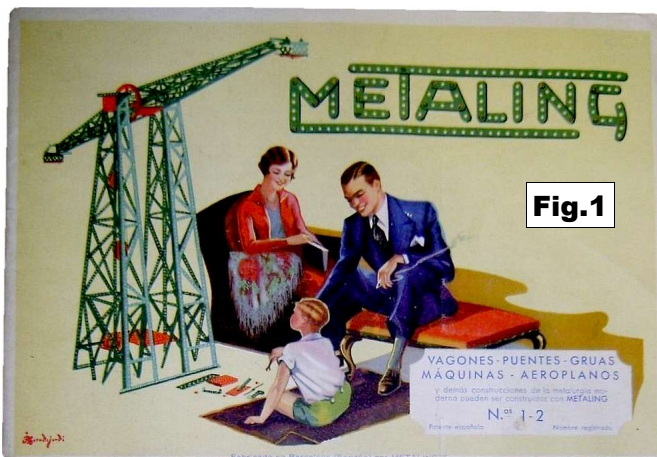


Fig.1

Meccano type manual covers were also used, and though they varied with time it seems the models in them stayed the same. Sets 6A & 7 were introduced towards the end of the 1930s. However some parts which were in the 1930 UK No.7, including the large circular parts #145 & 146 were not produced in Spain and were

never they in their No.7. Models which needed these parts were omitted from the manual. By this time, and probably much earlier, a long sideplate Motor was listed, in reversible & non-reversible versions. This range continued until 1964 with, apparently, no changes to the sets, or to the range of parts except that Loom & Printing Machine parts needed for the two Spanish supermodels, including a few unique to Spain, were added at the end of the 1940s.

### 1964 MECCANO

Poch changed to making the 0-8 and 0A-7A sets from the UK light red & green range which had been introduced in 1962. The new sets needed parts to be added to the Poch range, notably Road Wheels, Flexible & Strip Plates, and the flexible Triangular Plates. A few parts were updated, the Flanged Sector Plate for instance but the 8h long version may be found in early sets. A Gears Set B was also introduced, and for a short time linking sets 00c-4c, presumably to update the superseded sets. The sideplate Motor continued. The existing shades of the colour scheme also continued. At first the lid label was like the 1955 UK 'Dragline' manual cover but with a wide red band with 'Renovado' [Updated] on it stuck on, either below it, or across its lower half (Fig.3). Later lids were identical to the UK 'M' lids of the time (Fig.4) with any text on



Fig.3



Fig.4



them in English, including 'MADE IN ENGLAND BY MECCANO LTD.' The UK 1962 multilingual manual was used.

### 1969 MECCANO

Poch stopped making MECCANO and in 1970 a company in the TriAng group called Exin started to produce the UK Sets 1-5 with the then UK colours of yellow, blue, & BZP. Lids were similar to the UK 1970 dark blue pattern with the EXIN name in small letters (Fig.5). But the change of company seems to have been unsuccessful and in 1971 Exin ceased production in Spain and restarted it in Mexico. One factor may have been that Exin changed the thread to M4.



Fig.5

### 1970 METALING & a few MECCANO Sets

Poch reintroduced METALING with Sets 1-8, and linking sets for them. The colour scheme was the pre-1970 Liverpool black, yellow, & BZP. The range of parts was initially as in the 1964 MECCANO above but a little later a #33 Multipurposel Gear was added and it, the Ratchet Wheel, and all the Gears except the Worm, were nylon with brass bosses moulded in. The 95t #27c had been added but the 1/2" & 3/4" face Pinions had been dropped. Examples to hand of #27a have 55 teeth. Other new parts included yellow plastic Sprocket Wheels with 10 & 20 teeth and blue plastic Chain for them. Later Gears #26c & 27d were introduced, both nylon. Many of these parts, and some others carry the METALING name.

The parts in the sets were packed in polystyrene trays. A typical lid is shown in Fig.6; the Sprockets & Chain on it were omitted for Sets 1-3. These parts were in the larger sets but otherwise no details of the set contents are available. But the manual models were original and some changes may have been introduced. The linking sets were in square section tubular boxes. Sets 1-3 had a smaller size manual than the larger sets but each cover had models in 2 panels, with a rocket launch scenes in the righthand one.

It isn't known when they were introduced but in addition to the METALING sets above a 1974 Poch catalogue shows two others, a Gears Set, & a Motor Set with parts to make a



Fig.6

sideplate Motor. Also a PDU in red & blue. Some MECCANO sets are also included: the Army & Highway Multikits, the Clock Kit, & the Pocket Meccano. Their lids look to be in English but all but the Pocket Set have a small 'Poch' in one corner. A 1975 catalogue has the same sets but also a 'sin cabina' [without Cab] Army Set with a different scene on its lid, and 2 other Highway sets which are labelled MECCANO METALING, and again their lids have different scenes on them. One is described as Vehiculos 2 and has is labelled as such on the lid; the other is described as Vehiculos Gruas 3 [Crane Vehicles] but has Vehiculos 1 on the lid.

### 1976-early 1980s METALING & MECCANO

In 1976 the colour scheme was changed to yellow, dark blue, & BZP. Production of METALING sets continued but they were also sold under the name MECCANO METALING. Various other sets including the then UK Army, Highway, & No.1 Clock sets were added to the range, but also other sets unique to Spain.

A 1976 catalogue shows MECCANO METALING Sets 1-5 with new style lids (Fig.7 is typical) and a different layout of the



Fig.7

parts. The latter now corresponded to the then current UK inventories. The models on the lids are as before and still show black parts. Sets 6-8 are unchanged except for the colour of the parts. (Some early Sets 1-5 were also unchanged except for the colour of the parts.) All the sets in the catalogue now have reference numbers and Sets 1-8 are M1-M8. There is no mention of linking sets. The manuals for the new sets have yellow covers with a wide blue band down the right side and METALING or MECCANO METALING running into it. The models are as in the UK manuals but it isn't known if all were included.

M20 is the Pocket Meccano. M21 & 22 are the Highway, Army Multikits. M23 the Clock Kit, & M24 the 'sin cabina' Army multikit. All these are as before. M25 is a Vehiculos Multikit 1, a smaller set than the previous No.2, and M26 & 27 are the previous Vehiculos 2 & 3 sets.

A 1980 catalogue shows Sets 1-7, all with the new style lid and the 6 & 7 with a new layout of the parts. Their lids have just METALING on them. A Braced Girder can be seen among said parts and so the contents are probably now as the UK.



Fig.8



There is no mention of a No.8 outfit, and again no linking sets.

Sets 10-12 are listed as METALING but their photos have MECCANO METALING on them. All have lids similar to Fig.8. (Some actual sets are labelled MECCANO METALING, some METALING METALING, and some just METALING.) The parts in each set include a Magic Motor. Each has a manual with 4 models for No.10, those plus another 4 for No.11, & another 4 for Set 12. Most of the models are small vehicles running on 1" Pulleys with Tyres; the Robot on the lid is one of the No.12 models. The manual covers are similar to the lids except that the small panel of models is omitted.

Sets 15-17 are labelled METALING SUPERMODELOS but actual sets seen have METALING MECCANO as in Fig.9. All the lids are as Fig.9 apart from the models in the bottom right corner. The No.15 lid shows the 9 models from the Liverpool Combat set, the No.16 the 8 Highway models, & the No.17 the 10 Army models. The 2 large models on the lid are in the top half of the No.15 manual cover with SUPERMODELOS above them and, in the lower half, the Poch logo and '15'. The 16 & 17 covers have just SUPERMODELOS in the top half with the Set models in a large circle below.

Items 30-34 are all METALING. They are, in order, the ELECTROMOTOR Set with parts to make a 4-12v sideplate Motor; a 4-12v sideplate Motor which looks similar to the one

from the Set; a Transformer; an ENGRANAJES [Gears] Set with the nylon Gears, plastic Sprockets & Chain, and a Spring Motor like the Magic. The Motor & Gears sets have their parts in foam blocks under transparent lids.

They are not listed in the 1980 catalogue but one source says that the Action Packs were manufactured in Spain from 1979. And also that early in the 1980s a company called P.B.P, S.A. were making MECCANO/METALING.

#### AND THEREAFTER

After production ceased MECCANO sets were imported from France.

Fig.9



OSN 53/1635

### METALING & Spanish MECCANO: S3

**More on METALLIC** Two items following the Jacques Pitrat article on p1615: (a) notes, thanks to David Hobson, on his No.2 set, and (b) some points of interest about a No.1 set, thanks to Jean-Pierre Guibert.

**From David.** A few remarks on my No.2 following Jacques' excellent, comprehensive write-up of his No.2.

The French toy trader who supplied my set seemed familiar with the "P E Paris" mark saying "Hope you'll love this nice Pintel". I see on the web that there is currently a wholesale toy firm called "Pintel Jouets" in Paris and other French cities – perhaps a descendant of the original firm.

Some of the Strip parts in my set had been used, but the Plates and some of the A/Gs were still strung on the backing cards, and the 'string' is a red woven lace about 2mm wide which I have not seen used before in other MCS.

The tin-plate parts in my set were more oxidised (as in many MME sets) than those in Jacques' set, with only a few traces of bright tin. I have the same number of Plates as Jacques, with a few slight variations in the numbers of Strips & A/Gs.

The Strips & Girders have some ragged edges, presumably from guillotining; their hole size the same as Jacques at 2.5mm but the holes in the Plates are slightly larger.

The Fan is a smaller version of the 80mm Ø STABIL part. The Pulley is cast from a dense alloy – probably lead based – and has a deep V-groove 3-4mm deep. The bore is threaded to match the Threaded Rod, 2.4mm over thread, and I make the pitch to be .6mm.

I have 55 Bolts & 44 Nuts in a cardboard box 55\*33\*20mm with a lift-off lid which has a 'window', probably celluloid but now opaque with age. The N&B are brass turned from 5mm brass hex, and the parting tool has left the bolts with slightly domed heads, and one face of the nuts is also slightly domed. The bolts are 6.5mm overall 4mm long u/h, with the same thread diameter & pitch as the Rod. Many of the N&B combinations cannot now be tightened, perhaps a previous owner stripped the (delicate) thread by too enthusiastic use of the Spanners on the Nut & Bolt head. Also some of the threads on the bolts look slightly tapered.

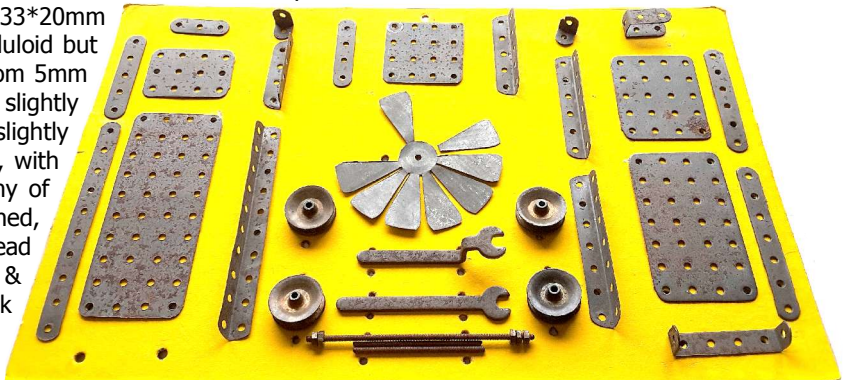
Re the 'Grand Moulin' model in the manual, I

found it is just possible to join the Angle Girders with a N&B by overlapping the holes – perhaps the Drift was supplied to help lever the holes into alignment, although at 3mm diameter only the tip will fit the holes.

**The No.1 Set** The box is 30½\*19½\*4¾cm and is in the same style as the No.2 on p1615, with the same label. Fig.1 shows the location of the parts on the backing board, but it's doubtful if the board is the original. The parts found were: **Flat Plates:** 4\*10,7,5,4h (1,1,1,2) **Strips:** 10,7,6,5,4,3h (6,4,2,3,5,6). **A/Gs:** 10,7,6,5,4h (4,2,3,3,4). **DAS:** 1\*4\*1h (1). **Single Bent Strip:** 2\*1\*2 (1). **A/B** (4). **Pulley Wheels** (4). These bear traces of gold lacquer and have a small boss on each side, 9½mm wide overall. Their bores were threaded but now a Threaded Rod just passes through: perhaps they were drilled out by a previous owner to avoid a loose Pulley moving along the Rod if it only turned in one direction. **Threaded Rods:** 85,45mm (1,2). **Fan** (1, missing 4 blades). **Bolts** (0). **Nuts** (5). **Tools:** the 2 Spanners.

Quite apart from the N&B it's very likely that at least some Strips & A/Gs are missing, also a DAS, and probably a Crank Arm.

The parts are not as good quality as Jacques'. A potential problem when building a model was the hole pitch. In most parts it is 9.9 to 10.0mm but 9.8 to 1.02 in some cases, particularly the Plates, and this could amount to a half hole discrepancy over 10 holes. The hole diameter is 2.7-2.8mm in the different parts. The edges of the Strips are a little irregular but not seriously so.



OSN 53/1635

METALLIC: S5



## Snippets. STEEL ENGINEERING

These add to the notes in 23/666. The system was announced in an ad dated January 1922

A dealers brochure from, probably, later that year shows sets 1, 3, 5, 10 & 25. Also the Electrification & Illumination Set 20. There is a photo of each but they are too blurry to see much detail. Their size, weight, number of parts/models are given as: **Set 1:** 12½\*8¾\*1"; 1lb.11oz; 92/109.

**Set 3:** 18¼\*10¼\*1½"; 2lb.13oz; 160/159. **Set 5:** 18¼\*10¼\*2½" (2 layers); 4lb.6oz; 192/180.

**Set 10:** 14¾\*8¾\*3¾" (wooden with tray); 11lb.6oz; 273/192.

**Set 25:** 18¾\* 11\*3½" (wooden with tray); 17lb.6oz; 1058/209.

**Set 20:** 18\*10¼\* 1¾"; 1lb.3oz.

Sets 10 & 25 include the Motor. All but Sets 1 & 20 have 4 Grooved (Spoked) Wheels. The parts in Set 20 include miniature Lamps, Wire, Sockets, Contact Strips. Sets 1 & 3 have the Book 1 manual, Set 5 Books 1 & 2, and Set 10 the 'big Books of Instruction'. Nothing is said for Sets 20 & 25.

Fig.2 shows the parts in a No.3.

As mentioned in OSN 23 a Set 35 was later added to the range, but no further details of it have emerged.

**The cardboard boxes** are black with a label similar to that of the No.5 in Fig.1. This basic design was used on all the cardboard boxes but the relative positions of its elements vary a little from set to set. Also the colours vary in intensity, at least in Ebay photos. The longer lid aprons have 'REAL SPORT FOR REAL BOYS' along them; the shorter ones, 'STEEL ENGINEERING' followed by the Set No.



Fig.1

Patents are listed below the base of the Big Wheel with 'Nov. 18, 1919' and 'June 1, 1920' on all; 'Other Patents Pending' on some, but Mar. 13, 1923 instead on others. One Ebay ad for a No.10 set claims 'Patented Aug. 1922' but probably this comes from the manual cover, as in the MCS one mentioned in OSN 23.

**The wooden boxes** have just a small label (Fig.3) on the lid's bottom right corner. The Set No. is on the inside of the lid at bottom right.

**The Manuals.** Fig.4 is the cover of the No.1 manual, as described in OSN 23. It has 16 pages with models for Sets 1 & 3.

The B&W cover of a No.2 manual was shown in OSN 23, and a comparable one was described there. A further No.2 is shown in Fig.5, and another ebay photo shows it open displaying the (blank) inside front cover and the first inside page. The latter is identical to the 'cover' shown in OSN 23, so it may be that all the B&W 'covers' are actually first pages. In any case the Fig.5 manual has 32 inside pages and they almost certainly match those in the OSN 23 Manual Summary.

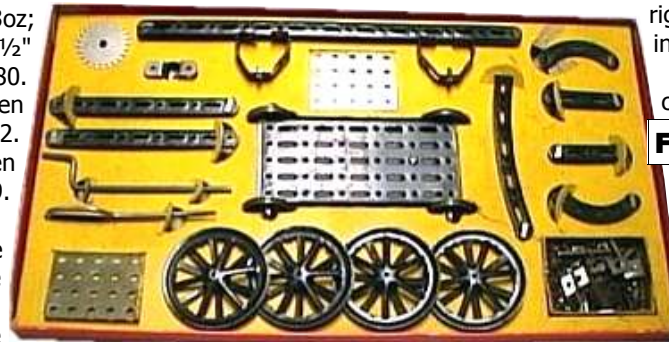


Fig.2



Fig.3

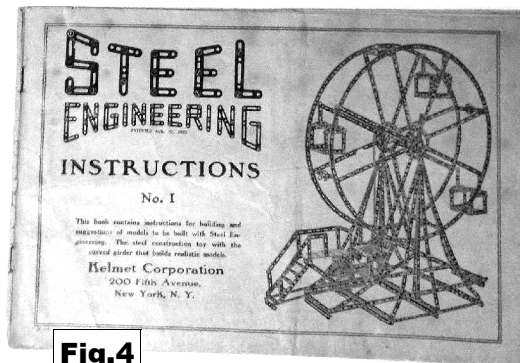


Fig.4



Fig.5

STEEL ENGINEERING [1]: S1

OSN 53/1636

**'New' System: AUTO-METALLBAUKASTEN** Thank you to Urs Flammer for sending the photos of the lid below, and of the parts right. The box is about 20½cm long and the Wheels are made from fire switches. The later probably indicates that this Set was introduced soon after WW2. The words on the lid bottom right translate as Educational, Entertaining, Stimulating (or Exhilarating). The words under the trademark right may just mean 'Take Note, Trademark'.

Fig.2



Fig.1



Fig.3

AUTO-METALLBAUKASTEN: S1

OSN 53/1636



## A Large THE IRON CONSTRUCTOR Set

by Jacques Pitrat

THE IRON CONSTRUCTOR (TIC) system, patented by an architect, Edward von Leistner, was produced in 1894. My set in a cardboard box is described in OSN 29/854, which also refers to a British patent. I recently acquired a larger set in a wooden box which contains parts (Fig.3) some of which were not described in the British patent. In the beginning of 1895, another version appeared (OSN 38/1147), called THE PRACTICAL IRON CONSTRUCTOR AND DEMONSTRATOR (PICAD); it was designed by F. Wm. Rumpf. Its manual gives a lot of useful information on both systems, but it does not mention the name of von Leistner. I will compare these sets, and study three of the patents submitted by von Leistner, two American and one British. Unfortunately, the manual is missing for my IRON CONSTRUCTOR sets. However, such a manual certainly existed: in the PICAD manual, among the improvements compared to the TIC set, it is said that 'the plates and drawings have been entirely worked over and enlarged'.

**THE SET** My set is in a 345\*195\*124mm wooden box with a sliding lid (Fig.1). A label with the same picture as the one on the cardboard box, is glued to the lid. It indicates as inventors von Leistner & Co, architects at New York and Arlington; the last line mentions US PATENT AF (AF probably stands for 'applied for'). For both sets, there is no indication of a set number. The box has two main compartments (Fig.2). The small one is for the wooden parts; the large one has wooden dividers forming smaller compartments; it also had a tray, we can see its supports at the four corners of the large compartment. Unfortunately, this tray is missing, and only three of its dividers remain in the box. Probably, with the tray, there was one compartment for each kind of part, as in the PICAD box. This box and my PICAD one look alike, although they are not identical.

**THE PARTS** I indicate in the following the letter which marks the parts in Fig.3, followed, between parentheses, by the quantity of parts in the cardboard and in the wooden box. Fig.3a shows the N&B in Fig.3 enlarged. The parts which are in both sets are identical, and with the few exceptions noted in OSN 29 and below, are as in Figs.1-10 of the British patent in OSN 29, with the same letter designations (but in lower case) and dimensions. My quotations are from the British patent.

Certainly, some parts are missing from the sets, especially the Bolts, but many still remain in both; their present number gives a good idea of the initial one. The holes are 1.8mm Ø; all the parts, except the wooden one, are brass.

**A** (20-71) Angle Girder with 3 holes.

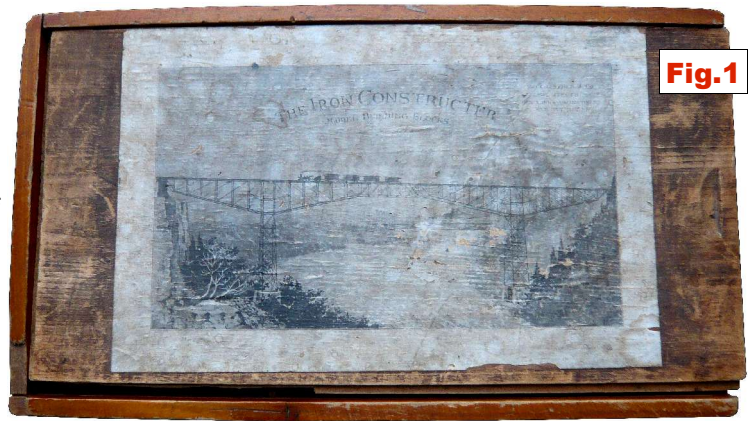


Fig.1



Fig.2

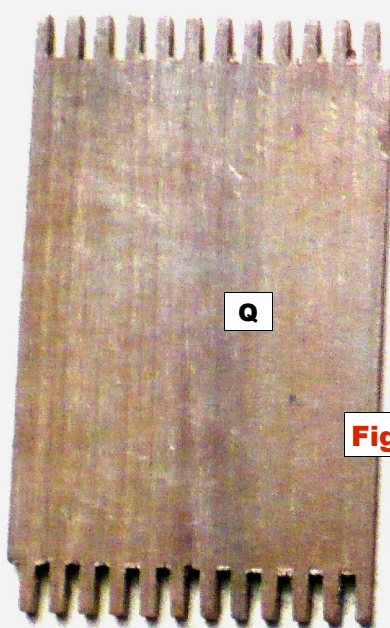


Fig.3

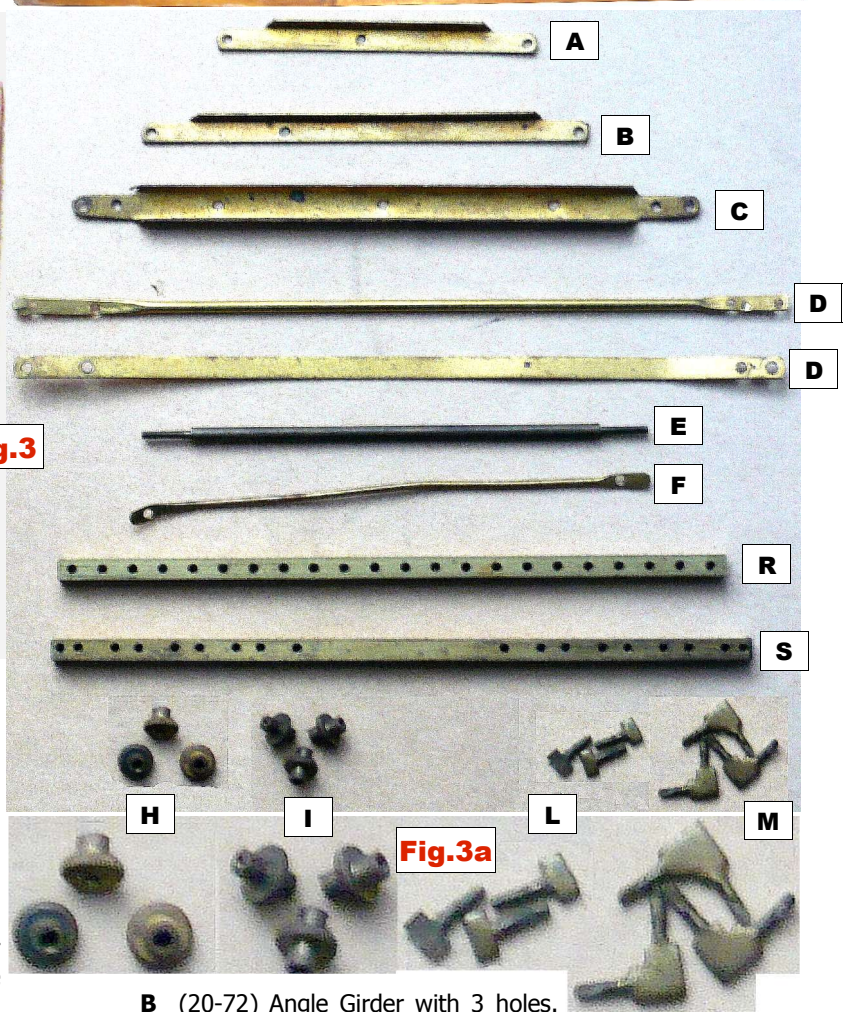


Fig.3a

**B** (20-72) Angle Girder with 3 holes.

This part has the length of the diagonal of a square of four 'a' parts.

**C** (21-74) U-Girder with 3 holes in the middle, and two at each end. The spacing between the end holes is the same at each end: that makes three possible distances between distant



holes. This part has the length of the diagonal of a rectangle with sides a and b.

Only the British patent describes another version of this part (OSN 29, Fig.10). 'Each flange extends on one side to the end of the perforated centre portion whereby this member gets stronger, it is specially intended for use in full-scale constructions'. As I have toy sets, it is normal that this version does not exist in my sets.

**D** First version (18-44) Rod with Flat Ends. Two holes are at each end, but the distance between them is different at the two ends: that makes four possible distances between distant holes.

**D** Second version (0-40). Flat Strip without intermediary holes. The British patent explains: 'Figure 6 is a modification of Figure 5 made of sheet metal in which form it can be manufactured cheaper.' Then, why are all d parts not the second version? This part does not exist in the second US patent; in the British patent, the position of the holes is the same as for the first version of d, but for the actual part the distance between the holes on the right is smaller than for the first version.

**E** (10-29) Transverse Piece with screw threads at each end.

**F** (0-37) Diagonal Binding Piece with two flattened heads, each one with one hole; their distance is 100mm.

**H** (25-55) Nut.

**I** (4-15) Double nut. 'The transverse piece e which connects the trusses is fastened by means of the Double Nuts I'.

**L** (3-21) Screw.

**M** (0-15). 'The 90° Screw m serves to connect parallel structures without the transverse piece e'. This, in context, probably means joining two parts at right-angles.

The hexagonal nut g; the other version of the double nut, k; the double screws n, o, and p, are not present in my sets. Moreover, screws o and p are not described in the second US patent. It is possible that the double screw n would be in a larger TIC set: only the largest PICAD set contained this part.

Three parts are not described in the TIC patents:

**Q** (5-18) Wooden Plate 133\*80mm, thickness 5mm. Two parts can be interlocked by their toothed ends; in that way, one creates a continuous platform. If one wants only to build bridges, small rectangular wooden parts are enough for the planking, as with PICAD; for building tents or roofs, it is necessary to introduce larger wooden parts.

In both TIC patents, another wooden part is called x. 'A few wooden piece x are shown which act as a support for the material with which the roof is covered.' Several appear in the roof model (Fig.14, OSN 29); they look like square section beams.

**R & S.** Both these Beams are only in the wooden box; all their holes are threaded.

**R** (0-9) 140mm Beam, 5mm square section with 22 holes, at .64mm pitch.

**S** (0-80) 146mm Beam, 5mm square section. It is symmetrical, with nine holes on each side, and no holes in the middle. The hole at each end is followed by 4 pairs of holes, with the holes in each pair at 7.5mm pitch. The first pair follows the single, end hole at 4mm pitch, the following 3 pairs are at 5mm pitch. I am unable to understand the use of this curious pattern of holes.

It is not easy to see how these Beams can be used, their holes do not correspond to those of the Girders. Moreover, the threads of the Bolts and Beams are of very poor quality: often the Bolts or the ends of part E either lock up or do not mesh. These Beams are very heavy compared with the other parts, 24g and 25g against between 1g and 5g). Together, they weigh twice the weight of all the other metal parts.

**VON LEISTNER'S PATENTS** Von Leistner worked with a team of several collaborators: on the TIC lids, his name is followed by '& Co architects'. Moritz Steinmann, Hermann Goetter, and F. Wm. Rumpf appear in the literature related to

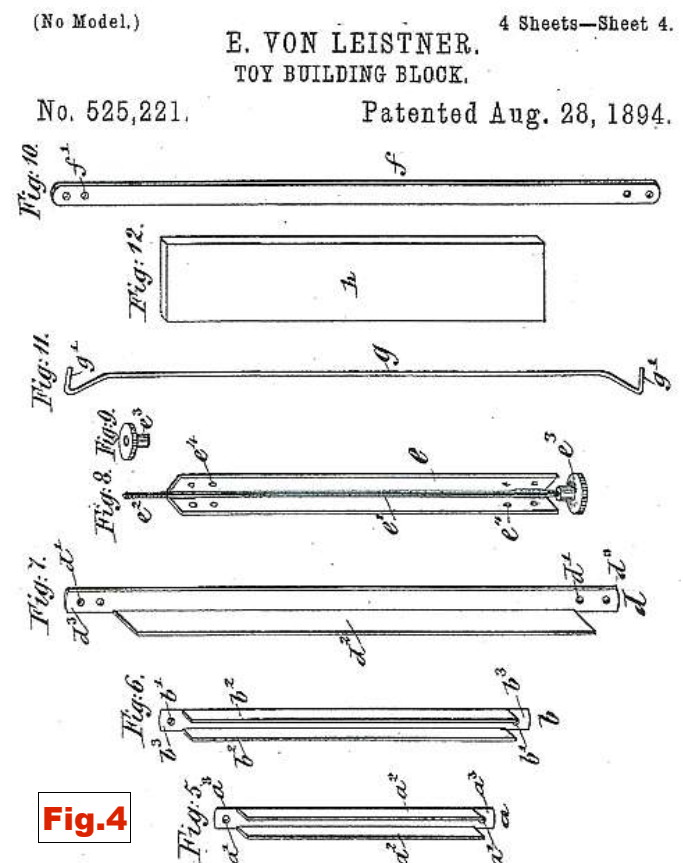
both systems. He submitted four patents. I have three of them, I could not find the German patent No 30647; as it was accepted two weeks after the first US patent, I assume that both were very similar. None of them indicates the name of the corresponding system. When I speak of a TIC or PICAD patent, it is because the parts described in the patent are those corresponding to TIC or PICAD parts; the names of the systems appear only on the lid of the boxes, and in the PICAD manual.

Here are the dates related to the various events linked to both systems:

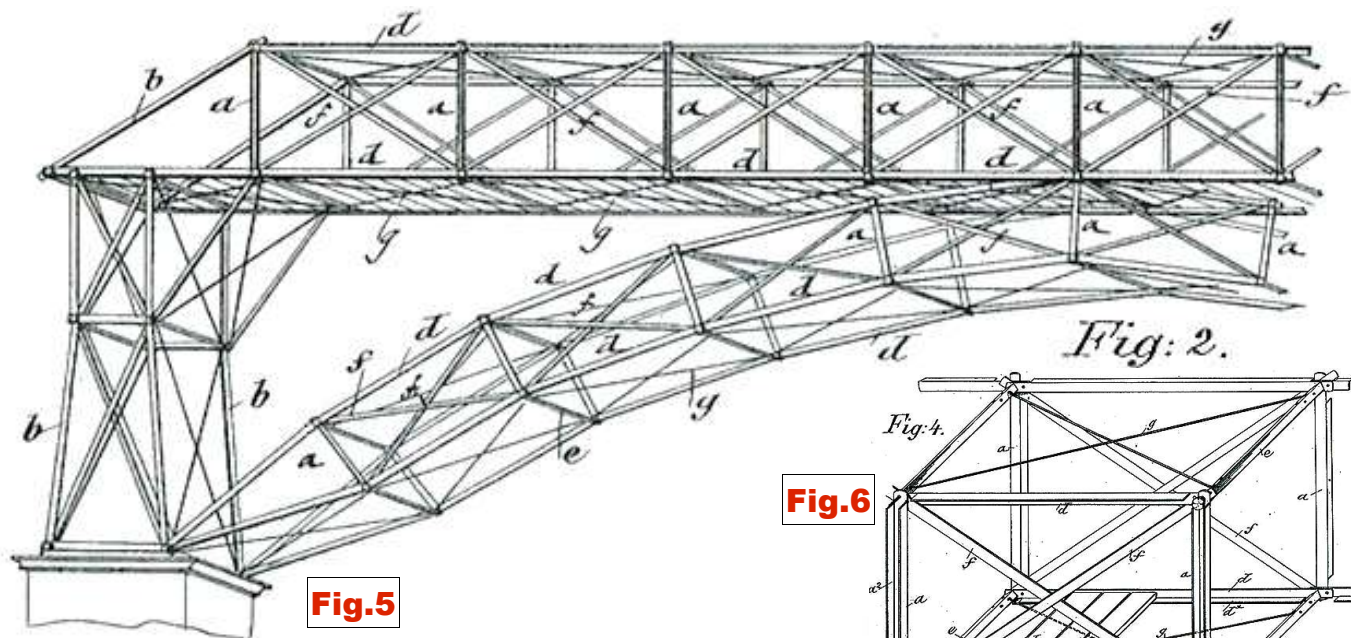
- 9 October 1893: the PICAD US patent is filed.
- 28 August 1894: the PICAD US patent is accepted.
- 11 September 1894: the PICAD German patent is accepted.
- October 1894: TIC is introduced into the market (according to the PICAD manual).
- 15 February 1895: the TIC US patent is filed.
- 2 March 1895: the PICAD manual is entered in the Library of Congress.
- 30 July 1895: the TIC US patent is accepted.
- The same day, 30 July 1895, the TIC British patent is filed.
- 9 November 1895: the TIC British patent is accepted.

This sequence of events is quite surprising: the 1894 US patent describes PICAD, the 1895 system, while both 1895 patents describe the 1894 system, TIC! However, all these events are known with absolute certainty from documents of this period.

**The FIRST US PATENT** 'Edward von Leistner, a subject of the Emperor of Germany.....assignor on one-half to Moritz Steinmann' filed on October 9, 1893 a US patent for 'Toy Building-Block; it was accepted on August 28, 1894 as No. 525,221. Fig.4 below shows the parts of this new system. They are definitely those of PICAD, and not those of TIC: parts a and b (using the letters in the patent) are channel girders while d is an angle girder, the number of holes are those of the corresponding PICAD part, the wire brace g is there, the angle piece e with nuts is also there, the parts are symmetrical, etc. Four drawings are included in this patent, all are clearly using

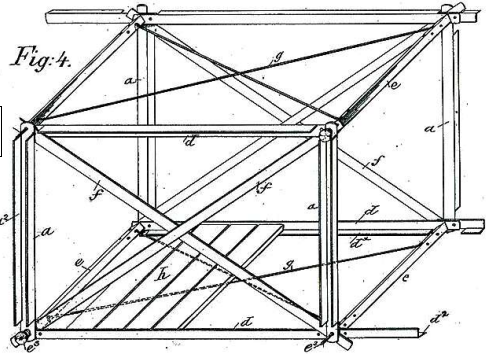






**Fig.5**

**Fig.6**



*Fig.4.*

*Fig.2.*

PICAD parts; Figs.5 & 6 above show two of them. Moreover, in the PICAD manual it was considered as a PICAD patent, as also was the German patent. One part, the Flat Strip, is missing in this description, and also the screw parts because their choice was not yet final, only very likely: 'So far I have found the screw-nuts to be the best mode of connecting the parts, the spring-keys or similar devices producing a less rigid or slightly wobbling [sic] connection of the parts.' Introducing screws was a last-minute decision, which perhaps explains why they were so crude.

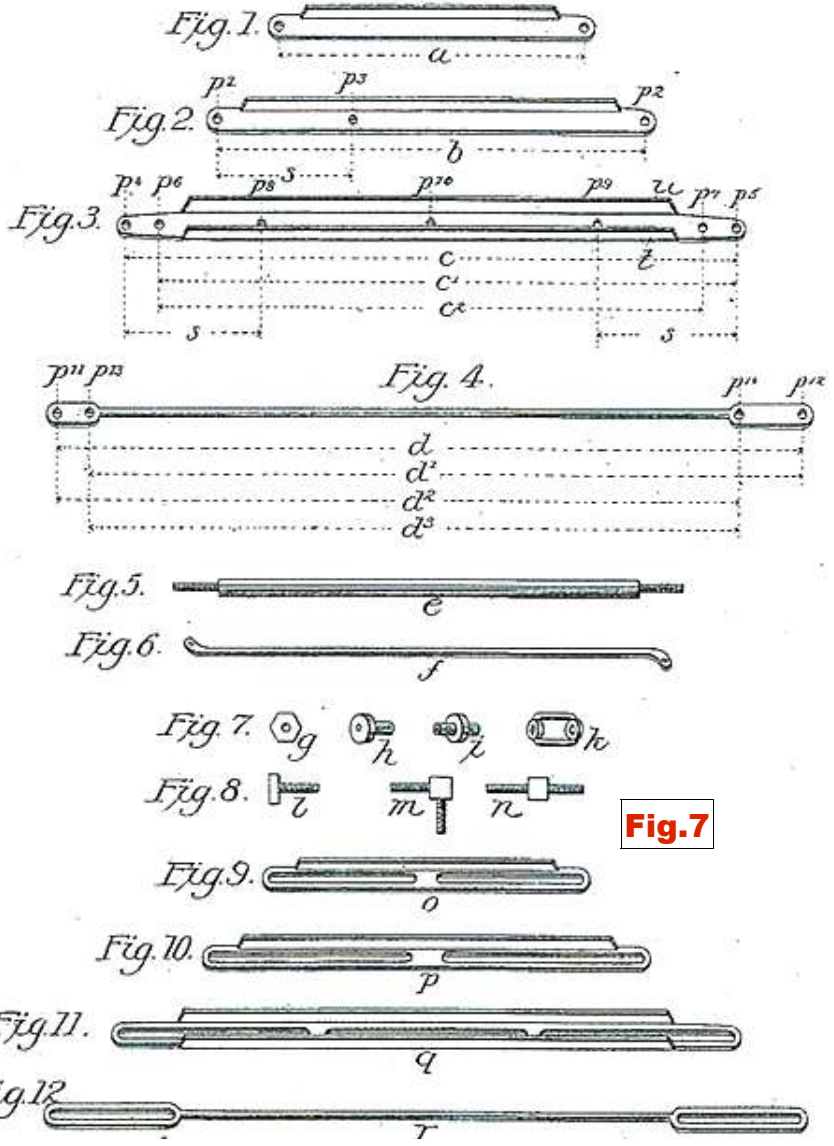
This patent is definitely for a toy: the word 'toy' occurs 7 times. Moreover, there are 4 occurrences of 'children', and 2 of 'boys'; these two words never occur in either TIC patents.

Von Leistner has a clear idea about the future of his system: 'The object of this invention is to supply children of that age when they gradually outgrow the well-known wood or stone building blocks ..... and thereby the constructive structures of iron and steel structures be rendered perfectly clear and comprehensible to children of mature age.' The use of iron does not indicate that the parts are made of iron, but that one reproduces constructions made of iron: 'These elementary parts are all made of sheet-metal, aluminum or brass being preferred'.

He writes later: 'All the parts after use can be disconnected and stored within a box of comparatively small size.....A number of boxes containing a smaller or larger multiple of the elementary pieces can be placed on the market, so that boys can progress from simple structures to more complicated structures, or specific boxes can be made for producing a specific iron structure of special repute.'

Manuals were to be provided with the sets: 'A number of progressive instruction books representing the different structures, from the simple to the more complicated ones, are supplied, so that children can readily form trusses, arches, etc.'

**The SECOND US PATENT** Edward von Leistner, assignor on one-half to Hermann Goetter, filed in February 15, 1895 a US patent for 'Building Set'; it was accepted in July 30, 1895 as No. 543580. Most of the parts (Fig.7) look like those of the 1894 TIC sets. Two main changes were made from the preceding patent:



**Fig.7**

(1). This is no longer a toy. The word 'toy' does



members of the set for actual constructions are made of metal or suitable metal composition, preferably of cast or wrought iron.' This explains why the system was named THE IRON CONSTRUCTOR. On the other hand 'the members of the set for building models are made of brass sheeting or of thin iron or steel sheeting or of any other suitable metal alloy which is light.'

The set for actual constructions is 'used with great advantage for building – for instance bridges of any shape in all places where time does not permit the erection of expensive permanent structures, and in half-civilized regions where building materials are hard to obtain.....For military purposes the set is invaluable for erecting bridges, tents, and the like, and is well adapted for building temporary and permanent roofs and all sorts of temporary buildings.' This system is a precursor of the WW2 Bailey bridge.

(2). The goal of the patent is to have a set of pieces such that their dimensions enable many structures to be built easily: 'It is the special object of this invention to furnish members of the set which bear certain geometrical and mathematical proportions to each other, so that, practically speaking, an unlimited number of constructions can be made with a small number of members of my improved set.' This explains some differences with PICAD: when a part has two holes in each end, and their spacing is not the same, it allows four possible distances between two end holes. The explanations are based on a mathematical diagram 'which forms a scientific basis for a system of constructing which is great in its conception and simple in its application, and, with the described lengths of the members, may be formed into an almost unlimited number of geometrical forms, which by their technical combination build with the elementary members, and give a vast number of constructions.' The words 'mathematical' and 'mathematically' are used 14 times in the patent. The only drawing representing a model is the roof published in OSN 29/855.

The parts are similar to, but different from, the PICAD parts, and not only in the position of holes. For instance, parts a and b are angle girders while the corresponding PICAD parts are channels; for part c it is the contrary: it is a channel while the PICAD part is an angle girder. Their dimensions are also slightly different. One of the reasons behind these changes was the introduction of a larger wooden part, which is necessary for roofs and tents. PICAD part d was fine for supporting planks, but it must be channeled to maintain the new wooden part when positioned obliquely. Moreover, what was possible with light brass cannot be done with a heavy iron part: one could no longer insert the hooks of PICAD part g into the perforations of the sides of part e. Therefore, the first part has to disappear, and the second one modified.

The patent includes the description of four new slotted parts, o to r, which appear neither in my set nor in the British patent. They 'are intended for model-boxes, and the slits therein are for the purpose of permitting use of the same members for any desired length of elements.' They are not used for the roof model.

**The BRITISH PATENT** Edward von Leistner and Hermann Goetter filed on 30 July, 1895 a British patent for 'Improvements in Building Sets', which was accepted on 9 November, 1895 as No.14442. The word 'toy' occurs six times, four of them in 'educational toys'. There are always two kinds of sets: the first one for actual, full-size constructions, but the second one is 'for toys and for building models.'

This patent is very similar to the second US patent. The figure representing the parts is in OSN 29/855. The slotted parts are no longer there, and two new bolts: o, with two screwed arms, and p, with three are used 'for connecting structures under angles.' Neither of them is in my set. We have already seen that part c has now two versions.

**A POSSIBLE EXPLANATION** The sets, the patents and

the PICAD manual are facts which seem contradictory: the first patent is for the second set, while the last ones are for the first set. I have found a possible explanation, but nothing to confirm or deny it.

Von Leistner had the idea to create a new kind of toy and developed this idea with several other architects; when the project was already well advanced, in October 1893, he filed a patent describing the main characteristics of PICAD. The team worked for some time at this idea, designing the parts, finding how to manufacture them, and creating models.

Then, some months later, when he was almost ready to produce this system, he had two new ideas, probably through discussions with Hermann Goetter. First, they found that with different distances between the holes at the end of the parts, and with some other modifications to the PICAD parts, they could have more possibilities in connecting the parts. Therefore, it would be possible to create more structures with this new set of parts. These ideas appear in the parts in the TIC outfits.

Importantly, they considered that it would be possible to design more than just a toy. If the parts were made of iron and in a larger size, it would be possible to create a system very useful for civilian and military purposes. This was a brilliant idea, and many systems were created later trying to do that. Examples from WW2 are the US Treadway and M4 (both pontoon bridges), and one British, Bailey, which could be used for any kind of obstacle.

It would also be worthwhile to create a small scale system for models, so that people could learn to use the main system, and in order to see what parts would be needed before constructing the real building.

As everything was ready for producing a toy, in a hurry they modified the initial parts, wrote a manual, and sold it as a toy for a few months. Because it was very complicated for children, who are not mathematicians, to use this system, it was not a success. Another architect, member of the team, F. Wm. Rumpf, thought that it was a pity to abandon the PICAD project, and decided to produce it. This explains why, in so short a time, he could market in the beginning of 1895 a system which was already almost complete. Meanwhile, von Leistner and Goetter believed that the most important goal was to realize full-size constructions, and they lost interest in the development of PICAD. They improved their ideas for producing a system for constructing real bridges and buildings. They submitted two patents in 1895; for the second one, they conceded that it could also be used as an educational toy. Unfortunately, it does not seem that their system for full-size constructions was ever produced.

### **Were there other THE IRON CONSTRUCTOR Sets?**

I believe that it is likely. Both TIC and PICAD sets were created by von Leistner, and there is a strong similarity between them. The 6 PICAD sets were numbered from A to F; perhaps, six TIC sets were also produced. The number of parts in the PICAD sets, counting Bolts but not Nuts and Washers, were 50, 100, 200, 300, 400, and 950 when one goes from A to F. For TIC my cardboard set has 97 parts, and the larger set 495, but only 406 if one does not count the square beams, parts which were not included in PICAD. Therefore, they could correspond to Sets B and E. It is possible that there were sets corresponding to A, C, and D, and also a very large set similar to F, which would have at least twice the number of parts of my larger set.

**END WORD** Von Leistner had two very bright ideas: a new kind of toy assembling metal parts with nuts and bolts, and a system for building full-size constructions easily. Pursuing two goals almost simultaneously, both ahead of their time, was too much: unfortunately, they did not receive the success they deserved.



**Notes on the different AMI & AMI-LAC Sets, and a COSTRUZIONI MECCANICHE Puzzle.** COSTRUZIONI MECCANICHE [Mechanical Engineering] appears on the lid label & manual cover of all known sets of the AMI & AMI-LAC brands (see 15/401 & 38/1153) until the last small sets noted in 48/1452. It also appears on a 'mystery' set, maker unknown, and perhaps a reader knows its story.

To start with, a recap of AMI/AMI-LAC history from 38/1152. AMI (Articoli Metallici Ingegnerosi [Ingenuous Metal Articles]) sets were produced from the early 1930s by a company owned by Fratelli Comerio. In 1954-55 it was acquired by Leonida Alemanni and at that point the sets were renamed AMI-LAC (Leonida Alemanni Casalpusterlengo). Casalpusterlengo is a town near Milan in which the Alemanni factory was/is? situated.

In looking for clues to the mystery sets the AMI & AMI-LAC material to hand, mainly Ebay photos, was examined and the combinations of lid labels & manual covers used are set out below in their probable date order.

1. Two boys with a Lorry-mounted Crane for both the label and cover (Fig.1). The parts in the sets were black.

2. The label had the same boys but posed differently with a Lifting Bridge (Fig.2). The manual cover was unchanged. The parts in most sets seen are coloured (in the mix of colours typical of AMI/-LAC sets) but a few are still all black.

3. The Lifting Bridge label continued but the cover (Fig.3) has the boys in full colour with a Tower Crane. The parts are all coloured. Note. The largest set seen in Phase 2 above is a No.4; the smallest in this phase a No.5. So it's possible that Phases 2 & 3 are one period with different manuals for the smaller & larger sets. However 3-5 manuals are shown in some of the Ebay photos from each phase.

4. The Tower Crane design in Fig.3 is used on both the label and the cover. 3 sets have been seen, two No.2's, each with a 1-2 manual, and a slightly larger set with two manuals a 3-4 and a 3-5. One No.2 and the larger set have coloured parts but, unexpectedly, most of the parts in the other No.2 are black.

5. At this point the ownership had changed and both the label and cover were the familiar type in Fig.4 with a boy & a girl by a simpler Crane.

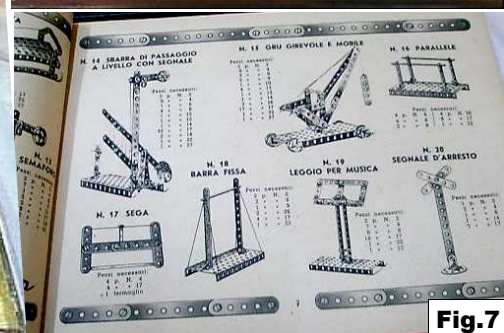
6. The revisions to the standard sets after 1996 and their packaging are covered in earlier Issues. It seems that the existing Fig.4 manuals were never changed. The various other sets which appeared were also covered but one not mentioned previously is an Energia Solare set. It has a lid in the style of the La Bici & Il Ciclista sets in 38/1151 but it is a multi-model set with 4 models shown on the lid. One other point, all the examples seen of Sets 101-105 have the AMI-LAC logo top right on their lids and most have LAC in an oval bottom right. But in two cases where there are several photos of the same set one at least does not have the LAC marking. Would that indicate a change in the company's ownership towards the end? The AMI-LAC website disappeared in 2017.

Now for the puzzle. Three mystery items have been seen (very few compared with, say, those from Phase 1). Two are No.1 sets with a No.1 manual, the third just a No.1 manual. All labels & covers are the same (Figs.5,6). One set has, apart from some small Wheels, black parts (Fig.6). The second is in an identical wooden box with some black parts as in the first set but also numerous red & green parts, which look like MECCANO. They include a 3" Pulley not listed in the AMI manual to hand. Almost certainly these red & green parts are not original. A page from the manual is shown in Fig.7, and the inventory for Set 1 is on another.

Beyond the black parts, no similarities could be seen between the mystery and AMI/AMI-LAC sets. From the parts the inspiration for the mystery set seems to have been MÄRKLIN and the Fig.7 page of models is in a 1939 MÄRKLIN manual, arranged in the same way. Some, perhaps all, the models are in earlier editions, and also in the AMI manual, but scattered among the pages.

So a copy of late 1930s

MÄRKLIN seems likely, probably from soon after, rather than before WW2. That would seem to rule out the mystery outfit having been an early AMI set but it's just possible that it was another line from Comerio (or less likely, even later by Alemanni). But this seems unlikely and pro tem the Set is seen as being from a different system. Perhaps by an ex-AMI employee?





**Snippets. 'New' German System: HAWE** Figs.1-4 are Ebay photos of a small set with an unusual pattern of holes in the Strips. The only indication of date is that the Manual's Introduction talks of the need to get away from models of guns & military machines – so HAWE probably appeared soon after WW2.

The words in script on the lid below are 'Der Kleine Modellbauer' (The Young Model Builder). The Strips in the Windmill model on it have the normal single row of holes.



**Fig.1**

It is also said in the Introduction that the system has 13 parts. Most can be identified with their PNs from the models & their Parts Lists in Fig.4, and almost all them can be seen in Figs.2-3. They are as follows.

**#1**, 6\*10h Flanged Plate.

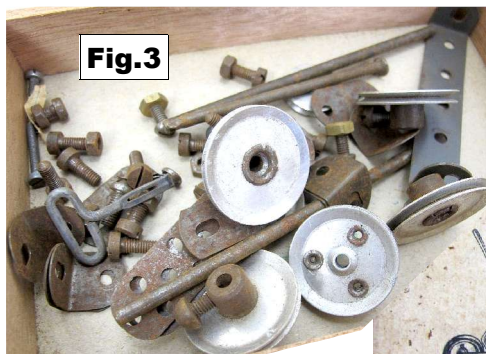
**#2,3**, Strips with 10,6 centre line holes. **#4**, Flat Bracket.

**#5**, A/B. **#6**, Axle. **#7**,

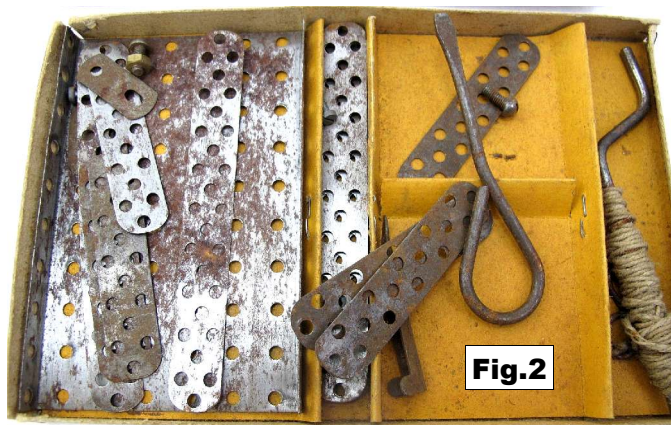
Crank Handle. **#8**, Pulley.

**#9,10** (or #10,9), N&B. Most in the photos are: hexagonal Nuts, some brass, some steel; steel Bolts with round or cheese heads. **#11,12** (or #12,11), most likely the Hook & Cord. **#13**, it is not called up for either model and could be the Loose Pulley in Fig.3, or the Screwdriver.

If the Loose Pulley is a genuine part the Screwdriver may not have been considered a model building part, likewise a



**Fig.3**

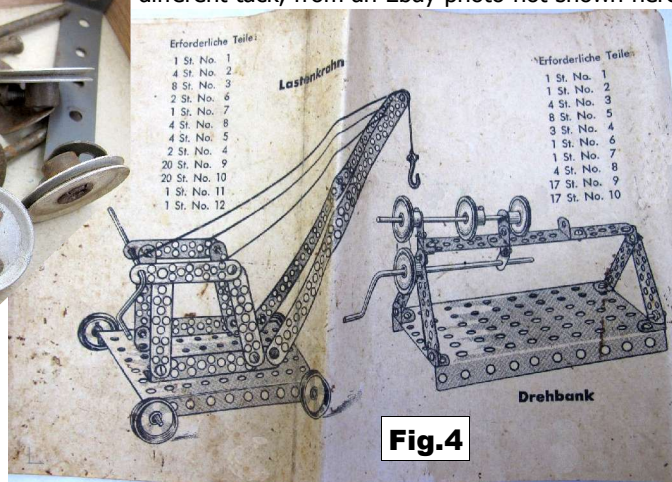


**Fig.2**

Spanner if there was one. Alternatively perhaps the Loose Pulley isn't genuine, in which case, given their similar appearance, the Fast one may not be either. If the Loose Pulley was a part one wonders why it wasn't used at the end of the Crane's jib. By the look of it the grey DAS in Fig.3 is almost certainly a foreigner.

The only slotted holes are one in each of the Brackets.

There is no indication of the size of the parts but if the holes were 4mm the hole pitch in the Plate & along the Strips scales at 13mm. And the pitch across the Strips about 9mm. On a different tack, from an Ebay photo not shown here



**Fig.4**

the manual would need to be folded to fit into the box and if the page size was A5 the box would be about 15cm wide and the holes about 4½mm at 15mm pitch.

**HAWE: S1**

**OSN 53/1642**

**A PEUGEOT Aeroplane.** Fig.13 in OSN 45/1362 is a blurry image of a model labelled Avion Démontable | Marche Automatique. Since then two models have been seen on Ebay



**Fig.1**

and the one above matches the OSN 45 model perfectly: it is built up with N&B, and has a friction Motor. It is 26cm long with a 21½cm wingspan.

The second model (Fig.2), is basically the same and has the same dimensions. Assuming it had them originally, it is missing its Wing Struts, Tail Wheel, Motor Unit, and Tailplane. The Landing Wheels were said to be Steering Wheels from the 201



**Fig.2**

Car Chassis (see 45/1361). The model's 'de-luxe' features are the cabin windows & a Suspension Bracket on top of the Wing.

The fin in Fig.1 looks to have been made by bringing together the extended fuselage sides, and in this model they have been bent apart. The Tail parts could have been bolted on through what looks like a hole near the bottom of the fin's white stripe. If there was no Tailplane the fins were perhaps a (not very convincing) take on the V-tail which replaced the fin & tailplane on a few aircraft from early in the 1930s onwards.

**PEUGEOT: S3**

**OSN 53/1642**



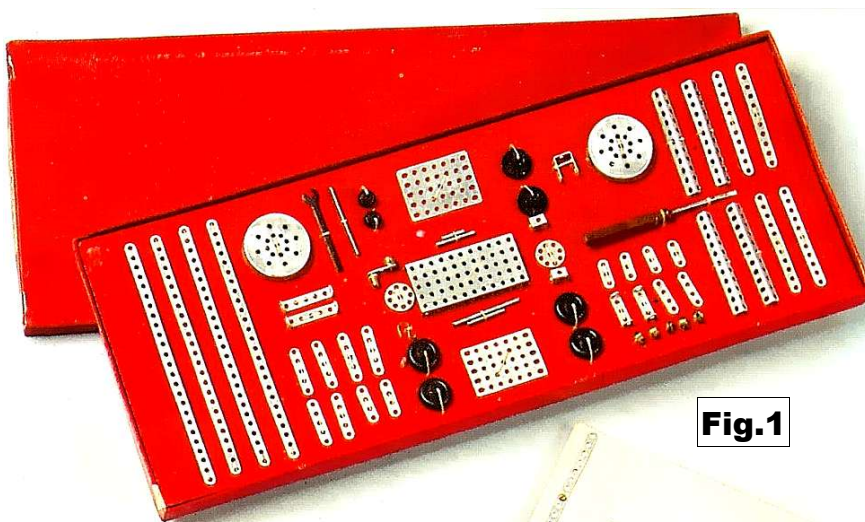
## 'New' Italian System RIVAROSSİ

This account has been taken from Giorgio Guiliani's [www.rivarossi-memory.it/Meccano/Meccano\\_RR.htm](http://www.rivarossi-memory.it/Meccano/Meccano_RR.htm), and links from it. Thanks also to Luciano Luppi for providing details of some of the parts. The story started in 1945 when, after war service, 24 year old Alessandro Rossi bought into a company called ASA which made electric commutators. Antonio Riva was already a partner and the company name was changed to Rivarossi Ltd. Rossi's intention was to produce the model trains which would soon make the company's name, but its first product was the RIVAROSSİ constructional system, launched in 1946 while the trains were still being developed. Riva left the company in 1946 and in 1947 it moved from Albese Cassano to Sagnino, 10km away across Lake Como.

RIVAROSSİ had small 7mm pitch parts, and was influenced by Märklin's prewar 1/4" pitch MINEX. There was much talk in the manual of building Cranes, Bridges, etc for use with the model trains. Production probably ceased in 1948, at least in part because by then there was much competition from many other systems, new & reintroduced. And perhaps building with the system's 2mm diameter N&B, appreciably smaller than the MINEX's 2.8mm parts, was something of a trial. (MINEX did not reappear after WW2.)

Sets are rare and only two small ones are known. There is though a picture of a larger set in the manual (Fig.1), and it also lists 8 outfits: sets HA, A, B, C; linking sets HA-A, A-B, B-C; & a Motor/Gears outfit. Sets HA - C contained 70,140,320 & 950 parts. The two small sets are shown on the website and are possibly an HA & an HA-A. All three sets have red boxes with no lid label, but with the name on the end of the lid, as on one of the small sets in Fig.2.

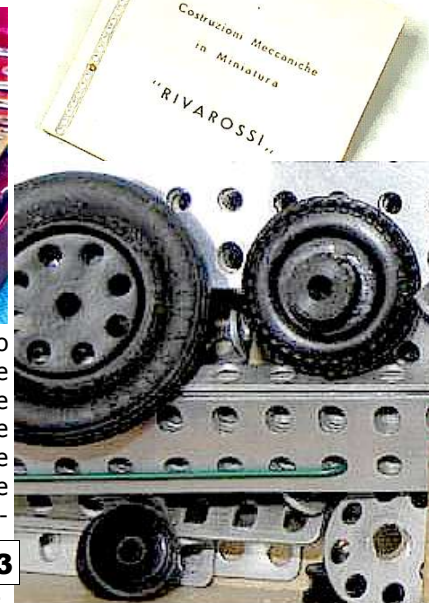
In all there were some 75 parts in the system, nearly all aluminium but the black Pulleys, Road Wheel hubs, & the handle of the Screwdriver were made of Bakelite. The rubber Tyre on the large Road



**Fig.1**



**Fig.2**



**Fig.3**

Wheel has RIVAROSSİ moulded into the sidewall (Fig.3), otherwise the parts are not marked. About 40 can be identified from the website and are listed below with a reference Figure No. in red where needed. All but the N&B can be seen in the photos. Dimensions have been scaled.

- Strips, 3,4,5,6,11,25h.
- A/Gs, 11,13,17,25h.
- Flat Girders, 17,25h.
- Brackets: Flat; Angle; Double; 2h high Double.
- Axles, 18,30,50mm.
- Pulleys: 9mm Loose, brass (2); 12mm (1,3,5); 20mm with 8h disc (1,2).
- 8h Bush Wheel.
- Screwdriver.
- Spanner.
- N&B, brass, good quality.
- Bolts, CH, 3.5, 5.5 & 16mm u/h.
- Nut, square.
- DAS: 1\*3,5\*1h.
- Flanged Plates: 5\*11h; 5\*7h.
- Perforated Plate 7\*11h

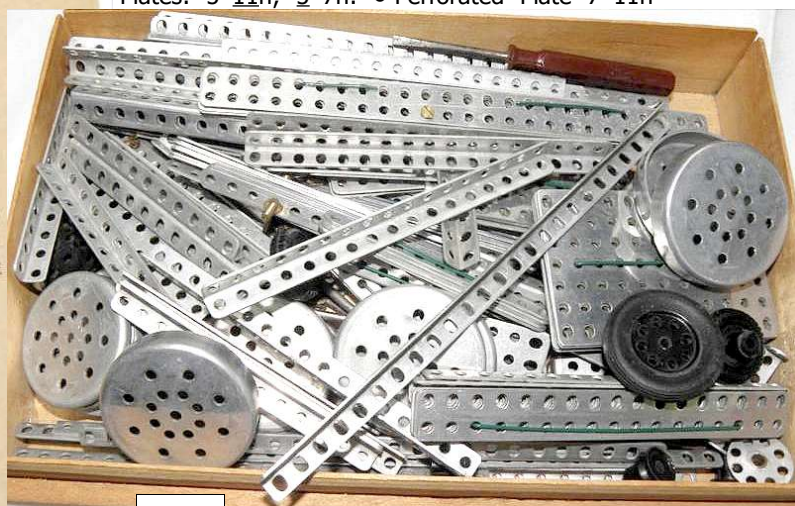
## GRU A BRACCIO SNODATO

Pezzi occorrenti

**Fig.4**

- |       |      |
|-------|------|
| 1 del | 8 A  |
| 1     | 8 B  |
| 1     | 10 B |
| 2     | 3 L  |
| 1     | 14 A |
| 22    | 14 C |
| 5     | 14 B |
| 1     | 12   |
| 4     | 1 A  |
| 4     | 1 D  |
| 4     | 1 G  |

- |       |      |
|-------|------|
| 2 del | 1 H  |
| 2     | 4 L  |
| 1     | 5 L  |
| 2     | 10 A |
| 2     | 17 I |
| 2     | 17 E |
| 3     | 20   |
| 1     | 26   |
| 27    | 15   |



**Fig.5**

- (5). • Hook, brass wire (1).
- Collar, brass.
- Handle Crank, brass, (1).
- 5h Ø Flanged Disc.
- Road Wheels with rubber Tyres 20mm (1,3,5), 37mm (3,5) o.d.

Two manual models are shown on the website, a small Handcart and the Crane in Fig.4. The photos of both models are identical to those of Models 39 and 86 for Set 01 in the MINEX manual.