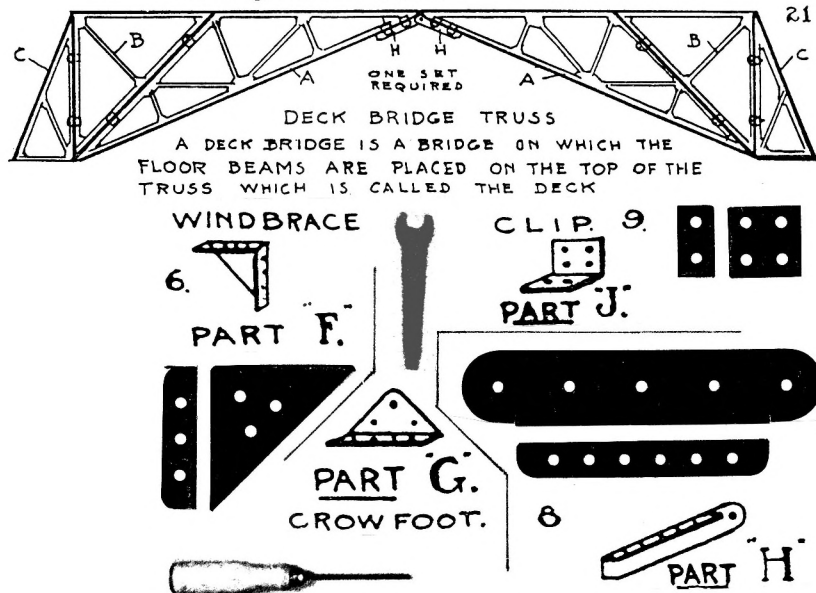


STEEL WORKER Kendrick Bisset and Richard Symonds have kindly sent details and samples of the parts, and a copy of a manual for this prewar American system. It was intended for models of steel structures like bridges and the frameworks of buildings, and there were only 5 main parts, 3 Trusses and 2 Channel Girders. Not many but they make up for it in size, with the longest Truss some 21" in length and 5" deep. The only comparable system I know of is the French CHARPENTO, from the 1920s, which had rather smaller parts, made of aluminium I believe though I've never seen any, but there were many more of them, including Plates to cover walls and roofs. STEELWORKER (sometimes in the manual the name was spelt as one word) parts are made of thin, soft steel and even the flanges can be bent or straightened as necessary by hand. Nevertheless finished structures are rigid enough for all practical purposes. The parts were bolted together with small N&B - MCS/FB mentions rivets but nothing is known of them.

STEEL WORKER was made by the Dayton Friction Toy Co. of Dayton, Ohio 'under rights for the United States and Canada', with certain rights reserved by the U.S. Government. It is said in the Intro to the manual that the system was first designed for use in the United States Army Air Service, and that Urban C. Thies, Architectural Engineer for the Air Service at McCook Field, had the idea of using the parts for a toy 'dedicated to American youth as a means of cultivating the spirit of progress in actual building under natural conditions equally fascinating outdoors or indoors as weather permits.' Free membership of a Steelworker Engineers Club was advertised in the manual and questions about construction work would 'be answered by competent architects and engineers'.

The 3 Trusses, A, B, C, can be seen in the Bridge below, which would be some 44" long overall. The acute angle in Trusses A and C is $22\frac{1}{2}^\circ$, and the 2 equal sides of the centre Truss B are 8" long. The Channels are $11\frac{1}{4}$ & $7\frac{1}{2}$ " in length and about $\frac{13}{16}$ " wide. The flanges on all these parts are $\frac{3}{8}$ " deep and have holes along their whole length at $\frac{3}{8}$ ", $\frac{3}{4}$ ", or $1\frac{1}{2}$ " pitch. There are only a few holes in the face of the Trusses and in the bottoms of the Channels. The 'I' Beams mentioned in MCS/FB are formed from 2 Channels bolted together back to back.



4 Brackets (above) are provided, and the holes in them are at $\frac{3}{8}$ " pitch unless stated. The Clip, J, is $\frac{3}{8} \times \frac{3}{4}$ ", and $\frac{3}{4}$ " wide, with 4 holes in one arm and 2 in the other. The Wind Brace, F, is $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{8}$ " and has 3 holes in each flange, and 3, not shown in the manual illustration, in the face. The Crow Foot, G, has 4 holes in its flange and 3, like F, in the face. The Hinge, H, sometimes called a Half Hinge, can be seen in use at the centre of the Bridge above. It's like a short A/G, $\frac{3}{4} \times \frac{3}{8}$ " in section with one flange longer than the other. Both can be seen photocopied above - the short one with 6 holes and the other, $3\frac{3}{4}$ " o/a, with 5 holes at $\frac{3}{4}$ " pitch.

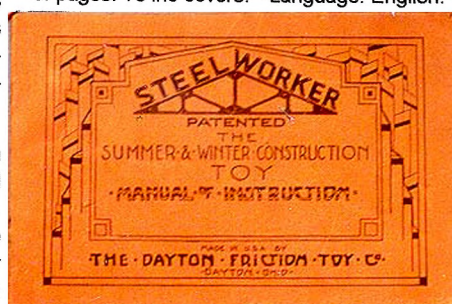
The steel in all the parts is about .021" thick: the main ones are painted a flat red colour, and the Brackets are plated a dull grey, just possibly nickel. The holes are 3.1mm Ø and the N&B,

steel brightly nickelled, are threaded 4-36, about 2.8mm Ø. The hex pressed Nuts are 6.3mm A/F, and the Bolts are roundheaded, 5.0mm Ø, and $\frac{1}{4}$ " u/h. Among Richard's parts are 2 Spanners and a wooden handled Screwdriver - they are shown with the Brackets and are about 2" and 5" long respectively.

STEEL WORKER was sold as a small set, and the models in the manual needed from 1 to 32 of them. Kendrick has worked out that the Set contained 2 each of the Trusses, 4 each of the Channels and Brackets F, H & J, and at least 2 of G. The 2xC Trusses were a pair because there are left and righthand versions.

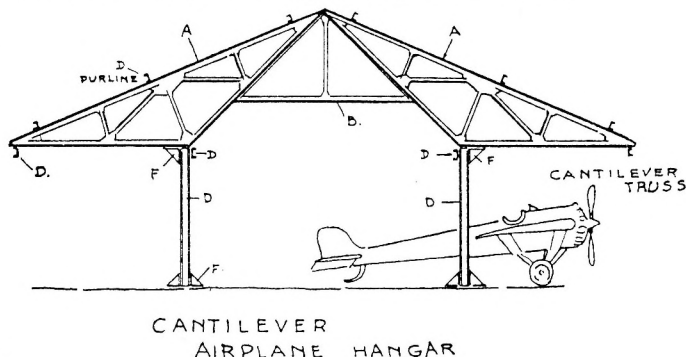
The manual is described below. Some reasonable small models can be made with one Set and 3 allow a 5 bay structure over 55" long and 21" wide, or a respectable 4ft long bridge. The largest model is an 8ft long Suspension Bridge which needs 32 sets. It is shown in MCS/FB so I've included a medium size model here, the Airplane Hangar which needs 6 sets and is said to be known as the Thies Cantilever type, as used by the U.S. Airservice at Wright Field. Kendrick pointed out that the 'T' Square model shown in MCS/FB can't actually be made with the parts as found because the only holes in the base of the Channel D are at the ends.

SUMMARY OF MANUAL •Name: STEEL WORKER Manual of Instruction. •Details of maker: The Dayton Friction Toy Co., Dayton, Ohio. •Dates &/or Ref Nos: none. •Page size: 230*156mm deep. •No. of pages: 16 inc covers. •Language: English. •Printing: black on white



line drawings; black on orange cover. •Page Nos. of Illustrated Parts List & highest PN: 3,J. •No Set Contents. •Sets covered: one, the models need from 1 to 32 sets. •No. of models: 59. •Name, Model No., Page No. of the first & last model:

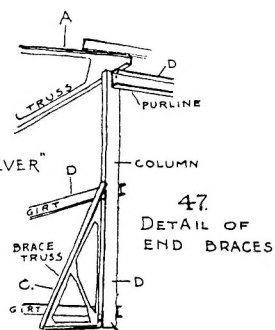
BOX, 10.4. TOWER SUSPENSION HUDSON RIVER BRIDGE, 72, 16. •Other notes: Illustrations 1-9 are the parts; Illustrations 40, 42, 47, 52 show details of other models; the models on p9 are out of sequence.



THIS IS THE TYPE HANGAR USED BY THE U.S. AIRSERVICE AT WRIGHT FIELD THE GREAT EXPERIMENTAL STATION FOR THE AIRSERVICE THIS TYPE IS KNOWN AS THE "THIES CANTILEVER"

46. 1 SET REQUIRED PER UNIT 6 SETS FOR HANGAR 6 BAYS LONG

SKETCH OF CANTILEVER HANGAR



47. DETAIL OF END BRACES

