

to the rear surfaces of the flanges of the 12 1/2" Angle Girders 1 bolted to the top surface of the base. The main members are 18 1/2" Angle Girders 6 with cross members being 7 1/2" Strips 7 at the 15th hole down, and 9 1/2" Angle Girders 8 at the top holes. Between the main members in the upper section are three vertical 7 1/2" Strips 9 decorated at their upper ends by 2 1/2" Curved Strips which are held to the 9 1/2" Angle Girders 8 by Fishplates.

In the lower section are two vertical 7 1/2" Strips 10 and four 5 1/2" Curved Strips 11. In the rear section, these Strips are spaced to the rear at each point by a Collar to allow space for the pendulum bob. Outside the main members are placed, from below up, 5 1/2", 7 1/2" and 4 1/2" Angle Girders, short sloping girders which are 3 1/2", 3" and 2 1/2" Angle Girders respectively, and each portion is finished by the addition of 2 1/2" Curved Strips as shown. The front 18 1/2" Angle Girders 6 are braced to 4 1/2" Angle Girders 2 by Corner Gussets.

**SPIRES** Figures 1, 3, 4

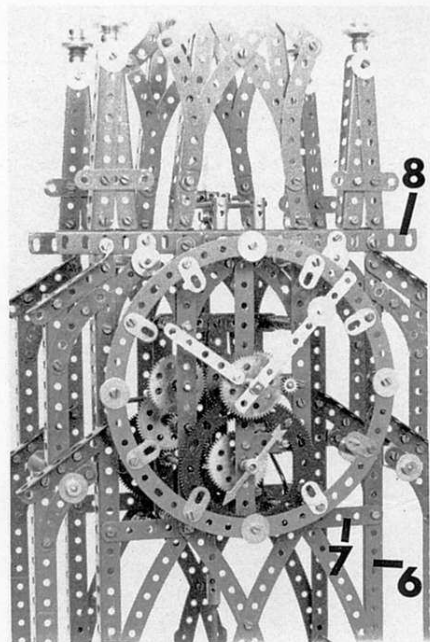
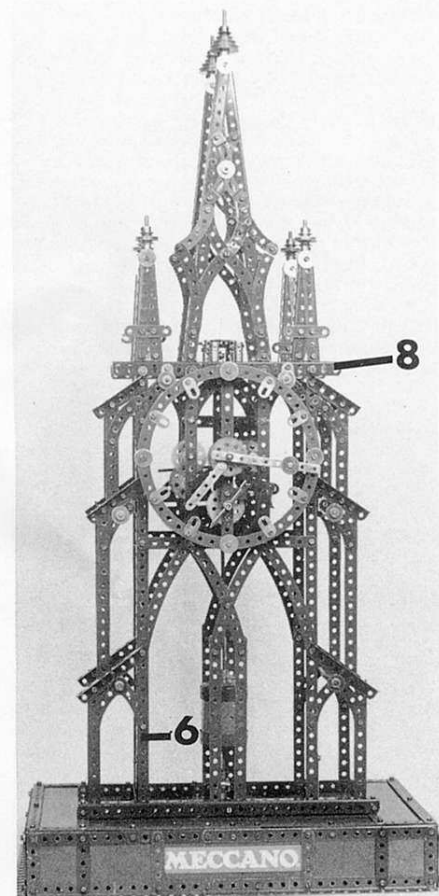
The central spire in each case is a pair of 12 1/2" Angle Girders 12, fixed below by Angle Brackets to the 9 1/2" Girders 8. A Bolt and 3/8" Washer secures the top ends by passing into the threaded bore of a Collar which holds a 2 1/2" Rod on which is mounted a finial consisting of a Cone Pulley 13 and a 1/2" Pulley with Boss.

The spire is decorated with pairs of 4", 2 1/2" and 3" Curved Strips as shown. Smaller spires are each made from a pair of 4 1/2" Angle Girders 14 connected below to the 9 1/2" Girder 8 by Angle Brackets, and holding finials above like the main spire, but using two 1/2" Pulleys with a 1" Pulley without Boss between them. 2" Strips decorate these small spires.

**MECHANISM FRAME** Figures 14, 15

This is fixed to the outer pair of 7 1/2" Strips 9 in the upper part of the front body section using 3" Screwed Rods with three Couplings on each as spacers. The frame consists above and below

**FIG. 3: Main view of the front of the Clock, showing the Gothic styling of the frame.**



**FIG. 2: The Clock dials are shown to advantage in this close-up shot.**

of doubled 3 1/2" Strips 15, and attached to these are three sets of vertical 5 1/2" Strips 16, also doubled. Note the uneven spacing. Pivot Bolts (Elektrikit No. 545) are lock-nutted at the places shown, 'x'. A 2" Strip 17 and a 1" Corner Bracket 18 are fixed to the forward 7 1/2" Strips 9.

**CONTACT SPRINGS** Figure 16

A 7/32" Cheesehead Bolt 19 has its head filed to a wedge as shown in Diagram C. Choose a Bolt with a shallow slot which should be effaced and a new shallow slot filed near the summit.

With this Bolt and Nut connect two 2" Wiper Arms 20, by their end holes. Straighten the bent end of one arm 20 and mount this part between a Fishplate and the long lug of a 1" x 1/2" Angle Bracket 21. Reshape the other Wiper Arm and bolt the Angle Bracket 21, lug upward and behind the horizontal 7 1/2" Strip 7 of the rear body. The free end of this upper contact spring lightly presses against a 3/4" Bolt 22 mounted in a Threaded Boss bolted to the rear body and locked with a Terminal Nut.

A further 2" Wiper Arm 23 reshaped as shown is bolted by its end hole to a Threaded Boss 24 which is held on a 1 1/2" Insulating Strip fixed to the 7 1/2" Strip 7. The upper and lower contact springs are adjusted until their contacts are separated by a 1/32" gap, the upper being vertically above the lower. Bolt two (doubled) 3 1/2" Strips 25 to the vertical 7 1/2" Strips 9 using 1/2" Bolts, spacing them behind the Strips by two Washers and a Collar on each Bolt. Fix a Pivot Bolt in the 3 1/2" Strips 25 as shown at x.

**CONNECTING FRONT AND REAR BODY SECTIONS**

Below, each section is bolted to a 12 1/2" Angle Girder. Above, the sections are connected by 5" Screwed Rods and 4 1/2" Plastic Rods at seven locations as follows: at the peak of the lowest pair of 2 1/2" Curved Strips; through the hole next to the top of the 2 1/2" Curved Strips connected to the 7 1/2" Angle Girders; through the peak of the pairs of 2 1/2" Curved Strips at the top of the main body just under the 9 1/2" Angle Girders 8; and through the point in the main spire where the central holes of the 3" Curved Strips overlap.

On all of these Screwed Rods, 4 1/2" Plastic Rods are used as spacers, and 3/4" Washers are placed on all surfaces. Terminal Nuts are used

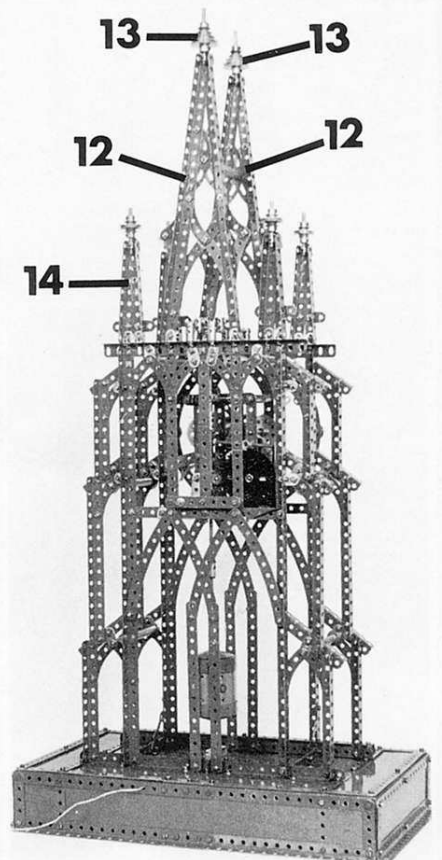
at the front end of the Screwed Rods, being more decorative than ordinary nuts.

**PENDULUM SUSPENSION** Figures 5, 17

A pair of Threaded Couplings 26 bolted to the flanges of the 9 1/2" Angle Girders 8 support 5" Rods in their upper transverse holes, these Rods also passing through transverse holes of Short Couplings. Through the other transverse holes of these Short Couplings a 2" Screwed Rod 27 is passed; between the Couplings this rod carries a 2" Flexible Strip spaced from each Coupling by a Collar, a Washer, and a Thin Washer, and it is held in place by Hexagonal Nuts. (Square Nuts are obstructed by the Grub Screws in the Couplings.)

**PENDULUM** Figures 11, 19

From the top down the Pendulum consists of the following: An End Bearing 28, a 3 1/2" Rod carrying a Short Coupling, and connected to a 6 1/2" Rod by a regular Coupling; the 6 1/2" Rod passes through the centre transverse hole of a Threaded Coupling 29 and is connected by a further Threaded Coupling to an 8" Screwed Rod which carries the bob and which is locknutted at its lower end in the boss of a Double Arm Crank 30.



**FIG. 4: The Hipp Clock as seen from the rear.**

**THE BOB**

A Cylinder is constructed from a 5 1/2" x 2 1/2" Plastic Plate lengthened 2" by being bolted to a 2 1/2" x 1 1/2" Plastic Plate. Adjust this as a snug fit in a pair of Boiler Ends. Mount all this on the 8" Screwed Rod with a Conical Disc above and below, and also a nut and a Threaded Boss below, and a Threaded Boss above.

Fill the bob with Meccano Bolts till it weighs about one pound. Shot or other weighty matter can be used instead of bolts. Screw the Threaded Bosses together to close the bob to prevent spillage. A Centre Fork held in a Rod and Strip Connector is fixed by a Shoulder Bolt through the connector into the end threaded hole of the Threaded Coupling 29.