

# New Meccano Models

## Wool-Winder and Clothes Washing Machine

CHIEF of the two new models we are describing this month is a useful wool-winding machine. This is shown in Fig. 1, and will be found not only interesting to construct but also useful when completed. The other new model is a clothes washing machine, the interior of which is fitted with rotating vanes for beating the clothes. It can be built from Outfit No. 3.

The first part of the wool-winder to be constructed is the frame. This consists of  $12\frac{1}{2}$ "  $5\frac{1}{2}$ " and  $2\frac{1}{2}$ " Angle Girders bolted together to form a structure measuring  $12\frac{1}{2}$ "  $\times$   $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ ". Two  $2\frac{1}{2}$ " Angle Girders are bolted to the sides of this frame,  $1\frac{1}{2}$ " from one end, and two similar Girders 2 are bolted to the sides  $5\frac{1}{2}$ " from the other end. The Girders form bearings for the Rods 3 and 4. Two  $18\frac{1}{2}$ " Girders are bolted centrally across the top of the frame,  $3\frac{1}{2}$ " apart. They form rails on which a trolley runs, and they are extended at one end by two  $1\frac{1}{2}$ " Angle Girders overlapped one hole with the  $18\frac{1}{2}$ " Girders.

Bearings for the Rods 5 and 6 are now added to the opposite ends of the rails. A  $4\frac{1}{2}$ " Girder is bolted by its slotted flange to a  $4\frac{1}{2}$ " Flat Girder, and a  $2\frac{1}{2}$ " Semi-Circular Plate forms the top bearing for the Rod 6. The Semi-Circular Plate is strengthened by bolting a Crank to it. The lower bearing for Rod 6 is constructed in a similar manner. Two  $7\frac{1}{2}$ " Angle Girders are held to the lower  $12\frac{1}{2}$ " Angle Girder of the frame by Angle Brackets. Bearings for the Rod 5 consist of  $2\frac{1}{2}$ " Angle Girders, and those for a Rod 7 are formed by two Double Brackets bolted to two  $1" \times \frac{1}{2}"$  Angle Brackets, which are attached to a  $5\frac{1}{2}"$  Girder fixed in the frame.

An E6 or E20B Electric Motor is bolted to two  $5\frac{1}{2}"$  Strips attached to the sides of the frame. A  $\frac{1}{2}"$  Pinion is fastened to the armature shaft of the Motor by its Grub Screw, and meshes with a 57-teeth Gear, carried on a  $2\frac{1}{2}"$  Rod journalled in holes in the sideplates of the Motor. The 57-teeth Gear is spaced from the sideplates by a Collar on the  $2\frac{1}{2}"$  Rod. The other end of this Rod carries a  $\frac{1}{2}"$  Pinion that meshes with a 57-teeth Gear 8 on the  $6\frac{1}{2}"$  Rod 4. On one end of this Rod is a Bush Wheel, and on the other end a 1" Sprocket Wheel, which is spaced from its bearing by a Collar.

The Rod 3 carries at one end a Crank, and in the centre a  $\frac{3}{4}"$  Bevel Gear and a Coupling between two Collars. Meshing with the Bevel Gear is a similar gear mounted on the Rod 7, one end of which is journalled in the Coupling and the other in the two Double Brackets. The Rod is prevented from sliding in its bearings by a Collar, and carries at its upper end a Bush Wheel. The skein of wool is placed over two Sleeve Pieces carried at the ends of a  $12\frac{1}{2}"$  Strip bolted across the Bush Wheel. A Crank is fixed to each end of the Strip. Each projecting half of the

$12\frac{1}{2}"$  Strip is fitted with a Sleeve Piece that is held to the Strip by a Chimney Adaptor and two  $\frac{1}{4}"$  fast Pulleys fixed to a 2" Rod. The lower end of this Rod is gripped in the boss of the Crank by its Grub Screw.

The Crank on the Rod 3 is connected to the Bush Wheel on the Rod 4 by a compound  $6\frac{1}{2}"$  Strip 9, which is constructed by overlapping a  $4\frac{1}{2}"$  Strip and a  $3\frac{1}{2}"$  Strip and bolting them together. The compound  $6\frac{1}{2}"$  Strip is lock-nutted to the Crank and to the Bush Wheel.

The 1" Sprocket Wheel on Rod 4 is connected by Sprocket Chain to another 1" Sprocket Wheel on Rod 5, the other end of which carries a  $\frac{3}{4}"$  Bevel Gear that meshes with a similar gear fixed on Rod 6. The latter Rod also carries a Coupling, in the bore of which is journalled one end of Rod 5. The upper

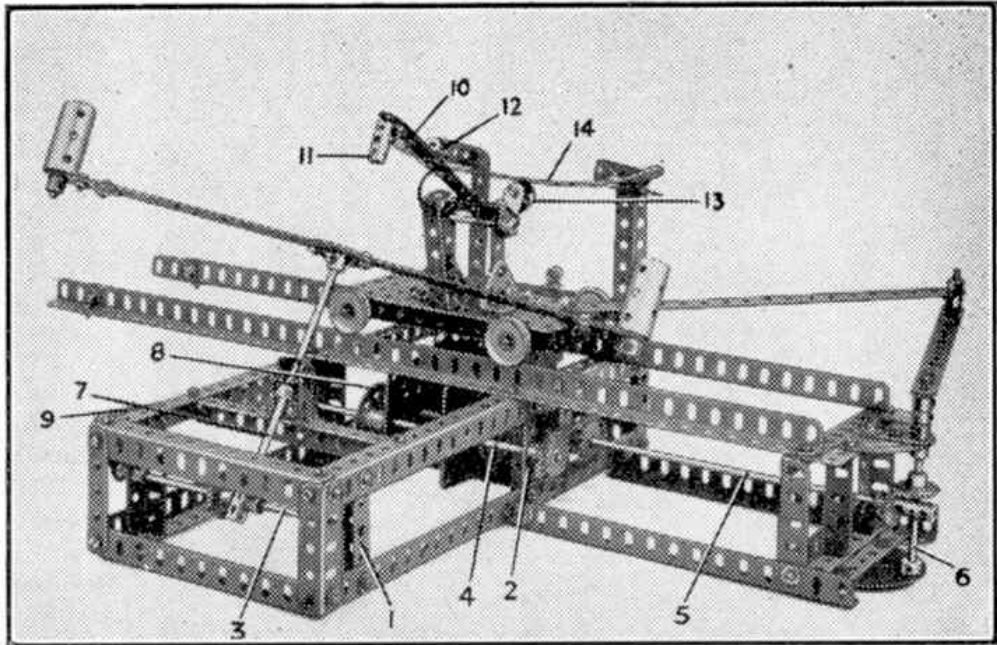


Fig. 1. A useful wool-winding machine that is interesting to construct and operate.

end of Rod 6 carries a Crank to which is bolted a  $7\frac{1}{2}"$  Strip, the other end of the Strip being bolted to a second Crank as shown. The boss of this Crank carries a 1" Rod, on which pivots one end of a  $9\frac{1}{2}"$  Strip. The other end of this Strip is lock-nutted to a  $5\frac{1}{2}" \times 2\frac{1}{2}"$  Flanged Plate that forms the base of the trolley. Two Trunnions are bolted to the Flanged Plate and to them 2" Strips are attached. A 2" Rod is journalled in holes in these Strips and on it is pivoted a compound  $6\frac{1}{2}"$  Strip 10, which is attached to the Rod by means of a  $1\frac{1}{2}" \times \frac{1}{2}"$  Double Angle Strip.

Guides for the wool consist of a Coupling 11 and a Collar 12 fixed to the  $6\frac{1}{2}"$  Strip. The latter is prevented from dropping below a pre-determined level by a  $2\frac{1}{2}" \times \frac{1}{2}"$  Double Angle Strip bolted to the Flanged Plate, and is tensioned by a Driving Band fixed to the Strip and to the  $2\frac{1}{2}" \times \frac{1}{2}"$  Double Angle Strip. The arm is given an up and down motion by means of a wheel 13, which consists of four  $\frac{3}{4}"$  Discs fixed to a  $1" \times 1"$  Angle Bracket bolted to the arm. The wheel runs along the underside of a  $7\frac{1}{2}"$  Strip 14, which is slightly curved and is fixed to the base by two  $4\frac{1}{2}"$  and two  $2\frac{1}{2}"$  Angle Girders.

The mechanism should be adjusted so that when the Motor is set in motion, the Coupling on the

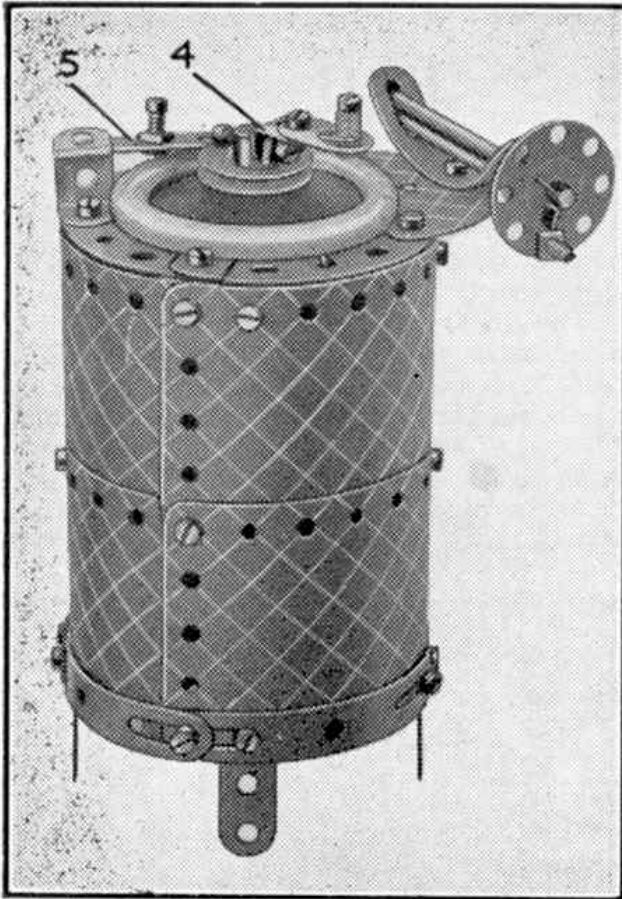


Fig. 2. A simple model clothes washing machine.

pivoted  $6\frac{1}{2}$ " Strip describes a figure eight around the two arms that carry the wool.

Parts required to build Wool Winder: 1 of No. 1; 1 of No. 1a; 2 of No. 1b; 3 of No. 2; 2 of No. 2a; 1 of No. 4; 1 of No. 5; 2 of No. 6; 2 of No. 7a; 4 of No. 8; 2 of No. 8b; 5 of No. 9; 4 of No. 9a; 14 of No. 9d; 2 of No. 9f; 2 of No. 11; 4 of No. 12; 1 of No. 12a; 1 of No. 13a; 2 of No. 14; 1 of No. 15; 5 of No. 16b; 1 of No. 16a; 3 of No. 17; 1 of No. 18b; 4 of No. 22; 4 of No. 23a; 2 of No. 24; 2 of No. 26; 2 of No. 27a; 4 of No. 30; 118 of No. 37a; 114 of No. 37b; 83 of No. 38; 1 of No. 48a; 1 of No. 52; 15 of No. 59; 6 of No. 62; 3 of No. 63; 1 of No. 94; 2 of No. 96; 2 of No. 103c; 4 of No. 111; 1 of No. 111c; 2 of No. 126; 1 of No. 126a; 2 of No. 163; 2 of No. 167. 1 Electric Motor E6 or F20B.

Readers in search of a novel model that is easy to build and requires only a small variety of parts for its construction, will find the washing machine shown in Fig. 2 a good subject for their attention. This is based on a modern type of domestic device consisting of a metal boiler, in which the water is heated by gas. Operating inside the boiler is a set of vanes, which are rotated by turning a handle mounted on top of it. These agitate the water and beat the clothes, thus giving them a thorough washing. In the illustration the model is shown for hand operation, but model-builders who have either a Clockwork or an Electric Motor will have no difficulty in arranging the model for driving by one of these units.

The boiler of the washing machine consists of three  $2\frac{1}{2}$ " Cranked Curved Strips that are bolted together to form part of a circle, the ends of the arc being attached to a Semi-Circular Plate. Three  $5\frac{1}{2}$ " Strips are fixed to the Curved Strips by  $\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Angle Brackets, and they are encased by two  $5\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " and two  $4\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flexible Plates, but project at their lower ends to form legs. These Flexible Plates are joined to a  $2\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " and a  $2\frac{1}{2}$ "  $\times$   $1\frac{1}{2}$ " Flexible Plate so that a space is left in the bottom of the boiler to allow access to the burner. Three 3" Formed

Slotted Strips and a  $2\frac{1}{2}$ " Strip bent to the required shape are bolted to the lower ends of the Flexible Plates. Two  $5\frac{1}{2}$ " Strips are attached to the boiler to provide further legs for the machine.

Inside the boiler are rotating vanes that beat the clothes. They consist of Double Brackets bolted to a  $2\frac{1}{2}$ " Strip. This Strip is fixed to a  $\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Angle Bracket lock-nutted to the boss of a 1" Pulley. The latter is mounted on a  $3\frac{1}{2}$ " Rod 1 journaled in a Flat Bracket and a Reversed Angle Bracket bolted to Trunnions attached to the arms of a  $2\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Double Angle Strip fixed to the boiler plates. The upper end of the Rod carries a Bush Wheel, in which are two Bolts fixed with their shanks upwards. These Bolts engage a  $\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Angle Bracket 2 attached to the boss of a 1" Pulley mounted on a  $1\frac{1}{2}$ " Rod 3, to which is also attached the operating handle.

A bearing for Rod 3 is provided by the boss of a Road Wheel, which also forms the cover of the boiler. The handle is a  $\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Angle Bracket 4 fixed to the boss of a 1" Pulley and attached to a Flat Bracket. A Cord Anchoring Spring is fixed to the outer end of this Flat Bracket by a  $\frac{1}{4}$ " Bolt.

A clip consisting of a  $2\frac{1}{2}$ " Strip 5 lock-nutted to the top of the boiler in the position shown, is provided to hold the cover in place when the machine is in operation. This Strip fits over one side of the cover and is held against it by a  $\frac{1}{2}$ " Reversed Angle Bracket also bolted to the boiler top. The bottom of the boiler is a  $2\frac{1}{2}$ "  $\times$   $2\frac{1}{2}$ " Flat Plate attached to a  $2\frac{1}{2}$ " Cranked Curved Strip fixed to the model by  $\frac{1}{2}$ "  $\times$   $\frac{1}{2}$ " Angle Brackets.

The model is completed by incorporating a wringer. This consists of a  $3\frac{1}{2}$ " and a 2" Rod held in the slots of a 3" Formed Slotted Strip bolted to the boiler top. A  $1\frac{1}{2}$ " Disc fitted with a  $\frac{1}{4}$ " Bolt is fixed on the  $3\frac{1}{2}$ " Rod between two Spring Clips, and is held in contact with the 2" Rod by a  $2\frac{1}{2}$ " Driving Band, which is passed over both ends of the Rod and attached to the Semi-Circular Plate.

Parts required to build model Washing Machine: 5 of No. 2; 3 of No. 5; 2 of No. 10; 2 of No. 11; 8 of No. 12; 2 of No. 16; 1 of No. 17; 1 of No. 18a; 3 of No. 22; 1 of No. 23; 1 of No. 24; 5 of No. 35; 51 of No. 37a; 44 of No. 37b; 5 of No. 38; 1 of No. 40; 1 of No. 48a; 4 of No. 90a; 4 of No. 111c; 2 of No. 125; 2 of No. 126a; 1 of No. 176; 1 of No. 186; 1 of No. 187; 1 of No. 188; 2 of No. 190; 2 of No. 191; 2 of No. 192; 1 of No. 214; 4 of No. 215; 2 of No. 217a.

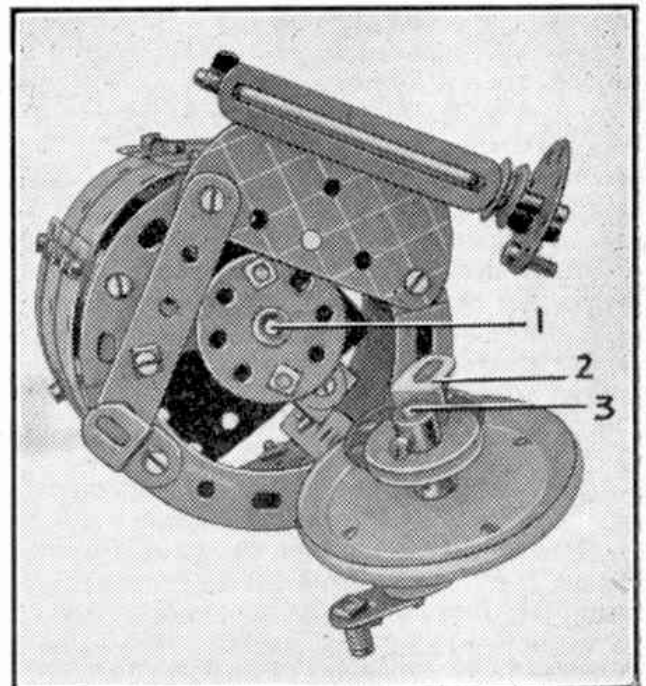


Fig. 3. View of the inside of the washing machine shown in Fig. 2.