

# Build a Vertical Log-Saw

By Spanner

**H**OW many Meccanomen, I wonder, while glancing through a magazine or reading a book, have seen something which they felt would make an excellent subject for a Meccano model. There must, I feel, be an enormous number, but how many of them have actually tried to build the model? Some, no doubt, but I am inclined to think that the majority, either because of lack of spare time or lack of parts or sometimes even lack of skill, have simply shrugged the idea from their minds and forgotten about it.

This, of course, is quite understandable, only I should like to point out that we, on Meccano Magazine, have the parts and we like to think that our model-builders have the skill, although we do know that they are often short of time. Our model-builders, however, are only human and they can run out of ideas as easily as anybody else, so I must stress that we have no objection to your passing ideas on to us if you don't think you will be able to act on them yourselves. After all, we might well be able to produce the required model, as is proved by the example featured below. This is a working reproduction of a Vertical Log Saw, used to cut logs into planks or beams, and is the result of a request we received some time ago from M.M. reader Mr. W. A. Wilson of Runcorn, Cheshire. Mr. Wilson sent an illustration of the full-size machine and, in no time at all our model-builder had come up with this model. Construction is not difficult.

## FRAMEWORK AND SAW FRAME

To begin with, a rectangular box framework is built up from four  $12\frac{1}{2}$  in. Angle Girders 1, joined at the top by two  $5\frac{1}{2}$  in. Strips 2 and two  $4\frac{1}{2}$  in. Angle Girders 3, and at the bottom by two  $5\frac{1}{2}$  in. by  $12\frac{1}{2}$  in. Flat Plates 4 and two  $4\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flat Plates 5. The lower Bolts securing Flat Plates 5 also fix two  $7\frac{1}{2}$  in. Angle Girders 6 in place, these Angle Girders protruding a distance of six holes outside the box framework. The ends of Girders 6 are then joined by a  $5\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flanged Plate which will later form the mounting for the Power Drive Unit.

Fixed between each side pair of Girders 1 is a  $4\frac{1}{2}$  in. by  $\frac{1}{2}$  in. Double Angle Strip, to which a Flat Trunnion 7 is bolted and two  $4\frac{1}{2}$  in. Strips 8, a distance of nine clear holes separating them. Upper Strips 8 are connected by a  $5\frac{1}{2}$  in. Strip 9, attached by Angle Brackets. Journalled in this Strip and in Flat Trunnions 7 are two 8 in. Rods 10, held by Collars, which serve as the mountings for the saw frame. The saw frame, itself, is built up simply from two  $3\frac{1}{2}$  in. Angle Girders 11, the ends of which are each joined by two  $4\frac{1}{2}$  in. Strips placed one on top of the other. Four Angle Brackets 12, arranged in pairs as shown, are bolted to each Girder 11 to provide the anchoring points for two suitable lengths of fret-saw blade which are clamped by a Nut and Bolt between the protruding lugs of the Angle Brackets.

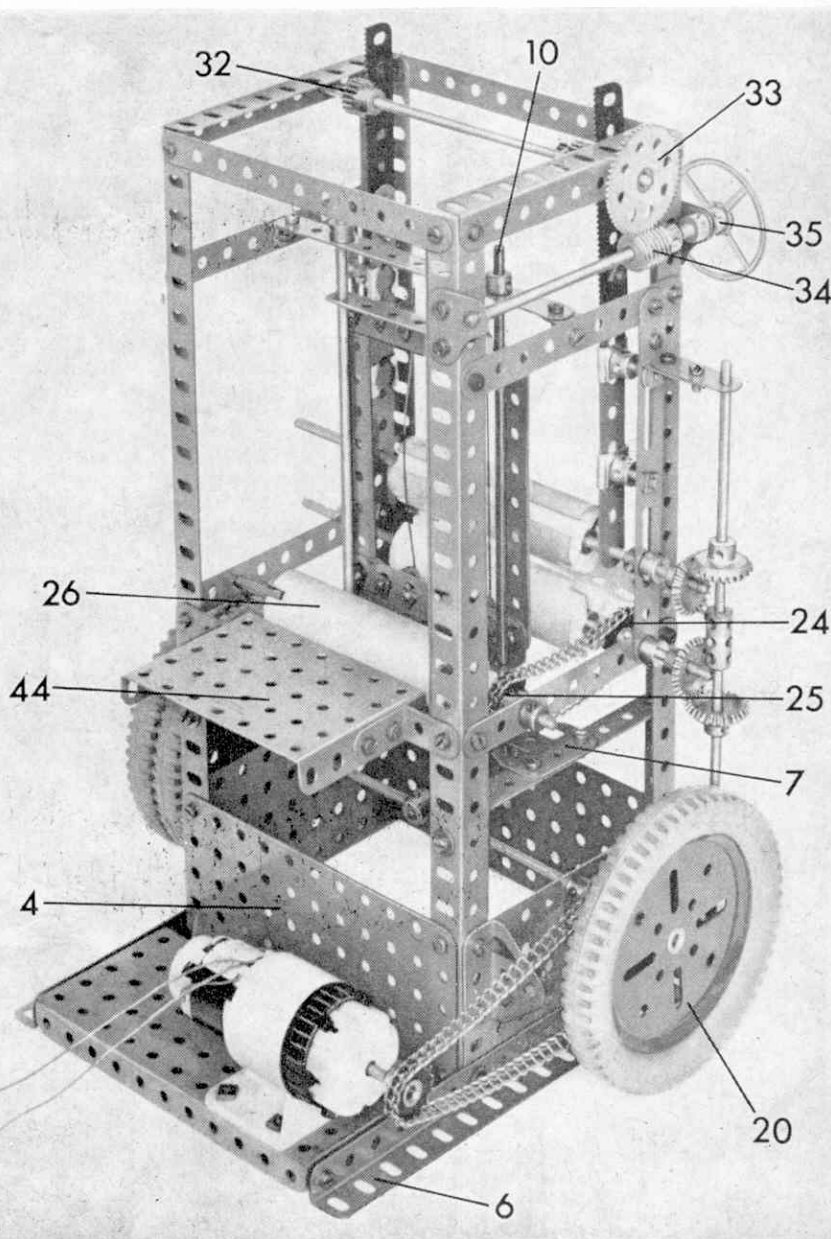
Bolted beneath the horizontal flange of lower Girder 11 is a 1 in. by  $\frac{1}{2}$  in. Double Bracket, its lugs pointing downwards. Mounted in their end holes is a 1 in. Rod carrying two Collars and a  $2\frac{1}{2}$  in. Strip 13 between the lugs, the Strip being positioned between the two Collars. Note, however, that the Collars must not prevent the Strip from turning on the Rod.

The lower end of Strip 13 is mounted, along with four washers, two each side, on another 1 in. Rod on the ends of which two Couplings 14 and 15 are fixed, the Rod being held in one end transverse smooth bore of the Coupling. Mounted in the other end transverse bore of Coupling 14 and in corresponding Flat Plate 5 is a  $4\frac{1}{2}$  in. Rod 16, carrying two 3 in. Pulleys with Motor Tyres outside Plate 5. Another  $4\frac{1}{2}$  in. Rod 17 is mounted in Coupling 15 and corresponding Plate 5, but this carries a Worm 18, a 2 in. Sprocket

Wheel 19 and only one 3 in. Pulley with Motor Tyre 20. When the 3 in. Pulleys are turned, the saw frame should move freely up and down Rods 10.

## ROLLER MOUNTING AND CONTROL MECHANISM

Having completed the saw frame as well as the basic framework of the model, we now move on to the rollers, three of which are included. The



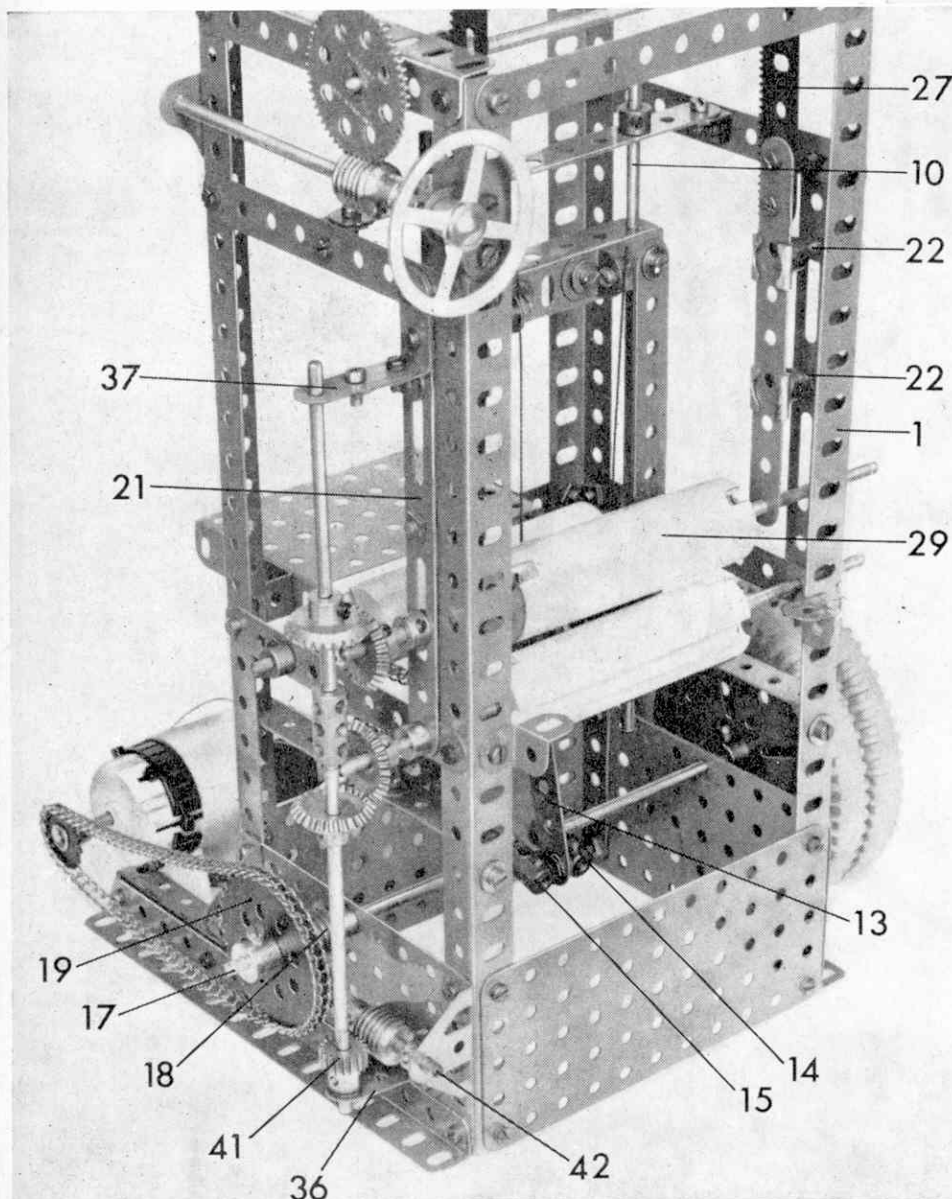
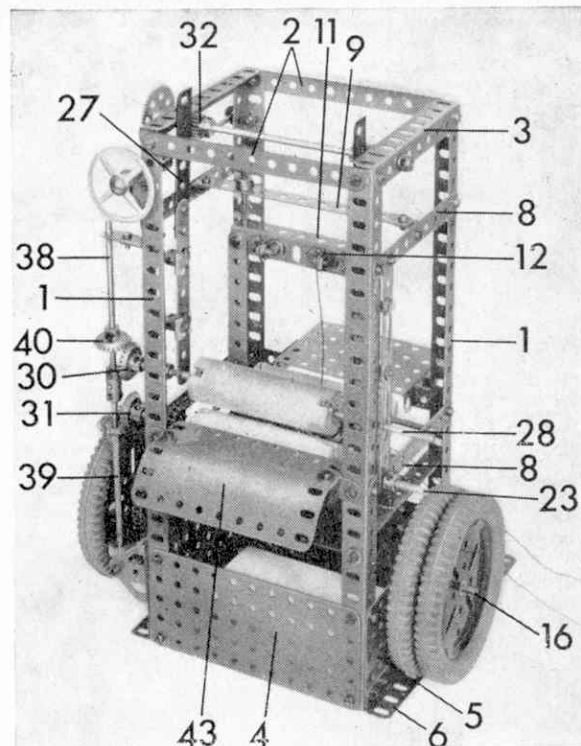
first two, mounted one above the other, work together as a pair and act as the feed-in rollers for the uncut logs, while the third serves on its own as the exit roller for the cut wood. All three are represented by standard Meccano Wood Rollers and all are mechanically driven from the Motor. In real life, of course, it is doubtful whether any two logs would be the same diameter and so it must be possible for the distance between the feed-in rollers to be altered while still allowing them both to be driven. In our model, the designer has overcome this problem in what I feel to be an excellent way!

Each pair of Strips 8 are connected by a  $5\frac{1}{2}$  in. Slotted Strip 21 in which two Threaded Pins 22 are fixed in the positions shown, with the shanks of the Pins pointing inwards. It is important to note that the lower ends of Slotted Strips 21 are not bolted to corresponding Strips 8, but are attached by means of an 8 in. Rod 23 and are held in place by Collars. Mounted on the Rod are a Wood Roller and a  $\frac{1}{4}$  in. Sprocket Wheel 24 which is connected by Chain to another  $\frac{1}{4}$  in. Sprocket Wheel 25 on a  $6\frac{1}{2}$  in. Rod journaled in lower Strips 8 and carrying a second Wood Roller 26.

Slide Pieces are now mounted on Threaded Pins 22 to provide 'runners' for two  $4\frac{1}{2}$  in. Strips, each extended by a  $3\frac{1}{2}$  in. Rack Strip 27. Journaled in the end holes of the  $4\frac{1}{2}$  in. Strips and in the lower slotted holes of Slotted Strips 21 is another 8 in. Rod 28, held in place by Collars and carry-

## PARTS REQUIRED

3 of No. 2	1 of No. 52
10 of No. 2a	1 of No. 53
1 of No. 5	2 of No. 53a
1 of No. 6a	2 of No. 55
4 of No. 8	15 of No. 59
2 of No. 8b	3 of No. 63
2 of No. 9a	2 of No. 70
2 of No. 9b	1 of No. 94
1 of No. 9f	1 of No. 95
1 of No. 11a	3 of No. 96a
10 of No. 12	3 of No. 106
3 of No. 12a	2 of No. 110
4 of No. 13a	4 of No. 115
1 of No. 14	2 of No. 126
2 of No. 15	2 of No. 126a
2 of No. 15a	1 of No. 133
2 of No. 18b	2 of No. 133a
3 of No. 19b	3 of No. 142b
4 of No. 26	1 of No. 154a
1 of No. 27a	1 of No. 154b
4 of No. 30	1 of No. 185
3 of No. 32	1 of No. 191
98 of No. 37a	1 of No. 230
98 of No. 37b	1 of No. 231
30 of No. 38	1 Power Drive Motor
2 of No. 48c	
4 of No. 50	



ing a third Wood Roller 29. The securing Collars must not be clamped so tightly that they prevent the Rod from sliding up and down in the slots of Slotted Strips 21. Two  $\frac{3}{8}$  in. Bevel Gears 30 and 31 are now fixed in position, the former on the end of Rod 23 and the latter on the end of Rod 28, while a  $6\frac{1}{2}$  in. Rod carrying two  $\frac{1}{2}$  in. Pinions 32 is mounted in Angle Girders 3 being held in place by a Collar and a 57-teeth Gear Wheel 33. Pinions 32 engage with Rack Strips 27. Gear Wheel 33, on the other hand, engages with a Worm 34 on a 5 in. Rod, journaled in 1 in. Corner Brackets bolted to appropriate Angle Girders 1 and held in place by a Collar and a Steering Wheel 35. Movement of this Steering Wheel should raise or lower feed-in Roller 29.

## DRIVE MECHANISM

Attached to one Flat Plate 5 by a  $1\frac{1}{2}$  in. Angle Girder is a  $1\frac{1}{2}$  in. by  $1\frac{1}{2}$  in. Corner Bracket 36 while a 1 in. by 1 in. Angle Bracket is bolted to the upper end of corresponding Slotted Strip 21. The horizontal lug of this Angle Bracket is extended by a  $1\frac{1}{2}$  in. Strip 37. Journaled in the end hole of this Strip and in Corner Bracket 36 is a 9 in. Compound Rod, obtained from a 4 in. Rod with Keyway 38 and a 5 in. Rod 39, joined by a coupling. Free to slide on Keyway Rod 38, but prevented from turning by a Keyway Bolt, is a  $\frac{3}{4}$  in. Bevel Gear 40, while another similar Bevel Gear is fixed tight on Rod 39. Both these Gears mesh with respective Bevel Gears 30 and 31.

On the lower end of Rod 39 is fixed a  $\frac{1}{2}$  in. Pinion 41, spaced from Corner Bracket 36 by two Washers. This Pinion engages with a Worm on a  $4\frac{1}{2}$  in. Rod 42, held by Collars in the apex holes of two Trunnions bolted to Flat Plate 5. Also fixed on the Rod is another  $\frac{1}{2}$  in. Pinion that meshes with Worm 18 on  $4\frac{1}{2}$  in. Rod 17. Finally, a Power Drive Unit, fitted with a  $\frac{3}{4}$  in. Sprocket Wheel on its output shaft, is bolted to the  $5\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flanged Plate secured between Girders 6, and the Sprocket Wheel is connected by Chain to Sprocket Wheel 19.

All that now remains to be built are the entrance and exit guides for the wood, and these are by no means complicated. The former consists quite simply of a  $4\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flexible Plate 42, attached to appropriate Angle Girders 1 by one right-hand and one left-hand Corner Angle Bracket, while the latter is supplied by a  $3\frac{1}{2}$  in. by  $2\frac{1}{2}$  in. Flanged Plate 44 attached to remaining Girders 1 by two 1 in. by 1 in. Angle Brackets. The Flexible Plate should be curved down slightly, as shown, and the model is finished.