

# Power for Your Model Aeroplanes!

## The Meccano Aero Clockwork Motors

**A**EROPLANES in flight are elusive subjects for the model aeroplane enthusiast to study. Once they have left the ground, they either fly at a great height so that their salient features can only be distinguished with difficulty, or they flash past overhead at low altitude so that a great deal of neck twisting is necessary to see them!

Aeroplanes may be seen to advantage, however, when they are taxi-ing along the runway of the airport preparatory to "taking off" or when landing. The observer then gets a splendid "close up" view of the machine in action, and an excellent impression of its grace and power may be obtained.

To bring this action and realism to the model aeroplanes built with the Meccano Aeroplane Constructor Outfits Nos. 1 and 2, we have introduced two special clockwork power units known as the Meccano Aero Clockwork Motors Nos. 1 and 2.

The No. 1 Aero Clockwork Motor is designed to fit into the fuselage of the Meccano aeroplane models and to drive the Propeller at high speed. The No. 2 Aero Motor is of more ambitious design, and in addition to rotating the Propeller of the model to which it is fitted, it also drives the landing wheel axle, so that the complete model taxis about the floor or table under its own power in a most realistic manner.

It is quite a simple matter to incorporate either the No. 1 or No. 2 Motor in a model, but a definite order of assembly of the various units should be followed so as to avoid having to remove one part in order to fit another in place.

### The No. 1 Aero Motor

The No. 1 Aero Clockwork Motor, which is illustrated in Figure 1, is supplied complete with the special propeller shaft 8, and Propeller Control Rod. A Propeller 6 (Aeroplane Part No. P34) and a special Aero Collar 7 (Aeroplane Part No. P52) are shown attached to the propeller shaft 8 in the illustration. These are not supplied with the Motor, but they are of course contained in the Standard Meccano Aeroplane Outfits. The Propeller Control Rod is engaged with the Propeller when the Motor is being wound, and thereby prevents the propeller shaft from rotating. By a slight movement of the Control Rod, the Propeller may be released.

To commence building a model in which the No. 1

Motor is to be incorporated, the Propeller Control Rod 1 should first be fitted to the Fuselage Top Front 3 and Fuselage Front 4. This assembly is shown in Figure 4. The plain end of the Control Rod 5 is pushed through the slot in the Fuselage Top Front and continued through the small hole in the Fuselage Front 4. Actually in building the model, the Fuselage Sides Front should be secured to the Fuselage Top Front and Fuselage

Front at the same time as these are bolted together, but they have been removed in the illustration in order to show the Control mechanism and propeller shaft 8 clearly.

After the Control Rod 1 has been secured in place, the fuselage of the model

may be completed, but the undercarriage should not be bolted in position.

The special Aero Collar 7 should next be secured to the propeller shaft 8 (see Figs. 1 and 4). The Collar is mounted on the shaft so that the toothed end of the shaft 8 engages with the contrate 9 when the Collar 7 rests against the inside face of the Fuselage Front 4. The correct position for the Collar on the shaft can be obtained by pushing the shaft into place and holding the Motor in the position it will occupy when bolted in place. The shaft is then removed, and the Collar locked in the correct position on the shaft by means of its grub-screw.

The end of the propeller shaft 8 is pushed through the upper hole in the Fuselage Front 4 (see Fig. 4). The toothed end of the shaft 8 is now passed through the hole in the bearing lug 10 or the Motor so that it engages with the contrate 9 attached to the Motor Spindle. Next, the Motor is lowered into position and at the same time the Undercarriage V-Struts of the machine are placed on each side (see Fig. 2).

The Motor is held in place rigidly by means of four bolts 11 of which two can be seen in the illustration. These bolts pass through the Fuselage Sides Middle sections.

It will be seen that they also serve to hold the Undercarriage V-Struts and the lower ends of the Wing Stays in place. The Propeller 6 is

placed on the end of the propeller shaft 8 that projects through the upper hole in the Fuselage Front, and locked in position by means of its grub-screw. The boss of the Propeller must not be pushed tightly against the front face of the Fuselage Front or considerable

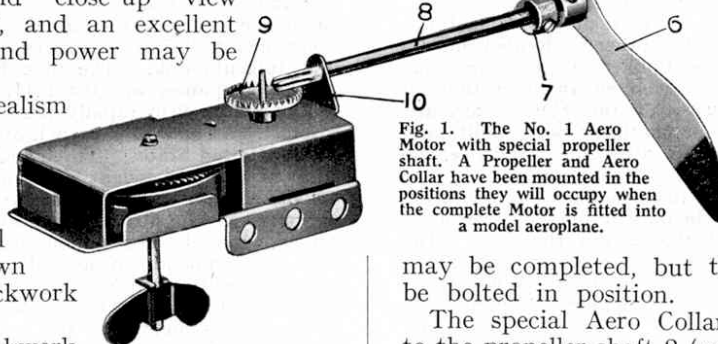


Fig. 1. The No. 1 Aero Motor with special propeller shaft. A Propeller and Aero Collar have been mounted in the positions they will occupy when the complete Motor is fitted into a model aeroplane.

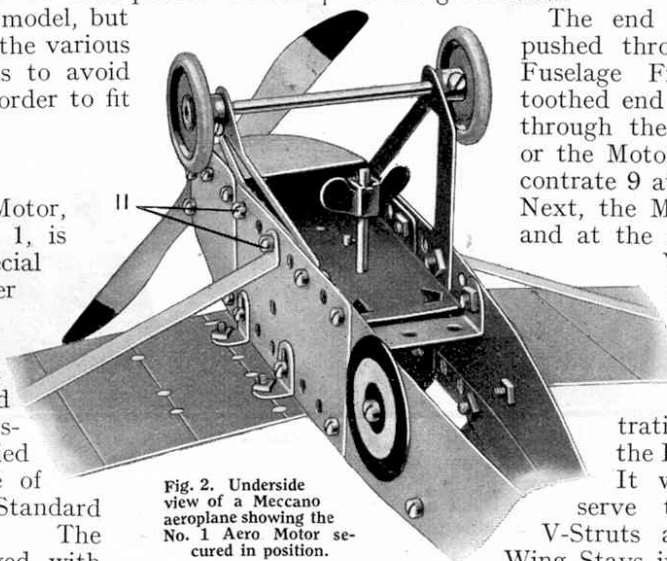


Fig. 2. Underside view of a Meccano aeroplane showing the No. 1 Aero Motor secured in position.

friction will result and the Motor will not run well.

Care should also be taken to see that the propeller shaft is free to turn in its bearings and that the toothed end of the shaft engages correctly with the teeth of the contrate 9 on the Motor. If there is any stiffness in the drive, the Propeller will run slowly or may even refuse to turn at all. A little Meccano Lubricating Oil applied to the teeth of the contrate 9 will improve the running.

When the Motor is being wound, the looped end of the Propeller Control Rod 1 is moved to the forward end of the slot 2 so that the plain end 5 (see Fig. 4) engages with the Propeller 6 and prevents it from rotating. To release the Propeller 6, the Control is moved to the rear of the Slot 2, and it should not be forgotten to shout "Contact" in the approved aeroplane fashion when performing this operation!

The Motor drives the Propeller at high speed for a surprisingly long period, and the complete effect is most realistic. When using the Motor, the Propeller Control Rod 1 must on no account be pushed to the forward end of the Slot 2 while the Motor is running as damage will result.

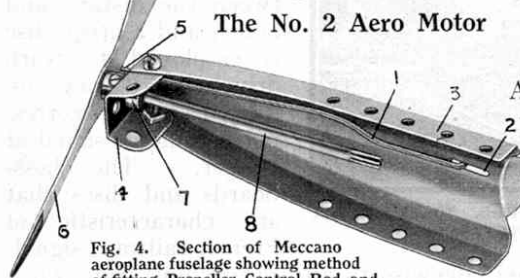


Fig. 4. Section of Meccano aeroplane fuselage showing method of fitting Propeller Control Rod and arrangement of propeller shaft.

shaft 21 fitted with special pinion, the landing wheel axle 13 also fitted with special pinion, the wheeled Tail Unit 14 and Propeller Stop Control. The Propeller 6 and Aero Collar 7 are contained in the standard Meccano Aeroplane Constructor Outfits. The No. 2 Motor is suitable for fitting to aeroplane models built with either a No. 1 or No. 2 Outfit and the Motor enables a greater degree of realism to be obtained than is the case with the No. 1 Motor.

The assembly of a model in which the No. 2 Motor is to be incorporated should be commenced by first fitting the Propeller Control Rod to the Fuselage Top Front and Fuselage Front of the machine. The Control Rod is assembled in exactly the same way as the Control Rod supplied with the No. 1 Motor described previously.

After the Propeller Control Rod has been fitted, the construction of the fuselage may be proceeded with, but the undercarriage should not be fitted to the fuselage at this stage. The Aero Collar 7 is secured to the Propeller Shaft 21 so that the special pinion on the end of this shaft engages with the Contrate 17 when the Collar rests against the inside face of the Fuselage Front. The end of the propeller shaft 21, complete with Collar 7 should be pushed through the upper hole in the Fuselage Front. The rear end of the propeller shaft 21 is next pushed through the hole

in the bearing lug 16 that projects from the frame 12 of the Motor. It is a good plan to apply a little oil to the teeth of the Contrate 17 before the Motor is finally bolted in position.

The Motor is next lowered into position and at the same time, the Undercarriage V-Struts are placed on each side of the fuselage of the machine. The Motor and Undercarriage V-Struts are held in place by 7/32" Bolts that are pushed through the lower holes in the Fuselage Side Middle sections.

The landing wheel axle 13 is pushed into position in the Undercarriage V-

Struts as shown in Fig. 3. It is essential that the special pinion on the shaft 13 engages with the Contrate 18 at the

left-hand side of the Fuselage (viewed from below). If the pinion engages with the Con-

trate at the right, the model will travel backward when placed on the ground! A 1" Fast Pulley complete with Rubber Tyre should be placed on each end of the axle 13. These Pulleys should be adjusted so as to keep the special pinion on the axle 13 in engagement with the contrate 18. The Propeller 6 may now be placed on the projecting end of the propeller shaft 21 and locked in position by means of the grub-screw in the boss of the Propeller. Care should be taken to see that the shafts 21 and 13 are free to turn in their bearings, while a little oil applied to the teeth of the contrates 17 and 18 will improve the running of the mechanism.

The wheeled Tail Unit is illustrated in Fig. 5, while in Fig. 3 it is shown secured to the model aeroplane. The Unit enables the direction in which the model taxis to be altered at will. In addition, the Unit reduces the friction between the tail of the machine and the ground. The Tail Unit is secured in position by means of a 3/8" Bolt 20 (see Fig. 3) which passes through the two perforated lugs 15 of the Unit (see Fig. 5) and through the Fuselage Side Rear sections. The model may be made to travel in any forward direction by adjusting the position of the wheel frame 14 on the toothed rack 19.

The model is operated by first pushing the Propeller Control Rod to the forward end of the slot in the Fuselage Top Front (see Fig. 4) so that the Control Rod engages with the Propeller and prevents it from rotating. The Motor is then wound by means of the detachable key, and the model placed on the floor or table.

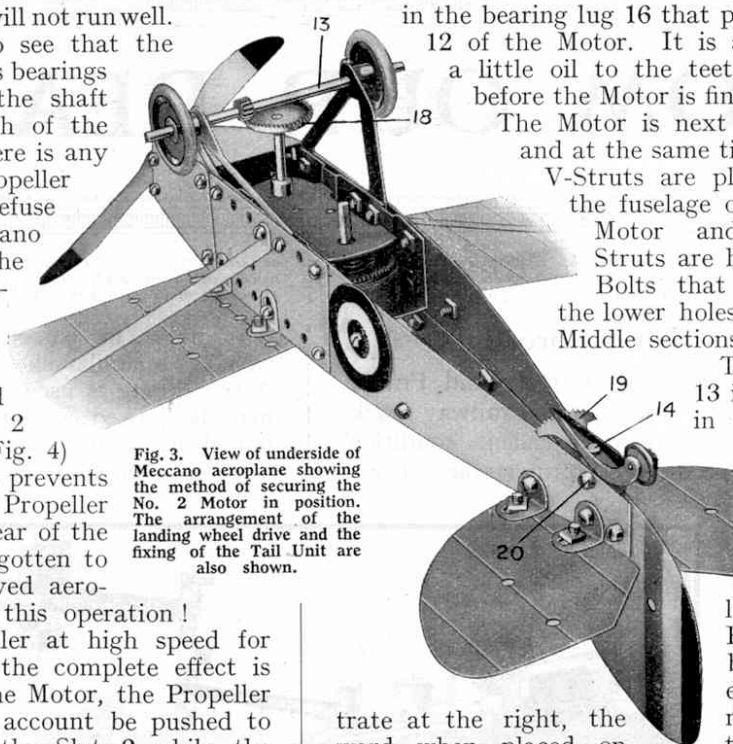


Fig. 3. View of underside of Meccano aeroplane showing the method of securing the No. 2 Motor in position. The arrangement of the landing wheel drive and the fixing of the Tail Unit are also shown.

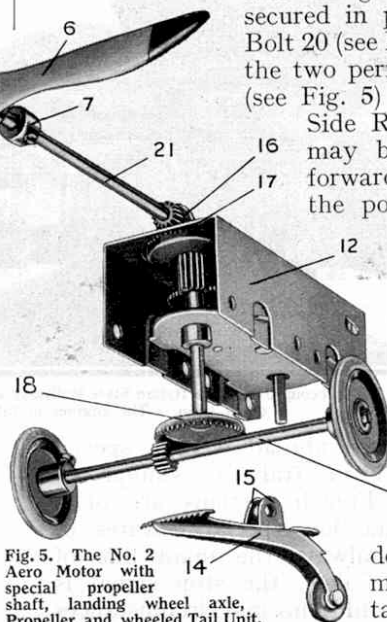


Fig. 5. The No. 2 Aero Motor with special propeller shaft, landing wheel axle, Propeller and wheeled Tail Unit.

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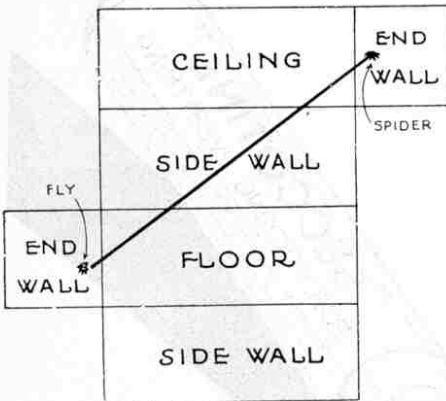
**Fowler Ditching Machine**—(Cont. from page 5)

machine. By the cheapest alternative method the cost would have been 4½d. Thus the saving effected amounted to more than 80 per cent. The difference between the costs is even more strikingly shown by comparing the expenditure per mile of ditch. With the Fowler machine the cost works out at a little more than £6 per mile; if the alternative method had been adopted this would have been very nearly £32.

Its remarkable speed of operation and extremely low running cost will make the Fowler machine invaluable in breaking new land in comparatively undeveloped countries, and also in improving old agricultural areas. It will be particularly useful in countries where artificial irrigation is necessary, for with its aid shallow distribution canals may be cut with very little trouble; and also in the tropics and elsewhere where violent rains are experienced and water often must be carried away quickly by means of an elaborate system of draining ditches.

**Solutions to December Puzzles**

- No. 1. There were 15 aeroplanes included in the square. The names began in the top left-hand corner and were as follows:—Wapiti, Desoutter, Hercules, Moth, Gadfly, Lincock, Argosy, Avian, Bulldog, Gamecock, Bluebird, Hornet, Siskin, Redwing, Martlet.
- No. 2. Nine ears of corn were in the box. Two of the ears carried out each time by the mouse were on its head.
- No. 3. Hornby was the answer to this acoustic.
- No. 4. The sentence was "Red Root Put Up To Order."
- No. 5. The following illustrations show clearly the route taken by the spider.

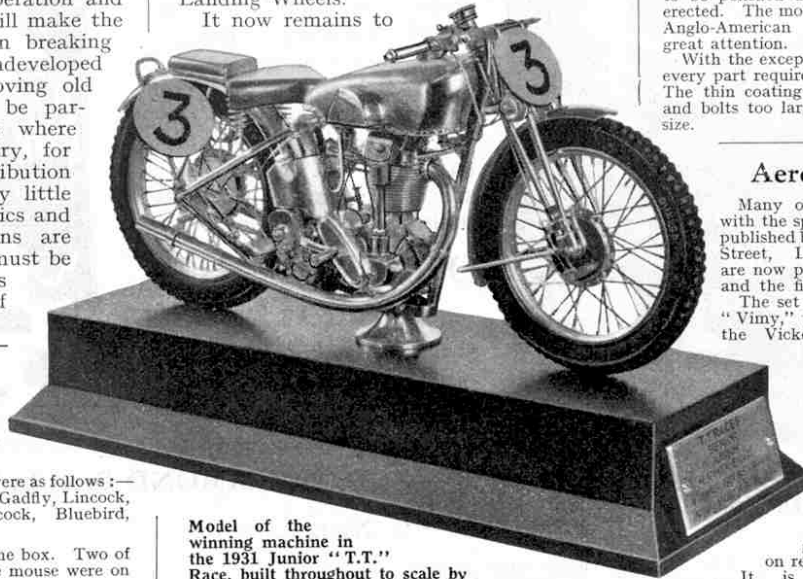


- No. 6. Two minutes were lost every hour by the grandfather clock, the alarm clock gaining one minute in the same time. It is therefore evident that in an hour's time the alarm gained three minutes upon the other and that in twenty hours it gained sixty minutes. During those twenty hours the alarm clock gained twenty upon the correct time from which it may be deduced that the race must have started the previous morning at twenty minutes to twelve o'clock.
- No. 7. The word square was:—  
N I C H E  
I D L E R  
C L A R A  
H E R D S  
E R A S E
- No. 8. Swarm; warm; arm. (Cont. in next column)

**Aero Clockwork Motors**—(Cont. from page 31)

If the model aeroplane is required to travel in a straight line, the wheel frame 14 (see Figs. 3 and 5) should be adjusted on the toothed rack 19 so that the small tail wheel is in the same plane as the main Landing Wheels. If on the other hand, the model is required to follow a circular path, the wheel frame 14 should be moved to one side of the rack 19 so that the tail wheel is out of line with the Landing Wheels.

It now remains to



Model of the winning machine in the 1931 Junior "T.T." Race, built throughout to scale by Bond's o' Euston Road Ltd., London.

place the model on the floor or table and draw the Propeller Control to the rear of the slot, when the model will run forward at a good speed with the Propeller rotating rapidly.

In using No. 2 Motor the Propeller Control Rod must never be pushed to the forward end of the slot in the fuselage Top Front when the Propeller is revolving, as damage will result.

**Air Pistols for Target Practice**

A hobby in which many of our readers are interested is that of shooting either with an air rifle or an air pistol. As a means of developing skill and accuracy in the use of eye and hand, there are few recreations superior to shooting, and the ability to place a succession of shots within a limited space on the target is a sure sign of fitness of both mind and muscle.

For those who wish to take up this hobby, Webley & Scott of Birmingham, the well-known manufacturers of firearms, have introduced an interesting series of air pistols for which no license is required. These range in price from 20/- to 45/-. In spite of their low cost they are made exactly like the ordinary automatic pistol, and they provide splendid shooting practice. They are remarkably accurate, and have given excellent results in the hands of experts who have tested them. In addition they are simple and safe to handle, and may be recommended to all who wish to obtain good shooting practice either indoors or in the open air. Full details of the pistols and of suitable pellets and darts for use with them may be obtained from Webley & Scott Ltd., 81, Weaman Street, Birmingham.

- No. 9. The letter was "X," making "Iax," "tax," "sex," etc.
- No. 10. One of the words Tommy was required to discover had already been used by his mistress. It was "facetious." The other word was "abstemious."
- No. 11. Following are the solutions to the clues given in this puzzle:—  
1. Oaks; 2. Roar; 3. Leyd; 4. Ever; 5. Bide; 6. Avon; 7. Rene.  
The names of the famous speed kings were:—Orlebar and Kaye Don.
- No. 12. "He who laughs last, laughs longest," was the jumbled proverb.
- No. 13. As there was only a quarter of the bun between four boys, the time must have been a quarter to four!

**An Interesting Motor Cycle Model**

A splendid scale model of the 350 c.c. Norton motor cycle on which Mr. P. Hunt won the International Junior T.T. Race of 1931, was shown at the recent Motor Cycling Exhibition at Olympia, London. The model was made by Bond's o' Euston Road Ltd., the well-known manufacturers of models and light engineering equipment. It is one-sixth the size of the original, and is exact in every detail. The engine is complete with all customary fittings, including valve gear and carburetter parts and controls. The chains are correct in scale, the spokes of the wheels are fitted with square-headed nipples, and even the cooling fins of the cylinder are correctly tapered and spaced. After the machine had been constructed it had to be completely stripped down to be polished and silver-plated, and was then re-erected. The model was exhibited on the stand of the Anglo-American Oil Company, where it attracted great attention.

With the exception of the tyres and certain screws, every part required was made by Bond's themselves. The thin coating of plating made some of the nuts and bolts too large, and they had to be reduced in size.

**Aeroplane Photographs**

Many of our readers are already familiar with the splendid series of railway photographs published by Railway Photographs, 23, Hanover Street, Liverpool. This enterprising firm are now producing photographs of aeroplanes, and the first 12 are ready.

The set includes photographs of the Vickers "Vimy," the first machine to fly the Atlantic; the Vickers Supermarine Rolls-Royce S.6 that won the Schneider Trophy in 1929; the Vickers "Victoria" troop carrier used for the evacuation of Kabul; the Blackburn "Lincock" single-seater light fighter, and the Westland "Wapiti" general-purpose machine. The photographs are postcard size and are sold at 3d. each or 2/6 per dozen post free. A specimen card, together with a list of the first 12 photographs available, will be sent on receipt of 4d.

It is intended shortly to publish another selection of photographs, and thus readers of the "M.M." who are interested in aviation will be able to make an interesting and representative collection of aeroplane photographs.

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