MOON-DRIVE MECH.

as fitted to Bert Love's No.10 Set Grandfather Clock (Oct.'73 MMQ)

SINCE THE GRANDFATHER Clock was first featured in M.M.Q. No. 3 (writes Mr. Love) some slight alterations to the moon mechanism have been incorporated to give yet another dial to the Clock, although still keeping within the No. 10 Set limitations. In following this description, readers are advised to consult the original article in issue No. 3 as several references to previous illustrations are important.

Referring to Fig. 4 on page 63 of MMQ No. 3, showing the main clock dial, the lower small dial is the 24 hour dial (not the seconds hand dial as was mistakenly indicated in the original article) and it is from this 24 hour dial, which turns on what is known as the "diurnal" shaft, that we take off the moon drive in stages. A 2½" Rod forms the diurnal shaft which runs through to the front clock plate behind the dial and is located so that it does not foul the external gears of the main winding drum revolving behind the clock plate. This diurnal shaft carries a 1½" Sprocket Wheel (which receives a 2:1 step-down motion from an hour shaft via a ¾" Sprocket Wheel) and behind the 1½" Sprocket, a Worm takes up most of the remaining portion of the 2½" Rod.

Now referring to Figs, 5 & 6 on page 64 of MMQ No. 3 we can see the ¾" Sprocket Wheel just mentioned, plus two more Sprocket Wheels which carry the moon drive in its second stage up to the top of the clock. The lower Sprocket Wheel is 1" diameter and has 18 teeth. It is fixed to a 4½" Rod carried in Trunnions at either end of the lower front clock plate. Towards the inner end of this Rod, a ½" Pinion is secured to engage with the Worm on the diurnal shaft. This means that, in 19 days, the 1" Sprocket will revolve once.

As the upper Sprocket Wheel is ¾" diameter and has 14 teeth, it speeds up the motion of the lower Sprocket and is fixed to another 4½" Rod carried in a 2½" x 1½" Double Angle Strip attached to a 3" x 1½" Flat Plate as shown in Fig 1 on this page. Both ends of this Plate are attached to the inside ledge of the ornamental clock top by Trunnions, the middle Trunnion carrying a 5½" Strip running to the top rear of the clock and holding a 5½" x 2½" blue Plastic Plate which forms an excellent curved background 'sky' for the moon globe.

To accommodate the new dial shown in Fig. 2 here, a slight change in gear positioning is required, the two Bevel Gears going inside, while the large Contrate and 50t Gear are mounted outboard as shown in

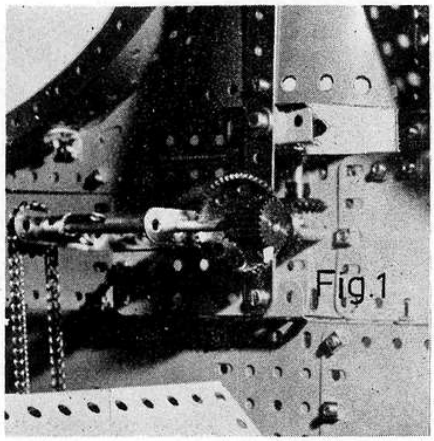


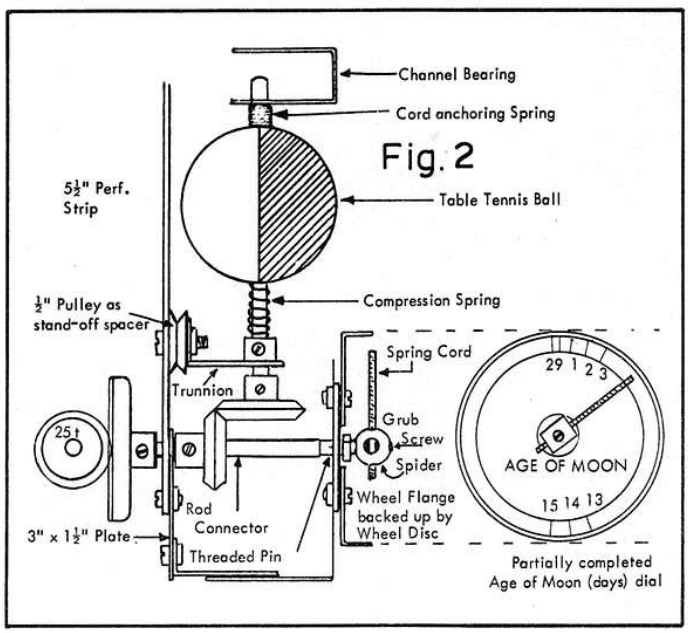
Fig. 1. It is necessary to have the 50t Gear running on the far side of the Contrate as shown to give correct rotional direction to the 'Age of Moon' indicator. The dial requires 29½ divisions.

Fig. 2 should make all of the final stage moon drive clear. Two sections of the Age of Moon shaft are provided, linked with a Rod Connector as shown to give a 'slip' drive to the indicator hand for re-setting the Age of Moon without back-winding the whole clock mechanism. So far, the gear train gives us the following ratio:

$$\frac{\text{Worm}}{19t} \times \frac{18t}{14t} \times \frac{25t}{50t} = 29.555$$

Thus the moon globe will rotate once in 29.555 days which is more accurate than most domestic grandfather clocks with simple moon motion. Credit for the moon train gear used goes to Pat Briggs – well known in Meccano clock-building circles.

Perhaps a word on making the moon globe will be welcome. A standard table tennis ball is used, but this should be pierced with care, using a darning needle to probe for a central axis. If the ball spins eccentrically, correct with a fresh hole at the tip of the needle until rotation is reasonably concentric. Open up the holes with a fine rat-tail file until they are a free-running fit on a Meccano Axle Rod. The Compression Spring shown in Fig. 2 gives a positive grip on the ball, but allows re-setting as required. Indian ink, brushed on with a small sable brush, should be used for shading one half of the table tennis ball. When faced squarely, the ball will present the correct moon phase to the observer. N.B. If any of our friends in the antipodes build this clock they will need to reverse the lower level of Fig. 2 for correct moon phase!



Alterations to moon-drive in No. 10 Set Grandfather Clock to add 'Age of Moon' dial with existing parts in Set. With Age of Moon pointer rotating clockwise, moon phase appearance of half-black table tennis ball is correct for observer in Northern Hemisphere. For Southern Hemisphere observers, lower Bevel Gear would have to be changed over from left to right to reverse moon globe direction.