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PATENT SPECIFICATION

DRAWINGS ATTACHED

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Inventor:—ALBERT ANDRE GILLERON.

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COMPLETE SPECIFICATION

Improvements in or relating to toy winding mechanisms.

We, MECCANO LIMITED, a British Company of Binns Road, Liverpool, 13, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to toy models and is more particularly concerned with winding mechanism employed therewith.

The present tendency with regard to the manufacture of toy models is one of increasing complexity coupled with a desire on the part of manufacturers to make the models as realistic as possible and to make movable those parts on the model which are movable in the real life construction. For instance, in the case of a mobile crane it is very desirable to provide in the model suitable arrangements for raising and lowering the jib and for raising and lowering the hook. Two controlling mechanisms are thus necessary and it is essential that these should be as simple as possible in order to keep the cost of manufacture down to an economic level.

The object of the present invention is to handle a winding mechanism having a single operating handle for effecting two winding operations.

According to the invention, in a winding mechanism for a toy model comprising a base plate having two parallel upstanding wall portions provided with pairs of aligned slots, one pair of aligned slots forming bearings for a first shaft provided with an operating handle and axially movable between two predetermined positions, a second pair of aligned slots forming bearings for a second shaft provided with a gear wheel and a third pair of aligned slots forming the bearings for a third shaft provided with a gear wheel, the two gear wheels being axially displaced with respect to each other by a

distance equal to that between said two predetermined positions whereby a gear wheel on said first shaft is capable of engaging with one or other of the gear wheels on said second and third shafts in the first or second of the two predetermined positions and on rotation of driving the appropriate one of the second and third shafts.

The invention will be better understood from the following description of one embodiment taken in conjunction with the accompanying drawing comprising Figs. 1 to 3. In the drawings:

Fig. 1 shows a perspective view of the main structural member of the winding mechanism,

Fig. 2 shows a plan view of the winding mechanism and

Fig. 3 shows the details of one of the shafts forming part of the mechanism.

Referring first to Fig. 1, the structural member consists of a metal base plate which is suitably secured to the body of the model. Symmetrically arranged on the base plate are two spaced walls 11 and 12, the walls being preferably formed integrally with the base plate as by die casting. Each of the walls is provided with three slots 13, 14 and 15 on wall 11 and 16, 17, 18 on wall 12. Slots 13, 16 and 14, 17 and 15, 18 are opposite to one another in the two walls. Lateral extensions 19, 20 on the wall 12 in co-operation with pockets 21, 22 provide mountings for two blade springs 23, 24 of U formation, the purpose of which will be described subsequently. A housing 25, also formed integrally with the base plate adjacent to the wall 11 and receives a limiting member 26 preferably formed of a suitable flexible plastics material and having an upturned nose 27.

As shown in Fig. 2 the slots 14 and 17 in the two walls form bearings for a shaft 28 provided with an operating handle 29 to enable the shaft to be rotated. The shaft

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28 is axially movable to enable a gear wheel 30 integral therewith to engage with one or other of the gear wheels 31 and 32 mounted on shafts 33 and 34 respectively. The shafts 33 and 34 are mounted within the slots 13, 16 and 15, 18 respectively. The shaft 28 is provided with two spaced circumferential depressions 35, 36, the distance between which is equal to the amount of axial movement of shaft 28 which is necessary to disengage gear wheel 30 from one of the gear wheels 31 and 32 and to engage it with the other. The axial movement of the shaft 28 is limited by the engagement of nose 27 of the limiting member 26 with one or other of the depressions 35, 36.

The construction of the shafts 33 and 34 is shown in detail in Fig. 3 from which it will be seen that shaft has a circular portion 37 and two square portions 38, 39 separated by a short circular portion 40. The length of one side of the square portions is equal to the diameter of the circular portions. The gear wheel 41 for mounting on the shaft is fabricated separately and is provided with a square bore to enable it to be slid on to the square portion of the shaft. The depth of the gear wheel is equal to the length of the square portion 39 of the shaft so that when mounted with the gear wheel engaging with the flange 42, the gear wheel does not overlap the circular portion 40. This form of fabrication is employed so that by reversing the mounting of the gear wheel, either of the forms shown in Fig. 2 are obtainable.

A hole 43 is provided in the shaft to enable a cord to be secured to the circular portion 37 and two flanges 44, 45 are also provided on the shaft to act as a guide for the cord if required.

Of the two cords, one would be used for raising and lowering the jib whereas the other would be used for raising and lowering the hook.

As shown in Fig. 2, the square portion 33 of the shafts is engaged by the spring 23 or 24 to retain the shafts in the position to which they have been rotated. The shafts are maintained in position in the slots by a cover which is indicated generally by the place 46 in Fig. 1.

It will be understood from the preceding description that by rotation of the operating handle 29, the shaft 28 will rotate the shaft 33 or 34 according to the axial position of the shaft 28, the shaft being moved from one position to the other as defined by the two depressions 35 and 36 by a slight pulling or pushing action of the shaft, the nose 27 being moved downwardly during axial movement of the shaft.

WHAT WE CLAIM IS:—

1. A winding mechanism for a toy model comprising a base plate having two parallel upstanding wall portions provided with pairs of aligned slots, one pair of aligned slots forming bearings for a first shaft provided with an operating handle and axially movable between two predetermined positions, a second pair of aligned slots forming bearings for a second shaft provided with a gear wheel and a third pair of aligned slots forming the bearings for a third shaft provided with a gear wheel, the two gear wheels being axially displaced with respect to each other by a distance equal to that between said two predetermined positions whereby a gear wheel on said first shaft is capable of engaging with one or other of the gear wheels on said second and third shafts in the first or second of the two predetermined positions and on rotation of driving the appropriate one of the second and third shafts.

2. A winding mechanism as claimed in claim 1, wherein a portion of each of said second and third shafts located between the bearing slots is of square cross section for the reception of the respective gear wheel which has a correspondingly shaped bore, the gear wheel being provided on one side with a boss having a length such that the two possible positions of the gear wheel on the square portion of the shaft are separated by a distance substantially equal to the distance between said two predetermined positions.

3. A winding mechanism as claimed in claim 2, wherein a portion of each of said second and third shafts extending beyond a wall portion is also of square cross-section and is engaged by a blade spring.

4. A winding mechanism as claimed in claim 1, wherein the base and plate and the wall portions are of metal and are integrally formed by a die-casting operation.

5. A winding mechanism for a toy model substantially as described herein with reference to the accompanying drawing.

POLLAK, MERCER & TENCH,
Chartered Patent Agents,
Audrey House, Ely Place,
London, E.C.1.
Agents for the Applicants.

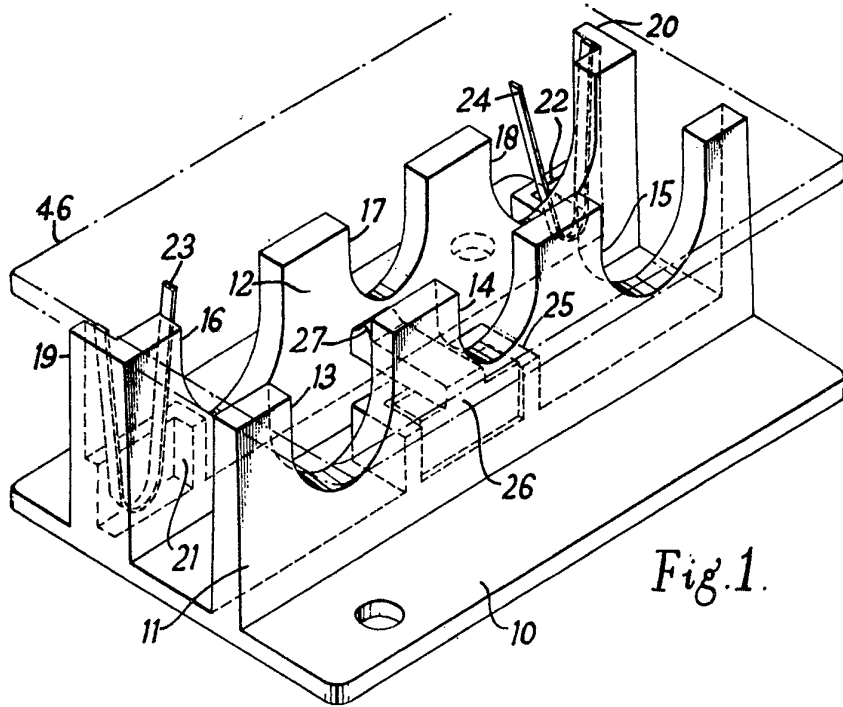


Fig. 1.

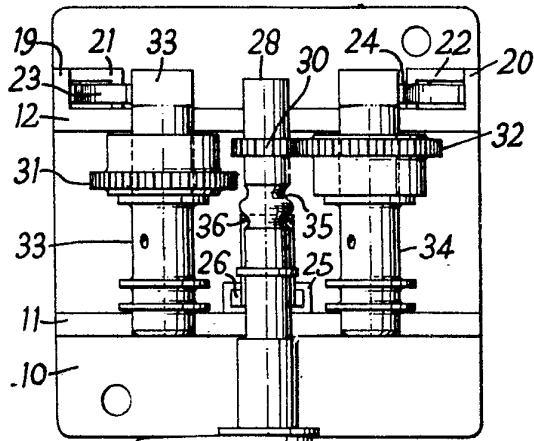


Fig. 2.

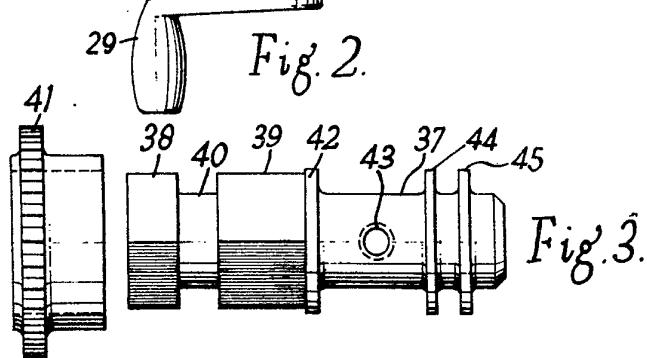


Fig. 3.