PATENT SPECIFICATION

489,898

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COMPLETE SPECIFICATION

Mechanical Toy

I ERNST VOELK, of No. 28, Badstrasse, Fürth, Bavaria, Germany, of German Nationality, do hereby declare the nature of this invention, and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to a mechanical toy in which, through the medium of a spring motor, a pair of reciprocating racks, and rack reversing means, toy figures, for instance, figures imitating soldiers, are moved to and fro, and turned through an angle of 180 dgs. at the ends of their movements.

Toys of this kind as designed heretofore are very complicated and expensive. and it is an object of the invention to provide a more simple and less expensive toy.

To this end, each rack is equipped with an arm at its outer end, each arm has a pair of spaced apart lugs at its free end for the reception of a figure-supporting shaft between them which shaft is guided in a slot of a track, the movement of the shafts in the slots being arrested in both directions by the ends of the slots, a rack section is arranged between each pair of lugs, and the corresponding figure-supporting shaft is equipped with a pinion meshing with the rack section, for turning the corresponding shaft through 180 dgs. at the ends of the slot it slides in.

An embodiment of the invention is illustrated in the accompanying drawing, in which

Fig. 1 is a section through the toy on line I-I of Fig. 2 the front plate of the mechanism being omitted for better showing the mechanism.

Fig. 2 is a plan view of the toy showing the position of the lugs on the rack arms when each figure is at the end of its slot, and the rack sections are about to turn the corresponding pinions.

Fig. 3 is a side elevation, and

Fig. 4 a section through the driving mechanism.

The spring motor 2 equipped with the reversing device is fixed on the base plate 1. The reversing device is equipped with a cam disc 3 meshing with a toothed disc 5 mounted on a shaft 4. On this toothed disc 5 a wheel 6 having a semi-crown of teeth is fixed which is brought into engagement alternately with two pinions 8 and 9 keyed on a vertical shaft 7 in order to effect alternating rotation of the shaft 7. A spur gear 10 keyed on the shaft 7 is arranged between and meshes with, and serves to shift in opposite directions, two racks 13 and 14, which have slots 11 and 12 for the shaft 7. The outer ends of racks 13 and 14 are bent at an angle to form arms 15, 16 with pairs of speed apart lugs 17 and 18 at their free ends forming forks 19 and 20, respectively. Small rack sections 21 and 22 engaging each with a pinion 23, 24 respectively are fitted in the fork shaped ends 19 and 20 respectively. The pinions 23 and 24 are keyed on shafts 25 and 26, respectively, which are journalled each in a bracket 28 and support each a figure 27. These brackets 28 are slidable in a channelled bar 29 forming a track which has two guide slots 30 and 31 in its web in which the shafts 25 and 26 of the toy figures move until arrested by the ends of their slots.

The operation of the toy is as follows: After the spring motor has been wound, its train of gears rotates the cam disc 3 which in turn intermittently rotates the toothed disc 5, as the pitch of the teeth is too large for continuous rotation, and the wheel 6 with the semi-crown. The pinions 8 and 9 and the spur gear 10 are thus alternately rotated and alternately shift the two racks 13 and 14 in opposite directions.

That lug, which is trailing at the time, pushes the corresponding shaft 25 or 26 to the outer end of its slot 30 and 31, respectively, where the shaft is arrested. In this position, the leading lug has moved beyond the arrested shaft for about the length of the rack section 21 or 22. The racks 13 and 14 are now reversed, and the rack sections 21 and 22 turn the pinions 23 and 24 through an angle of 180 degs. so that the figures 27 turn about. When they have been so turned, the leading lugs—which are now in the trailing position — engage the corresponding shafts 25 and 26 and push them as far as the inner end of the corresponding slots 30 and 31, where the cycle is repeated.

The intermittent co-operation of cam

[*Price* 1/-]

disc 3 and toothed disc 5 imparts to the figures 27 a marching stepwise movement until they turn about at the ends of their slots 30 and 31.

Any desired structure can be combined with the toy, for instance, an imitation of barracks which soldiers enter and leave.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A mechanical toy for imitating the marching and about turn movements of toy figures, comprising a spring motor, a pair of racks operatively connected to the motor for reciprocating and turning the figures, and rack-reversing means, characterised in that each rack is equipped with an arm at its outer end, that each arm has has a pair of spaced apart lugs at its free end for the reception of a figure - supporting shaft between them which shaft is guided in a slot of a track, the movement of the shafts in the slots being arrested in both directions by the ends of the slots, that a rack section is arranged between each pair of lugs, and that the corresponding figure-supporting shaft is equipped with a pinion meshing with the rack section, for turning the corresponding shaft through 180 degs. at the ends of the slot it slides in.

2. Toy as claimed in claim 1, characterised in that the reversing means comprises a wheel (6) having a semi-crown of teeth, pinions (8, 9) alternatingly acted upon by said teeth, and a spur gear (10) arranged between, and meshing with, the reciprocating racks (13, 14).

3. A toy as claimed in claim 1, characterised in that the shafts (25, 26) of the pinions (23,24) are rotatably mounted in brackets (28) which are shiftable within a bar (29) having slots (30, 31) forming the track.

Dated this 30th day of August, 1937.

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Fig. 1

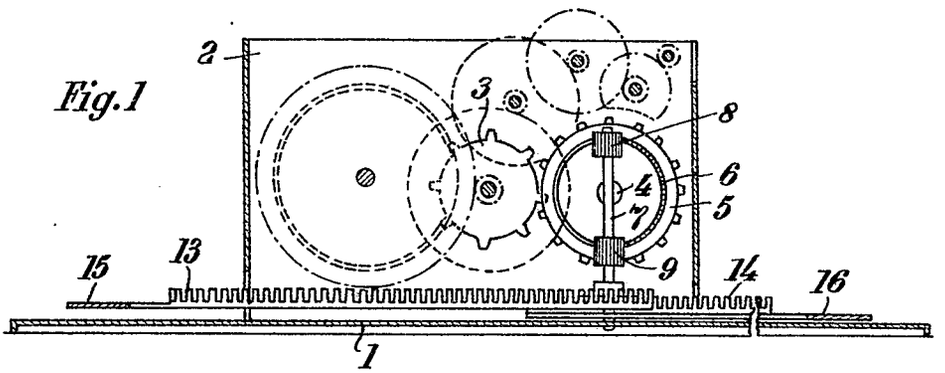


Fig. 2

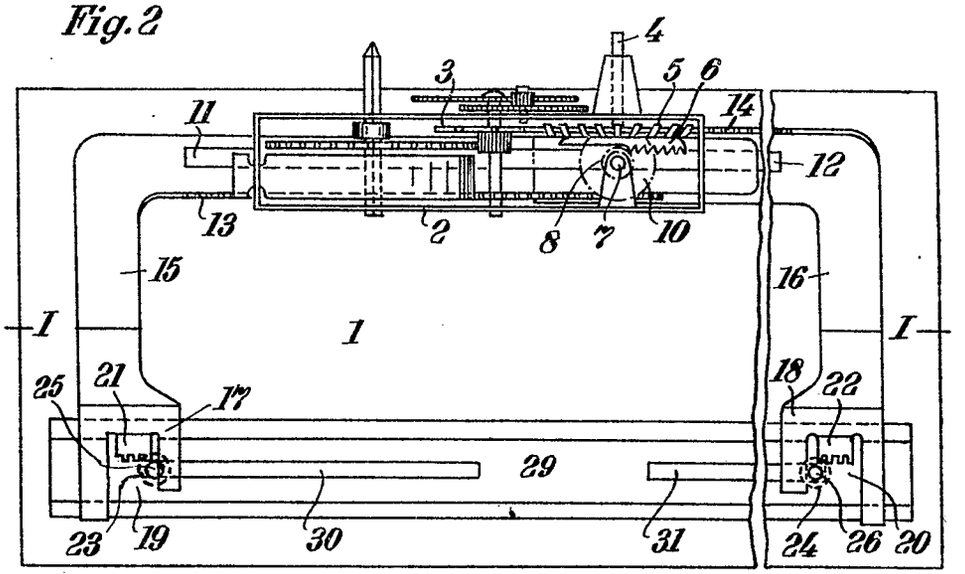


Fig. 3

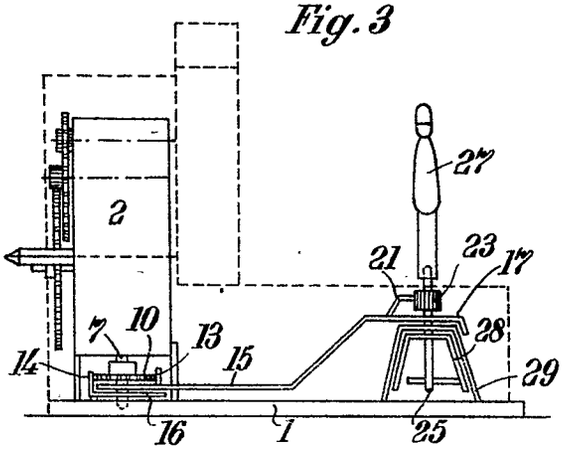
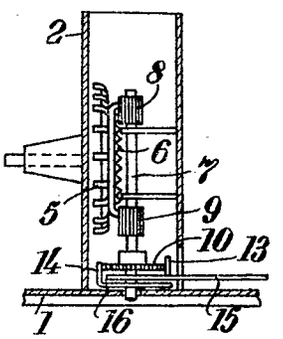


Fig. 4



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