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MECHANICAL TOY

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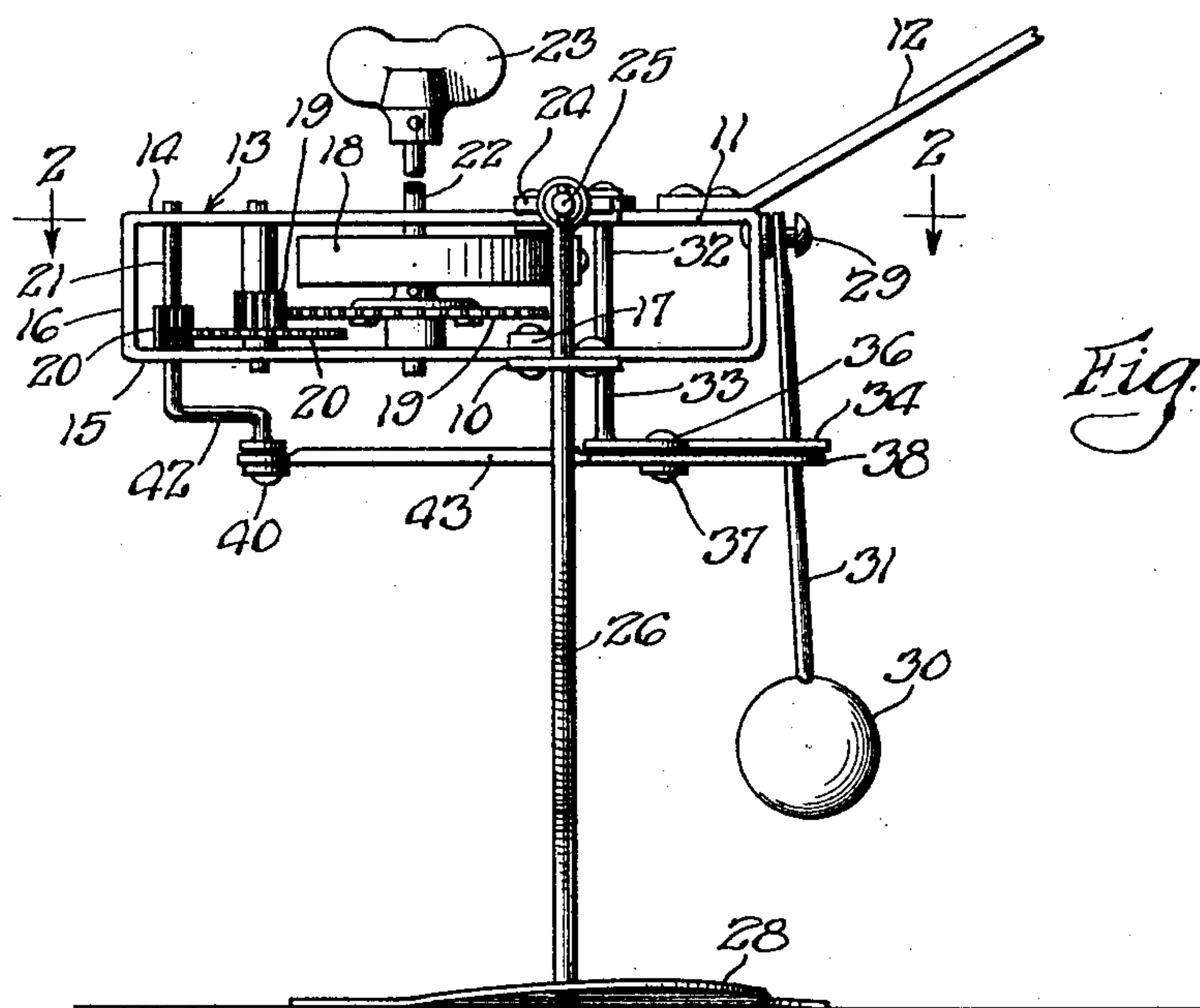


Fig. 1

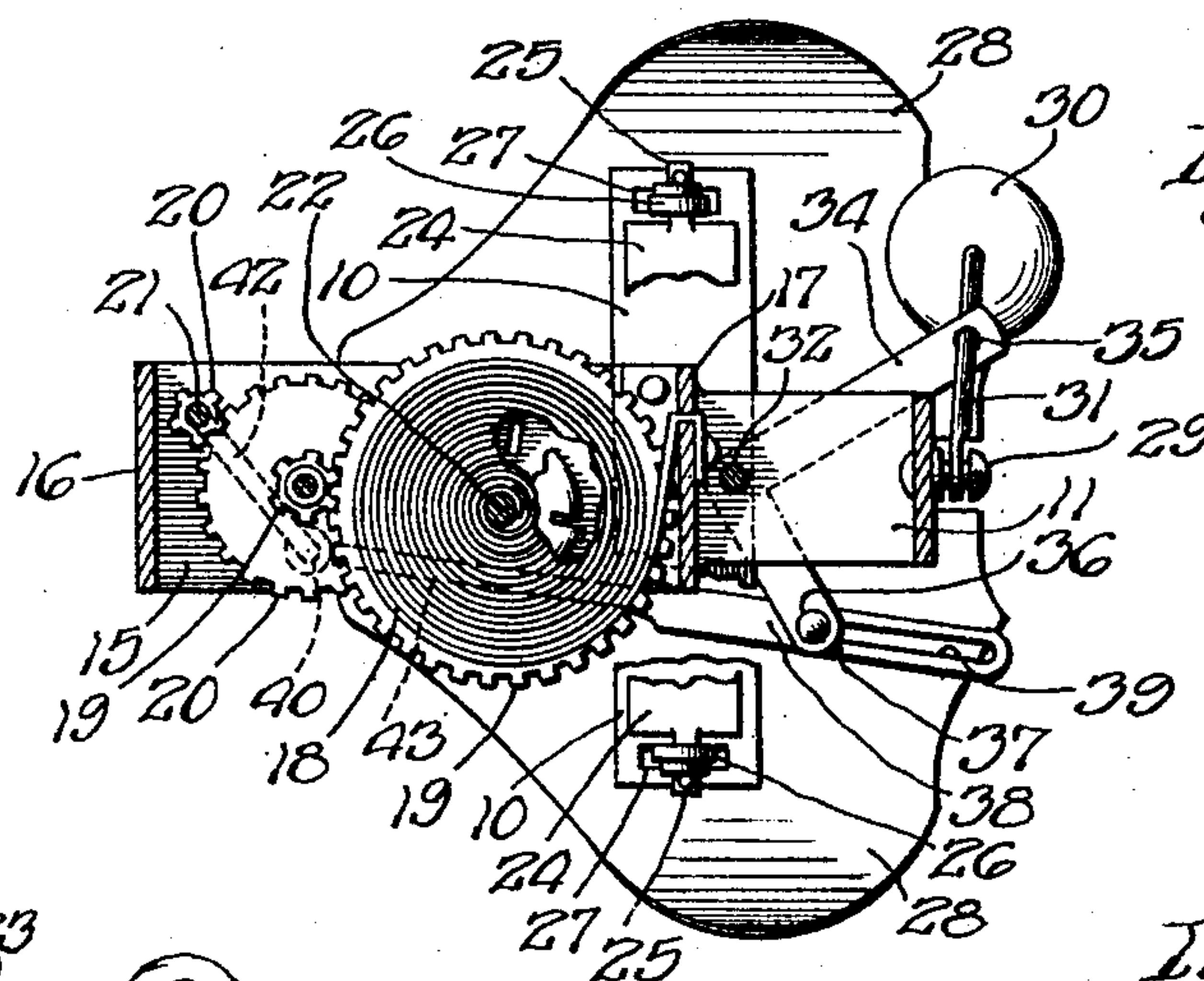


Fig. 2

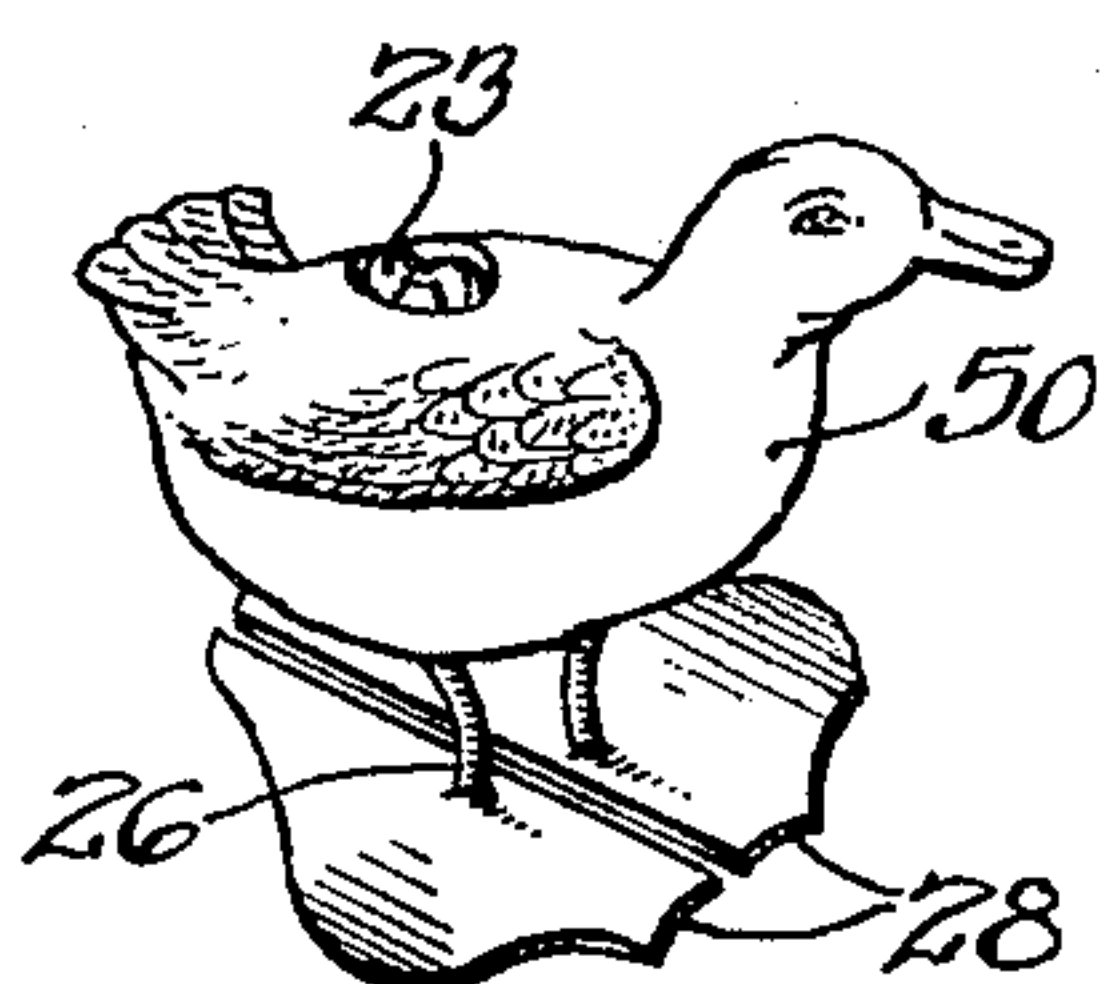


Fig. 3

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MECHANICAL TOY

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The present invention relates primarily to a mechanical toy and has to do particularly with an animated device and a means for causing such device to move about.

Any mechanical toy attracts greater attention or is more readily sold when it is animated. There have been many efforts to produce mechanical dolls, animals, insects, and other objects which have a motion simulating walking whereby the device is made to move about in a more or less regular manner, such movement, of course, being controlled to some extent by the character of the material or surface over which it travels.

Included in the objects of the present invention, among others, are the following:—

A new and novel means for causing propulsion of a mechanical toy.

New and novel means for imparting to the supporting legs of a toy physical movement without direct connection to a prime mover attached to the toy.

A unique application of clockwork to a toy whereby the feet thereof are moved without direct connection with such clockwork.

A unique arrangement of a motor and the feet of a mechanical toy.

A novel combination of a pendulum and feet in a mechanical toy whereby there is had movement of the toy because of a pendulum operating to indirectly impart alternate movements to the extremities projecting from the toy.

These, and such other objects as may hereinafter appear, are obtained by the novel construction, unique arrangement, and improved combination of the several elements which constitute the single embodiment of the invention illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of the mechanical parts of the toy with all covering material removed.

Figure 2 is a horizontal section through such parts on the line 2—2 of Figure 1; and

Figure 3 is a reduced perspective of one form which the finished toy containing such mechanism may take.

Like reference characters are used to designate similar parts in the drawing and in the

description of the invention hereinafter given.

The device comprises a transverse frame member 10 which extends laterally and provides, as will later be explained, a guide member for the legs of the device. Secured to said transverse frame 10, in any suitable manner, is a front frame member 11 which is U-shaped, and which may provide a support for a head rest holding member 12 which may project forwardly of the mechanism as shown. This part may be omitted as is hereinafter suggested.

Intermediate and secured to the two sides of the U-shaped member 11 is disposed a clock mechanism which is designated, as a unit, 13 and which comprises top and bottom plates 14 and 15, end members 16 and 17, a main-spring 18, a train of gears 19, and a second train of gears 20. By these trains of gears the force of the spring 18, when under tension, is transferred to a shaft 21 which is journaled in the plates 14 and 15. For tensioning the spring 18, which is upon the shaft 22, there is a key 23, which may be integral with said shaft or detachable, as desired.

Across the top plate 14 or across the top leg of the U-shaped member 11, is a second transverse frame member 24, comprising a bent wire member or metal strip which projects to approximately the same points as the frame member 10. Adjacent each end are shafts, these being designated 25. Disposed for free movement upon the frame member 24 are two leg members 26, one for each side of the device. The leg members 26 are adapted to project through slots provided therefor in the member 10, these slots being indicated by the ordinal 27.

At the lower end of the members 26 are feet 28 which may be of any suitable size, but no larger than is necessary to give to the device stability during the walking operation.

The slots 27 should not be too long to avoid giving to the object an ungainly stride or permitting of such a stride as will produce tilting. As a matter of fact, these slots should be relatively short because of the greater proportion of the leg 26 projecting below the frame member 10.

The legs 26 swing freely upon the axle 24 and freely through the slot 27, there being no undue friction between these parts. The reason for this free movement will be immediately manifest.

At the front of the device and disposed upon a lug 29 which provides a pivot therefor is a pendulum. The weight 30 thereof is at the end of a rod 31 which swings freely about the pivoting lug 29. Said lug 29 may assume any suitable form or shape and should be securely fastened at the front end of the frame 11. This lug is normally disposed adjacent the top of the front section of the U-shaped frame member 11 and should be in the geometrical vertical center thereof.

It is desired that the pendulum 30 swing to the right and left of the device in an arcuate path, stopping at the end of each swing with a slight jerk in order to lift the opposite side of the machine with its foot from its supporting surface and force the device slightly forward at the lifted side to permit of the leg 26 on that side advancing while that portion of the device is elevated.

To obtain oscillatory movement of the pendulum 30, there is secured to the frame member 11, a bar 32, the bottom end which provides an axle or support for a hub 33. Mounted upon the hub 33 in a horizontal plane is an L-shaped lever 34 having at its outer end an aperture 35 through which the pendulum stem 31 passes freely, being held therein without undue friction.

At its other end, the lever 34 is provided with a lug having a head, the lug being designated 36 and the head 37. The purpose of the head 37 is to prevent accidental displacement from lever 34 of a link 38 having an enlarged end provided with an elongated slot 39, the lug 36 projecting through said slot 39.

The enlarged end having the slot 39 is adapted to ride freely upon the lug 36.

The opposite end of link 38 is pivoted at 40 to a lever 42 which may comprise an integral part of the shaft 21 journaled in the plates 14 and 15. The connection 43 between the lever 42 and the link 38 is such that there is no undue friction of these parts.

Each rotation of the shaft 21 produces a complete rotation of the lever 42, reciprocating the link 38. The linear motion of the link 37 over one part of its travel is adapted to actuate the lever 34 in one direction and in the reverse direction to move the lever 34 back to its original extreme position when moving over the other part of its travel.

The slot 39 in link 38 compensates for the differences in movement between the lever 42 and the lever 34. The slot 39 is of such length that movement of lever 34 is had only at the time the link 38 has approached the ends of its opposite movements, this giving to the member 38 a sharp movement followed by a

slight rest of the pendulum when either of its extreme positions is attained.

This intermittent actuation of lever 34 allows the leg 26 on the side opposite from that of the pendulum to advance because of the shifting of the weight to the side of the device upon which the pendulum is positioned causing a slight tilting of the device to that side, such movement being accentuated by the jerking motion resulting from the vibration of the pendulum itself.

Thus, when the clock mechanism 14 is wound, the spring motor 18 sets into motion a pendulum 30. When the pendulum 30 swings to the left, it throws much of the weight of the device to that side, tilting the device slightly and exerting a slight turning force to the right which effect is noticeable except under careful scrutiny.

As the pendulum 30 rests at the limit of its movement to the left with the device momentarily tilted the leg 26 on the right side advances to its frontmost position in the arcuate path 27.

At about the instant said leg attains such position, the pendulum 30 begins to swing to the right. When the pendulum 30 reaches the right hand extremity of its movement, the weight of the device is shifted to the right, with the same jerking motion referred to before. This permits of the left foot advancing to its foremost position. Thus, the feet 26 are made to alternately advance. This advance is accentuated by forcing the pendulum to swing in an arcuate path. The device continues to advance on alternate feet until the spring motor 18 has run down.

In the present instance, Figure 3 shows the device in a metal or other casing 50 having the form of a duck. Any other conventional design may be adapted. Grotesque figures may be substituted for conventional designs and one of the novel figures of this type is an animal or bird with its head hanging downwardly, the head moving with the pendulum 30. This gives to a device so arranged a most unusual appearance as the pendulum swings the head to the side as the toy advances.

I claim:

1. A mechanical toy comprising a body, a prime mover in said body, means actuated by said prime mover for tilting said body from side to side, and a supporting member free from any operative connection with said prime mover and pivotally mounted upon each side of said body and adapted to advance longitudinally of said body coincidentally with each tilting movement of such side.

2. A mechanical toy comprising a body, a motor in said body, means actuated by said motor for tilting the toy, and a leg pivoted to said toy to move freely longitudinally and forwardly of said body coincidentally with such tilting movement, said leg being free

of any operative connection with said motor.

3. A mechanical toy comprising a body, a spring motor in said body, means actuated by said spring motor for tilting the toy, and
5 a leg mounted for free movement longitudinally of said body and adapted to move coincidentally with the tilting of said toy, said leg being free of any operative connection with said motor.

10 4. A mechanical toy comprising a body, and means in said body for tilting the toy from side to side and legs freely pivoted to said toy and adapted to advance alternately and normally of the direction of the tilting
15 movement, said legs being free of any operative connection with said tilting means.

5. A mechanical toy comprising a body, means in said body for rocking the toy transversely, and legs freely pivoted at opposite
20 sides of said toy and adapted to advance normally of the direction of the rocking movement and one at a time coincidentally with the rocking of the toy and as an incident to the inertia of such rocking motion, said
25 legs being free of any operative connection with said rocking means.

6. A mechanical toy comprising a spring motor, a pendulum actuated by said motor, and legs pivoted at the sides of said toy and
30 free to advance coincidental with the rocking of said toy due to the movement of said pendulum, said legs being free of any operative connection with said motor, the advancing movement of said toy under the influence of said pendulum being in the nature
35 of a twisting tilt.

7. A mechanical toy comprising a body, a spring motor disposed therein, a pendulum moving transversely of said body and actuated by said motor, and legs pivoted at the
40 sides of said body free to advance coincidentally with the torsional rocking movement of said body due to the movement of said pendulum, said legs being free of any operative connection with said motor.

8. A mechanical toy comprising a body, a spring motor disposed therein, a pendulum moving transversely of said body and actuated by said motor, and legs pivoted at
50 the sides of said body back of said pendulum and free to advance coincidentally with the rocking of said body under the movement of said pendulum whereby said body is adapted to be slightly turned as an incident to the
55 rocking thereof, said legs being free of any operative connection with said motor.

9. A mechanical toy comprising a frame, a spring motor mounted therein, a pendulum swinging transversely of said frame and actuated by said motor, and legs pivoted at
60 the sides of said frame at the rear of said pendulum and free to advance one at a time coincidentally with the rocking of said frame under the movement of said pendulum whereby
65 by each leg alternately becomes a pivot for

the frame and the opposite leg is lifted from the toy supporting surface, said legs being free of any operative connection with said motor.

10. A mechanical toy comprising a frame, 70 a spring motor disposed therein, a pendulum moving in an arcuate path transversing said frame and actuated by said motor, and legs pivoted for free movement longitudinally of
75 of said body at the sides of said frame whereby to advance coincidentally with the rocking of said frame under the movement of said pendulum, said legs being free of any operative connection with said motor.

11. A mechanical toy comprising a body, a 80 spring motor disposed therein, a pendulum moving in an arcuate path transversely of said toy and actuated by said motor, there being connecting means between said motor and said pendulum to give to the latter a
85 jerking motion, and legs pivoted at each side of said toy and back of said pendulum and mounted for free movement to advance longitudinally of said body coincidentally with the rocking of said toy from one leg to the
90 other under the jerking transverse motion of said pendulum, said legs being free of any operative connection with said motor.

12. In a walking figure, the combination 95 of a body member and motor driven means upon said body member for imparting a to and fro lateral swaying motion thereto, with gravitating leg members transversely pivoted upon and supporting said body member, said leg members being adapted to alternately advance by gravity when lifted to simulate walking.

13. A mechanical toy comprising a body, a 105 spring motor in said body, means actuated by said motor for rocking the toy, and legs pivoted to opposite sides of said body and free to advance one at a time transversely of the direction of the rocking movement of said toy, said legs being free of any operative connection with said motor. 110

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