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MACHINE FOR USE AS MECHANICAL TOYS AND OTHER PURPOSES

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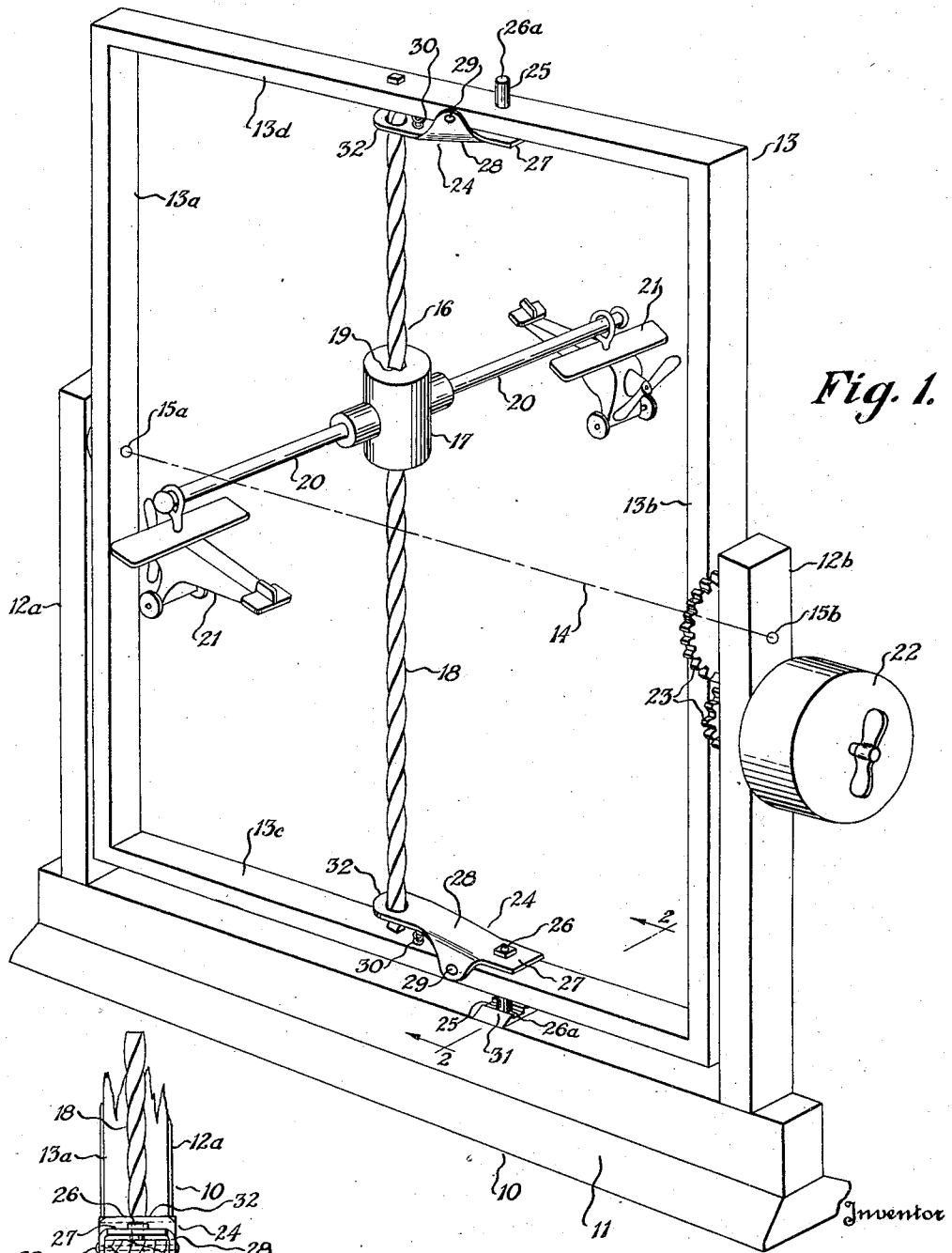


Fig. 1.

Fig. 2.

Inventor

M. J. Reider

By Hair & Frease

Attorney

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MAURICE J. REIDER, OF CANTON, OHIO

MACHINE FOR USE AS MECHANICAL TOYS AND OTHER PURPOSES

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My invention relates to machines adapted for use in the smaller sizes as mechanical toys, and which are also adapted for use in larger sizes as amusement devices for carrying passengers, and which may also be used for advertising purposes, or for any other purposes industrial or otherwise such as for actuating clockwork, wherein the novel operation of the machine may be advantageous.

More particularly, the invention relates to machines for the above mentioned purposes, and which include a gravity actuated mechanism including a moving member, the movement of which is preferably both translatory and rotary. Such a machine may include a normally upright screw rod, the lead of the thread or threads of which is relatively long, and on which a similarly threaded nut is mounted, and one or more arms may extend from the nut radially with respect to the axis of the screw, and each arm may have preferably slidably mounted thereon a member, such as a model of a toy airplane in the smaller sizes of the machine, or a passenger carrying airplane model in the larger sizes, or the like.

When the nut is positioned at an upper end of the screw rod, gravity causes a downward translatory movement of the nut, and the threads of the screw rod cooperating with the threads of the nut rotate the nut and the arms and members carried thereby, during the downward translatory movement thereof.

When the nut reaches the lower end of the screw rod it is necessary to reverse the position of the screw rod so that the then lower end of the screw rod becomes the upper end thereof, and in the usual machine of this character a base is secured at each end of the screw rod, and the position of the screw rod is successively changed manually so that the rod is successively supported in the upright position on its opposite bases, whereby gravity may successively impart the desired movement to the nut.

This manual repositioning of the screw rod of the usual machine of the general type of the present improvement, soon becomes irksome, and it is desirable to provide some means for mechanically reversing the position of the gravity actuated mechanism such as the screw rod and nut, whereby automatic operation of the mechanism may continue for a considerable period of time.

The objects of the present improvements accordingly, include the provision of a machine including a gravity actuated mechanism, and novel automatic means for successively reversing the position of the gravity actuated mechanism, so that the gravity actuated mechanism may be operated for prolonged periods of time.

The foregoing and other objects are attained by the present invention, as is hereinafter claimed, and which may be stated in general terms as including a base, supporting means extending upwardly from the base, a frame pivotally mounted on the supporting means for rotating about a horizontally extending axis, a gravity actuated mechanism operatively mounted on the frame, motor means applying a force tending to rotate the frame about the horizontally extending axis, a releasable latch means mounted at each end of the frame, the frame ends being on opposite sides of the axis of rotation of the frame, catch means on the base successively engaging the opposite latch means, and releasing means for each latch means, each releasing means being located for being operated to release its latch means by movement against the releasing means of a moving member of the gravity actuated mechanism.

A preferred embodiment of the improvements is illustrated in the accompanying drawings forming part hereof in which

Figure 1 is a perspective view of a machine embodying the present improvements, the particular machine illustrated being adapted for use as a mechanical toy; and

Fig. 2, a fragmentary sectional view thereof as in the direction of the arrows 2—2, Fig. 1.

Similar numerals refer to similar parts throughout the several views.

The improved machine indicated generally at 10 includes a base 11 and supporting members 12^a and 12^b extending upwardly from the base 11. A frame indicated generally at 13

includes side members 13^a and 13^b and end members 13^c and 13^d, and the frame is pivotally mounted on the supporting members for rotation about a laterally extending preferably horizontal axis 14, as by means of pivot pins 15^a and 15^b, the pin 15^a extending through registered apertures in the side member 13^a and supporting member 12^a, and the pin 15^b extending through registered apertures in the side member 13^b and the supporting member 12^b.

It is obvious that the frame may be mounted for rotation about the laterally extending axis 14 if only one supporting member is provided, by making the supporting member of sufficient transverse dimensions and making the pivot pin of sufficient length.

A gravity actuated mechanism indicated generally at 16 is operatively mounted on the frame and includes a mass member 17 which is moved by action of gravity between the ends 13^c and 13^d of the frame towards one end thereof when the other end is positioned above the axis of rotation 14. The mass member 17 makes guiding engagement with a guide member 18.

The guide member 18 as illustrated is a rod, which extends through an aperture 19 in the mass member 17, and the ends of the rod are secured in the end members 13^c and 13^d of the frame.

Accordingly, depending on the frictional or other engagement between the mass member and the rod, the mass member 17 when positioned on the rod adjacent a then upper end of the frame, and above the axis 14, will be given by the action of gravity a translatory movement towards the then lower end thereof.

The speed of this translatory movement will depend upon the frictional or other engagement between the mass member and the guide member. For the purposes of the present invention it is preferable to give the mass member a rotary movement as well as a translatory movement by the action of gravity, and accordingly the guide member 18 is preferably a multiple threaded screw, the threads of which have a relatively long lead, as may be attained by twisting a square rod about its longitudinal axis.

The aperture 19 in the mass member 17 has threads formed therein to slidably fit on the multiple threads of the screw guide member 18 whereby the mass member 17 is a nut member, and the movement of the same on the screw guide member 18 is rotary as well as translatory.

A plurality of arms 20 extend radially from the nut mass member 17, and a terminal member 21 is preferably slidably mounted on each arm so that it will be moved to the outer end thereof by centrifugal force during rotation of the mass member 17.

As illustrated, the terminal members 21 are toy model airplanes.

In a larger size of the machine such as for example a machine intended for use as an amusement device, the terminal members may include the fuselage of an aircraft or the like in which passengers may ride.

As aforesaid, the nut mass member 17 when positioned above the axis of rotation 14 of the frame, and nearest the then upper end member of the frame, will be given by the force of gravity and screw action a translatory and rotary movement until the mass member 17 moves on the guide member 18 to the then lower end member of the frame.

Means actuated by the gravity mechanism 16 are provided for intermittently rotating the frame a half revolution for successively positioning the end members of the frame and consequently the ends of the guide member 18 above the axis of rotation 14 of the frame.

The intermittent rotating means may include a motor 22 which as illustrated is a spring motor, and which is mounted on the frame 12^b and is operatively connected with the frame as by gearing 23, whereby the motor 22 applies a force to the frame tending to rotate the same about the axis 14.

A latch means each indicated generally at 24, is mounted on and associated with each of the frame end members 13^c and 13^d, respectively.

Each latch means 24 includes a plunger 25 which is mounted for reciprocation in an aperture in the associated frame end member in the direction of the longitudinal axis of the screw guide member 18.

One end 26 of each plunger 25 extends from the associated frame end member towards the axis 14, and each plunger end 26 is operatively connected with one end 27 of a latch control lever 28.

Each latch control lever 28 is pivotally mounted on the associated frame end member, as by means of a pivot pin 29 extending perpendicular to the plane of the guide member 18 and the plunger 25. Each latch means also includes a spring 30, which applies a force to the latch control lever 28 yieldingly urging its plunger 25 away from the axis 14, whereby the outer end 26^a of each latch plunger on the outside of the associated frame end member, may make spring latch engagement with a catch member 31 mounted on the base 11, when either end member of the frame is rotated to the position illustrated in Fig. 1.

A means actuated by the gravity mechanism for successively and automatically releasing each latch means 24 from engagement with the catch means 31, is provided, and may include a release arm 32 extending from each latch control lever 28 on the side of the pivot pin 29 opposite to the side at which the plunger 25 is located, and each release arm

32 extends into the path of translatory movement of the mass member 17, whereby the mass member 17 moves downwardly successively against a then lower release arm 32, and moves the control lever 28 to disengage the plunger 25 from the catch 31, whereupon the motor 22 rotates the frame a half revolution thereby elevating the mass member 17 above the axis 14, and the latch means at the other end of the frame is rotated to assume the lowermost position, and is engaged by the catch means until released after the mass member 17 has moved into engagement with the release arm thereof.

I claim:

1. A machine including a base, supporting means extending upwardly from the base, a frame pivotally mounted on the supporting means for rotating about a laterally extending axis, a gravity actuated mechanism operatively mounted on the frame, the frame including end members on opposite sides of the axis of rotation of the frame, and the gravity actuated mechanism including a mass member mounted in the frame for successive movement by action of gravity between the ends of the frame towards one end thereof when the other end is positioned above the axis of rotation of the frame, means applying a force tending to rotate the frame about its axis of rotation, a releasable latch means mounted on each end member of the frame, catch means on the base successively engaging the latch means, and releasing means for each latch means, each releasing means being located for actuation to release its latch means by a member of the gravity actuated mechanism during downward movement of the mass member.

2. A machine including a base, supporting means extending upwardly from the base, a frame pivotally mounted on the supporting means for rotating about a laterally extending axis, a gravity actuated mechanism operatively mounted on the frame, the frame including end members on opposite sides of the axis of rotation of the frame, and the gravity actuated mechanism including a mass member mounted in the frame for successive movement by action of gravity between the ends of the frame towards one end thereof when the other end is positioned above the axis of rotation of the frame, and means intermittently rotating the frame about its axis of rotation for successively positioning the ends of the frame above its axis of rotation.

3. A machine including a base, supporting means extending upwardly from the base, a frame pivotally mounted on the supporting means for rotating about a laterally extending axis, a gravity actuated mechanism operatively mounted on the frame, the frame including end members on opposite sides of the axis of rotation of the frame, and the gravity actuated mechanism including a mass member mounted in the frame for successive movement by action of gravity between the ends of the frame towards one end thereof when the other end is positioned above the axis of rotation of the frame, and means actuated by the gravity mechanism for intermittently rotating the frame and successively positioning the ends of the frame above its axis of rotation.

In testimony that I claim the above, I have hereunto subscribed my name.

MAURICE J. REIDER.