Feb. 24, 1931. F. J. GORIUP 1,793,480

MECHANICAL TOY

Filed May 31, 1930 2 Sheets-Sheet 1

Fig. 1

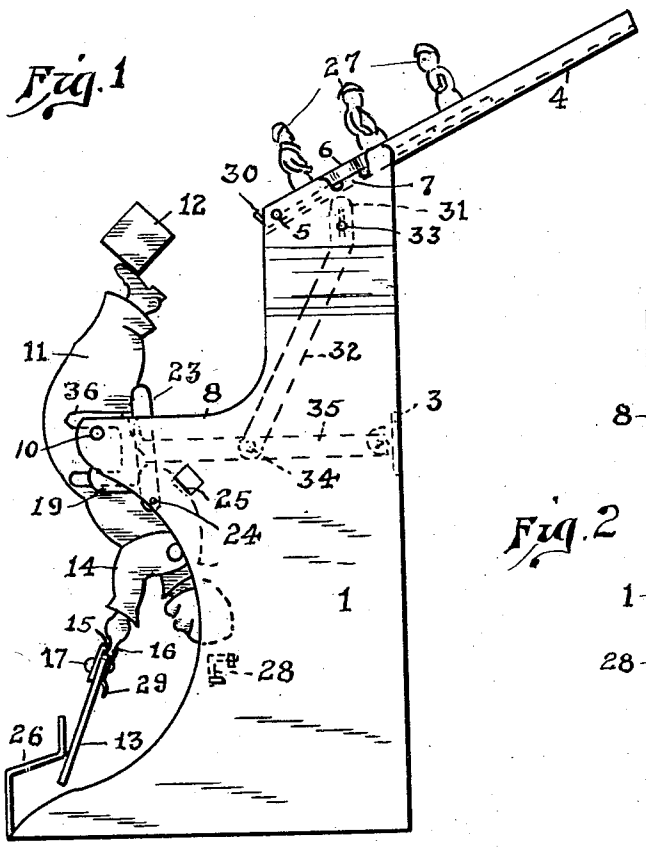


Fig. 2

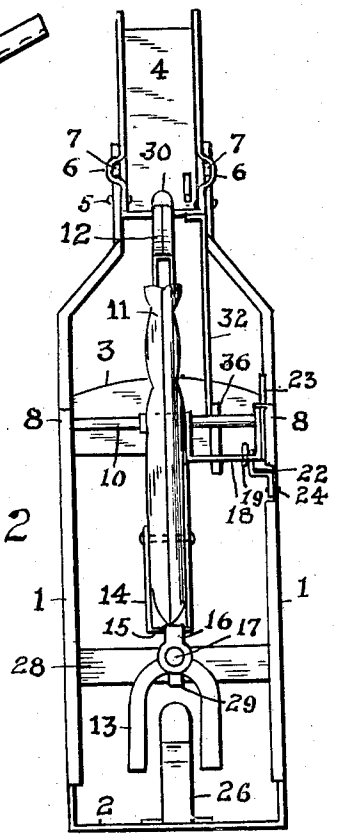


Fig. 3

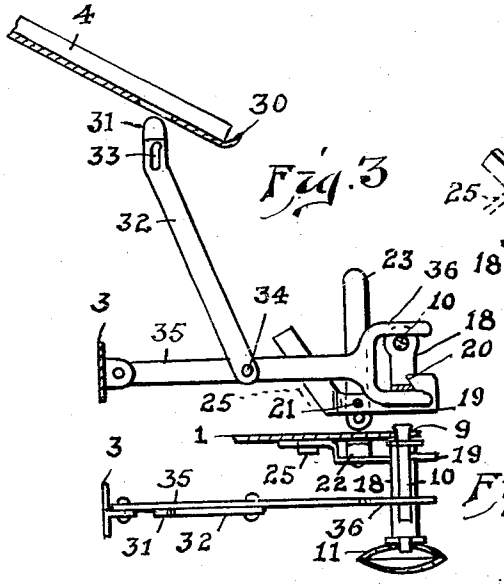


Fig. 4

Fig. 5

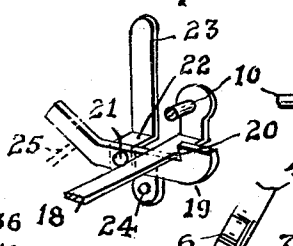
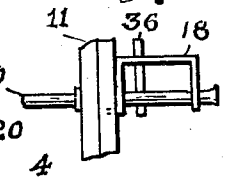


Fig. 6



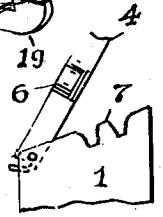


Fig. 7

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MECHANICAL TOY

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Fig. 8

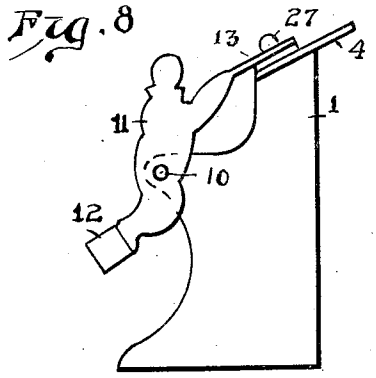


Fig. 11

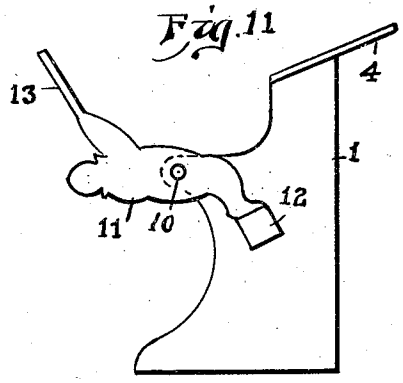


Fig. 9

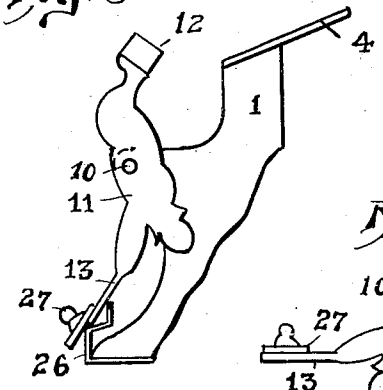


Fig. 10

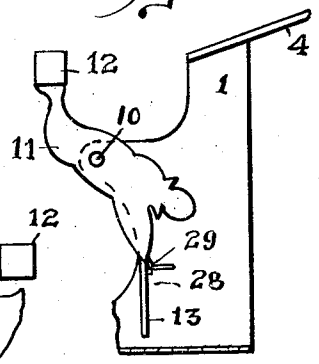


Fig. 12

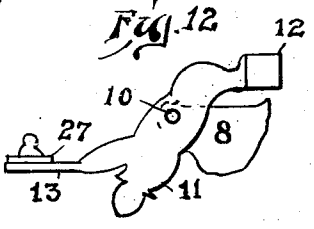


Fig. 13

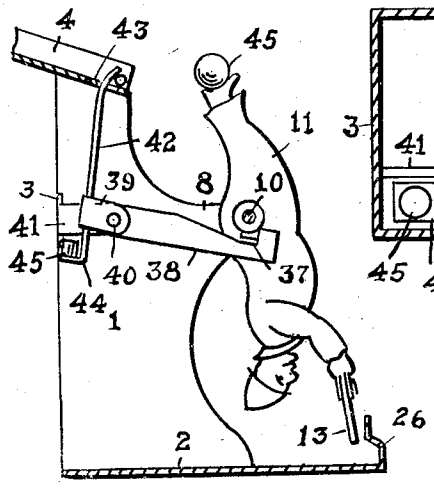
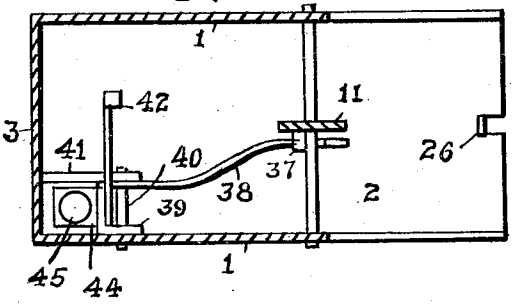


Fig. 14



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Patented Feb. 24, 1931

1,793,480

UNITED STATES PATENT OFFICE

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MECHANICAL TOY

Application filed May 31, 1930. Serial No. 458,463.

This application is a continuation in part of my earlier patent application Serial No. 409,267, filed in the United States Patent Office on November 23, 1929.

Generally speaking my new toy is characterized by the provision of a transfer element, preferably comprising the representation of a human figure, such as an acrobatic clown, which is mounted intermediate of its ends to oscillate on a horizontal axis and is arranged to pick up an object or objects from a take-off position and to transfer them to a deposit position.

Means are provided whereby the objects to be transferred are presented one at a time at the take-off position to the transfer element.

Means are also provided for disengaging the objects from the transfer element at the deposit position.

One end of the transfer element is overweighted and its other end is provided with means for picking up an object.

In the preferred embodiment of my invention the underweighted end of the transfer element is provided with a magnet and the objects which are to be transferred are made of magnetizable material.

Means are provided whereby the element may be locked with its overweighted end uppermost and the arrangement is such that when the element is released the underweighted end of the element is swung into the take-up position, picking up an object which is then, by the reverse swing of the element, transferred to and deposited at the deposit position.

Means are also provided whereby, when there are no objects presented in the take-off position the transfer element is automatically locked stationary with its overweighted end uppermost, but when an object is placed in the take-off position the element is unlocked.

Other novel features of construction and arrangement of parts will appear from the following description.

In the accompanying drawings wherein I have illustrated a practical embodiment of the principles of my invention, Fig. 1 is a side elevation of the toy with the transfer element locked in its inverted position, that is with its overweighted end uppermost.

Fig. 2 is a front elevation of the toy and the transfer element in the same position.

Fig. 3 is a detail partially in elevation and partially in vertical section illustrating the locking mechanism and its release, and also illustrating the means for presenting the objects singly in the take-off position.

Fig. 4 is another view of the same, being partially in plan and partially in horizontal section.

Fig. 5 is a detail in perspective showing the locking mechanism.

Fig. 6 is a detail in front elevation showing a portion of the mechanism for presenting the objects singly.

Fig. 7 is a detail in side elevation showing the mounting of the object-chute on the frames.

Fig. 8 is a diagrammatic view showing the transfer element swung into its take-up position.

Fig. 9 is a similar view showing the element at the deposit position as the object is being disengaged from the magnet.

Fig. 10 is a similar view showing the transfer element at the end of its swing after having deposited an object, the overweighted end of the element being uppermost.

Fig. 11 is a similar view showing the transfer element in the position of balance which it would assume if unlocked and with no object carried by the magnet.

Fig. 12 is a similar view showing the element in the position of balance which it would assume with one of the objects carried by the magnet.

Fig. 13 is a view similar to Fig. 1 with one side frame removed and showing a modification.

Fig. 14 is a horizontal section taken along the line 14—14 in Fig. 13.

Referring first to Figs. 1 to 12, inclusive, of the drawings, 1 represents a pair of parallel and vertical side frames or plates which are preferably of substantially the shape shown and which rise from a base 2. The plates are bent so that their upper portions

are closer together than their lower portions.

3 represents a cross brace connecting the frames at the rear and intermediate of their height. 4 represents a flat trough-shaped chute which is pivoted as by the rivets 5 at its front end between the upper portion of the frames 1 and which may be swung forwardly and downwardly out of the way when the toy is packed, and which, when the toy is to be used, is disposed in the forwardly and downwardly inclined position shown in the drawings, the side walls of the chute being bowed outwardly and slotted as at 6 to receive the tongues 7 cut in the tops of the frames 1, as best illustrated in Figs. 1, 2 and 6, to support the chute in operative position. Intermediate of their height the frames are provided with forwardly extending brackets 8 which are provided with horizontally alined bearing holes 9 in which are journaled the ends of a horizontal shaft 10.

11 represents the transfer element which is fixed intermediate of its ends on the shaft 10. One end of the element 11 is overweighted as by means of the weight 12. The other end of the element is provided with means for picking up objects to be transferred. Thus I have shown a horseshoe magnet 13 attached to the other end of the element. Mechanical means for picking up suitable objects may be substituted for the magnet, if desired.

In practice I have preferred to employ a transfer element comprising the representation of a human figure, such as an acrobatic clown, and the weight 12 is attached to the feet of the clown while the magnet 13 is attached to the ends of the outstretched arms 14. The arms 14 are fixedly attached to the body of the figure.

In the embodiment shown the outer ends of the arms or hands of the figure are connected by a bridge piece 15 to which is soldered or otherwise fixed the central portion of a sheet metal clevis 16 whose ends are secured to the central portion of the magnet 13 as by the bolt 17. Thus there is a certain amount of resiliency in the mounting of the magnet on the transfer element. The transfer element or clown may be hollow and formed of sheet metal.

18 represents a three-sided frame made by bending up a strip of metal and said frame is journaled on the shaft 10 and is fixed at its inner end to the transfer element 11 so as to oscillate in unison therewith. When the transfer element is in position with its overweighted end upwardly as shown in Figs. 1 and 2, the frame 18 is below the shaft, and when the overweighted end of the transfer element is below the frame is above the shaft.

19 represents a locking lever extending forwardly beneath the shaft 10 and having a notch 20 which may engage the frame 18 when the transfer element is in the position shown in Figs. 1 and 2, and thus lock the transfer element stationary in said position, that is, with its overweighted end uppermost.

Intermediate of its ends the lever 19 is pivotally mounted as by the rivet 21 on the angular boxing 22 of a hand lever 23 whose lower end is pivotally attached as at 24 to the adjacent bracket 8. The rear or tail end of the lever 19 rides on a finger 25 formed by cutting and striking in a portion of the metal of the bracket 8.

Thus the transfer element may be locked in position with its overweighted end upwardly as illustrated in Figs. 1 and 2. When in such position the weight 12 is disposed in the rear of a vertical plane passing through the axis of oscillation of the transfer element so that when the locking lever is released the transfer element will swing clockwise and cause the magnet 13 to come into contact with an object presented at the front end of the chute 4.

26 represents an angular bracket preferably formed of a strip of resilient metal and mounted on the front of the base 2. The bracket is narrow enough to permit the magnet 13 to straddle and clear it as the transfer element oscillates.

27 represents the objects which are to be transferred from the chute 4, which is the take-off position, to the deposit position at the bracket 26.

Where the pick-up means of the transfer element is a magnet, the objects 27 are of magnetizable metal so that the magnet may pick them up and transfer them. Thus I have shown said objects to comprise a flat steel or iron disk with a small figure mounted on the center thereof, the legs of the magnet 13 straddling the figure and contacting with the disk which forms the base of the object.

The operation of the toy as described so far, and as illustrated in the above mentioned views, is as follows. The clown is locked in the inverted position shown in Fig. 1 and a plurality of the objects 27 are placed in order, as shown on the chute 4. The clown is now unlocked and the weight 12 causes the clown to swing in a clockwise direction from the position shown in Figs. 1 and 2 to that shown in Fig. 8, the magnet 13 being pressed upon the front object in the row arranged on the chute 4. The clown then swings counterclockwise from the position shown in Fig. 8 into the position shown in Fig. 9. The inception of this reverse movement is assisted by the rebound of the resiliently attached magnet as it strikes the object. As the magnet swings past the bracket 26, said bracket engages the object 27 carried by the magnet and dislodges it from the magnet, and the object drops down in front of the bracket. The swing of the

clown continues until it reaches the limit thereof indicated in Fig. 10.

To halt the transfer element at the end of its clockwise swing, I provide a cross bar 28 extending between the frames 1 and also I provide the central portion of the magnet with a bent spring-metal finger 29 which may be attached thereto by the bolt 17. The finger 29 strikes the cross bar 28 and causes the clown to rebound sufficiently to carry the weight 12 over the center and thus a reverse or clockwise swing of the clown is instituted.

As the clown swings back into the position shown in Fig. 8 the magnet engages the next object 27 which has slid down into position and a counterclockwise swing of the clown ensues. This oscillation of the clown continues until all the objects suspended in the chute at the take-off position are removed and deposited at the bracket 26.

To prevent the first object 27 from sliding off the front end of the chute I provide a stop means which in the form now described is an upturned metal finger 30 formed of the metal of the chute.

To prevent the objects from overlapping or piling up on each other at the front end of the chute I provide a movable stop which engages the second object and holds it stationary until the first object has been removed, whereupon the second object is permitted to slide down against the finger 30. This movable stop 31 is provided by the upper end of a lever 32 loosely attached, as by pin and slot connection 33, with the side wall to the inner face of the adjacent frame 1. The lower end of the lever 32 is pivotally connected at 34 to an intermediate portion of a lever 35 whose rear end is pivoted to the cross brace 3 and whose front end is provided with a yoke 36 which straddles the shaft 10 and the frame 18.

When the frame moves into position below the shaft 10, the lever 35 is swung downwardly, thus retracting the stop 31 from the chute floor and when the frame moves above the shaft 10 the finger is moved upwardly so as to temporarily hold back the second object 27.

Thus as the clown swings clockwise the stop 31 is moved into operative position, but as the clown swings counterclockwise, carrying the first object 27 with it the stop 31 is retracted, allowing the second object to slide down against the finger 30.

In practice I have employed such comparative weights of the ends of the transfer element and clown that when no object is adhering to the magnet and the transfer element is unlocked the element will assume substantially the position shown in Fig. 11, the weight 12 being below the magnet 13 and the line passing through the two ends of the clown being at an angle of substantially 45° to the vertical. Again when an object 27 adheres to the magnet and the transfer element is unlocked and allowed to come to rest it will assume substantially the position illustrated in Fig. 12, the weight 12 being somewhat overbalanced by the magnet 13 and the object 27.

In Figs. 13 and 14 I have illustrated means whereby when the transfer element is locked in its inoperative position with its overweighted end uppermost and an object is placed on the chute in the take-off position, the transfer element is automatically unlocked and set into operation, and again when the objects are all exhausted or taken off from the chute by the transfer element, the transfer element is again automatically locked in its inoperative position.

Thus 37 represents a projection which may be formed by cutting and pressing outwardly a portion of the material of the transfer element 11 at a point adjacent to the axis of movement of said element and on the magnet side of the latter. 38 represents a notched locking lever which is arranged to engage the projection 37 when the element 11 is in the reverse position shown in Fig. 13 and thereby lock the element against movement.

The locking lever is bent at its rear end to form a rectangular portion 39 which is pivotally mounted on a rod 40 supported by one of the side frames 1 and a bracket 41 extending forwardly from the cross brace 3. Attached to the rectangular portion 39 of the lever 38 is a release finger 42 which extends upwardly through a slot 43 in the front center of the chute 4. The portion 39 of the lever 38 is provided with a rearwardly extending shelf 44 on which is mounted a weight 45, thus tending to hold the lever 38 in locking engagement with the projection 37, and also tending to hold the finger 42 against the rear end of the slot 43.

It is evident that if an object 27 moves down the chute 4 into engagement with the finger 42 the locking lever 38 will be depressed out of engagement with the projection 37 and will be held so depressed, thus unlocking the transfer element and permitting it to start its swing, counterclockwise in Fig. 13. As the front object is removed by the magnet the next object will slide down along the chute against the finger 42, thus holding the locking lever retracted. When the objects are all exhausted from the chute 4, the weights 45 will cause the locking lever to rise, thus locking the transfer element stationary as it swings back into the position illustrated in Fig. 13.

What I desire to claim is:—

1. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects of magnetizable metal from a take-up position to a deposit position at a lower level, one of the ends of the element being overbalanced, a magnet carried

by the other end of the element whereby the swinging element picks up the objects and transfers them to the deposit position, and means arranged to engage the objects at the deposit position and to disengage the objects from the magnet.

2. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects from a take-up position to a deposit position, one of the ends of said element being overbalanced, means carried by the other end of the element for picking up an object, and means for locking the element stationary with its overbalanced end upward.

3. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects from a take-up position to a deposit position, one of the ends of said element being overbalanced, means carried by the other end of the element for picking up an object, means whereby when the objects are exhausted from the take-up position said element is locked in position with its overbalanced end upward, and means whereby the travel of an object into the take-up position releases such locking means.

4. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects from a take-up position to a deposit position, one of the ends of said element being overbalanced, means carried by the other end of the element for picking up an object, means whereby when the objects are exhausted from the take-up position said element is locked in position with its overbalanced end upward, and means whereby the presence of an object in the take-up position prevents the operation of the locking means.

5. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects of magnetizable metal from a take-up position to a deposit position at a lower level, one of the ends of the element being overbalanced, a magnet carried by the other end of the element whereby the swinging element picks up the objects and transfers them to the deposit position, means for disengaging the objects from the magnet at the deposit position, and means for locking the element stationary with its overbalanced end upward.

6. In a mechanical toy, the combination of a transfer element mounted intermediate of its ends to swing on a horizontal axis so as to transfer objects of magnetizable metal from a take-up position to a deposit position, one of the ends of the element being overbalanced, a magnet carried by the other end of the element whereby the swinging element picks up the objects and transfers them to the deposit position, means for disengaging the objects from the magnet at the deposit position, means for locking the element stationary with its overbalanced end upward when it completes a transfer movement, and means whereby an object remaining in the take-up position prevents such locking means from operating.

Signed at Pittsburgh, Pa., this 28th day of May, 1930.

FRANK J. GORIUP.