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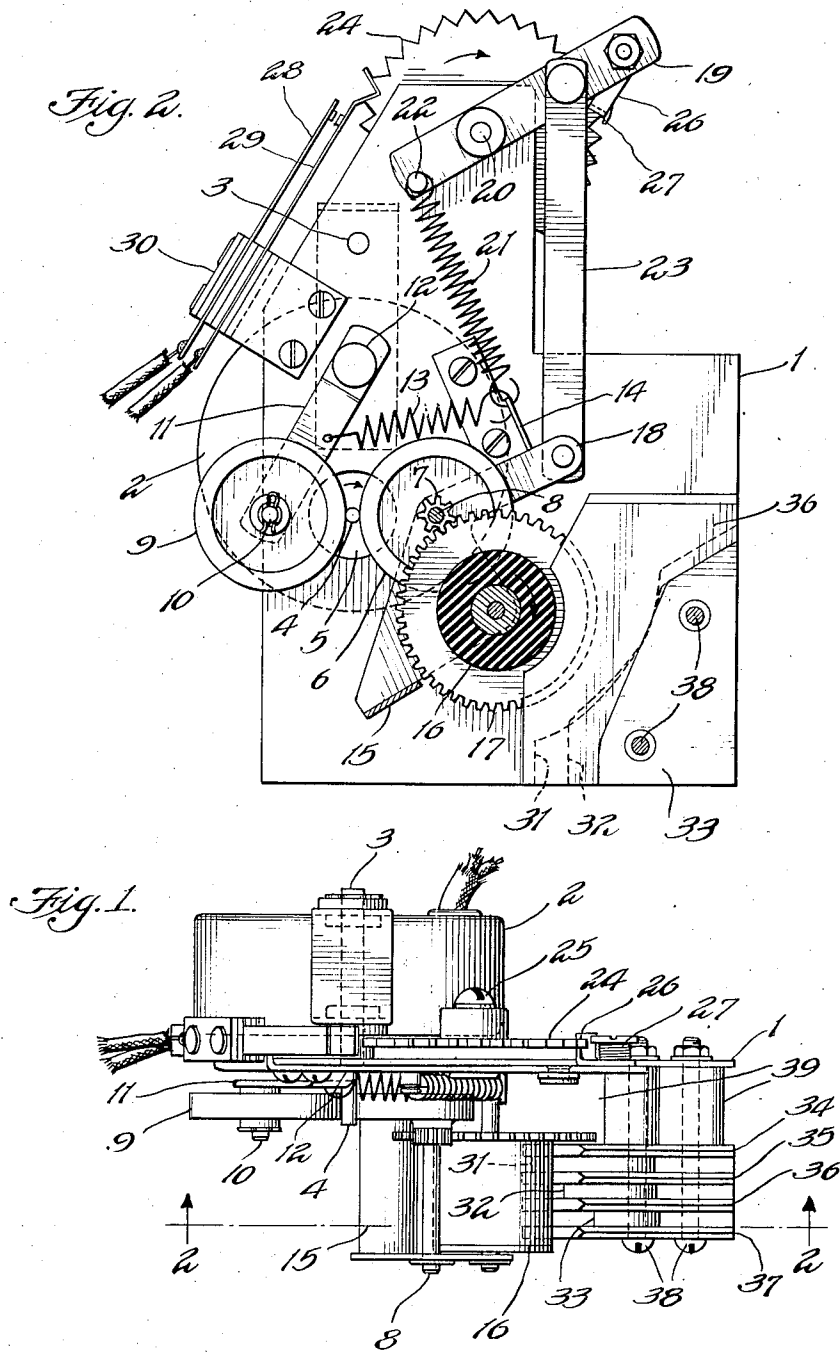
L. J. ANDRES

2,366,469

COIN OPERATED DEVICE

Filed Aug. 5, 1942

2 Sheets-Sheet 1



INVENTOR.

BY *Lloyd J. Andres*

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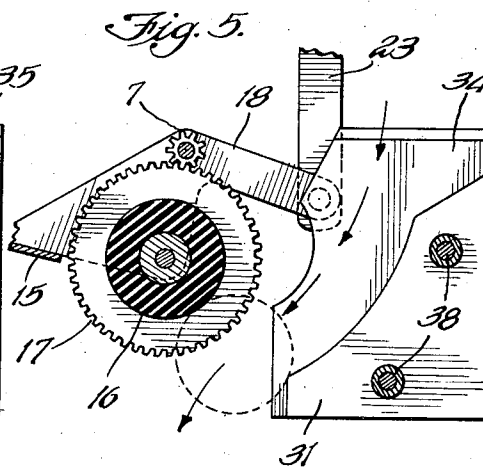
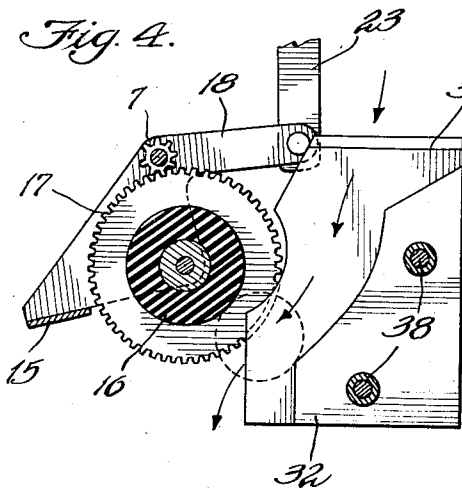
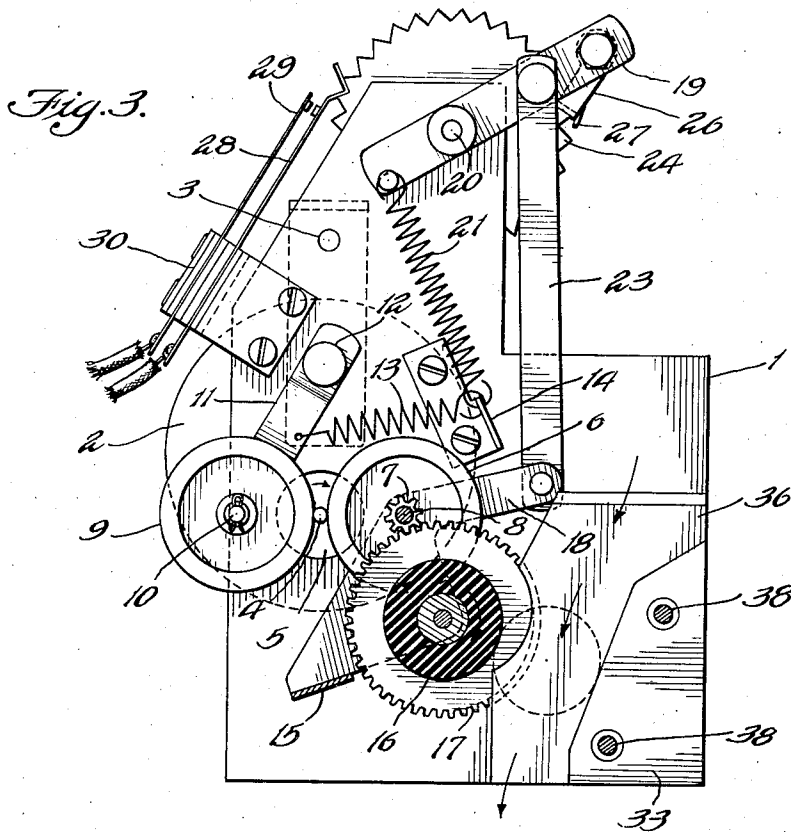
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,366,469

COIN OPERATED DEVICE

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3 Claims. (Cl. 194—9)

This invention in general relates to coin operated devices and more particularly to a new device for recording pluralities of coins of different predetermined denominations.

Coin mechanisms previous to this invention usually were dependent upon the action of gravity upon the coins for registration or the determination of their values. Such devices frequently were rendered inoperative by the insertion of deformed coins or debris. The electrical or mechanical means responsive to coins in gravity devices are required to be of exceedingly sensitive construction, particularly when adapted for use with relatively light-weight coins. Motor driven coin devices usually were dependent upon an element for carrying the coins in pockets or to displace a plurality of obstructions in order to register values. This type device is also subject to frequent failure when encountering deformed coins or debris which would jam the pockets or disturb the natural function of the projections.

In the present invention all of the above difficulties are completely overcome in the novel means employed whereby the coins of different denominations are conducted to respective conduits and are forced by motor driven means to travel through separate predetermined paths in a natural rolling motion to displace registering elements proportional to the diameters of the different coins. Deposit of deformed coins or other debris, which is passed through an appropriate entrance aperture, will readily pass through the device without interrupting or injuring the mechanism.

A principal object of the invention is the provision of a motor driven coin registering device wherein coins of each denomination are urged through predetermined pathways to displace a registering element predetermined distances in accordance with the diameters of the respective coins.

A further object of the invention is the provision of a motor driven rotary means whereby a single coin responsive member is displaced a predetermined distance corresponding with the diameters and denominations of the respective coins deposited therein.

A further object of the invention is the provision of motor driven means wherein coins of various denominations will close an electrical commutator a predetermined number of times in accordance with the diameters and denominations of the coins deposited therein.

A further object of the invention is the provision of means forming separate passageways,

each having different contours, whereby a motor driven member responsive to the coins' movements in the said passageways will be displaced predetermined distances dependent upon the diameters of the coins deposited therein.

These and other objects and advantages will appear in one embodiment of the invention, in which:

Fig. 1 is a top plan view of the device.

Fig. 2 is a side elevation of the device showing a section taken through section lines 2—2, Fig. 1.

Fig. 3 is a side elevation same as Fig. 2 with parts in displaced position.

Fig. 4 is a fragmentary diagrammatic elevation of a portion of the device as shown Fig. 2.

Fig. 5 is a diagrammatic elevation showing the mechanism of Fig. 4 in changed position.

Referring to Figs. 1 and 2, a plate 1 serves as a frame for retaining the various elements to be described. An electric motor 2 is pivotally suspended on a fixed shaft 3 secured at one end to the frame 1. The motor drive shaft 4 extends through a clearance hole 5 in the plate 1 and serves as a frictional drive roller. It is apparent that the motor and its drive shaft 3 are capable of lateral movement with respect to the plate 1 by virtue of the pivotal mounting 3. A frictional drive wheel 6, having a resilient rim and an integral pinion 7 affixed concentrically thereto, is carried on an axle 8 secured at one end to the plate 1. A pressure roller 9 is rotatably secured to an axle 10 affixed to an arm 11. The arm is pivotally mounted to the plate 1 by stud 12. A spring 13 secured to the arm 11 at one end and suspended by a fixed bracket 14 at its opposite end, is provided to urge the roller 9 in contact with the drive shaft 4. Thus the drive shaft 4 is urged by roller 9 into frictional contact with the drive wheel 6. The motor bearings supporting the shaft 4 are relieved of large frictional stresses and at the same time frictional driving contact between the drive shaft 4 and the rim of the drive wheel 6 is constantly maintained. A rocker member 15 is freely suspended on axle 8 and serves as a hanger for the axle of the coin roller 16, which roller carries a resilient tire for engagement with the rims of coins. A gear 17 integral with the roller 16 is meshed with and driven by pinion 7. Thus it can be seen from Fig. 2 that when the drive shaft 4 is rotated in a clockwise direction, the roller 16 will rotate in the same direction. An arm 18 integral with hanger 15 is adapted to operate lever 19 through the medium of a pivotally mounted link 23. Lever 19 is pivotally mounted to the frame 1 by stud 20 and urged

in one direction by spring 21 attached to the lever at 22 and secured at its opposite end to bracket 14. Thus the hanger 15 and the roller 16 are normally held in the position shown Fig. 2 by a stop provided by bracket 14 in the path of the arm 18.

A ratchet-wheel 24 is affixed to the plate 1 by screw 25 located concentric with the stud 20. This wheel is adapted to turn freely on its hub and in this particular embodiment is made from insulating material. A pawl 26 is loosely mounted to one end of lever 19 and urged toward the wheel by a spring 27. A pair of contact springs 28 and 29 are secured to the frame 1 by a bracket 30 and conventional insulation means. The working end of spring 29 is formed to provide detent engagement with the teeth of the wheel 24. Thus it can be seen that when the lever 19 is oscillated through a predetermined distance, the wheel 24 will be moved by the pawl 26 in a direction shown by arrow, Fig. 2. This movement will momentarily close the contacts of the contact springs 28 and 29 a given number of times dependent upon the displacement of lever 19. In this particular embodiment of the invention, runways are provided for coins of three different diameters. The runway assembly comprises three tracks 31, 32, and 33, having different working face contours to carry three coins; namely United States nickel, dime, and quarter. The tracks are held in spaced relation by separators 34, 35, 36, and 37. The tracks and separators are secured to the plate 1 by screws 38 and spacers 39. The coins of different diameters are fed by suitable conduits, not shown, into the respective tracks 31, 32, and 33 usually after they have passed through a coin-sorting and slug-eliminating device, also not shown.

Referring to Fig. 3 and assuming that a United States nickel is deposited in the outer track 33 and assuming that the electric motor is in operation and the coin wheel is turning in the direction shown by arrow, the opposite edges of the coin will wedge between the surface of the track 33 and the adjacent periphery of the roller 16 and be moved downwardly by the roller which will simultaneously move away from the track. This movement will displace the lever 19 to momentarily close the contacts 28 and 29 one time as previously described. Thence the coin will pass from the bottom of the device in a path shown by arrow. The action of the spring 21 will then return the lever 19, the link 23, and the roller 16 to their normal positions, the ratchet-wheel having remained in its displaced position by virtue of the pawl riding over a tooth in the wheel.

Fig. 4 illustrates the passage of a coin of smallest diameter and illustrates a greater lateral movement transmitted to the roller 16 by virtue of the longer track 32. It is obvious that the ratchet-wheel will be displaced a greater angular distance and thereby the contacts 28 and 29 will be closed a greater number of predetermined times.

Fig. 5 illustrates the passage of a coin of largest diameter by virtue of the track 31 having the longest face. This embodiment was adapted to move the lever 19 shown Fig. 3 and the ratchet-wheel 24 an angular distance sufficient to close the contacts 28 and 29 five times. Referring to Fig. 2, it is apparent that since the hanger 15 is pivoted about the axis of axle 8, the cradle carrying roller 16 will likewise follow an arc centered through the axis of axle 8, therefore, the working faces of the tracks 31, 32 and 33 are arbitrary with reference to the center of axle 8 and they

may be proportioned to cause a coin to displace the roller an increasing distance dependent upon the length of the working surface of the arbitrarily positioned track. Thus it has been shown that successive coins of different denominations deposited in the proper runways will operate contacts 28 and 29 in accordance with their diameters to initiate a suitable electrical device to register the predetermined value of the coins inserted. It is obvious that the oscillating motion transmitted to the lever 19 by coins of various diameters may be employed to operate mechanical devices rather than the electrical contacts shown. It is also obvious that the range of movement of the lever 19 may be altered by changing the tracks to provide various ranges of movement of the lever 19 or various commutations by the contacts. It is also apparent, and it is intended to be covered in the scope of the appended claims, that a modification of the device in which alternate construction provides the same relative motion between the wheel 6 and the runways by maintaining the rotary roller 16 in a fixed position and pivotally mounting the runways about their upper screw 38 and transmitting the resultant runway movement to lever 19.

Having described my invention, I claim:

1. A coin operated mechanism comprising a power driven coin roller, drive means for rotating said roller about its axis, a pivotally mounted supporting member for said roller, means forming a plurality of trackways positioned in spaced relation and adjacent to said roller, each said trackway having a working face proportioned to carry a coin of different diameter with the edge of the coin in contact with the outer periphery of said roller and its corresponding trackway, means for urging said supporting member with the said roller toward said trackways, lever means affixed to said supporting member and responsive to movement thereof, whereby coins of different diameters will be carried by said roller through the space between the said roller and corresponding trackways to displace the said roller and supporting member and to move the said lever means a distance determined by the diameter of the coin passing between the roller and the respective trackway when said roller is rotated by the said drive means.

2. In a coin operated mechanism a frame, means forming a plurality of coin trackways positioned on said frame in parallel spaced relation, said trackways adapted to receive coins of predetermined different diameters, a power rotated coin roller journaled on a support member, said member movably supported on said frame, urging means for urging said member toward the faces of said trackways, said roller being normally positioned a predetermined distance from and adjacent to said trackways, the faces of said trackways being disposed at different distances from the periphery of said roller, whereby each coin deposited in its corresponding trackway will be rolled along the trackway through the space between the roller and the face of the trackway, and will displace said member and roller in accordance with the diameter of the coin and the distance between the face of the trackway and the periphery of the roller.

3. In a coin operated mechanism a frame, means forming a plurality of coin trackways, said trackways adapted to receive coins of predetermined different diameters, a power rotated coin roller journaled on a support member, said mem-

ber movably supported on said frame, urging means for urging said member toward said trackways, said roller being normally positioned a predetermined distance from and adjacent to said trackways, the faces of said trackways being disposed at different distances from the periphery of said roller, ratchet means pivotally secured to said frame connected and responsive to reciprocating movement of said support member, switch means secured to said frame and positioned for operation by said ratchet means where-

5 by each coin deposited in its corresponding trackway will be rolled along the trackway through the space between the roller and the face of the trackway and will displace said member in accordance with the diameter of the coin and the distance between the face of the trackway and the periphery of the roller to move said ratchet means and cause said switch means to operate a predetermined number of times corresponding 10 to the diameter of the coin deposited.

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