

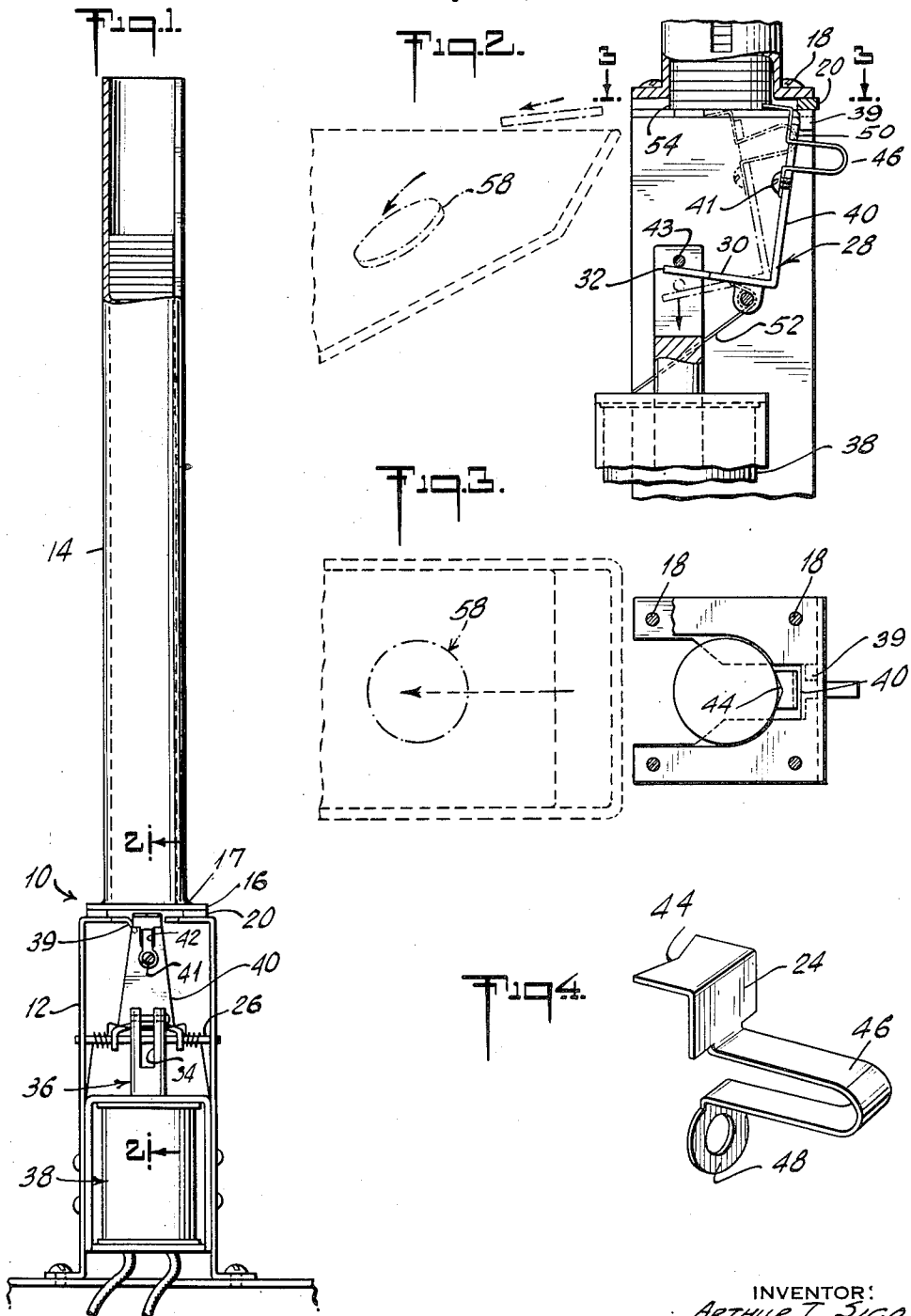
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A. T. SIGO

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COIN DISPENSING MECHANISM

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INVENTOR:
ARTHUR T. SIGO.

BY
Oldham & Oldham
ATTORNEYS:

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COIN DISPENSING MECHANISM

Arthur T. Sigo, Chicago, Ill., assignor, by mesne assignments, to Serv-Kraft, Inc., New York, N. Y., a corporation of New York

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3 Claims. (Cl. 133—5)

This invention relates to a coin dispensing mechanism, and more particularly to a device for use in vending machines for ejecting coins one at a time from a column thereof, for example, in returning change to a purchaser who has inserted an amount of money exceeding the cost of the article or service being vended.

It is an object of the present invention to provide such an apparatus of improved and simplified construction. It is another object of the present invention to provide a solenoid operated device of this type of improved reliability that insures that a coin will be ejected upon each operation of the device. An additional object is that of providing a coin engaging finger of a novel type that insures accurate contact with but a single coin so that only one coin at a time will be discharged. It is a further object to provide a coin engaging finger that minimizes the frictional contact between said finger and the coins being dispensed. These and other and further objects will become apparent as the specification proceeds.

In the drawings:

Figure 1 is a side elevation of a device embodying features of the present invention, with a portion of the device broken away to show coins positioned therein;

Figure 2 is an enlarged, fragmentary vertical section taken on line 2—2 of Figure 1;

Figure 3 is a sectional view taken on line 3—3 of Figure 2; and

Figure 4 is an enlarged perspective view of the coin contacting finger of the device.

While the present invention is applicable to the dispensing of coins of any denomination, the specific embodiment shown will be described in connection with the dispensing of five-cent pieces or nickels, but it is to be understood that the invention is not limited thereto.

Referring now to Figure 1, the coin dispensing mechanism 10 includes a supporting frame 12 of a generally inverted U-shape. Mounted on the top of this frame 12 is a vertical tube 14 having an inside diameter slightly greater than that of a five-cent piece. The lower end of tube 14 is fastened to a plate 16, for example, by welding, as indicated at 17. This plate 16 in turn is secured to the frame 12 by screws 18. Disposed between the plate 16 and the frame 12 is a generally horseshoe-shaped spacer 20 which is of a thickness equal to that of a nickel and the arms of which are sufficiently spaced to admit a nickel flat-wise between them. A tapered slot 22 is cut into the top of the frame member 12, the inner end of the slot having a width less than the diameter of the nickel, but sufficient to accommodate a spring finger 24. Thus the bottom nickel of the stack in tube 14 rests upon the top of the frame 12 in the area between the arms of the horseshoe spacer 20.

Positioned adjacent the open end of the horseshoe spacer 20 is a coin return chute 56, or other similar receptacle for receiving the coins dispensed from the mechanism 10 and delivering them to the customer.

Pivotaly mounted on an axle 26 between the side pieces of frame 12 is a bell crank 28. The lower arm 30 of the

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bell crank has a narrow projection 32 on the end thereof, which projects into a slot 34 in a plunger 36. This plunger 36 forms the upper portion of the core of a solenoid 38 which operates the device, the lower portion of the core serving as a stop to limit the movement of the plunger and bell crank 28. The plunger 32 is a cylinder of magnetic material of a diameter such that it fits into a corresponding hole in solenoid 38. The slot 34 is cut in the upper end of the plunger to accommodate one end of bell crank 28 and has a pin 43 extending across the slot near the upper end of the plunger. The other arm 40 of the bell crank 28 has adjacent the upper end thereof a small rectangular cutout 42, adapted to receive therein a coin pushing finger 24.

As may be seen in Figure 4, the finger 24 comprises a piece of sheet metal having a coin engaging edge 44 of a concave, generally V-shaped configuration, a hair-pin shaped spring portion 46, and a mounting eye 48. These portions of the spring finger 24 are proportioned so that when the spring finger 24 is mounted on the arm 40 by a screw 41 through the mounting eye 48, the spring portion 46 projects through the opening 42 in a direction away from the stack of nickels. The transverse portion 50 at the upper end of the opening 42 in the arm 40 provides a stop for the spring 46 to limit its upward movement so that only the bottom coin of the stack will be contacted by the coin engaging edge 44. This spring mounting also permits easy withdrawal of the finger assembly from under the stack of coins as will be described in detail herein.

As may be seen from Figure 2, the bell crank 28 is normally maintained in the withdrawn position (shown in full lines) by a spring 52; and, by virtue of the engagement of arm 30 with pin 43, the plunger 36 is thus moved to and normally held at its upper position, partially out of solenoid 38. Movement of the bell crank 28 toward its withdrawn position is limited by a stop 39, in the form of a small tab bent down from the frame member 12.

On energization of the solenoid 28, the bell crank is drawn forward to the position shown in broken lines in Figure 2 by attraction of the plunger 36 into the solenoid 38. The solenoid 38 is of a size sufficient to move the bell crank 28 sharply and kick the bottom coin 54 out of the column into the coin return chute 56, as shown in dotted lines at 58 in Figures 2 and 3.

When the bell crank 28 is in its forward or actuated position, as shown in broken lines, and the bottom coin 54 has been ejected, the spring finger 24 is depressed downwardly by the weight of the column of nickels in the chute 14, which immediately drop downwardly by a distance equal to the thickness of a nickel. The bell crank 28, however, is readily returned to its withdrawn position by the spring 52, the finger 24 yielding downwardly to clear the bottom of the column of nickels during this return stroke. As soon as the coin-engaging edge 44 has cleared the rearward edge of the bottom coin on the return stroke, the resiliency of the finger 24 causes the edge 44 to snap up to a position in alignment with the edge of the bottom coin, as shown in full lines in Figure 2.

This novel mechanism greatly reduces the frictional contact normally incurred in devices of this type, where the column rests upon a slide which has a hole therein and which is moved across the bottom of the stack of nickels to draw a single coin off the bottom, or that type wherein the finger or ram is of fixed, relatively rigid type. With this device a much simpler and lighter construction can be used, eliminating for all practical purposes, the frictional contact between the coin discharging finger and the stack of coins.

While there is given above a certain specific example of this invention and its application in practical use, it should be understood that this is not intended to be exhaustive or to be limiting of the invention. On the con-

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trary, this illustration and the explanation herein are given in order to acquaint others skilled in the art with this invention and the principles thereof and a suitable manner of its application in practical use, so that others skilled in the art may be enabled to modify the invention and to adapt and apply it in numerous forms, each as may be best suited to the requirements of a particular use.

I claim:

1. In a coin dispensing mechanism of the character described, a chute for holding a stack of coins, a frame at one end of said chute for supporting the bottom coin in the stack, said frame having two side shoulders separated by a through slot, said shoulders being adapted to support said end coin near two opposite side edges thereof with an exposed rear edge between, and a coin ejecting member beneath said slot and having a finger adapted to move forward through said slot to push said end coin forward out of said chute, said member comprising an arm pivoted beneath said slot and its free end adapted to swing forward along an arcuate path in the line of said slot, said finger comprising a flat strip spring having a hairpin loop along its length and an outer edge, the inner end of said spring being attached to said arm at a point removed from the free end thereof, said hairpin loop projecting backward through an opening in said arm be-

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tween said point and said free end, the rear face of said finger bearing against the forward face of said arm at its free end.

2. The combination of elements as in claim 1 wherein said finger along its outer edge is bent forward into a thin, wide lip generally at right angles to said arm and adapted to contact the rear edge of said end coin, said lip being adapted to move radially along said arm against the action of the hairpin loop of said spring.

3. The combination of elements as in claim 2 wherein the forward edge of said lip is V-shaped.

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