Jan. 10, 1933. I. H. KAUFFMAN ET AL 1,893,708

DISPENSING APPARATUS

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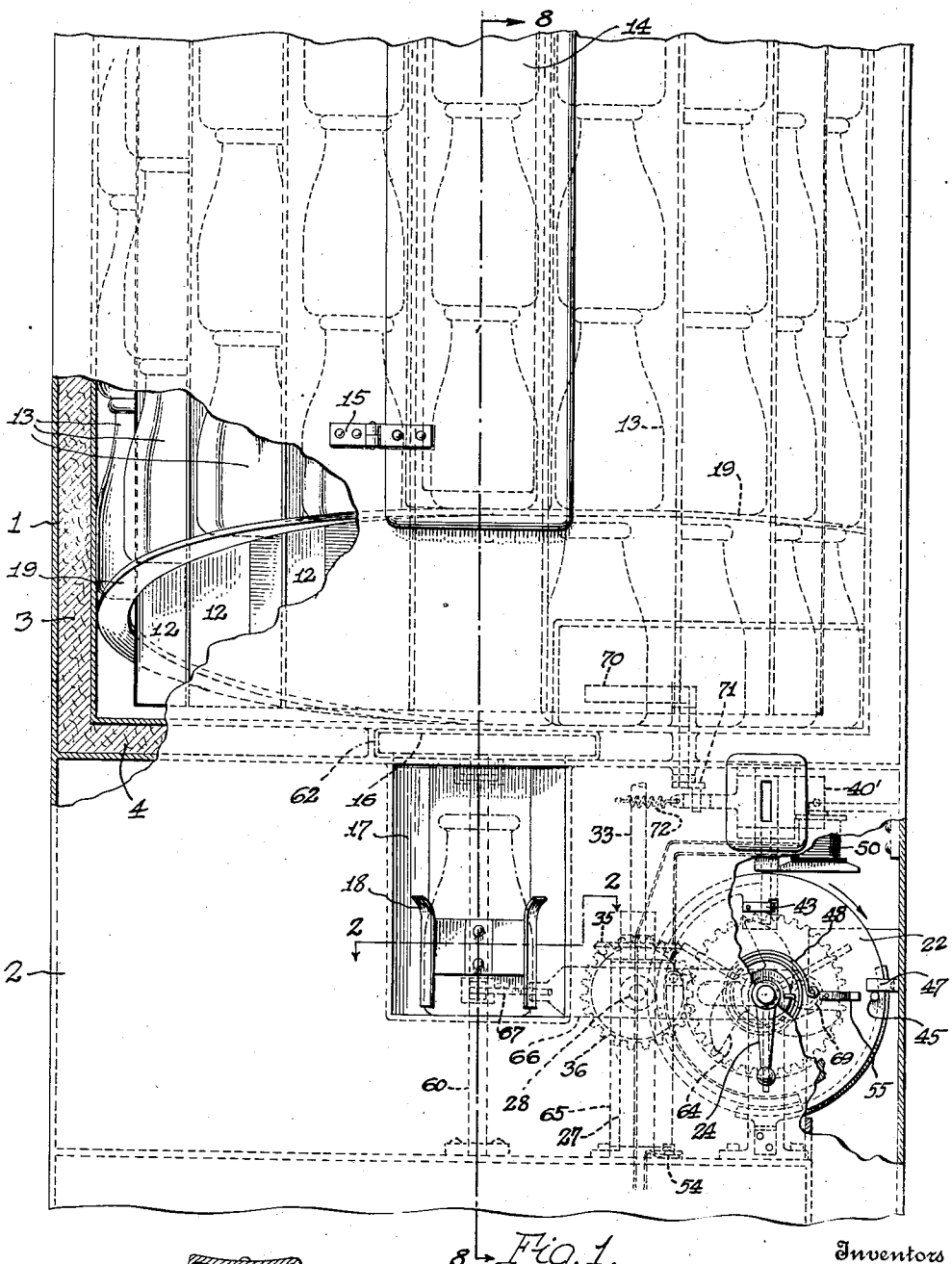

Fig. 1.

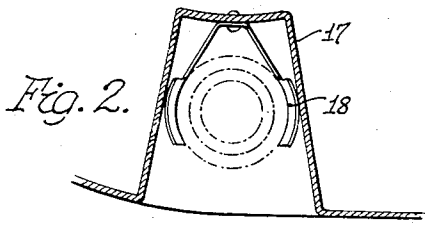

Fig. 2.

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Fig. 3.

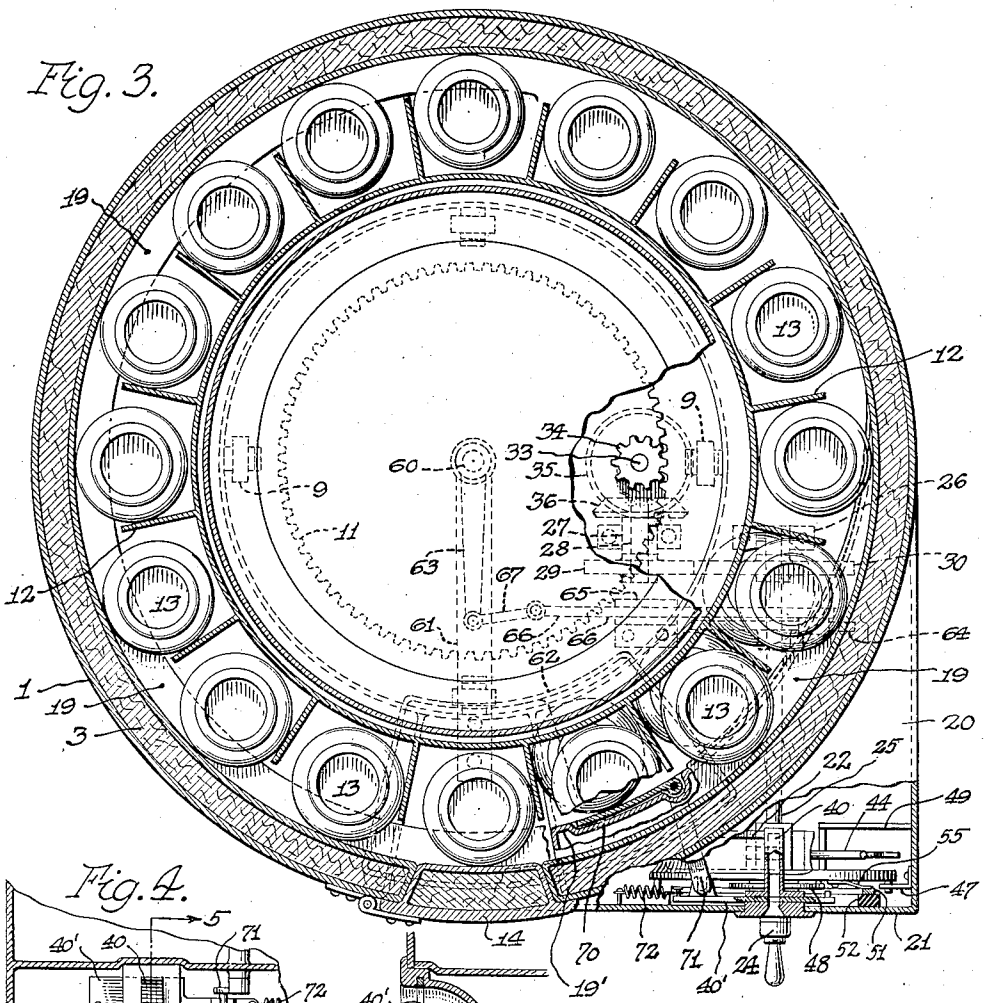
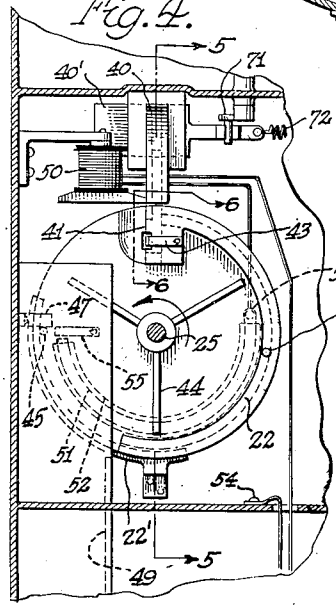


Fig. 4.



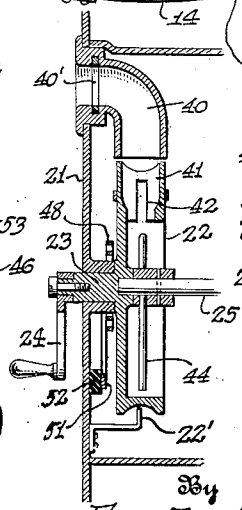


Fig. 5.

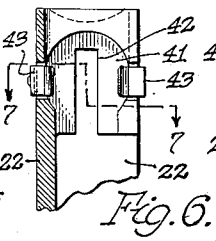


Fig. 6.

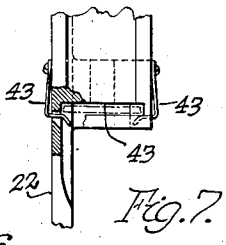


Fig. 7.

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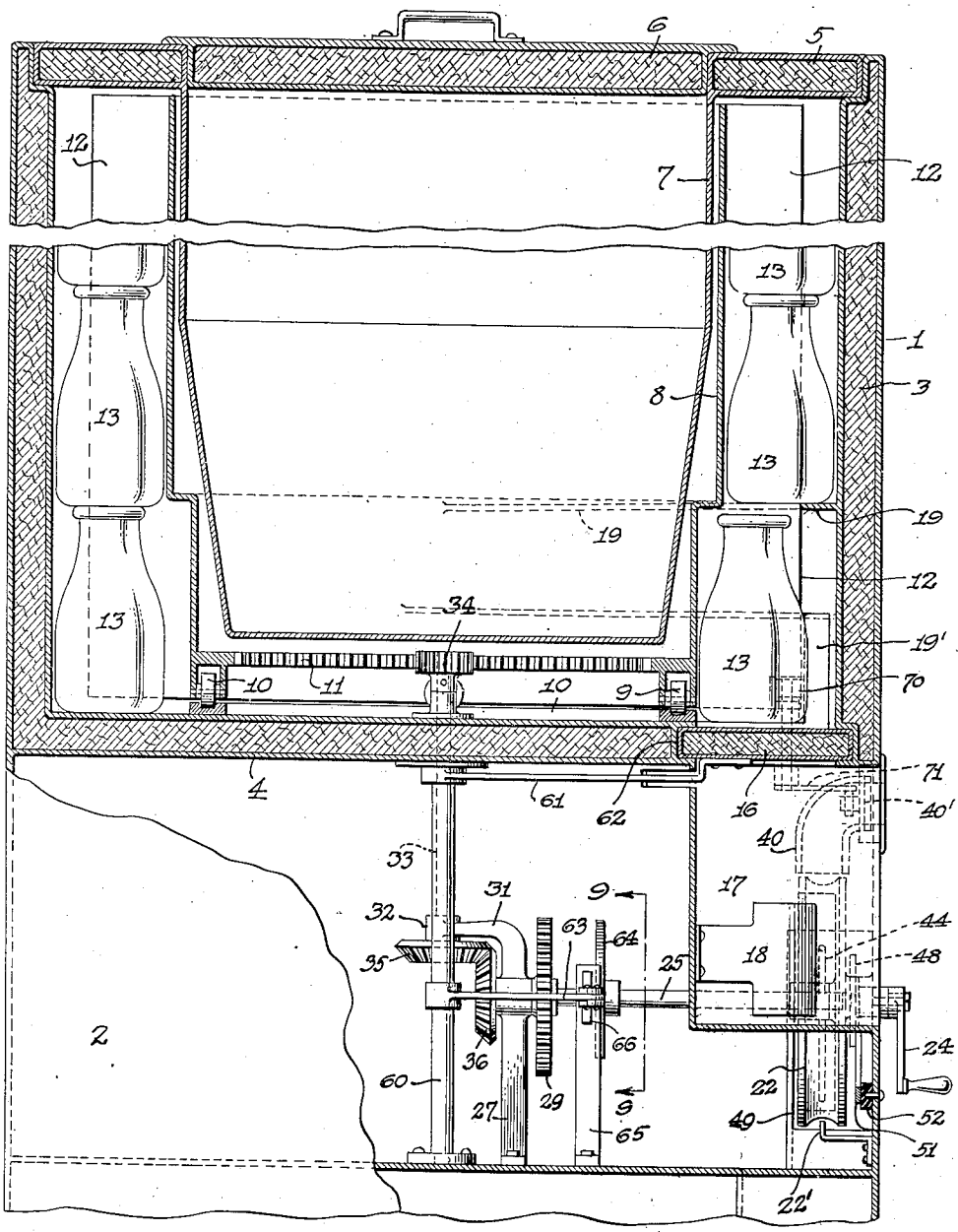

Fig. 8.

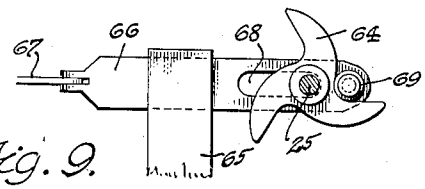

Fig. 9.

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UNITED STATES PATENT OFFICE

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DISPENSING APPARATUS

Application filed June 28, 1928. Serial No. 288,917.

The present invention pertains to a novel dispensing apparatus designed particularly for use in vending bottles of liquid. The invention is illustrated and described in connection with a device for dispensing bottles of milk, but it will be apparent that the bottles may contain any other fluid or beverage such as soda water and the like.

The utility of the invention lies principally in the fact that the necessity of an attendant is eliminated, whereby the profit on these low priced commodities is considerably increased.

Among the objects of the invention is to provide a device of this character actuated by certain mechanism which can be operated only on insertion of a coin of proper denomination into the apparatus. The gearing for bringing the bottles to the outlet of the device may be operated by an external handle when such coin is inserted. The invention further provides an electro-magnetic device for withdrawing and rejecting counterfeit coins, so that none of the contents of the apparatus may be obtained by the use of such coins.

The invention also comprises a device for closing the coin chute when the apparatus is empty, and such other incidentals and accessories as become necessary in the operation of such a mechanism, all of which are set forth in the detailed description.

The invention is fully disclosed by way of example in the following description and in the accompanying drawings, in which—

Figure 1 is a fragmentary side elevation of the apparatus, partly broken away;

Fig. 2 is a section on the line 2—2 of Figure 1;

Fig. 3 is a transverse horizontal section;

Fig. 4 is a detail elevation of the coin control mechanism;

Fig. 5 is a section on the line 5—5 of Figure 4;

Fig. 6 is a section on the line 6—6 of Figure 4;

Fig. 7 is a section, partly in elevation, on the line 7—7 of Figure 6;

Fig. 8 is a section on the line 8—8 of Figure 1; and

Fig. 9 is a detail of the operating means for the trap door.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

In Figures 1, 3 and 8 the device is seen to comprise a cylindrical body 1 mounted on a suitable hollow base 2. The cylindrical wall is of a two-ply construction forming a seam filled with insulating material 3. Beneath the wall is built a floor 4 of like construction. An annular top piece 5 of the same construction is supported on the top as shown in Figure 8, and into this member is fitted an insulating cover 6. A bucket or receptacle 7 hangs from the top 5 and extends into the cylinder formed by the wall 1 for a purpose which will presently appear.

The body further contains a concentric drum 8 carrying at its lower end a series of rollers 9 which ride on a track 10 mounted on the base 4. At the bottom of the drum is formed an internal gear 11 for a purpose presently to be described. A series of radial fins 12 extend outwardly from the drum 8 towards the inner wall of the body 1 but substantially spaced from the latter as shown in Figure 3.

A number of bottles 13 are arranged in superposed relation between the drum 8 and wall 1 and also between the fins. The fins are so spaced that a single vertical row of bottles is properly accommodated between each pair. The bottles illustrated have the shape of conventional milk bottles, but it will be obvious that the contents may be varied as well as the shape, the only requisite being that the bottles be adapted for superposed relation. The bucket 7 previously mentioned is provided for the purpose of containing ice, supplied by lifting the cover 6 for maintaining the contents of the bottles 13 in a cool condition. The wall of the body is fitted with a vertical door 14 also of insulating material and supported by means of hinges 15 to swing on a vertical axis. The apparatus is filled with bottles through this door in a manner presently to be described in detail.

In the edge of the floor 4 is provided a trap door 16 which, when moved aside, permits a bottle to drop into a pocket 17 beneath the door. This pocket contains a spring device 18 in which the falling bottle is caught and held without breaking. In order to prevent shifting of the entire row above the falling bottle, we provide a spiral track 19 having a high point directly above the trap door at a distance equal to the height of one bottle and having its lower end merged into the level of the floor. The second tier of bottles will therefore rest on this shelf or track and gradually descend to the floor without interference by the bottles discharged into the pocket 17 on opening the trap door. The bottles on the floor are advanced to the trap door by turning the drum 8 with its fins 12; and the means for turning these parts as well as for operating the trap door will presently be described. Beneath the high or entrance end of the spiral track is formed a deflecting member 19′ extending inwardly from the inner wall of the cylindrical body. As the lower tier is advanced, the bottles therein are moved inwardly to permit the shelf 19 to ride under the second tier as shown in Figure 8. It may be mentioned at this point that, when the apparatus is empty, it is filled through the door 14 by inserting rows of bottles into the spaces between the fins 12, which are brought into alignment with the door opening by turning the drum.

The base 2 has a lateral right angular extension 20 forming a housing for part of the drive mechanism. In the front wall 21 of the housing is journalled a pulley 22 having a stud 23 to which is attached an external handle 24. The center of the pulley loosely receives one end of a shaft 25, the other end of which is supported in an upright bearing 26. Adjacent the shaft, near the inner end thereof is mounted an upright bearing 27 supporting a stub shaft 28 which carries a spur gear 29, a similar gear 30 on the shaft 25 meshes with the gear 29. The bearing 27 has a horizontal arm 31 with a vertical bearing 32 in which is journalled a vertical shaft 33. This shaft carries at its upper end a pinion 34 meshing with the gear 11 and at its lower end a bevel pinion 35 meshing with a similar member 36 on the stub shaft 28. In this manner a drive is established from the shaft 25 to the ring gear 11.

It has already been stated that the shaft 25 is loose with respect to the pulley 22, so that rotation of the handle 24 does not of itself turn the shaft. The driving connection between the pulley and the shaft depends on the deposit of a proper coin into the apparatus. To this end there is provided a coin chute 40 in the front wall 21 and leading towards the pulley. The latter member is provided with a coin seat which consists of a member 41 extending perpendicular to the general plans of the pulley and having a radial slot 42. At one side of the member 41 is provided a pair of spring clips 43 adapted to hold the coin in engagement with the member.

The shaft 25 has fixed thereto three equally spaced radial fingers 44 adapted each to pass through the slot 42 when there is no coin in the coin seat. The edge of the pulley carries a pair of diametrically opposed studs 45 and 46, and a stop 47 projecting from the casing 20 lies in the path of these studs. After a coin has been inserted in the chute 40 and passed to the seat 41, the handle 24 is turned in the direction of the arrow in Figure 4. In this direction of movement the coin is backed by the plate-like member 41 as indicated by the position of the clips 43 in Figure 4 and by the sectional views taken on Figure 4. After turning through an arc of sixty degrees, the coin engages one of the fingers 44 and causes the shaft 25 to turn. Movement is thus transmitted to the drum 8, whereby a bottle 13 is advanced to the trap door 16. Turning of the pulley 22 is however limited to 180° in one direction by the engagement of the stud 46 with the stop 47. An arcuate guard 22′ fixed to the wall 21 prevents the coin from falling out of its carrier during this movement.

The movement of the pulley in the direction indicated in Figure 4 winds a spring 48 having one end fixed to the front plate 21 and its other end to the pulley as shown in Figure 1. Thus, when the handle 24 is released after being stopped by the stud 46 it will reverse its movement through an arc of 180° determined in this case by the stud 45. There is no such return movement of the shaft 25 and fingers 44, which now remain stationary. The coin seat 41 is moved through an arc of 180° and contacts with one of the fingers 44 spaced at 120°, as the result of which the coin strikes one of these fingers. In this reverse direction of the coin seat, the coin is held only by the clips 43, and the impact of the coin against the fingers is sufficient to force the coin out of the seat and permit it to drop into a coin box 49 below.

In order to prevent the effectiveness of iron or other magnetic disks which may be deposited in the coin chute for deceptive purposes, an electro-magnet 50 is mounted adjacent the coin seat near the rest position thereof. A conducting strip 51 is secured to the wall 21 through the medium of an insulating member 52 and is joined as at 53 to one of the terminals of the magnet. The other terminal is grounded as at 54 by being connected to a metallic part of the housing 20 and is consequently in electrical communication with the contact member 55 carried by the pulley. A suitable source of current has one terminal connected to the electro-magnet and the other terminal grounded in the usual manner. The relation between the conducting members 51

and 55, as shown in Figure 4, is such that the initial movement of the pulley closes the circuit and energizes the magnet 50, whereby a counterfeit coin deposited in the coin seat will be withdrawn before coming into contact with any of the fingers 44.

Referring now to the actual dispensing operation, it will be apparent that when a bottle 13 is delivered to the trap door, this door must be removed in order to permit the bottle to fall into the holder 18. In order to accomplish this operation a vertical shaft 60 is journalled in the base 2, substantially in the axis of the cylindrical body 1, as shown in Figures 3 and 8. From the upper end of the shaft, an arm 61 extends to the trap door, so that when the shaft is turned the trap door is drawn from beneath the bottle thereon and into a cavity 62 formed in the floor 4 for receiving the door as illustrated in Figure 3. To an intermediate point of the shaft 60 is secured a shorter arm 63 normally parallel to the arm 61. The shaft 25 carries a three-point cam 64 as shown in Figure 9, and adjacent the shaft is a support 65 for a slide 66, connected to the free end of the arm 63 by a link 67. The slide has a slot 68 through which the shaft 25 passes, and the free end of the slide carries a roller 69 in contact with the cam. Thus, rotation of the shaft 25 in the manner described causes the slide 66 to be shifted and to turn the shaft 60 so that the arm 61 moves the trap door 16. The construction of the cam is such that the trap door will be opened and closed during the 180° turn of the crank 24.

In order to prevent deposit of coins into the machine after all the bottles 13 have been dispensed, there is provided a slide 40′ movable across the intake end of the chute 40 and operable automatically under these conditions. In the inner wall of the body 1 is provided a vertically hinged flap 70 (Figure 3) having a lever 71 connected to the slide. A spring 72 connecting the slide to a fixed point on the wall 21 tends to draw the slide to closing position with respect to the chute 40 and to swing the flap 70 towards the drum 8, but both these movements are resisted by the engagement of the flap with a bottle 13 so long as bottles remain in the apparatus. When however no bottles remain, the flap 70 swings inwardly and the slide 40′ moves to a position which obstructs the chute.

It will now be apparent that the invention provides an apparatus for dispensing bottled fluids and maintaining them in a cool condition, that the device is inoperative by counterfeit coins and that it does not take coins when empty, as indicated in the statement of the objects of the invention.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claim.

What we claim is:—

A dispensing apparatus comprising a cylindrical body having a floor, a cylindrical drum rotatably mounted therein, fins extending from said drum towards the wall of said body, a trap door in said floor at the edge thereof, and a spiral track along the inner wall of said body, extending from a point directly above said trap door to said floor, and a deflecting member projecting inwardly from said body at the lower end of said track and positioned to guide articles from said track to said trap door.

In testimony whereof we affix our signatures.

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