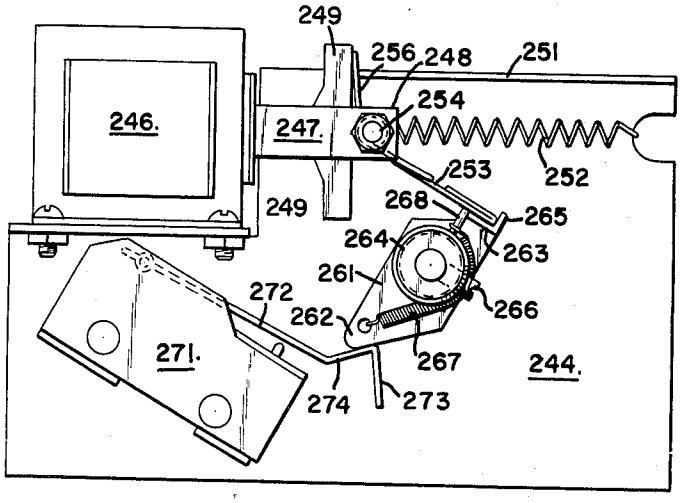
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COIN METERING APPARATUS FOR MULTIPLE MACHINE INSTALLATIONS

Original Filed April 29, 1963

Fig. 1



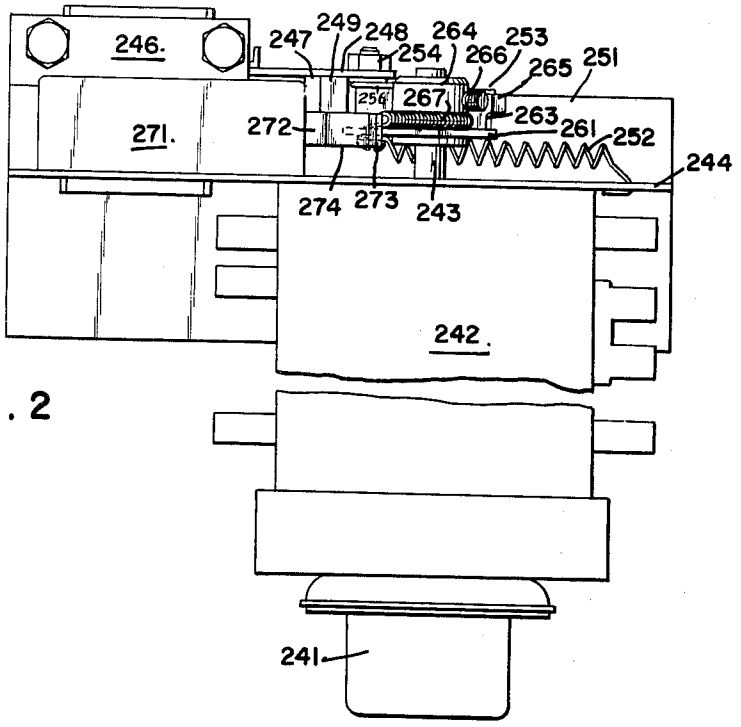


Fig. 2

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COIN METERING APPARATUS FOR MULTIPLE MACHINE INSTALLATIONS

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6 Claims. (Cl. 200—92)

This application is a division of application, Serial No. 276,514, filed April 29, 1963, now Patent No. 3,221,862, which is a continuation-in-part of copending application Serial No. 199,919, filed June 4, 1962, now issued as U.S. Patent No. 3,140,766. This invention relates to a new and improved coin metering apparatus for multiple installations.

Washing machines, driers, and dry cleaning machines are frequently installed in locations where attendants are not usually present and hence the provision of a coin metering device which is accurate and which prevents operation of the machines by dishonest patrons is of considerable importance. Where such machines are installed in groups and wherein the patron selects one of a group of similar machines for use, the present invention is particularly suitable. Thus in accordance with one form of the invention hereinafter described in detail there is provided at a central location in the room in which the machines are installed a console having a selector switch whereby the patron may select any of a group of machines for use plus a coin slot and coin metering device whereby the patron inserts the required number of coins to start the machine. As a further feature of the invention such coin metering apparatus may be so constructed that the patron may install coins for more than one time cycle as desired, it being understood that particularly in connection with clothes driers the type of fabric and other considerations may make it desirable to dry the clothes for several cycles. The present invention comprises an apparatus which may be used to satisfy all of the foregoing requirements and which have considerable advantages over all the coin metering devices previously used for similar purposes.

A particular advantage of the present invention is the fact that the coin metering mechanism may be adjusted by an attendant so that it will start a machine upon deposit of either a single coin or any desired plurality of coins and that by simple adjustment of the device the number of coins required for such purpose may be altered. Assuming that the coin slot is selected of such dimension that it will accept a 25-cent piece, the mechanism hereinafter described has removable pins in its construction which may be added or removed so that the machine starts after the deposit of one, two, three or four quarters or more as desired. The adjustment heretofore mentioned may be made at the site of the machines and does not require removing the device or any portion thereof for servicing at a central servicing center or repair shop. The alteration may be made by relatively unskilled labor and without the use of special tools or equipment.

A further advantage of the invention is the fact that the apparatus is very simple in operation and consists of a few parts which are of rugged construction resulting in a device which is inexpensive to produce, maintain and repair.

Still another feature of the invention is the fact that means is provided so that a dishonest patron cannot actuate the timer mechanism and then by manipulation of the device obtain a return of one or more coins. Further, means is provided to prevent intentional or unintentional vibration of the machine which would result in advancing the coin device so that fewer coins than the desired number energize the machine. Another advantage of the invention is the fact that provision is made whereby a dishonest patron cannot by manipulation of the switches energize a plurality of machines upon deposit of coins for sufficient to start a single machine. Provision is also made so that coins smaller than the coin to be used as a basis for energization of the machine are rejected and coins larger than such desired coin are not accepted by the device.

A particular advantage of the present invention is the fact that the point at which the coins are deposited may be located centrally and remote from the individual machine to be controlled thereby, this central point being more readily visible and hence dishonest patrons are more likely to be detected.

A still further advantage of the invention is that there is no mechanical connection between the coin mechanism and the timer for the machine. It will be understood that such timers are quite delicate and when abused are quite likely to become inaccurate or inoperative. The absence of mechanical connection between the coin deposit mechanism and the timer reduces the mechanical shock and wear which tends to harm the switches, timers, and relays which are used on the individual machines. No matter how the patron abuses the coin deposit mechanism, damage to the timer is avoided.

A still further feature of the invention is the elimination of electrical relays in the circuitry whereby the coin mechanism controls actuation of the individual machine. Such relays, particularly in the damp atmosphere in which washing machines are usually installed, tend to create service problems which are largely eliminated by reason of the installation of the invention hereinafter described.

Another feature of the coin deposit mechanism hereinafter described is the fact that the coin itself is the mechanical connection between the turning knob which the patron turns after depositing the coin and the cam which energizes a switch. The switch is connected to a solenoid at the individual machine selected which solenoid is energized upon turning of the control knob. The solenoid is so connected into the timing mechanism of the individual machine that only when the coin drops out of its holder and into the coin deposit box is the machine actuated. Thus when the coin tends to stick in the coin deposit mechanism the energization of the plurality of machines is not accomplished.

A still further feature of the invention is the provision of an interlock in the control knob whereby the patron selects the desired machine for operation so that when one of the machines is energized the control knob is locked against movement thereby proventing the patron from, upon deposit of a single coin or coins, rapidly manipulating the selector switch so as to energize a plurality of machines.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a fragmentary top plan of a switch mechanism mounted on a washing machine.

FIG. 2 is a side elevation of the structure of FIG. 1.

In one form of the invention illustrated in said application, Serial No. 276,514 a central control cabinet or console A is provided having a selector switch whereby the deposit of a coin or coins may be arranged to actuate any one of a plurality of machines located remote from the console. Thus assuming the invention is installed in a laundry room of an apartment house, a coin-operated

laundry, or the like, the patron selects a particular washing machine (or drier or the like) for deposit of clothes and thereupon sets a selector switch for connection with that particular machine. Thereupon the patron deposits in a Coin Deposit Mechanism B on console A one or more coins which have been predetermined as required to actuate the machine for a cycle. Deposit of the coins actuates either a Dryer Type Switch Mechanism C or Washer Type Swith Mechanism D located at the respective machine selected which starts operation of the machine.

In another form of the invention, the coin mechanism E is directly connected to timing mechanism and relays for a single machine as distinguished from selection of multiple machines, but much of the coin mechanism of this form of the invention is similar to a portion of the mechanism previously described.

For convenience the following specification of the invention is divided into sections.

Multiple washer-type switch mechanism

Where the remote control coin mechanism B, described in said Serial No. 276,514 is used to energize a machine such as a washing machine, such machine has a motor **241** which drives a relay **242** controlling the cycle of operation of the machine which includes control of admission of water, rotation of the washing drum for washing, rinsing and drying, pumping of waste water, and the like, all as well understood in the automatic washing machine art. The details of motor **241** and relay **242** form no part of the present invention and are broadly disclosed in U.S. Patent No. 2,313,064, as well as others. It will be understood that the details of the construction of such equipment are subject to wide variation and the particular form herein illustrated may likewise be varied. The shaft **243** of the relay **242** extends up through a suitable aperture in mounting plate **244** on the washing machine and upon which the mechanism hereinafter described in detail is mounted and rotates in clockwise direction as viewed in FIG. 1. Mounted on plate **244** is a solenoid **246** which is energized upon closing of a switch (not shown) such as switch **101** of said Serial No. 276,514. The outer end of armature **247** of solenoid **246** is formed with a clevis **248** and inwardly of clevis are laterally projecting wings **249**. An upturned portion **251** of plate **244** is contacted by one of the wings **249** to limit outward movement of armature **247**. Armature **247** is biased toward outward position by means of spring **252** connected at one end to plate **244** and at the opposite end to clevis **248**. Cam dog **253** is mounted on clevis **248** by screw **254** passing through an eye at the inner end of dog **253**. Dog **253** is biased in a direction toward shaft **243** by means of torsion spring **256** wrapped around screw **254** and having one extension engaging armature **247** and another engaging dog **253**.

Rotatably mounted on and relative to shaft **243** is cam **261**. Cam **261** has an elongated point **262** and, approximately 180° to the rear of point **262**, is upturned ear **263** having outward turned shoulder **265**. A collar **264** is fixed on shaft **243** by set screw **266** and spring **267** interconnecting collar **264** and cam **261** biases cam **261** in a direction opposite the direction of rotation of shaft **243**. Counter-clockwise movement of cam **261** relative to shaft **243** is limited by radial pin **268** on collar **264** engaging ear **263**.

Mounted to one side of shaft **243** is micro-switch **271** having switch arm **272** formed with a V-shaped angular extremity having outer surface **273**, inner surface **274**, and which protrudes into the path of rotation of cam **261**. Closing of switch **271** by movement of arm **272** toward shaft **243** energizes timer motor **241**.

In operation, the cycle commences with point **262** of cam **261** in contact with outer surface **273** of switch arm **272** so that arm **272** is depressed, switch **271** opened, and thus the machine is stopped. In this position, spring **267** forces ear **263** in contact with pin **268**. Upon deposit of

coins at coin deposit B, as described in Serial No. 276,514, solenoid **246** is energized retracting armature **247** and bringing dog **253** into position behind shoulder **265**. Upon de-energization of solenoid **246**, spring **252** projects armature **247** and dog **253** pushes cam **261** a few degrees clockwise until point **262** clears outer surface **273** and comes to rest on inner surface **274**, so that arm **272** moves outward and starts motor **241**. Since dog **253** engages shoulder **265**, cam **261** is held against return to initial position, the force of spring **252** being considerably greater than that of spring **267**. Energization of motor **241** turns shaft **243** and eventually pin **268** engages behind ear **263**, turning cam **261** in clockwise direction through 360° to the initial position, whereupon point **262** engages and depresses surface **263** and stops motor **241**. If a dishonest or mischievous patron jars the machine at "off" position so that dog **253** is out of contact with shoulder **265**, spring **267** maintains point **262** against outer surface **273**, thereby preventing start of the machine. Similarly, jarring during the interval when point **262** contacts inside surface **274** can only result in spring **267** returning cam **261** to initial or "off" position, thus defeating the purpose of the dishonest parton.

What is claimed is:

1. A switch mechanism comprising a motor, a relay turned by said motor and having a shaft and means to maintain said motor energized until said shaft has turned to first position and then de-energize said motor, a cam rotatable relative to said shaft, a lost-motion connection between said shaft and cam permitting said cam to turn ahead of said shaft, means biasing said cam against the direction of turning of said shaft, said cam having a point, a switch controlling starting of said motor and having an arm with an angular extremity, said point, when in first position, in contact with the outer part of said extremity opening said switch and when in second position out of contact with said outer part closing said switch to start said motor, a solenoid, a pawl controlled by said solenoid, said pawl when extended contacting said cam to move said point from first position to second position, ahead of rotation of said shaft and closes said switch to energize said motor.

2. A switch mechanism according to claim **1** wherein continued operation of said motor takes up said lost-motion connection and turns said cam to first position to open said switch and de-energize said motor.

3. A switch mechanism comprising,

a motor,

a shaft turned by said motor,

a pin affixed to, and extending radially outwardly from, said shaft,

a cam rotatable about said shaft, said cam having a point and a shoulder,

means biasing said point of said cam towards said pin on said shaft,

a normally closed held-open switch in the starting circuit of said motor, said switch being held open by said point on said cam when said point is in a first position,

a solenoid,

a pawl connected to and controlled by said solenoid, said pawl being extended when said solenoid is de-energized and retracted when said solenoid is energized, said pawl resting against said cam when said pawl is initially extended and said point is in said first position,

said pawl, when extended after an initial retraction, extending to contact said shoulder on said cam to move said point on said cam θ degrees to a second position,

said point when moving to said second position causing said switch to return to its normally closed position, causing said motor to turn, said pin on said motor shaft contacting said cam after said pin has turned θ degrees, said pin continuing to turn said cam and said point until said point has returned to said first

position, thereby opening said switch and causing said motor to stop.

4. A switch mechanism according to claim 3, which further comprises,

a removable collar affixed to said shaft to turn with said shaft, said pin being affixed to said collar and turning with said collar and said shaft.

5. A switch mechanism according to claim 3, in which said means biasing said point of said cam towards said pin on said shaft comprises,

a spring extending from said pin on said shaft to position on said cam in close proximity to said point on said cam.

6. A switch mechanism according to claim 3 in which said cam comprises a flat piece of metal of substantially rhombic shape having an opening formed therein for said shaft and having said shoulder formed at one corner of said cam diagonally opposite said point, said shoulder extending upwardly from the plane of said cam.

No references cited.

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