

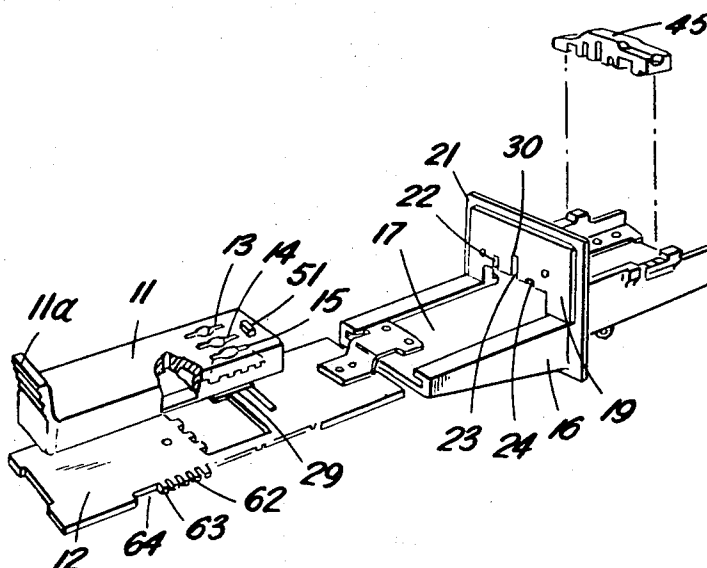
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[73]	Assignee	Electric Shop Developments Limited London, England
[32]	Priority	May 27, 1968 Great Britain 25302/68

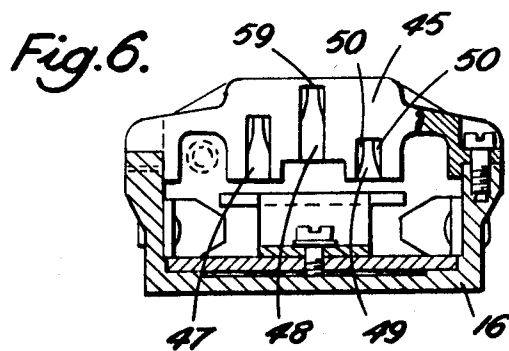
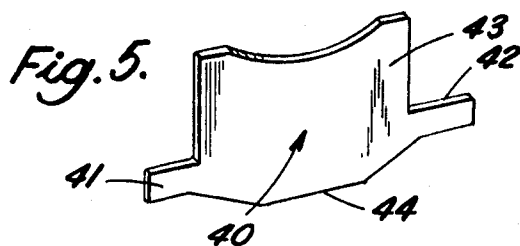
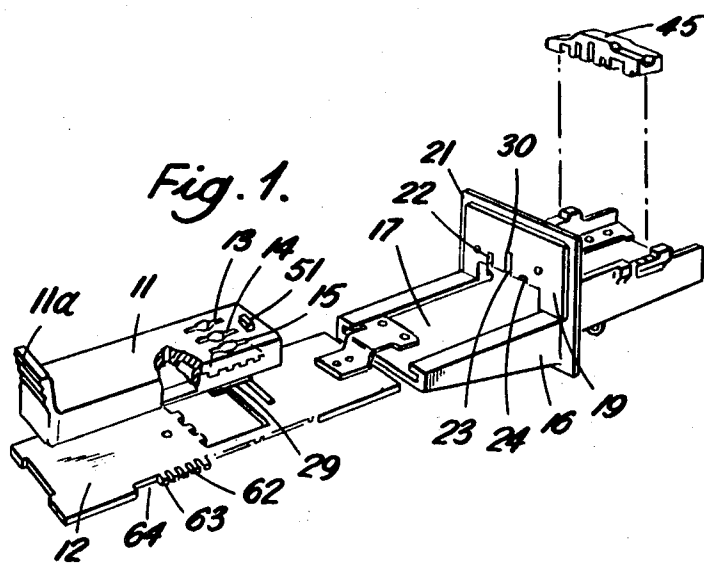
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<i>Primary Examiner</i> —Samuel F. Coleman			
<i>Attorney</i> —Bacon & Thomas			

[54] **COIN OPERATED APPARATUS**
10 Claims, 6 Drawing Figs.

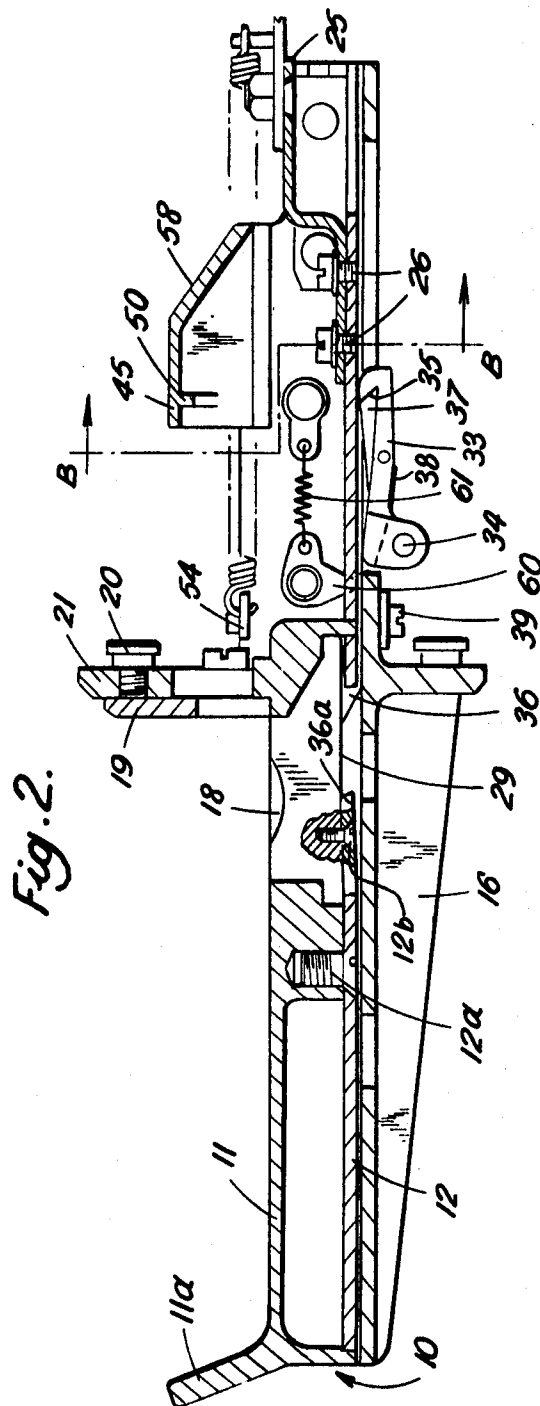
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[50]	Field of Search.....	194/92, 93, 55-60

ABSTRACT: Coin freed apparatus having a coin slide with an apparatus operating position, having two abutments which receive an upright coin, the correct predetermined coin in the slide being movable to the apparatus operating position though a third abutment, a coin greater than the predetermined size engaging the edge of the third abutment and wherein a lever engages a member on the slide to prevent movement to the apparatus operating position if no coin is received by the slide.

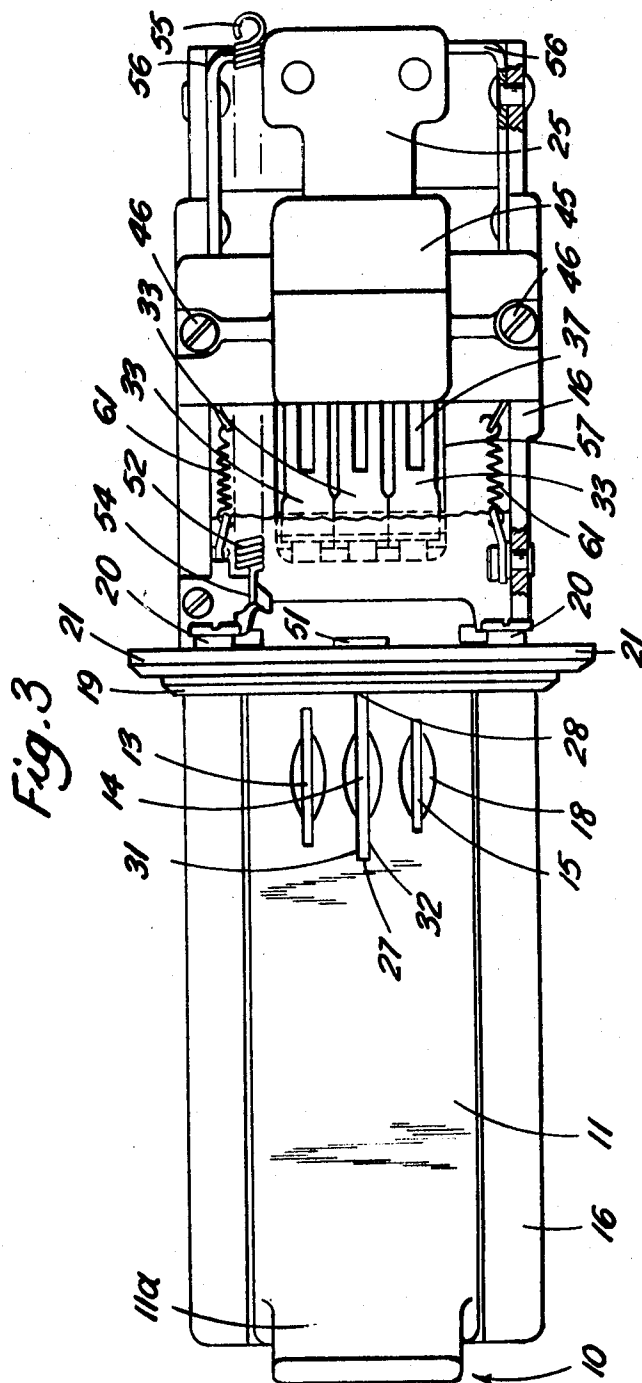




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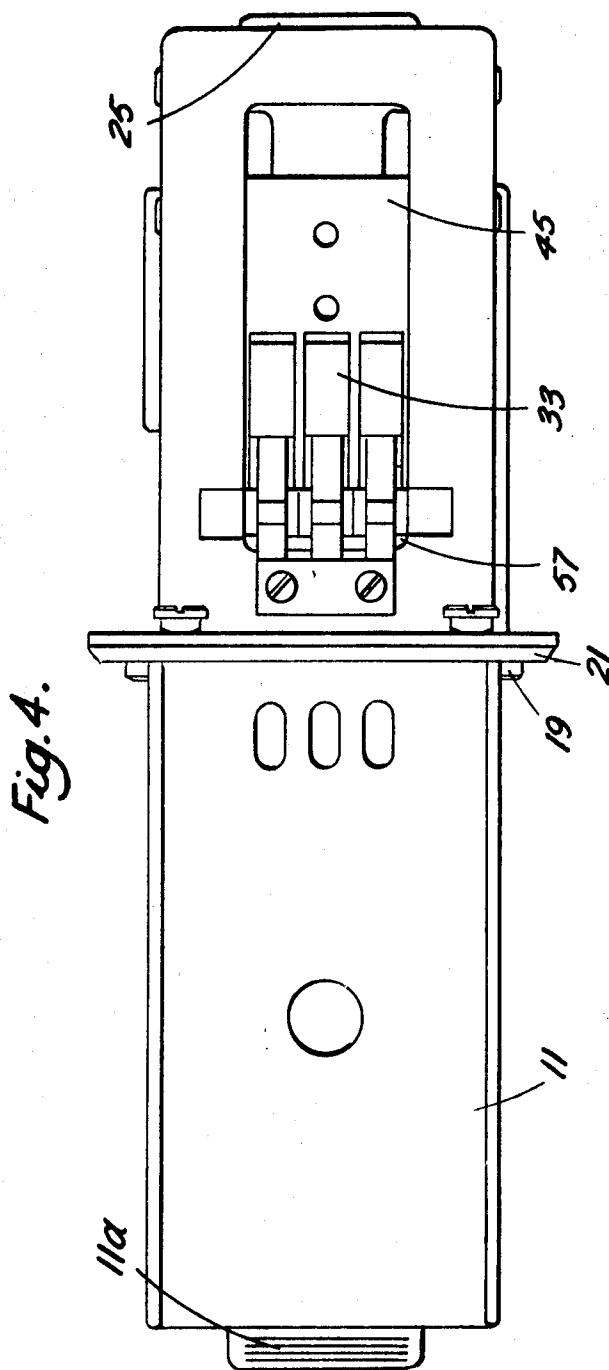
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COIN OPERATED APPARATUS

The invention relates to coin operated apparatus.

In the specification the term 'coin' is intended to include both genuine and counterfeit coins and also coin tokens and the like.

It has been a difficulty that as prices of articles vary or for example when a monetary system is altered or prices rise then automatic vending machines, automatic washing machines or the like have to be modified in order to accommodate the new price or the new sized coins as the case may be.

Accordingly the present invention is intended to alleviate this difficulty by providing a coin selector which can be easily modified to operate upon receipt of different coins or on any combination of different coins. The only modifications which have to be made to the apparatus to accommodate different coins is to alter a coin receiving block and/or an escutcheon plate and possibly the height of a bridge. It need not be necessary to make all these modifications, the precise modifications to be made depending upon the size of the coins. The apparatus also includes several checks for coins received by the apparatus in order to ensure that the coins are genuine. If any one of the received coins fails to satisfy any one of the checks then the coins are not accepted. The elegant and compact construction of the apparatus enables it to be easily maintained.

Accordingly the present invention provides apparatus for carrying out an operation or making an operation possible on receipt of one or more coins, which apparatus includes a movable coin receiving part for receiving at least one coin when in one position which coin receiving part is movable to a second operating position through coin checking means, and means for preventing the coin receiving part from being moved to the said second position if no coin has been received by the coin receiving part, the coin receiving part having two spaced abutments arranged to engage the edge of a received coin at two positions around the periphery of the coin so that a coin greater than a predetermined size projects above the coin receiving part a sufficient amount that the coin checking means prevents passage of the coin receiving part to the second operating position.

Preferably the coin checking means includes a third abutment and preferably the coin receiving part has two further spaced apart abutments to prevent a coin being received if its thickness is greater than a predetermined amount.

Conveniently the abutments of the coin receiving part are formed by at least one slot and the coin checking means includes a second slot arranged to allow passage therethrough of a received coin of predetermined size placed in the slot of the coin receiving part and advantageously the slot of the coin receiving part is adapted to receive vertical coins.

Preferably the slot of the coin checking means is substantially at right angles to the longitudinal axis of the slot of the coin receiving part.

Preferably the coin receiving part is adapted to retain a received coin at least for the initial part of its movement from the said one to the said other position.

Conveniently the means for preventing the coin receiving part from being moved to the said second position includes gripping means arranged to grip a grippable abutment means upon the coin receiving part which gripping means is depressed away from the abutment means upon the passage of a coin of the correct size.

Preferably the gripping means is spring biased towards the grippable abutment means.

The gripping means may be a pivotally mounted lever which has an inclined face to engage with the said gripping abutment means of the coin receiving part.

Also the apparatus preferably includes a bridge having wall members against which a coin of the predetermined size abuts and depresses the gripping means to allow passage of the coin receiving part.

Advantageously a coin of less than the predetermined size does not abut against the wall members and depress the gripping means but allows the gripping means to grip the grippable abutment means of the coin receiving part to prevent the passage thereof.

Preferably the bridge has coin propulsion means to propel accepted coins from the apparatus and preferably this is an inclined abutment surface within the slot of the bridge.

Preferably the coin receiving part is a slide.

A specific example of apparatus for use with an automatic washing machine and embodying the invention will now be described by way of example and with reference to the accompanying drawings in which:

FIG. 1 is an exploded view of part of the apparatus;

FIG. 2 is a sectional side view of the apparatus;

FIG. 3 is a plan view of the apparatus;

FIG. 4 is an underside view of the apparatus;

FIG. 5 is a perspective view of part of the apparatus; and

FIG. 6 is a sectional view along the lines BB of FIG. 2.

The apparatus shown in FIGS. 1 to 6 is for allowing a machine such as an automatic washing machine to be operated on receipt of a coin or coins from a person wishing to use the washing machine.

The apparatus has a manually operable slide 10 comprising a coin receiving metal block 11 which is screwed to a metal rectangular plate 12 by a screw 12a. The block 11 has an integrally moulded handle 11a by which the slide 10 may be moved as will be hereinafter described. The block 11 has three coin receiving slots 13, 14, 15 for receiving three different size coins which in the case of this example are a one shilling coin, a two shilling coin and a sixpenny coin respectively. The slots 13, 14, 15 have a partly dished surface 18 to facilitate the insertion of coins. The slide 10 is mounted for sliding movement in a metal frame 16 with a flat base part 17 adapted to receive the slide 10 and an upright part 21. Screwed to the upright part 21 by screws 20 is an escutcheon plate 19. The escutcheon plate 19 is provided with three slots 22, 23, 24 as shown in FIG. 1. The three slots 22, 23, 24 are in line with the three coin receiving slots 13, 14, 15.

The base part 17 and the folded over edges of the frame 16 constrain the slide 10 so that it may slide between a leftward position, in which the slide is shown in FIGS. 2 to 4, and a rightward position. Leftward movement of the slide 10 is limited by a stop 51 which projects above the body of the block 11 and which abuts against the escutcheon plate 19. Rightward movement of the slide is against the bias of a spring 52 fastened between a post 54 on the frame 16 and the end of the plate 12 at 55. The rightward movement is limited by the end stops 56 which abut against the ends of the block 11.

When the apparatus is fitted to a washing machine the part of the apparatus to the right of the upright part 21 as seen for example in FIG. 2 is inside the machine and normally inaccessible and the part of the apparatus to the left of the upright part 21 is outside and accessible. Thus in use of the apparatus the coin receiving block 11 can receive coins only when the slide 10 is in its leftward position. The slide 10 has suitable means such as a cam 25 or the like screwed to the end of the plate 12 at its right-hand end by screws 26 for operating a washing machine when the slide is moved to a rightward position. A person wishing to operate the washing machine inserts the appropriate coins as required into the coin receiving slots 13, 14, 15 when the slide 10 is in its leftward position and then pushes the handle 11a of the slide 10 to its rightward position in which the slide operates the washing machine. As will be described hereinafter movement of the slide to its rightward position is prevented if the coins do not satisfy certain checks. For a further operation of the machine the slide is pulled back to its original leftward position.

In order to describe the operation of the apparatus the insertion of only one coin into the slot 14 will be considered. It will however be appreciated that the operation of the apparatus for other coins will be identical except that the size of the slots is appropriately altered to receive the varying dimensions of the other coins.

The sides of the slot 14 form two abutments 27 and 28 (see FIG. 3) which are spaced apart by a distance slightly greater than the diameter of a genuine coin. The plate 12 has an opening 29 in it below the slot 14 so that when a genuine coin is received by the slot 14 the lower part of the edge of the coin will rest on the base part 17. The slot 23 in the escutcheon plate 19 at 90° to the slot 14 forms a third abutment 30 spaced above the base part 17 by an appropriate distance. The slots 14 and 23 are in line so that when a genuine coin has been received in the slot 14 and the slide 10 is then moved to the right the coin will pass through the slot 23 the coin being retained as it moves by being supported on the base part 17. If however the received coin is a counterfeit coin having a diameter greater than the spacing of the two abutments 27 and 28 then the two abutments 27 and 28 will engage the edge of the received coin at two positions around the periphery of the coin and cause the coin to project above the slide 10 a distance greater than that of the height of the abutment 30 above the slide 10, so that if any attempt is made to move the slide 10 to its rightward position the top edge of the coin will catch against the third abutment 30 and prevent such movement.

The apparatus operates in precisely the same way to prevent the slide being moved rightward if a coin with a diameter substantially greater than that of a genuine coin is received by the slots 13, 15 in the block 11, the slots 22, 24 respectively providing the third abutments to prevent the passage of coins having a diameter greater than that of the predetermined amount.

The sides of the slot 14 form two further abutments 31 and 32 which are spaced apart by a distance slightly greater than the thickness of a genuine coin. These two abutments will prevent a counterfeit coin being received at all by the slot 14 if the thickness of the coin is greater than their spacing.

The block 12 operates in precisely the same way to reject a coin if its thickness is substantially greater than that of the slots 13, 15.

To the right, as seen in FIGS. 2 to 4 of the upright part 21, are means for preventing the slide being moved to its rightward position if no coin has been received by the slot 14 in the coin receiving block 11. This means comprises three levers 33 which are pivotally mounted upon a pivot shaft 34. A leaf spring 38 is attached to the frame 16 by screws 39, the leaf spring acting to urge the levers 33 through an opening 57 in the frame against the plate 12. The levers 33 have inclined gripping faces 35 which may engage locking keys 36a screwed to the block 11 by screw 12b on the underside of block 11. The levers 33 are of a general T-shaped section, with the center member 37 projecting upwards towards the plate 12.

If no coin is inserted into the apparatus then when the slide 10 is moved to the right the levers 33 are not depressed. Since levers 33 are urged upwards by the leaf spring 38, the gripping faces 35 are engaged with locking abutments 36a, said levers 33 being lowered by the inclined faces of abutments 36 on the block 11 to the undersurface of the block 11 thus preventing further movement of the slide to the right. Also since the face 35 of the lever 33 is inclined then increasing the force in order to try to compel the slide to move to the right in an attempt to start the washing machine for the insertion of no coins causes more of the face of the lever to be engaged with the locking keys 36a so more firmly engaging the levers 33 and the locking keys 36a.

A further device is incorporated into the apparatus in order to enable coins which are too narrow or otherwise of the wrong shape to not be accepted even through the coins may be of the correct diameter to have passed the checks provided by slots 13-15, 22-24.

The further device is a bridge 45. The bridge 45 is secured to the frame 16 by two screws 46 (see FIG. 3). Referring now to FIGS. 2, 3 and 6 the bridge has three rectangular slots 47, 48, 49 in line with the slots 13, 14, 15 in the block 11. Within each of the slots 47, 48, 49 and slightly spaced from the entrance are wall members 50. At the rear of the bridge is an inclined surface 58.

If a genuine coin of sufficient thickness is inserted into the slot 14 then as the slide 10 is moved to the right the upper periphery of the coin is engaged between the wall members 50 and the lower periphery of the coin depresses the lever 33 so that the face 35 of the levers does not engage abutments 36 on the underside of block 11. The slide may thus be continued to be pushed forwards whereupon the coin abuts against the inclined surface 58 and drops through the hole 57 into a cash box (not shown); the slide may continue to be pushed forwards so that the cam 25 may operate the washing machine.

If a coin is inserted which is of too small a diameter, although of sufficient thickness then the upper periphery of the coin will not engage the wall members 50 sufficiently to cause the lever 33 to be depressed to clear the abutments 36. Hence further movement of the slide to the right is prevented.

If a coin is inserted which although of the correct diameter is too thin then movement of the slide to the right permits the upper periphery of the coin not to engage the wall members 50 but instead to fit between them at 59. The lower periphery of the coin will no longer depress the levers 33 to clear the abutments and hence further movements of the slide to the right is prevented.

Also if for example coins of an incorrect shape, square or rectangular coins were received which has passed the previous checks then the edge of the coin would abut against the inclined surface 58 before contacting the depressing the lever 33 so that further movement of the slide to the right would be prevented. The height of the bridge 45 above the frame may be varied by the inclusion of shims (not shown) between the bridge and the frame 16 so that the distance between the wall members and the levers may be altered and hence the thickness at which coins are rejected may be altered.

In the present embodiment of the invention failure to fill all of the slots 13, 14, 15 with coins would result in the levers 33 engaging the locking keys 36a. However the apparatus can be simply modified to operate on any combination of coins or even if no coins are inserted, by the use of one or more blanking plates 40 (see FIG. 5). The blanking plate 40 has two arms 41 and 42 which fit into slots (not shown) on the underside of the block 11. The projecting part 43 projects into the appropriate slot and prevents the insertion of coins into that slot. The lower projecting part 44 is adapted to simulate a genuine coin so that when the slide 10 is moved to the right the blanking plate 40 engages the appropriate center member 37 of the lever 33 and depresses the lever to allow the slide 10 to continue to move to the right. It will be appreciated that blanking plates may be inserted into the block 11 so that the block 11 may be arranged to work on any combination of coins, the vacant slots being filled by blanking plates.

A nonreturn means is included within the apparatus to prevent the slide being returned to its original starting position without having first been moved to a rightward position in which the slide operates the washing machine. The nonreturn means comprises two pivotally mounted ratchet arms 60, one on each side of the frame 16. The arms 60 are spring biased by springs 61 to have the apex of the arms 60 projecting downwards to engage spaces 62 between teeth 63 in the plate 12. The spaces 62 and the arms 60 engage substantially as the received coins fall into the cash box to prevent the slide 10 being returned. The slide 10 then has to be pushed fully to the right to engage the cam 25 with the washing machine when the arm 60, having moved over the teeth 63, is received by the larger space 64.

The inclination of the arm 60 may now be reversed to facilitate the return of the slide to the original leftward starting position in readiness for a further operation.

A magnet (not shown) may also be positioned within the apparatus. This magnet would cause any coin which included ferromagnetic material (i.e. is counterfeit) to jam in the apparatus and prevent further rightward movement of the slide 10.

In addition a device for preventing movement of the slide to its rightward position if a received coin has a hole in it can be

provided. This device may comprise a pivoted lever for each coin, the lever being arranged so that its end presses against the face of the coin at some stage as the slide moves from its leftward to its rightward position. The lever carries a stop and is arranged so that if there is a hole in the coin the end of the lever will enter this hole and cause the stop to operate to prevent further rightward movement of the slide.

The above apparatus can readily be adapted for use with other coins. This adaptation is carried out by replacing the coin receiving block 11 and/or the escutcheon plate 19 and possibly altering the height of the bridge 45 by shims as aforementioned.

Since the same type of automatic washing machine may be required to be used in a number of countries with differing currencies it has become the practice for automatic washing machines to be made for use with any one of a number of coin operated apparatus for operating the machine. This has led to most types of washing machines having an opening of a standard width for receiving the coin operated apparatus. The above apparatus is in fact of this standard width being about three inches wide.

I claim:

1. In coin freed apparatus, the combination comprising a coin receiving part movable between first and second operating positions having coin receiving means for receiving at least one coin when in said first operating position, coin checking means positioned between the first and second operating positions, means for preventing movement of the coin receiving part from the first to the second operating position, said preventing means having upon the coin receiving part a grippable abutment member, said means including gripping means for gripping the grippable abutment member to thereby provide a first engageable position to prevent movement of the coin receiving part from the first operating position to the said second operating position and a second disengageable position to permit movement of the coin receiving part from the first operating position to the second operating position, said coin receiving part having two abutments spaced apart a distance slightly greater than the diameter of a coin of predetermined size, whereby a coin of greater than a predetermined diameter engages the edges of the spaced abutments and projects above the coin receiving part to engage a third abutment upon the coin checking means to prevent passage of the coin receiving part to the said second operating position and a coin of a correct predetermined diameter lies between the spaced abutments and moves the preventing means to the second disengageable position, and wherein a bridge in said second operating position has wall members which abut the coins of the said correct predetermined size to cause the coins to depress the gripping means to the said second disengageable position and wherein a coin of less than the predetermined size is moved between said wall members without causing depression of said gripping means, to thereby leave said gripping means in said first engageable position.

2. Apparatus as claimed in claim 1, in which the coin receiving part has two further abutments spaced apart the predetermined thickness of a coin.

3. Apparatus as claimed in claim 1, in which the abutments of the coin receiving part are the edges of a slot and the coin

checking means includes a second slot substantially at right angles to and in line with the longitudinal axis of the slot of the coin receiving part.

4. Apparatus as claimed in claim 1, wherein the gripping means is a spring biased pivotally mounted lever which has an inclined face to engage the grippable abutment means of the coin receiving part.

5. Apparatus as claimed in claim 1, wherein the gripping means contains a center member, and wherein the coins of the correct predetermined size on movement from the first to the second operating position contact said center member to depress said gripping means.

6. Apparatus as claimed in claim 5, wherein gripping means has an inclined face on each side of the center member.

7. Apparatus as claimed in claim 1, wherein each of a plurality of coins within the coin receiving part are movable together to the said coin checking means.

8. In coin freed apparatus, the combination of a coin receiving part movable between first and second operating positions having a first slot for receiving at least one coin when in said first operating position, coin checking means having a second slot positioned between the first and second operating positions, means for preventing movement of the coin receiving part from the first to the second operating position, said preventing means having upon the coin receiving part a grippable abutment member said means including gripping means for gripping the grippable abutment member to thereby provide a first engageable position to prevent movement of the coin receiving part from the first operating position to the second operating position and a second disengageable position to permit movement of the coin receiving part from the first operating position to the second operating position, said first slot of the coin receiving part having two abutments spaced apart a distance slightly greater than the diameter of a coin of predetermined size, whereby a coin of greater than a predetermined diameter engages the edges of the spaced abutments and projects above the receiving part to engage a third abutment upon the coin checking means to prevent passage of the coin receiving part to the said second operating position and a coin of a correct predetermined diameter lies between the spaced abutments and depresses the gripping means to provide the said second disengageable position and wherein a coin of less than the predetermined size is moved between said abutments without causing depression of said gripping means, to thereby leave said gripping means in said first engageable position, and wherein the gripping means contains a center member, coins of the correct predetermined size on movement to the first to the second operating position contacting said center member to depress said gripping means, the gripping means having an inclined face on each side of the center member to engage said grippable abutment means of the coin receiving part.

9. Apparatus as claimed in claim 8, in which the bridge has coin deflecting means to deflect accepted coins from the apparatus.

10. Apparatus as claimed in claim 8, in which the coin deflection means is an inclined abutment surface within the slot of the bridge.