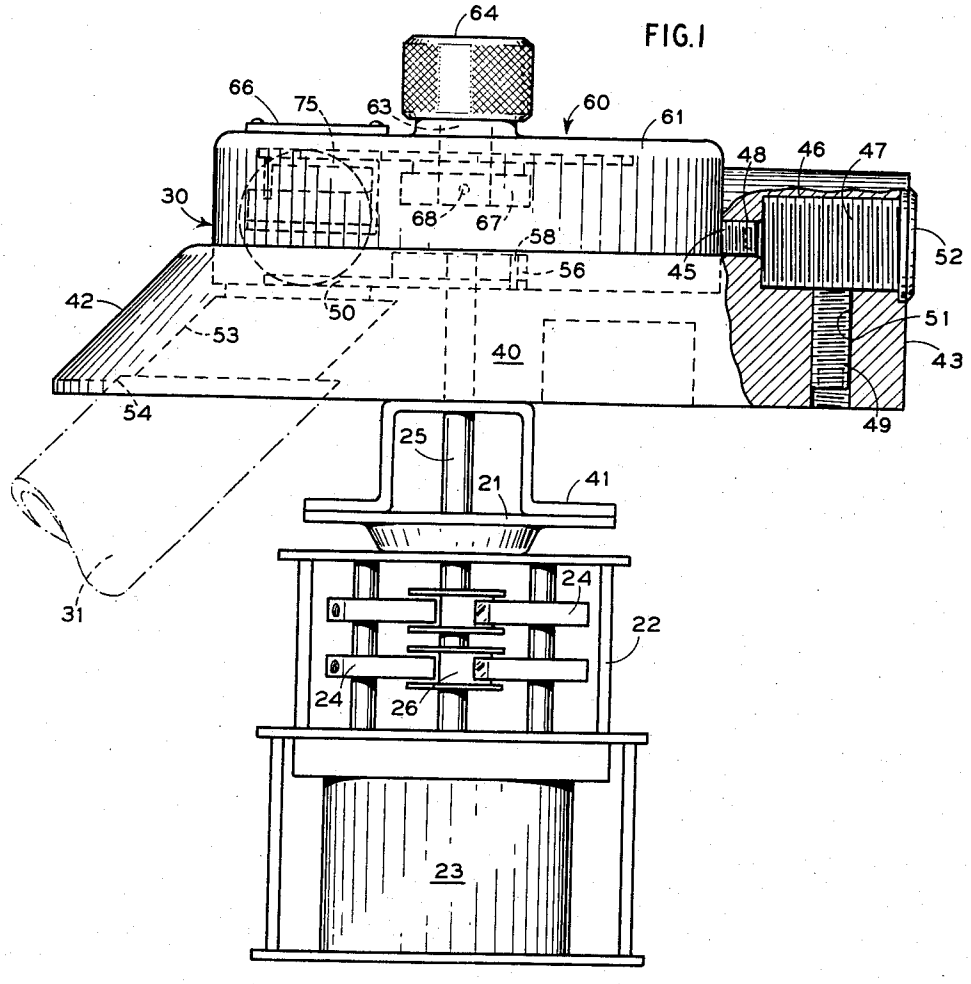
Feb. 9, 1960 H. GREENWALD 2,924,320

COIN CONTROLLED MECHANISM

Filed Jan. 10, 1955

3 Sheets-Sheet 1

FIG. 1



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FIG. 2

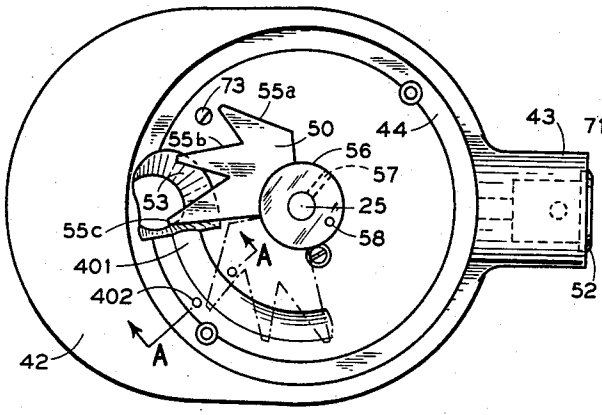
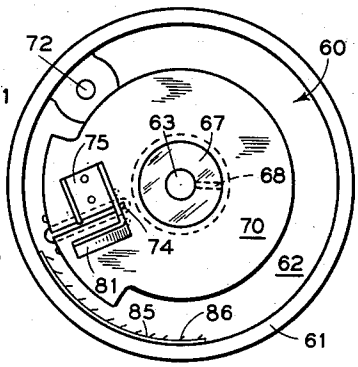


FIG. 4



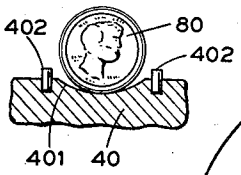


FIG. 3

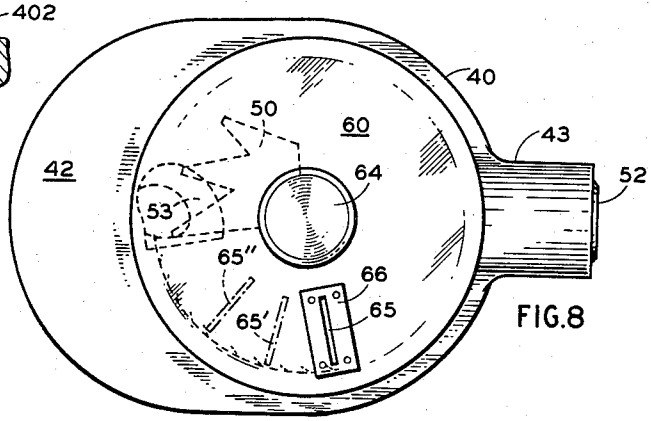


FIG. 8

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FIG. 5

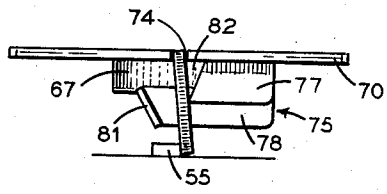


FIG. 6

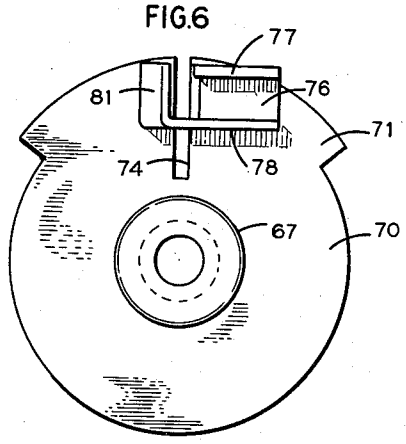
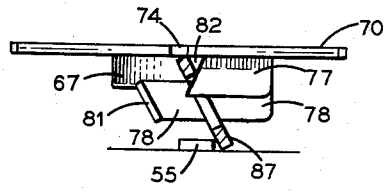


FIG. 7



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COIN CONTROLLED MECHANISM

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Application January 10, 1955, Serial No. 480,797

1 Claim. (Cl. 194—84)

This invention relates to coin controlled mechanisms and, more particularly, to such mechanisms of the type in which insertion of a coin mechanically couples an operating or driving member to an operated or driven member during a predetermined movement of the members, at the end of which movement the coin falls into a coin release chute or the like to effectively uncouple the members.

Coin controlled mechanisms of this type are frequently used in commercial installations of automatic appliances such as clothes washers and driers. The operation of such automatic appliances is usually controlled by a cycle timer which is energized by movement of a control element to a "start" position to automatically carry out the operating cycle of the appliance. During the operating cycle, the cycle timer control element is progressively moved from the "start" position toward a "stop" position and, when it reaches the latter position, the cycle timer is automatically deenergized and the operating cycle of the appliance is terminated.

To re-start the operating cycle, the timer control element must be moved from the "stop" position to the "start" position, the direction of this latter movement customarily being in the same direction as the movement of the control element during the operating cycle. There is thus a positional gap or interval between the "stop" or "off" position and the "start" position of the timer control element.

When a coin controlled mechanism of the aforementioned type is applied to such an automatic appliance, the usual control knob is removed from the control element of the cycle timer and the operated or driven member of the coin mechanism is coupled to the control element. The parts of the coin mechanism are so related that the required number of coins must be inserted before the cycle control element can be moved the full distance from the "stop" to the "start" positions. For example, if it is desired to have the appliance operate when a single coin is inserted, the driving and driven members of the coin mechanism are so related that the cycle control element is moved the full distance to the "start" position by the coin-coupled operating and operated members of the coin mechanism before the coin drops into the coin chute to uncouple these members. If a multiple coin operation is desired, the members of the coin mechanism are so designed that each coin-coupled operation of the mechanism advances the cycle timer control element only a fraction of the "positional gap" before the coin falls into the coin chute, and successive coin insertions are required to move the control element over the remainder of the "positional gap." Thus, for a two-coin operation, insertion of the first coin couples the driving and driven members for movement of the timer control element only one-half the distance between the "stop" and "start" positions before the coin falls into the chute to uncouple the members. When a second coin is inserted, the members are coupled for a sufficient distance of movement to move the control element the balance of the distance

to the "start" position before the second coin falls into the coin chute.

Coin mechanisms of this type generally include a base part receiving the control element and containing a driven or operated member secured to such element, which element is usually a rotatable shaft. A cover part locked to the base part contains the driving or operating member to which is secured an externally accessible control knob, the cover being formed with a coin slot.

In the usual construction, the two parts of the coin mechanism are secured together by bolts extending longitudinally therebetween, and the cooperating parts must be changed in accordance with the number of coins desired to effect one operation of the cycle timer. The securing bolts are usually inaccessible without removing the unit from the appliance, and this factor, together with the required interchange of parts, results in considerable expense to change over the operation from a one-coin to a two- or three-coin cycle initiation, or vice versa.

In the coin mechanism to which the present invention is applied, the base part is provided with a driven member having a number of fingers and adjustably secured to the timer control shaft or element in such relation thereto that, when the control element is at the "start" position, the rearmost or trailing finger is aligned with a coin discharge or outlet opening.

The relative angular distance of the coin slot in the cover from the coin outlet in the base determines the number of coins required to start the cycle timer. For a one-coin operation, the coin slot is so positioned that an inserted coin will couple the driving member, in its retracted position, to the rearmost finger of the driven member when the control element is in the "stop" position. Thus, the driving and driven elements will remain coupled until such rearmost finger is aligned with the coin chute, so that insertion of a single coin will allow the timer control shaft to be moved the full distance to the "start" position.

For a two-coin operation, the cover is adjusted to position the coin slot between the last finger and the penultimate finger. Consequently, when the inserted coin drops into the coin chute, the last finger is still spaced therefrom, and the next inserted coin will engage the last finger to complete movement of the control element to the "start" position.

To set the mechanism for a three-coin operation, the cover is adjusted to position the coin slot in advance of the penultimate finger so that, when the coin drops, this finger is between the coin slot and the coin chute. The next inserted coin allows the penultimate finger to be aligned with the coin chute and a third coin is required to permit movement of the last finger to the coin chute. This procedure can be carried out for a larger number of coins, if desired, by adding suitably located fingers to the driven member.

For an understanding of the invention principles, reference is made to the following description of a typical embodiment thereof as illustrated in the accompanying drawing. In the drawing:

Fig. 1 is an enlarged elevation view illustrating the coin-controlled mechanism mounted on a conventional cycle timer;

Fig. 2 is a top plan view of the coin-controlled mechanism with the cover removed;

Fig. 3 is a partial radial sectional view on the line A—A of Fig. 2;

Fig. 4 is an inside plan view of the cover;

Fig. 5 is an outside elevation view of the coin clutch coupled by a coin;

Fig. 6 is a bottom plan view of the driving member of the coin clutch;

Fig. 7 is a view similar to Fig. 5 illustrating the coin clutch action with an inserted washer; and

Fig. 8 is a top plan view of the coin-controlled mechanism.

Referring to Fig. 1, timer **20** is generally illustrated as including a mounting member **21** secured to a framework **22**, a geared motor **23** driving control shaft **25**, and switches or similar devices **24** operated in a predetermined sequence by cams **26** on shaft **25**. When a control knob on shaft **25** is manually rotated to a "start" position, motor **23** is energized to rotate shaft **25** to carry out the operating cycle of appliance **10**. When the control knob reaches the "stop" or "off" position, motor **23** is deenergized to terminate the cycle. The movement of the control knob from "start" to "off" is less than a complete revolution, and the knob must be manually rotated through the remaining arc to "start" to re-start the opening cycle. In the illustrated case, the control knob is removed from shaft **25**, and movement of the shaft from the "stop" to the "start" position is under the control of mechanism **30**.

Referring particularly to Figs. 1 through 8, mechanism includes a base part **40**, secured to timer mounting member **21** by a bracket **41**, and a cover part **60**. The base **40** is a generally cylindrical casting having an outwardly and downwardly sloping, and consequently thickened, "front" wall **42** and a boss **43** projecting from its rear wall substantially diametrically opposite the center of front wall **42** and extending above the upper surface of the base. The upper surface of the base is recessed to provide a cylindrical rim **44** which is ground or otherwise machined to have a close fit with the outer surface of a peripheral flange **61** on cover **60** when the latter is mounted on base **40**.

A coin chute passage **53** extends downwardly and outwardly from the upper surface of base **40** and has an enlargement **54** seating conduit **31**, this conduit having an extension engaged in chute **53** with its end bevelled to be flush with the upper end of the coin chute **53**.

The driven member of the mechanism **30** comprises a relatively thin flat plate **50** set over the end of shaft **25** projecting into base **40** through an axial opening in the latter. Plate **50** has a circular inner extension congruent with a collar **56** secured to shaft **25** by a set screw **57** and connected with such circular extension by a pin **58**. The plate **50** is formed with three or more fingers **55***a*, **55***b*, and **55***c*, each having a radial trailing edge and a sloped leading or forward edge.

Cover **60** includes a circular top wall **62** bounded by the peripheral flange **61** which is machined for a close fit in rim **44** of base **40**. Wall **62** has a central aperture through which extends a shaft **63** having a knurled outer end press fitted in an external operating knob **64**. A radial coin slot **65** is formed through wall **62** and provided with an external, slotted escutcheon plate **66**. A coin carrier plate **70** has a tight, non-rotatable spring fit on the shaft **63** inside cover **60**, and is held against wall **62** by a collar **67** secured to shaft **63** by a set screw **68**. Plate **70** carries the driving member **75** of the "coin-clutch," described more fully hereinafter.

The coin carrier plate is generally circular except for an arcuate lip **71** extending through about 120° of the plate circumference. The radial ends of lip **71** are engageable with a pin **72**, in cover **60**, and a pin **73**, in base **40**, to limit rotation of the knob **64** in both directions. Centrally of the arcuate extent of lip **71**, a slot **74** is formed in plate **70** and is coextensively alignable with coin slot **65**. Cover carried pin **72** limits counterclockwise movement of plate **70** to a position beyond coin slot **65** by an amount such that plate **70** covers slot **65**. Base carried pin **73** limits clockwise or forward movement of the plate to a position where trailing finger **55***c* extends over coin chute **53** to allow a coin behind the rear edge of finger **55***c* to drop into the coin chute.

The operating member **75** is generally channel shaped, having a base **76** riveted or otherwise secured to the under-surface of plate **70**. The radially outer flange **77** terminates at slot **74**, while the other flange **78** is deeper than flange **77** and extends beyond slot **74** and is bent radially outwardly to form a radial arm **81** sloping rearwardly and downwardly toward the lower edge of flange **77**. The upper edge of arm **81** is at substantially the level of the lower edge of flange **77**. As seen in Fig. 5, the forward end of flange **77** is bevelled to form a wedge **82** extending toward arm **81** and having a surface sloping upwardly away therefrom. The purpose of this will be described.

The operation of mechanism **30** will be understood best by reference to Figs. 1 and 8. For a one-coin operation, cover **60** is positioned with coin slot **65** in the solid line position of Fig. 6. At the end of the operating cycle, driven member **50** is in the broken line position of Fig. 2 and, to activate timer **20**, must be moved to the solid line position of this figure which is the position shown in Fig. 8. The rear edge of finger **55***c* is somewhat in advance of slot **65**.

By turning knob **64** to align slots **65** and **74**, a coin **80** may be inserted through these slots and engaged between arm **81** and the bevelled nose of flange **77**, the coin having its edge contacting the surface of base **40** and the inside of flange **61**. When knob **64** is turned clockwise, the coin will engage the rear edge of finger **55***c*, mechanically coupling parts **50** and **75** for movement as a unit. Such movement continues until the coin reaches chute **53** and drops therethrough into conduit **31** and coin receiver **32**. Finger **55***c* is now aligned with chute **53** and thus shaft **25** has been moved to the "start" position for timer **20**.

For a two-coin operation, lock cylinder **53** is unlocked and removed, set screw **47** is loosened, and cover **60** is moved to bring the coin slot to the position **65'** of Fig. 8. Set screw **47** is retightened, and lock cylinder **52** locked into housing **47**. When coin **80** is inserted through slots **65** and **74**, movement of knob **64** will engage the coin with the rear edge of finger **55***b*. This finger will then be moved by operator **75** until the coin drops into chute **53**, which occurs when finger **55***b* is aligned with the coin chute. As the rear finger **55***c* is still counterclockwise of the coin chute, the timer **20** is not started, and insertion of a second coin is required for operator **75** to move finger **55***c* to the start position.

For a three-coin operation, cover **60** is adjusted and locked, as described, with the coin slot at position **65''** of Fig. 8. An inserted coin **80** will be engaged with finger **55A** when knob **64** is rotated, and will fall into chute **53** when finger **55***b* is just in advance of slot **65''**. Hence, two more coin insertions are required to move member **50** to the timer "start" position of Fig. 8.

As reverse movement of the timer control shaft will damage some cycle timers, means are provided to prevent such reverse movement. This means comprises a ratchet strip **85** having forwardly facing teeth **86** and mounted along flange **61** to extend between slot position **65** and the coin chute **53**. Teeth **86**, engaged by an inserted coin **80**, prevent reverse movement of knob **84** when members **50** and **75** are coupled by a coin.

The ratchet strip **85** also serves to prevent starting of the timer by only one coin when the mechanism is set for a plural coin operation. If the coin carrier assembly **70–75** could be freely oscillated, it is possible to so manipulate this assembly that a single coin can be successively engaged with each of the fingers **55***a*, **55***b*, and **55***c* of element **50** before the coin has been moved to the coin discharge opening. Thus, a single coin can effect movement of finger **55***c* to opening **53**. The ratchet **85**, engaging a coin held in assembly **70–75**, prevents such oscillatory movement of the latter and allows the assembly to move only toward the coin discharge opening.

Should a washer **87** be inserted into mechanism **30**, no starting of the timer takes place. The nose of flange

77 engages the washer opening, as knob 64 is rotated, so that the washer rides up along surface 82, being thus lifted and dragged over the fingers of member 50. When the washer is over chute 53, it slides off member 75 and falls into receiver 32.

It is also possible to operate the mechanism by inserting razor blades in coin slot 65. This can be prevented by the means shown in Figs. 2 and 3. Referring to these figures, the upper surface of base 40 is provided with a depression 401, in the form of a V-groove or the like, extending through substantially the maximum arc of travel of finger 55c. A coin 80 inserted in slot 65 centers itself in this groove. On either side of the groove, and just in advance of coin slot position 65, pins 402 are set into base 40 to project slightly above its upper surface. Driven element 55 can be slightly elevated to clear these pins or base 40 can be suitably recessed on over about 90° ot its extent.

If a razor blade is inserted, its edge will ride along the upper surface of base 40 and will engage pins 402, thus blocking further movement of knob 64 and the coin-coupled members. However, when a coin 80 is inserted, its edge will clear pins 402 as can be seen from Fig. 3, thus providing normal operation of the mechanism.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

A new article of manufacture for use in a coin controlled mechanism including a driving plate and a driven member; which comprises a coin carrying driving member secured to said driving plate and in the form of a sheet metal channel having its base portion secured to the underside of the driving plate, the side flanges of the channel having the ends at the leading end of the channel projecting beyond the leading end of the base portion, one of said side flanges having its projecting end to form an upwardly and rearwardly sloping nose, the projecting end of the other side flange having its outer end portion bent laterally to form an arm that extends across the beveled end on the other side flange and is spaced from such beveled end to provide a coin receiving space cooperable with the slot in the driving plate to support a coin in engagement with the driven member.

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