Sept. 11, 1962 H. GREENWALD 3,053,946

COIN OPERATED DEVICE WITH PERCUSSION ACTUATED TIMER

Filed May 10, 1960

FIG. 1

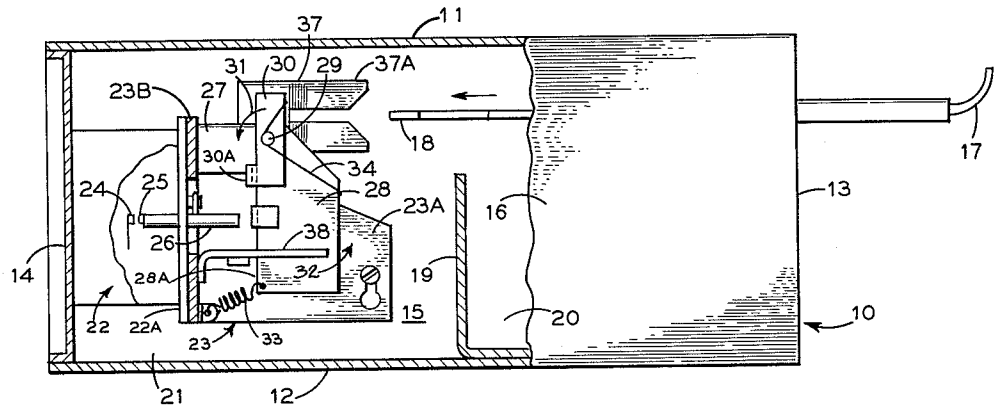


FIG. 3

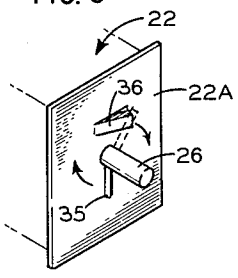


FIG. 4

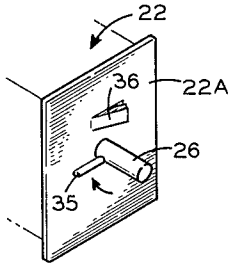
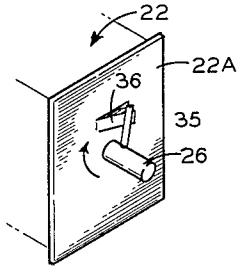


FIG. 5



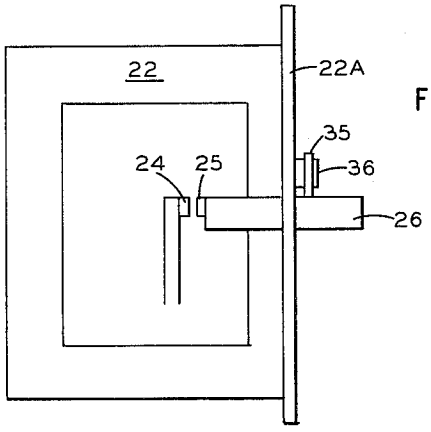


FIG. 2

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COIN OPERATED DEVICE WITH PERCUSSION ACTUATED TIMER

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6 Claims. (Cl. 200—35)

This invention relates in general to a coin operated device and more specifically to an improvement in a cycle initiating and timing unit and timer therefor.

An object of this invention is to provide in a coin operated device an improved percussion actuated, timing mechanism that is relatively simple in construction and positive in operation.

Another object is to provide the timer mechanism of a coin operated device with a timer shaft or plunger that is reciprocally mounted for initiating the operating cycle upon receiving an impact or percussion blow upon the deposit of a coin to energize electrical contacts for commencing the operation cycle, and thereafter rotatable about its axis for timing the duration of a particular operating cycle.

Another object its to provide on the face of the timer mechanism a cam means and on the rotating timer shaft a co-operating pin follower connected normal thereto so that engagement of the pin follower with the cam effects the termination of the operating cycle by positively urging the timer shaft to its initial inoperative position.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a sectional elevation side view having parts broken away.

FIG. 2 is a detail view illustrating the improvements in the timer mechanism in accordance with this invention.

FIGS. 3, 4 and 5, respectively, illustrate the position of the plunger and connected pin follower at various positions or time intervals with respect to the camming means.

FIG. 1 illustrates the general arrangement of a coin operated device **10**, in accordance with this invention, which is specifically adapted for initiating and timing the operating cycle of an automatic coin operated machine, such as a washing machine or the like. In the illustrated embodiment the device **10** comprises a housing having a top **11**, bottom **12**, front **13**, back **14**, and connecting side walls **15** and **16**. A coin bar or slide **17** is mounted in the front wall **13** for movement in and out of the housing. The forward portion of the coin slide **17** is provided with the usual recess for receiving the coin and the inner end of the slide is provided with a laterally extending projection **18**. A partition **19** extending transversely of the housing divides the housing into a coin receptacle **20** in the forward end thereof and a rear compartment **21** in which the timer assembly **22** is located.

Intermediate the partition **19** and the rear wall **14** of the housing there is connected to the side wall **15** an angle bracket **23** having one leg **23A** connected flush against the inner surface of the side wall **15** and has its other leg **23B** extending normal thereto. Between leg **23B** of the bracket **23** and the rear wall **14**, there is located the timer assembly **22** which contains the electrical circuit which sequentially controls the operation of a given cycle, as for example a complete clothes washing cycle. Included in this cycle, which does not form any part of this invention, are a pair of normally open contacts **24** and **25** which must be closed before the circuit (not shown) is energized to start the cycle.

In accordance with this invention one of the contacts may be either located on the end of a timer shaft or plunger **26** which extends through the front face **22A** of the timer **22** and through an opening **27** in leg **23B** of the bracket, or positioned immediately to the rear of the plunger. The plunger **26** is mounted for movement in and out of the timer unit **22** for making and breaking the circuit by either opening or closing the contacts **24**, **25** accordingly. In the illustrated form of the invention the contacts are shown as normally open contacts which are adapted to be closed by a percussion or impact blow imparted to the plunger upon the deposit of a coin.

In accordance with this invention a hammer means is provided to actuate the timer shaft or plunger **26**. As shown leg **23B** of the bracket has connected thereon, in substantially vertical alignment with plunger **26**, a forwardly extending brace **27** to which a hammer plate **28** is pivotally connected at **29**. Also pivoted about pivot **29** is a striker **30** which forms an extension of the hammer plate **28**. The arrangement of the striker **30** and hammer plate **28** is such that when the coin slide **17** is pushed into the housing to deposit a coin, the lateral extension **18** of the slide **17** will engage the striker **30** and rock it in the direction of arrow **31**. The striker **30** is provided with a reversely bent tab **30A** which is in contact with the hammer plate **28**, thus causing the hammer plate to be cocked in the direction of arrow **32**. As the coin slide **17** reaches the end of its travel, the lateral projection **18** thereof is cammed beyond the rotated striker **28**, whereupon spring **33** returns the hammer plate **28** and striker **30** to their original position. In doing so the hammer **28** will impart a percussion blow or impact to the plunger **26** causing the latter to be moved inwardly of the timer **22** to close the contacts **24**, **25** and thereby actuate or enrgize the circuit to start the operating cycle. It is to be observed that the hammer plate **28** is normally slightly spaced from the end of the plunger **26** so that edge **28A** of the hammer plate **28** will not rest on the end of the plunger; initial impact being had by the slight overdrive which the hammer plate **28** will inherently have upon release thereof from the cocked position.

Upon impact the plunger is subjected to a movement of approximately $\frac{1}{16}$" to $\frac{3}{32}$" which is sufficient to close the circuit contacts **24**, **25**. The plunger shaft **26** upon actuation of the cycle on closing the contacts **24**, **25** is arranged to rotate in the direction indicated by the arrow in FIGS. 3 to 5.

Upon actuation of the circuit on the closing of the contacts **24**, **25** the coin slide is returned to its normal extended position, as shown. The striker **30** being separately pivoted is cammed to the right as viewed in FIG. 1 upon the return of the coin slide. This facilitates the passing of the slide's lateral projection **18** thereover in returning to normal inoperative position. A wire spring **34** assures repositioning of the striker **30** upon the passage of the slide **17** thereover.

In accordance with this invention, the plunger **26** has connected thereto a follower pin **35** which extends normal thereto and parallel to face **22A** of the timer. The pin is spaced slightly forward of the face **22A** an amount sufficient to permit the movement necessary for the plunger **26** to close contacts **24**, **25**.

As the plunger rotates upon initiation of the cycle, it will be noted that the pin follower **35** will rotate therewith as indicated in FIGS. 3 to 5 with the timing of the cycle being had by the angular velocity of the plunger **26**.

In accordance with this invention means in the form of an inclined surface or cam **36** is connected to face **22A** of the timer adjacent the plunger **26**, and it is in position

to engage the pin follower **35** as it is rotated thereby. With this arrangement the cam **36** provides a positive means for opening the contacts **24**, **25** and thereby causing the cycle to stop. It will be observed that as the pin **35** rides up the inclined cam **36**, the plunger **26** is pushed or forced outward of the timer, and thereby opens the contacts **24**, **25** which causes the circuit to be de-energized and the cycle to stop.

Completing the coin operated assembly is a guide plate **37** which has a laterally offset bifurcated portion **37A** to guide the slide **17** in moving in and out of the housing. Connected to leg **23B** is a horizontally disposed bifurcated guide plate **38** which is positioned so that the hammer plate **28** is guided between the bifurcation thereof.

From the foregoing description it will be observed that actuation of the timer is had by simply a sliding movement of the coin slide **17** for actuating the hammer means which effects an impact on the timer shaft **26** to commence the cycle, and stopping of the cycle is positively and automatically attained by a co-operating cam **36** and a pin follower **35** which is connected to the timer shaft for urging the latter outward of the timer **22** to cause contacts **24**, **25** to open.

While in accordance with the provisions of the statutes there is illustrated and described herein the best form and mode of operation of the invention now known to the inventor, those skilled in the art will understand that changes may be made in the form of the apparatus disclosed without departing from the spirit of the invention covered by the claims, and that certain features of the invention may sometimes be used to advantage without a corresponding use of other features.

What is claimed is:

1. For use in a coin operated device, a cycle initiating and timing unit comprising a housing, a coin slide movably mounted in said housing, a percussion actuated timer positioned in said housing to control the duration of a predetermined operating cycle, said timer including co-operating contacts for starting and stopping the cycle, and a plunger for actuating said contacts for starting and stopping said cycle, hammer means actuated by said coin slide to operate on said plunger to energize said contacts to start said cycle, and means independent of said coin slide and hammer means for positively and automatically actuating said plunger to de-energize said contacts to stop said cycle.

2. For use in a coin operated device, a cycle initiating and timing unit comprising a housing, a coin slide movably mounted in said housing, a percussion actuated timer positioned in said housing to control the duration of a predetermined operating cycle, said timer including co-operating contacts for starting and stopping the cycle, and a plunger movable in and out of said timer for energizing and de-energizing said contacts for either starting or stopping said cycle, hammer means actuated by said coin slide to operate on said plunger to energize said contacts to start said cycle, said hammer means including a hammer plate pivotally mounted within said housing, a striker pivotally mounted to said hammer plate, spring means normally urging said striker and hammer plate in vertical alignment, said coin slide being arranged to engage said striker for automatically cocking said hammer plate so that upon the release thereof an impact blow is imparted to said plunger for moving said plunger inwardly of said timer to energize said contacts, and means for actuating said plunger to de-energize said contacts to stop said cycle.

3. For use in a coin operated device, a cycle initiating and timing unit comprising a housing, a coin slide movably mounted in said housing, a percussion actuated timer positioned in said housing to control the duration of a predetermined operating cycle, said timer including co-operative contacts for starting and stopping the cycle and a plunger movable in and out of said timer for energizing

and de-energizing said contacts for either starting or stopping said cycle, said plunger being arranged to rotate about its axis when said contacts are energized for timing the duration of said cycle, means actuated by said coin slide to operate on said plunger to energize said contacts to start said cycle, and means for actuating said plunger to de-energize said contacts to stop said cycle, said latter means including a cam positioned on the face of said timer adjacent said plunger, and a follower pin connected to said plunger for engaging said cam as said pin is rotated past said cam for positively urging said plunger out of said timer to de-energize said contacts and thereby stopping said cycle.

4. For use in a coin operated device, a cycle initiating and timing unit comprising a housing, a coin slide movably mounted in said housing, a percussion actuated timer having a face plate positioned in said housing, said timer controlling the duration of a predetermined cycle and includes co-operating contacts for starting and stopping said cycle, said contacts being normally open when said cycle is inoperative and closed when said cycle is rendered operative, a plunger mounted in the face plate of said timer for movement in and out thereof to open and close said contacts, said plunger being arranged to rotate about its axis when said contacts are closed for timing said cycle, hammer means positioned in alignment with said plunger and actuated by said coin slide to provide an impact blow on said plunger to move the latter inwardly of said timer face plate to close said contacts for initiating the operating cycle, a cam connected to said face plate, a pin follower connected to said plunger, said pin follower being closely spaced to the face plate of said timer whereby said pin is arranged for engaging said cam as said pin is rotated past said cam as the cycle is nearing its end so that said cam urges said pin and connected plunger away from said face plate to open said contacts to stop said cycle.

5. For use in a coin operated device, a cycle initiating and timing unit comprising a housing, a coin slide movably mounted in said housing, said slide having a laterally extending offset portion, a percussion actuated timer having a face plate positioned in said housing and disposed normal to said slide, said timer controlling the duration of a predetermined cycle and it includes co-operating contacts for starting and stopping said cycle, said contacts being normally open when said cycle is inoperative and closed when said cycle is rendered operative, a plunger mounted in the face plate of said timer for movement in and out thereof to open and close said contacts, said plunger being arranged to rotate about its axis when said contacts are closed for timing said cycle, hammer means, said hammer means including a hammer plate pivotally mounted within said housing, a striker pivotally mounted to said hammer plate and arranged to pivot relative thereto, spring means normally exerting a bias on said striker to resist relative movement therebetween, the offset portion of said slide being arranged to cam said striker to cock said hammer plate whereby said hammer plate is automatically released as said slide is cammed over said striker so that said hammer plate imparts an impact on said plunger to move the latter inwardly of said timer face plate to close said contacts for initiating operation of the cycle and rotation of said plunger about its axis, a cam connected to said face plate of said timer, a follower pin connected to said plunger, said pin follower being closely spaced to the face plate of said timer for engaging said cam as said pin is rotated past said cam as the cycle is nearing its end so that said cam urges said pin and connected plunger away from said face plate to open said contact to stop said cycle.

6. A timer for controlling the cycle of a coin operated device comprising a housing having a face plate, an actuating plunger extending through the front plate of said housing and mounted for movement in and out of said housing, contacts actuated by said plunger for energizing

an electric circuit when said plunger is moved into said housing, said plunger being arranged to rotate about its axis when the contacts are actuated, a cam positioned on the face of said timer adjacent the plunger, and a follower pin connected to said plunger for engaging said cam as said pin is rotated thereby for positively urging said plunger out of said timer to de-energize said contacts to stop the cycle.

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