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3,526,087

RANDOM DELAY TOY TIMER

Filed March 14, 1969

3 Sheets-Sheet 1

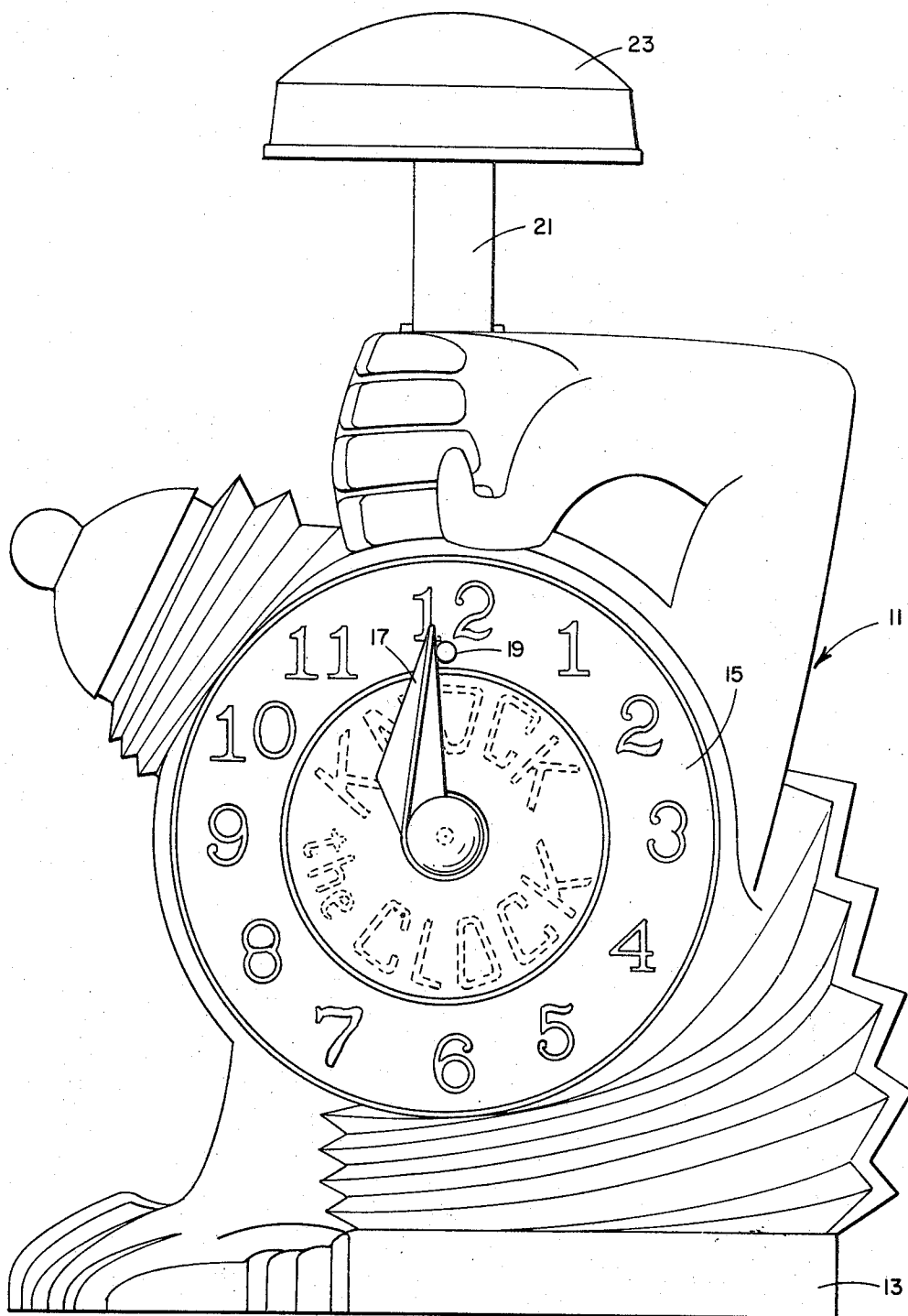


FIG. 1

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3 Sheets-Sheet 2

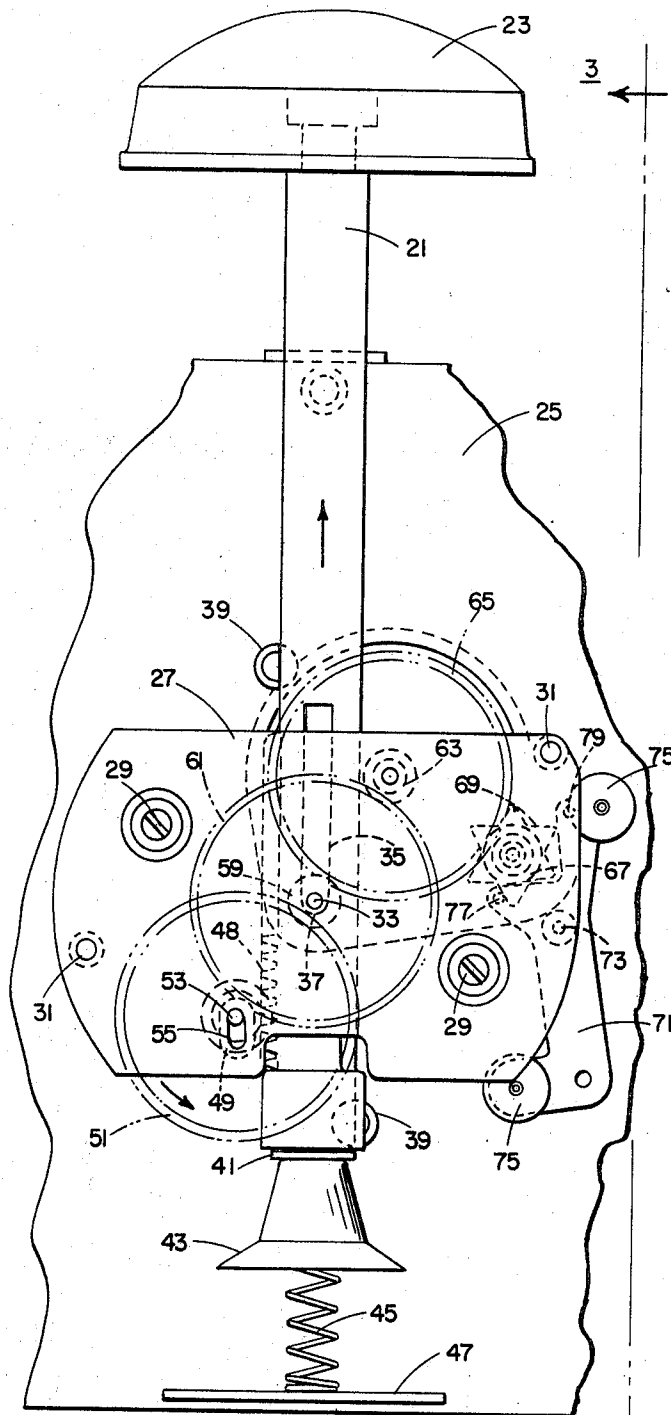


FIG. 2

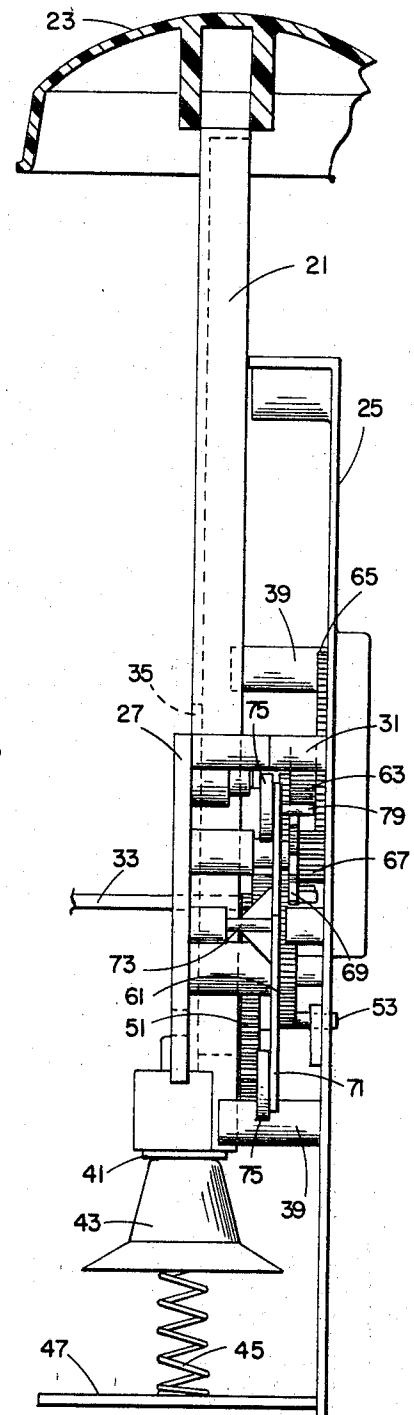


FIG. 3

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3 Sheets-Sheet 3

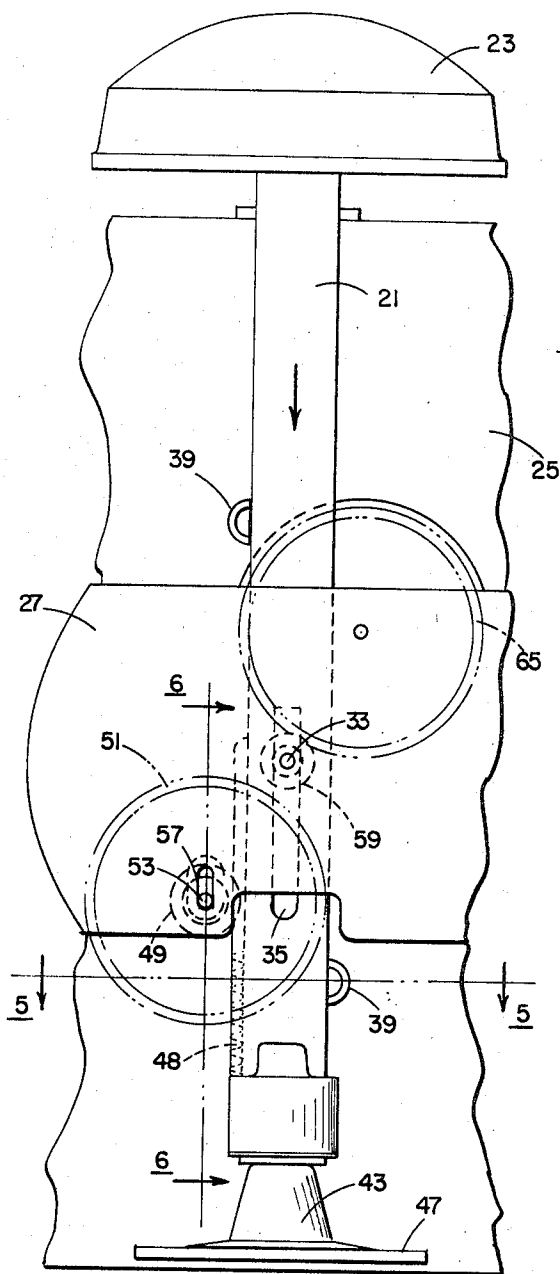


FIG. 4

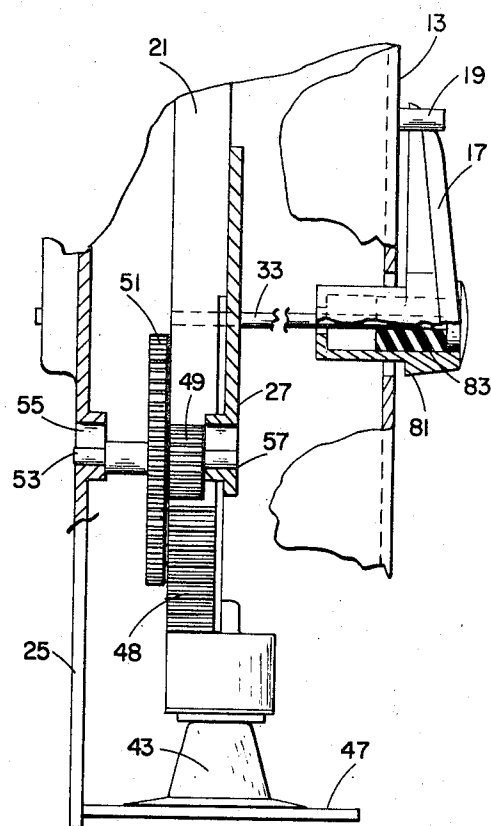


FIG. 6

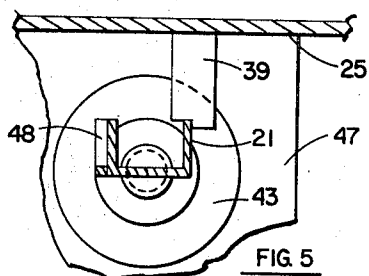


FIG. 5

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RANDOM DELAY TOY TIMER

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7 Claims

ABSTRACT OF THE DISCLOSURE

A toy timer incorporating means operated by a push-down handle or plunger for stopping for randomly varied lengths of time the operation of the timer.

For use as a toy or in a game it is often desired to have a simple timing device where movement of the indicator can be readily stopped by a player at any given point, and the indicator will automatically resume its movement, but only after an indeterminate interval.

In addition, in various games, it is often desirable to have simple timing mechanisms that do not necessarily provide an accurate timing in seconds, minutes or the like, but rather such timing devices serve to indicate a comparative length of time between various players to accomplish a given feat or the like. It can be seen that instead of a relatively expensive stopwatch or the like it is preferable to have a simple device that does not require a precision mechanism yet should be sturdy and easy to manufacture. Thus, it is desirable to have such a clock mechanism comprised of a minimum number of moving parts and/or gears which can provide the desired end result.

To date there has been no device that would meet the foregoing requirements of a clock having means for readily stopping it for a varying time interval, whereby it would continue at the end of the interval. Neither has there been a clock for use in a game that will provide the desired results in a simple mechanism. Most all clocks that have been previously developed have concentrated on providing a timed output in terms of actual seconds, minutes and the like, and have not been based solely on a means for giving a relative output with the hand or hands moving just from number to number about a dial regardless of the actual time consumed.

Thus, an object of this invention is to provide a novel clock mechanism which can be readily stopped and will subsequently restart but only after an indeterminate time interval.

Another object of this invention is to provide a simple clock mechanism which will give a relative time output for utilization in game and the like.

Still another object of this invention is to provide a novel clock mechanism having a minimum number of working parts.

The above and other objects of this invention are accomplished by the illustrated embodiment of a novel toy clock device which has a housing containing a clock mechanism. A plunger in the form of a vertical disposed rod extends through the housing and has a rack formed adjacent the bottom end thereof, with the bottom end having a suction cup affixed thereto. The rack portion of the plunger engages an input gear of a gear train utilized to drive an output shaft on which a clock hand can rotate and move circularly about a clock face. The rack portion of the plunger actually engages a small pinion integrally formed with a larger diameter gear which is the main input gear for the gear train. When the plunger is depressed, the main input gear is forced to disengage from the gear train, thus stopping the move-

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ment of the clock hand. Together with this, the suction cup engages the base of the housing so that the plunger remains depressed after removal of a player's hand. After an indeterminate period, the suction cup releases, the plunger moves upwardly and the main input gear re-engages with the gear training causing continued rotation of the clock hand. A coiled spring may be disposed between the suction cup and the housing. The spring when contracted serves to slowly break the vacuum established and force the plunger and associated pinion into re-engagement with the gear train of the clock. It is believed the invention will be further understood from the following detailed description and drawings, of which:

FIG. 1 is a pictorial plan view of the front of the clock which is a preferred embodiment of this invention; FIG. 2 is a partially sectioned view of the clock of FIG. 1 showing the mechanism thereof with the actuating plunger in a fully extended position;

FIG. 3 is a side view of FIG. 2;

FIG. 4 is a view similar to FIG. 2 showing the plunger of the clock mechanism in a fully depressed position;

FIG. 5 is a view taken along line 5—5 of FIG. 4; and

FIG. 6 is a side view of FIG. 4 showing the relationship of the rack portion of the plunger and the input gear when the plunger is in a fully depressed position.

Turning now to FIG. 1, there is seen the outer housing face of the clock 11 which is a preferred embodiment of this invention. The clock can be formed from a plastic housing 13 of any desired configuration, one shown by way of example. As seen, the clock is provided with a series of numbers from 1 to 12 about its face 15, and has a single hand 17. A stop 19 is provided at the number 12 to prevent the continuous rotation of the hand around the clock if desired. Extending upwardly from the top of the housing 13 is a drive plunger 21 having a wide convex surface 23 which can be hit with the hand to depress the plunger 21. Such a clock can be utilized in various games including a game which may be called "Knock the Clock" where the clock is struck by a player to stop the movement of the clock's hand 17 at a given number as it progress about the face 15.

Turning now to FIGS. 2 and 3, there is seen the clock mechanism. The mechanism is connected between a large base mounting plate 25 and a smaller plate 27, spaced from and connected to plate 25, by two screws 29 and spacing elements 31. Plate 25 actually serves as the back plate for the clock device and is disposed behind the face 13 shown in FIG. 1 and connected thereto by various protrusions not shown.

An output shaft 33 extends in apertures between plates 25 and 27 passing out through the face of the clock to support the hand 17. Plunger 21 has an elongated slot 35 therein which surrounds and engages the output shaft 33. The bottom end 37 of slot 35 serves to limit the upward movement of the plunger 21 when it engages the shaft 33. Two guide members 39 located on opposite sides of the plunger 21 serve to prevent undue lateral movement of the plunger during the actuation of the device. The bottom end 41 of the plunger 21 is connected to a suction cup 43. Within suction cup 43 and connected thereto is a coil or compression spring 45. The spring in turn rests on a bottom plate 47 which is affixed to back plate 25. Spring 45 is the drive spring for the clock mechanism as will be further explained and shown.

Along a portion of one side of plunger 21 there is provided a rack 48. The rack in turn engages a pinion 49. The pinion 49 in turn is affixed to and integrally formed with large gear 51 which is the main input gear for the mechanism. The pinion 49 and gear 51 rotates on an axle 53 which can move vertically within slots 55 and 57

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formed in back plate 25 and plate 27 respectively. This is particularly well seen in FIG. 6. As the plunger 21 moves in an upward direction, as shown by the arrow in FIG. 2, the axle 53 seats at the top of the slot as shown. In this position, gear 51 engages the main drive pinion 59 which is affixed to the drive shaft 33 and surrounds it. Thus, the upward movement of the plunger 21 causes rack 48 to rotate pinion 49 and associated gear 51 in a counter-clockwise direction as shown by the arrow in FIG. 2. This in turn causes main drive pinion 59 to move in a clockwise direction turning the drive shaft 33 therewith moving the hand of the clock accordingly.

In order to control the timing or rotational speed of the shaft 33, main drive pinion 59 is rigidly affixed and formed with a large gear 61. Gear 61 in turn engages a pinion 63 that is affixed to a larger gear 65. Large gear 65 meshes with a small pinion 67 which is part of an escape mechanism. Pinion 67 has affixed thereto a rotatable star wheel 69. A pivot arm 71 moves on shaft 73 and pivots thereabout. At each end of arm 71 is a weight 75 which can be a metal disc or the like. The rotation of the star wheel 69 is limited by two protrusions or stops 77 and 79 on the arm 71. As seen in FIG. 2, the star wheel is striking extension 77 as it rotates in a clockwise direction. This causes the arm 71 to move in a counter-clockwise direction wherein the extension or stop 79 will next engage the starwheel in a rockerlike movement. Thus, as the star wheel rotates each protrusion 77 and 79 respectively successively strikes the star surfaces limiting the speed of rotation thereof and in turn the rotational speed of the entire gear mechanism rotating the output shaft 33.

When it is desired to either start the clock by depressing the spring 45 or to stop the movement of the shaft 33 and hand 17, plunger 21 must be depressed to a position shown in FIG. 4. When the plunger 21 is depressed, rack 48 acting on pinion 49 causes the shaft 53 to move downwardly within slot 55 to a position shown in FIGS. 4 and 6. This causes the associated gear 51 to disengage itself from the main drive pinion 59 preventing any opposite rotation of the output shaft 33 and movement of the hand therewith. This thus in effect provides a simple mechanism for an easy disengagement during the recompression of the drive spring as well as immediately stopping the hand at a point on the face of the clock.

When the plunger 21 is pushed downward, its movement is limited by the suction cup 43 compressing against the bottom surface 47. Upon release of one's hand from the top 23 of the plunger after forcing its depression, the suction cup 43 will keep it fixed for an indeterminate period. The spring 45 will work against the suction force established between the cup 43 and surface 47, gradually destroying the vacuum effect. In other words, spring 45 will gradually push the plunger 21 upward away from surface 27, ultimately breaking the suction. When such is accomplished, the hand 17 will resume its movement about the face of the clock from the position in which it was stopped. It will be appreciated that even without the spring 45 the suction cup 43 would tend to release itself from the surface 47 although it would normally involve longer time intervals of delay.

It should be pointed out that, though the spring 45 serves in the embodiment shown to actually drive the clock's gear, such is not necessary. One of the main objects of the herein invention is the ability to stop the clock's hand 17 for an indeterminate period as it progresses about the face 15. The same mechanism as shown can be used where plunger 21 would merely serve to disengage input gear 51 by its aforementioned action on pinion 49, from the rest of the gear train.

The spring 45 is but a single embodiment of a means to help break the suction and force the plunger upward for re-engagement with the gear train. Obviously, other spring means could be used for accomplishing the foregoing.

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As seen particularly in FIG. 6, the hand 17 of the clock contains a housing 81 surrounding shaft 33. Housing 81 contains a rubber bushing 83 which grips the shaft 33 so that the hand 17 will rotate with the movement of the shaft. After the hand has reached the stop 19, or has been stopped intermediate on the clock face by depression of plunger 21, it is reset manually by simply turning it back to its starting point. The frictional resistance of the gear train is sufficient to prevent movement of the gears yet allow the rubber elastomeric bushing 83 to rotate about the shaft during the resetting of the hand.

We claim:

1. A toy timer which may be stopped for unpredictably different time intervals, comprising:

- a housing including a time scale;
- a time indicator carried on the housing for movement relative to the time scale to indicate time;
- timer means in the housing for advancing the indicator relative to the scale;
- control means partially disposed within said housing for slidably engaging said timer means, said control means operable to stop said timer means for an indeterminate time interval to then automatically permit said timer means to resume its advancing of said indicator.

2. The device of claim 1 wherein said control means comprises:

- a slidable plunger partially extending into said housing for engaging said timer means, whereby when said plunger is depressed further within said housing, it disengages from and stops said timer means.

3. The device of claim 2 further comprising:

- a suction means provided on an end of said plunger disposed within said housing whereby said suction means engages a portion of said housing when said plunger is depressed, whereby movement of said plunger and operation of said timer means is prevented while suction is maintained and said timer means is actuated when suction is broken allowing movement of said plunger.

4. The device of claim 3 further comprising:

- means connected to said plunger for returning a depressed plunger to re-engage said timer means.

5. The device of claim 4 further comprising:

- a compression spring disposed between said suction means and the portion of said housing engaged by said suction means which serves to force said suction means away from said housing when said suction means is engaged therewith.

6. The device of claim 2 wherein a portion of said plunger within said housing has a rack integrally formed thereon, and said timer means includes a gear train having a pinion engaging said rack portion of said plunger.

7. The device of claim 6 further comprising:

- a main input gear for said gear train rigidly affixed to said pinion;
- said pinion and said gear mounted on an axle therefor; and
- means in said housing engaging said axle for permitting displacement thereof when said plunger is actuated.

References Cited

UNITED STATES PATENTS

2,210,337 8/1940 Perlman.

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U.S. Cl. X.R.