Jan. 27, 1953 A. O. SEELER ET AL 2,626,660

ELECTRICAL TIMER OUTLET

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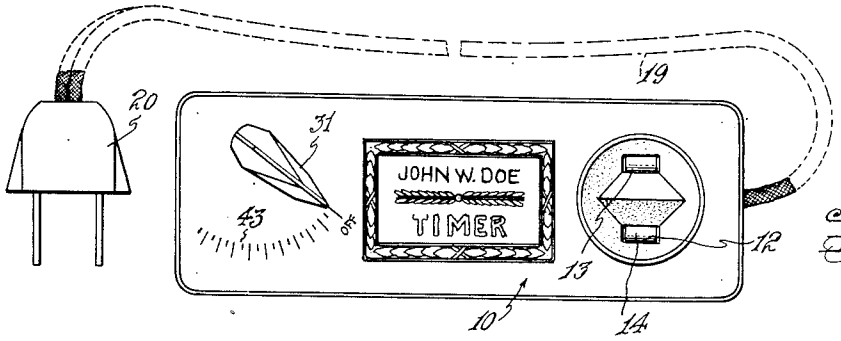

Fig. 1

Fig. 2

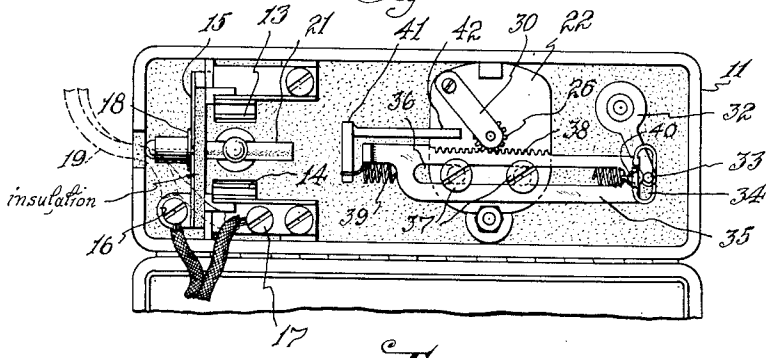

Fig. 3

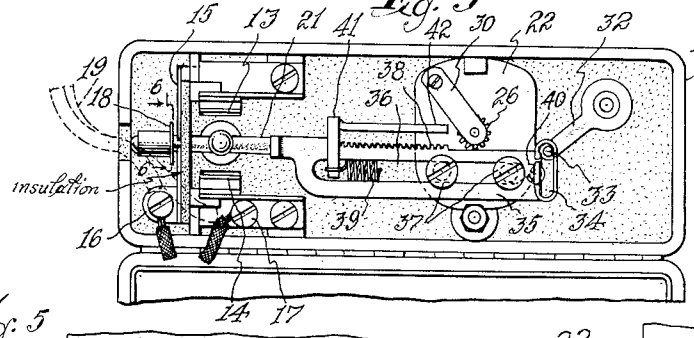

Fig. 8

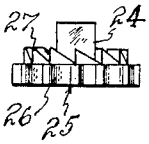

Fig. 6

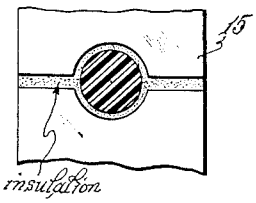

Fig. 5

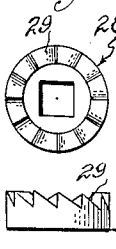

Fig. 7

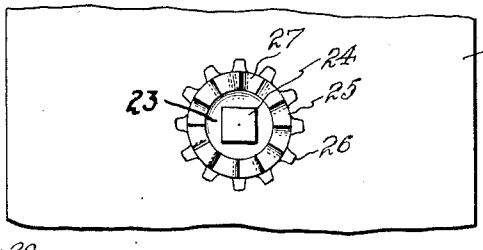

Fig. 4

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ELECTRICAL TIMER OUTLET

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5 Claims. (Cl. 161—1)

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This invention relates to electrical timer outlets and more especially to such outlets as are suitable for operating or turning off the operation of electrical appliances of various kinds such as television and radio sets.

An object of our invention is to provide an electrical timer control of the type referred to which is simple in construction and inexpensive in cost and which in great degree utilizes conventional parts in a novel arrangement. The foregoing and other objects are accomplished in accordance with our present invention by our novel electrical timer outlet having in combination, a timing mechanism, means external said mechanism for actuating the latter, these same means also serving to actuate an electrical switch after a predetermined period of time, the entire assembly being connected electrically to a television or radio set, or other electrical device, whereby operation of the electrical devices is automatically controlled.

A specific embodiment of our invention is described herein by way of example only and in accordance with the manner in which we now prefer to practice the invention, the following detailed description taken in connection with the accompanying drawings in which like numbers represent like parts throughout and which form a part hereof, being intended for the purpose of illustration.

In the drawings:

Fig. 1 is a front elevational view of our timer outlet;

Fig. 2 is a rear elevation of our timer outlet with the rear of casing open to expose the parts, the timer outlet being shown under tension and part of the spring being broken away to expose parts underneath;

Fig. 3 is similar to Fig. 2 except that the parts are shown after the timer has become untensioned and the electric switch has been actuated;

Fig. 4 is an enlarged view of the winding pinion showing it loosely placed around the square top shaft;

Fig. 5 is an enlarged view of the winding clutch which fits over and engages the winding pinion;

Fig. 6 is a section taken along the line 6—6 of Fig. 3.

Fig. 7 is a side elevation of the part shown in Fig. 5; and

Fig. 8 is a side elevation of the pinion or gear of Fig. 4.

Referring to the drawings, our timer outlet 10 is contained in a casing 11 into which is secured in known manner an electrical receptacle or

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socket 12. Terminal 13 is at all times in electrical contact with split contact 15 but is in electrical contact with binding post 16 only when switch 18 touches the split contact 15. Terminal 14 is at all times in contact with binding post 17. The binding posts are connected by the usual electrical wire 19 terminating in a conventional plug 20 for insertion in a receptacle or socket (not shown).

The switch 18 is urged by spring means (not shown) to its normal position against or in contact with split contact 15. Working against the spring is an insulated push rod 21 which is adapted to cause the switch 18 to move away from contact 15 when rod 21 is moved leftward (as viewed in the drawings).

The timing mechanism 22 comprises a conventional watch movement (details not shown) having a center wheel but no main spring. To the center wheel is fixedly mounted a shaft 23 the other or external end 24 of which is squared (Fig. 4). Loosely placed over the external end of the shaft 23 is a sleeve gear or winding pinion 25 provided with spur teeth 26 along its outer and lower periphery and with ratchet teeth 27 along its inner and upper periphery. Above the sleeve gear 25 is a winding clutch 28 having ratchet teeth 29 corresponding to and meshing with those of the sleeve gear 25. The clutch 28 has a square central hole corresponding to the square end 24 of the shaft 23. In order to prevent the parts from coming loose in transit or in operation a flat spring 30 is provided as a stop guide.

In order to set the aforesaid timing mechanism in operation and also to actuate the electrical switch, we provide the following means. Located on the front of the outlet 10 is a time scale 43 and a movable timing indicator 31. Located within the casing 11 is a crank 32 responsive in movement to the movement of the timing indicator 31. One arm 33 of the crank 32 extends through opening 34 of one end of plunger bar 35. This bar 35 has a channel 36 and is movable along guide screws 37 back and forth (from right to left and vice-versa, in the drawings).

As shown in Fig. 3, when the switch 18 is not in contact with the split contact 15 the plunger 35 bears against the push rod 21. Also, under such conditions the teeth 38 of the plunger 35 are not in contact with the spur teeth 26 of the sleeve gear 25. When the plunger 35 is moved to the right (Fig. 2) by setting timing indicator 31 to any position other than "off" the plunger teeth 38 and gear teeth 26 are in contact.

It will be noted from the foregoing that when the timing indicator is set as aforesaid the timing mechanism is not affected in any way by the parts described because the gear 25 is merely a sleeve around shaft 23 and does not rotatably engage it. This is true in spite of the fact that the ratchet teeth of winding clutch 28 would engage the corresponding teeth of gear 25 during leftward travel of the plunger 35 and in so doing also would rotatably engage shaft 23.

All that needs to be done however to set the timing mechanism into operation is to provide a spring 39 (shown broken away) which urges the plunger 35 to move leftward and in so doing places the aforesaid gear train and shaft 23 in operation. The spring 39 is anchored at one end 40 of the plunger 35 and to bracket 41 suitably secured, as to the timing mechanism casing 42.

In operation, our timer outlet is simply connected to an appliance such as a radio which it is desired to place into operation for a certain period by placing the plug of the latter into socket 12. The outlet timer plug 20 is inserted into a source of current and the timing indicator 31 is set for the desired period, as indicated by the scale 43. The plunger 35 is urged leftward by the force exerted by spring 39, this force causing gear 25 to move in a clockwise direction (in the embodiment shown). In moving in this direction the gear 25 causes clutch 28 to move along with it, as the ratchet teeth 27, 29 of the gear and clutch, respectively engage each other operably in this direction. Since the clutch opening rotatably engages shaft top 24 the timing mechanism is consequently put into operation and remains in operation as long as the spring 39 exerts its force and as long as the plunger and gear teeth are in mesh.

However, just at the predetermined time while the spring 39 still exerts its aforesaid force urging the plunger 35 leftward, the last of the plunger teeth 38 passes out of mesh with gear spur teeth 26. At this instant the bar 35, being free of operative contact with the timing mechanism, is immediately urged leftward unimpeded and pushes rod 21 to the left, causing the switch 18 to break the electrical contact, thereby turning the radio off automatically.

While we have described our invention in detail in its preferred embodiment, it will be obvious to those skilled in the art, after understanding our invention, that various changes and modifications may be made therein without departing from the spirit or scope thereof. We aim in the appended claims to cover all such modifications and changes. Thus, we do not wish to be limited to any particular kind of timing mechanism or electrical switch. Furthermore, while we have described an embodiment in which our timer outlet permits the operation of an electrical device for a pre-determined period of time and then automatically causes it to cease operation, we contemplate the use of our timer outlet in these cases when it is intended to start operation of an electrical device after a desired period. This could be done by modifying the arrangement of the switch in our outlet timer so that it normally keeps the circuit open and closes it when actuated by the plunger, for example, by placing the switch to the right of and normally out of contact with the split contact 15 and causing contact of the switch and split contact 15 to occur when the plunger pushes rod 21 to the left.

The timer outlet can also be modified so as to actuate a switch after long or short periods, for example, by varying the number of teeth on the gear and/or plunger.

We claim:

1. An article of manufacture, which comprises, in combination, a clock escapement having a shaft, a pinion rotatable on said shaft and having a set of spur teeth on its periphery and a set of ratchet teeth on one face thereof, a rack bar engageable with said spur teeth of said pinion, a clutch member rotatable with said shaft and having ratchet teeth meshing with said ratchet teeth of said pinion, and yieldable means for driving said rack bar.

2. An article of manufacture, which comprises, in combination, a clock escapement having a shaft, a pinion rotatable on said shaft and having a set of spur teeth on its periphery and a set of ratchet teeth on one face thereof, a rack bar engageable with said spur teeth of said pinion, a clutch member rotatable with said shaft and having ratchet teeth meshing with said ratchet teeth of said pinion, yieldable means for driving said rack bar, and an electric switch actuated by said bar.

3. An article of manufacture, which comprises, in combination, a timing escapement having a shaft, a pinion rotatable on said shaft and having a set of spur teeth on its periphery and a set of ratchet teeth on one face thereof, a longitudinally-movable rack bar having spur teeth along part of its length and engageable with said spur teeth of said pinion, a clutch member rotatable with said shaft and having ratchet teeth meshing with said ratchet teeth of said pinion, and an expansion spring for driving said bar.

4. An article of manufacture, which comprises, in combination, a timing escapement having a shaft, a pinion rotatable on said shaft and having a set of spur teeth on its periphery and a set of ratchet teeth on one face thereof, a longitudinally-movable rack bar having spur teeth along part of its length and engageable with said spur teeth of said pinion, a clutch member rotatable with said shaft and having ratchet teeth meshing with said ratchet teeth of said pinion, an expansion spring for driving said bar, and an electric switch actuated by said bar.

5. An article of manufacture, which comprises, in combination, a timing escapement having a shaft, a pinion rotatable on said shaft and having a set of spur teeth on its periphery and a set of ratchet teeth on one face thereof, a longitudinally-movable rack bar having spur teeth along part of its length and engageable with said spur teeth of said pinion, a clutch member rotatable with said shaft and having ratchet teeth meshing with said ratchet teeth of said pinion, an expansion spring for driving said bar, and an electric switch actuated by said bar pushing it.

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