

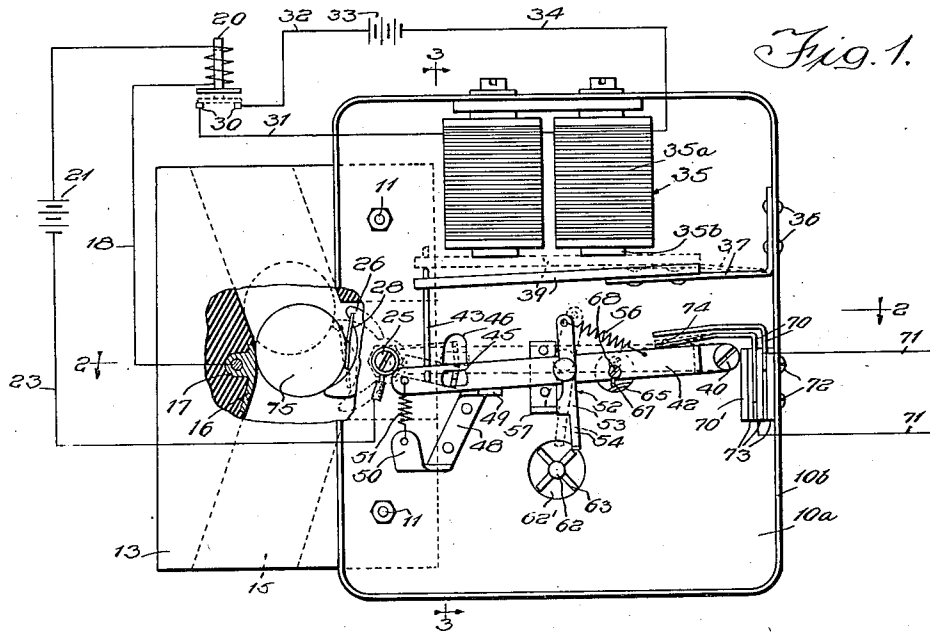
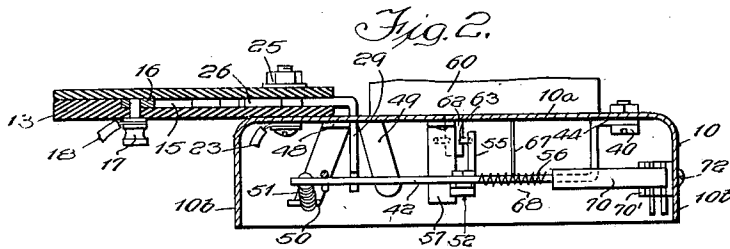
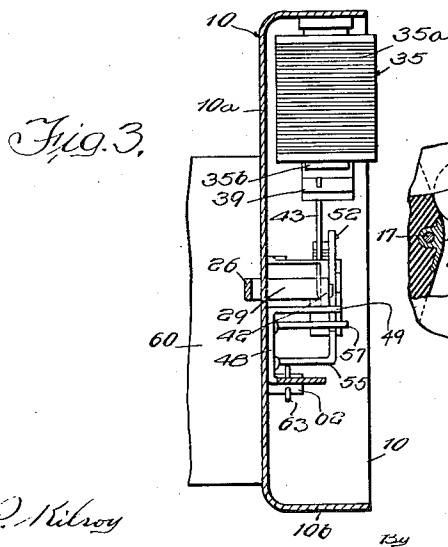
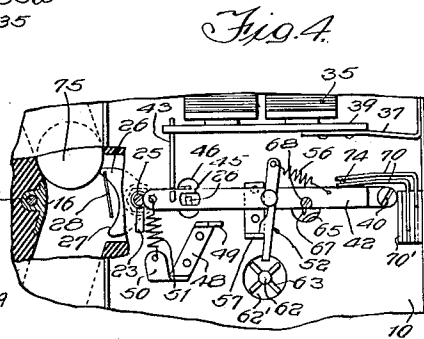
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C. J. BUCKWALTER

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TIMING DEVICE

Filed Jan. 16, 1929



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UNITED STATES PATENT OFFICE

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TIMING DEVICE

Application filed January 16, 1929. Serial No. 332,791.

My invention relates to timing devices and has to do more particularly with coin-controlled devices for timing or metering any desired commodity. However, the device is particularly adapted to serve as a coin-controlled meter for radio receiving sets, or other electrically controlled apparatus.

An object of my invention is to provide a device whereby a coin deposited therein will set in operation a radio receiving set or other apparatus connected thereto and at the same time a timing mechanism, said timing mechanism being adapted to disconnect the radio receiving set or other apparatus at the end of a given period of time.

A further object is to provide a device of the type described which will be adapted to operate continuously for successive periods of time according to the number of coins deposited in the device when a plurality of coins are deposited therein at a time.

Still another object is to provide a device of the type referred to which will be particularly simple in design, inexpensive to manufacture, certain in operation, and rugged.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts:

Fig. 1 represents a plan view of a preferred embodiment of my invention:

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1; and

Fig. 4 is a fragmentary detailed plan view of the same device showing the parts in changed positions.

In a preferred embodiment shown in the drawings, the numeral 10 represents a casing formed of any suitable material having

a rear wall 10a and side walls 10b. Attached to the casing 10 by means of screws 11, or other suitable means, is a member 13 having a coin slot 15 therein. The member 13 is preferably formed of electrically non-conducting material such as fibre, bakelite, or other suitable material and has attached thereto, adjacent the coin slot, an arcuate conducting member 16. Secured to a binding post 17 of the conducting member is an electrical conductor 18. As clearly shown in Fig. 1, the conductor 18 leads to a relay or solenoid 20, or the equivalent, thence to a battery 21, or other suitable source of electrical energy from which extends a conductor 23. The conductor 23 is secured to a binding post 25 to which is pivoted a lever 26. The lever 26 is preferably crescent shaped as shown, having an arcuate surface 27 of substantially the same curvature as the coin for which the slot is designed, and attached to this surface is a leaf spring 28. As best shown in Figs. 2 and 3, the lever 26 has a portion 29 extending perpendicularly from the crescent shaped portion, as described in greater detail below.

Adapted to coact with the relay 20 are a pair of contact members 30. These contact members are connected respectively, to a pair of electrical conductors 31 and 32, a battery 33 or other suitable source of electrical energy being connected to the electrical conductor 32. The conductor 31 is connected to a solenoid relay or the like 35 from which another conductor 34 leads to the battery 33. The solenoid is of the usual type, having coils 35a and fixed cores 35b of magnetizable metal.

Secured to a side wall 10b of the casing 10 by means of rivets 36, or other suitable means, is a leaf spring 37 to which is secured an armature member 39, this armature member being adapted to cooperate with the solenoid 35.

Pivotaly secured to the rear wall 10a of the casing member 10 by means of a screw 40 or other suitable means, is an arm 42, having an offset end 44, this arm being connected adjacent one end by means of a link 43 to the armature member 39. A slot 45

is formed in the arm 42 and loosely disposed in this slot is the end 29 of the lever 26, this portion of the lever projecting through an aperture 46 formed in the casing member.

5 A bracket member 48 is secured to the rear wall of the casing member 10 by rivets or other suitable means, this bracket having a portion 49 projecting substantially perpendicularly from the rear wall of the casing member and forming an abutment upon 10 which the arm 42 may rest in the position shown in Fig. 1. Projecting from the opposite end of the bracket 48 is an apertured portion 50 to which is connected a tension 15 helical spring 51, this spring being secured at its opposite end in an aperture formed adjacent the end of the arm 42.

Pivotaly connected to the arm 42 intermediate of its ends is a dog 52 having an 20 enlarged portion 53 and a reduced portion 54. The reduced end 54 is bent rectangularly as at 55 (Fig. 3) so as to project toward the rear wall of the casing member. To one end of the dog 52 is connected a 25 tension helical spring 56, this spring being secured at its opposite end in an aperture formed in the arm 42. A bracket 57 is secured to the rear wall of the casing member 10 by rivets, or the like, and projects in 30 the path of the dog 52.

Secured to the rear wall of the casing member 10 is a clock work mechanism indicated at 60, or other suitable timing device. Connected to the clockwork mechanism 60 35 is a rotatable spindle 62, this spindle projecting through an aperture 62' formed in the rear wall of the casing member 10. This spindle has a plurality of radially projecting pins 63. Numeral 65 represents a 40 balance wheel or other movable portion of the clockwork mechanism with which is adapted to coact a resilient brake member 67, this brake member being secured to the arm 42 by means of a screw 68 or other suitable means.

Secured to a side wall 106 of the casing member 10 is a pair of contact members 70, these members being retained by means of 45 screws 72, or other suitable means, and a retaining plate 70', and insulated from each other by means of suitable insulating members 73. It will be seen that the contact members 70 are substantially rectangular and are resilient, one of the members having an integral projection 74 formed thereon.

Connected to the contact members 70 is a pair of conductors 71, these conductors forming part of a circuit which I shall designate as the work circuit, and which may include a radio receiving set or other desired apparatus from which service is to be dispensed.

65 In the operation of the device above described, the device illustrated will be connected to a radio receiving set, or other ap-

paratus, through the conductors 71 forming part of the work circuits. A coin 75 is inserted in the slot 15 when it is desired to obtain service from the apparatus connected to the work circuit. The coin 75 drops by 70 gravity through slot 15 and in passing between the arcuate member 16 and the crescent shaped lever 26 forms an electrical connection therebetween so as to close the circuit including these members, the conductor 23, battery 21, relay 20, and conductor 18. 75 Obviously, the battery 21 may be relatively weak. Hence, the relay 20 is activated and electrically connects the contact members 30. When these contact members are connected, current will flow through the circuit including these members, the conductor 32, battery 33, conductor 34, solenoid 35, and conductor 31. The cores of the solenoid member 35 thus become magnetized and 85 attract the armature member 39, this armature member carrying with it, by means of the link 43, the arm 42. The members will now occupy the positions shown in Fig. 4.

It will be seen that, in its inoperative 90 position, with the parts as shown in Fig. 1, the contact members 70 are out of engagement with each other and hence, no current will flow through the work circuit including these contact members and the conductors 71. When, however, the armature member has moved the arm 42 as described above, the arm will engage the lowermost of the resilient contact members 70, moving it so that the projection 74 on one 100 of the contact members is brought into contact with the other contact member and hence the work circuit including these members and the conductors 71 is closed. The radio receiving set or other apparatus connected with the work circuit, will therefore 105 immediately be brought into operation and will continue to function until the circuit is broken.

When the arm 42 is moved by the armature in the manner described above, it will 110 be seen that the reduced portion of the dog 52 will slip into engagement with the bracket 57 as a result of the tension of the spring 56 and hence this dog will retain 115 the arm 42 in the position shown in Fig. 4 against the tension of the spring 51 and the pull of gravity. Furthermore, as the arm 42 is moved by the armature, the brake member 67 will be moved out of engagement with the balance wheel 65 or other 120 movable part of the clock work mechanism and hence this mechanism will immediately begin to function. The spindle 62, therefore, which is connected to the clockwork mechanism, will be rotated in a clock-wise 125 direction carrying with it the radial pins 63. These pins may be so spaced that the work circuit may operate for any desired period of time. 130

When the spindle 62 has been rotated to such an extent that one of the pins 63 will be brought into engagement with the rearwardly projecting portions 55 of the dog 52, this dog will be moved about its pivot and out of engagement with the bracket 57. When this occurs, the tension of the spring 51 will pull the arm 42 downwardly about its pivot 40. Hence, the lowermost contact member 70 will spring out of engagement with the other, the work circuit will be opened, and the service performed by the apparatus controlled by the work circuit will be discontinued. Simultaneously with the movement of the arm 42 about its pivot in the manner just referred to, the brake member 67 will be brought into engagement with the balance wheel 65 or other operating part of the clockwork mechanism and, hence, this mechanism will be stopped. The parts will thus be retained in inoperative position as shown in Fig. 1.

In the event that a user of the apparatus controlled by the device wishes to have the apparatus function longer than the period of time permitted by a single coin, he may insert as many coins in the slot at a given time as he desires. In such an event, the first coin introduced will function in the manner described above, moving the parts to the position shown in Fig. 4. The next coin which is introduced in the slot will take a position as shown in Fig. 4, being retained by the arcuate lever 26 from passing through the slot. Obviously, any succeeding coins which may be introduced will be retained in the slot by the coin which is in engagement with the lever 26. Assuming that the parts are as shown in Fig. 4 and that a coin is retained in the slot as shown, when the timing mechanism has operated so as to move the next pin 63 into engagement with the dog 52 and the parts function as described above, it will be readily apparent that the arm 42, in being moved downwardly by the spring about its pivot will oscillate the lever 26 about its pivot 25, inasmuch as the end 29 of the lever 26 is in engagement with the slot 45 of the arm 42. When the lever 26 is rocked about its pivot, the coin shown in Fig. 4 will be permitted to drop through the slot, closing the circuit between the contact member 16 and the lever 26 and again setting the device in operation in the manner previously described. Obviously, the operation just described will take place so quickly that the apparatus controlled by the timing device will function with no substantial interruption as long as coins are in the slot.

Obviously a coin smaller in size than the one for which the device is designed will pass inoperatively through the slot, as it will be incapable of closing the circuit.

It will be readily apparent that the cas-

ing member 10 will preferably be provided with a suitable closure (not shown) so as to maintain the parts free from dust and moisture and also that a suitable coin box may be provided for receiving the coins issuing from the slot 15.

Having thus described my invention, it will be obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the class described, a timing mechanism, a member having a coin slot therein, a pair of spaced electrical conductors associated with said slot, one of said conductors comprising a lever having an arm movable into and out of the path of coins in said slot, an electrical circuit including said conductors and adapted to include a coin passing therebetween, an electromagnet controlled by said circuit, means controlled by said electromagnet for closing a work circuit and for starting said timing mechanism, said means being connected to said lever so as to move the arm thereof into the path of coins in said slot when said means is actuated by said electromagnet, and means operated by said timing mechanism for so actuating said electromagnet-controlled means after a predetermined period of time as to open said work circuit and move the arm of said lever out of the path of coins in said slot.

2. In a device of the class described, a timing mechanism, a member having a slot therein, a pair of spaced electrical conductors associated with said slot, one of said conductors comprising a lever having an arm movable into and out of the path of coins in said slot, an electrical circuit including said conductors and adapted to include a coin passing therebetween, an electromagnet controlled by said circuit, a work circuit, a pair of normally spaced conductors including a resilient member forming part of the work circuit, means controlled by said electromagnet for urging said resilient member into engagement with the other of said conductors for closing said work circuit and for starting said timing mechanism, said means being connected to said lever so as to move the arm thereof into the path of coins in said slot when said means is actuated by said electromagnet, and means operated by said timing mechanism for so actuating said electromagnet-controlled means after a predetermined period of time as to open said work

circuit and move the arm of said lever out of the path of coins in said slot.

3. In a device of the class described, a pair of electrical conductors adapted to be connected to a work circuit, means for connecting said conductors so as to close said circuit, said means including an electro-magnet having an armature associated therewith, a pivoted arm, means for connecting said arm to said armature in a manner to be moved thereby, a pair of electrical conductors adapted to be engaged by a coin, for controlling the operation of said magnet in a manner to actuate said armature, a stationary bracket, a dog pivotally mounted on said arm and cooperable with said bracket for retaining said conductors in circuit closing position, timing mechanism, a plurality of pins associated therewith adapted to cooperate with said dog in a manner to disengage the dog from said bracket for releasing said arm and opening the work circuit, and resilient means carried by said arm and cooperable with a portion of said timing mechanism for controlling the operation thereof.

4. In a device of the class described, a pair of electrical conductors adapted to be connected to a work circuit, means for connecting said conductors so as to close said circuit, said means including a pivoted arm, an electro-magnet operatively related thereto, a control circuit for said magnet, a member having a coin slot therein, a pair of spaced electrical conductors associated with said slot in a manner to be engaged by a coin deposited therein, an electrical circuit completed by said coin for actuating said control circuit, means operatively related to said arm for moving one of said spaced conductors in a manner to release the coin from engagement therewith, and means for retaining said arm in position to maintain said first-mentioned conductors in circuit closing position after release of said coin.

5. In a device of the class described, a pair of electrical conductors adapted to be connected to a work circuit, means for connecting said conductors so as to close said circuit, said means including a pivoted arm, an electro-magnet operatively related thereto, a control circuit for said magnet, a member having a coin slot therein, a pair of spaced electrical conductors associated with said slot in a manner to be engaged by a coin deposited therein, an electrical circuit completed by said coin for actuating said control circuit, means operatively related to said arm for moving one of said spaced conductors in a manner to release the coin from engagement therewith, and means mounted on said arm for retaining the arm in position to maintain said first-mentioned conductors in circuit closing position after release of said coin, and timing mechanism for releasing

said retaining means to open said work circuit.

6. In a device of the class described, a pair of normally spaced electrical conductors adapted to be connected to a work circuit, one of said conductors comprising a resilient member, an arm for urging said resilient member into contact with the other of said conductors so as to close the work circuit, a timing mechanism, means on said arm engageable with a portion of said timing mechanism for controlling the operation thereof, an electro-magnet for actuating said arm to simultaneously close said work circuit and release the timing mechanism, means for retaining said arm in circuit closing position, a coin controlled electrical circuit for controlling said electro-magnet, and means associated with said timing mechanism and cooperable with said retaining means in a manner to simultaneously open said work circuit and retard the operation of said timing mechanism.

In witness whereof, I hereunto subscribe my name this 2nd day of January, A. D., 1929.

CLARENCE J. BUCKWALTER.