May 12, 1925.

1,537,136

T. J. H. PEIRCE

ELECTRIC TIME SWITCH

Filed Dec. 29, 1921

2 Sheets-Sheet 1

Fig. 1.

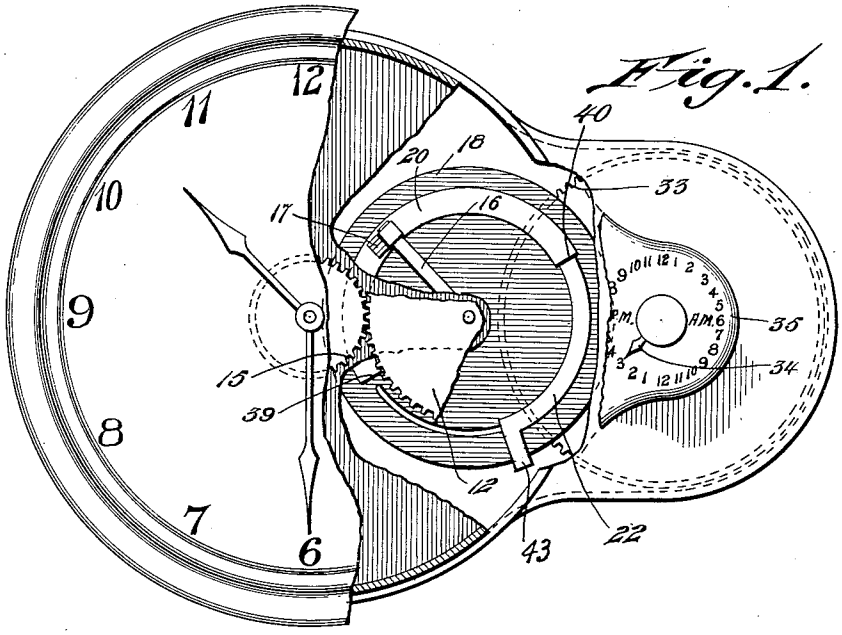


Fig. 2

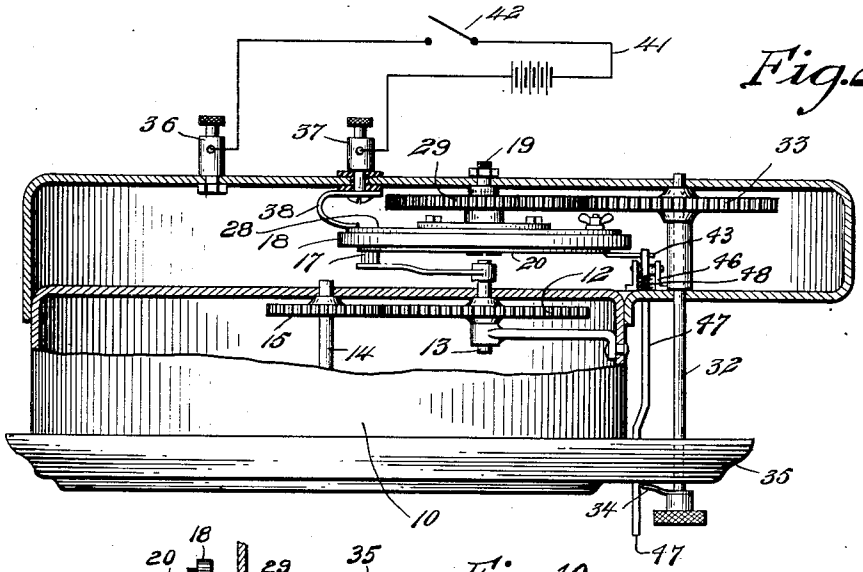


Fig. 9

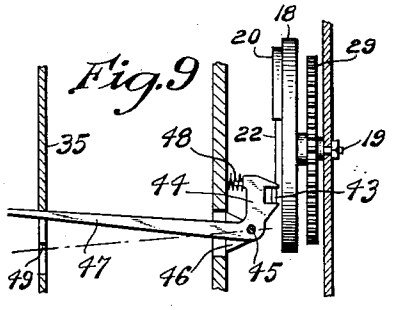
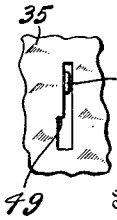


Fig. 10



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ELECTRIC TIME SWITCH

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Fig. 3.

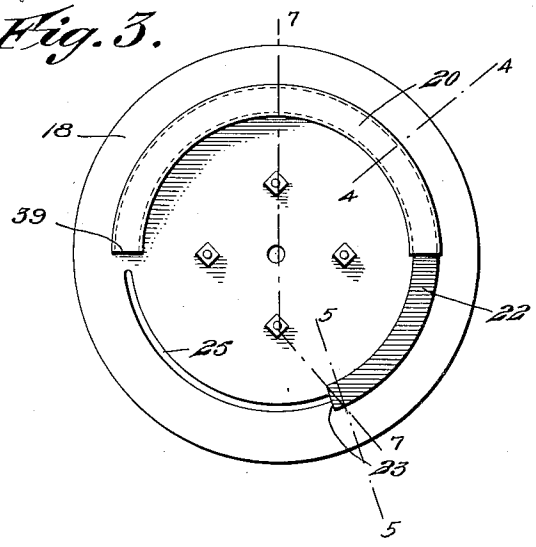


Fig. 4.

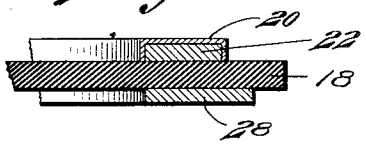


Fig. 5.

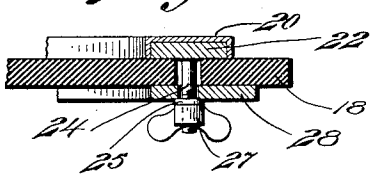
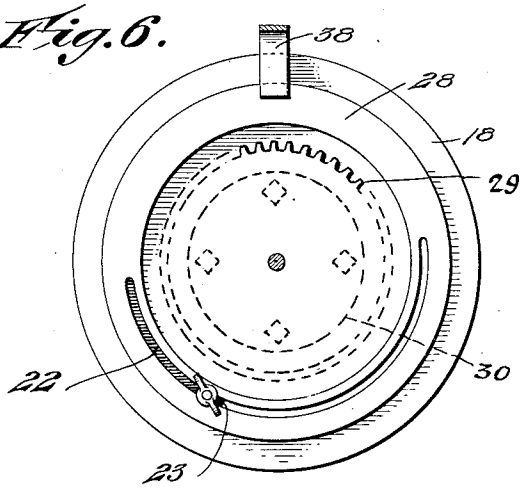


Fig. 6.



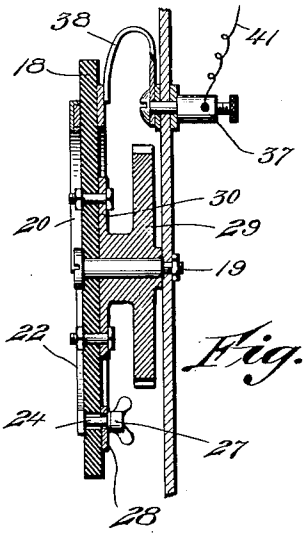
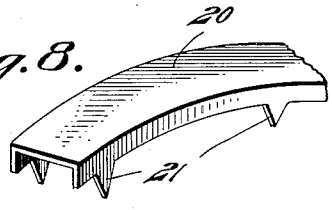


Fig. 7.

Fig. 8.



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UNITED STATES PATENT OFFICE.

THOMAS J. H. PEIRCE, OF CRANSTON, RHODE ISLAND.

ELECTRIC TIME SWITCH.

Application filed December 29, 1921. Serial No. 525,631.

To all whom it may concern:

Be it known that I, THOMAS J. H. PEIRCE, a citizen of the United States, residing at Edgewood, city of Cranston, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Electric Time Switches, of which the following is a specification.

This invention relates to improvements in an electric time switch or means for determining the time for closing an electric circuit and also the duration of time that the circuit shall be closed or open; and the object of this invention is to provide simple and effective means which may be connected to any clock mechanism by the adjustment of which an electric circuit may be closed at any predetermined hour and remain closed as long as desired, the device being adapted to be applied to the lighting circuit of an automobile, which may be left on the street, for turning on the lights at a predetermined hour and extinguishing them at a predeter- hour, or the device may be used for automatically adjusting the mechanism of electrically-driven clocks to effect the changes between the standard and daylight saving times, or it may be used for any other purpose for which it is adapted.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings,

Figure 1 is a front elevation partly broken away to illustrate the mechanism of my improved attachment as attached to a clock.

Figure 2 is a top sectional view of the mechanism illustrated in Figure 1.

Figure 3 is a front view of the segment-carrying disc.

Figure 4 is a section on line 4—4 of Figure 3, showing the channel-shaped segment with an extension member slidably mounted therein; also showing the contact ring on the opposite side of the disc.

Figure 5 is a section on line 5—5 of Figure 3 through the securing member of the segment extension.

Figure 6 is a back view of the segment-carrying disc, showing the contact strip thereon.

Figure 7 is a section on line 7—7 of Figure 3 through the segment-carrying disc, showing the segment mounted on one face and the contact ring on the opposite face, also showing the pinion as secured to the back of the disc.

Figure 8 is a perspective view illustrating the fixed portion of the contact segment.

Figure 9 is a sectional side elevation showing the latch engaging the extendible member of the contact segment.

Figure 10 is a fragmental view of the front wall showing the notched slot for guiding and retaining the latch handle.

It is found desirable in practice that when an automobile is left upon the street in the evening, to be of advantage to be able to turn on the lights at the time required by law and in some cases to be able to extinguish the lights at day light in the morning and it is found desirable to provide means for adjusting the mechanism so that the time for starting the contact may be varied according to conditions and to also adjust the mechanism so as to control the duration of contact; and the following is a detailed description of one means by which these results may be accomplished:—

With reference to the drawings, 10 designates the casing of an ordinary clock to the back of which an auxiliary casing 11 may be attached.

A gear 12 is mounted on a jack-shaft 13 in the clock-body proper to be driven at one-half the speed of the main drive shaft 14 of the clock through the pinion 15. On the outer end of this jack-shaft 13 is mounted a flexible contact arm 16 having a brush or other suitable contact 17 on its end adapted to engage a contact segment, presently described.

In this auxiliary casing in line with the axis of the jack-shaft 13 I have mounted a disc of insulating material 18 on the stud 19.

On the front face of this disc I have mounted a channel-shaped segmental contact member 20, the edges of this segment being provided at intervals with inwardly-projecting spurs 21 which may be forced through the fiber disc 18 to secure the segment thereto. In the channeled portion of this segment I have mounted a segmental plate 22 which is adapted to be housed entirely within the channeled member or it may extend to complete the circle if desired, or it may be adjusted to any desired intermediate position.

The outer end 23 of this adjustable seg-

ment is provided with a bolt or stem 24 which extends through a slot 25 in the disc and is provided with a spring washer 26 and a nut or other binding member 27 whereby the adjustable segment may be secured in any adjusted position.

On the back of this fiber disc 18 I have secured a plain ring 28 which is slotted to permit the passage of the bolt 24 therethrough.

To the back of this fiber disc I have secured a pinion 29 by means of the flange 30 and this disc may be rotated by hand through the handle 31, shaft 32 and large gear 33.

In order to determine the exact point to which the disc should be rotated so as to be brought into contact with the contact arm at a predetermined period, I have mounted a pointer 34 on the shaft 32 to be rotated over a dial 35, each half of which dial is graduated into twelve parts, one part denoting the twelve hours from 12 o'clock a. m. to noon and the other half denoting the afternoon period from one to twelve at night, so that the time of starting the contact either in the afternoon or in the morning may be accurately determined the gearing having been arranged so that the contact arm 16 will only make one complete circle during the twenty-four hour period while the hour hand of the ordinary clock makes two complete revolutions in the same time. In making an electrical connection to this device I preferably connect one of the wires to the bolt 36 which is grounded on the casing of the clock while the other bolt 37 is insulated from the clock casing and is provided with a spring contact 38 which bears against the outer edge of the rear plate or ring 28 carried by the fiber disc 18.

In operating the device I set the pointer 34 to the hour at which it is desired the contact shall be made to complete the electric circuit. The rotating of this pointer also rotates the disc through the gears 33 and 29 to set the edge 39 of the contact segment in position to be engaged by the clock-driven contact-arm 16 at the time desired.

If it is desired that the duration of the contact shall be only twelve hours then the extension segment 22 will be pushed away back to the end 40 of the fixed segment so that as the arm 16 is driven around by the clock mechanism it will run off from the contact segment onto the fiber disc after twelve hours. If, however, it is desired to extend the contact period for twenty-four hours it is only necessary to draw out the segment extension member 22 to complete the full circuit or it may be set to complete any desired portion of the circle. Before doing this, however, the binding nut 27 is, of course, loosened which is accomplished by rotating the disc to a point clear of gear 33 where the nut 27 may be engaged through an opening, not shown, in the back plate 11.

In some instances it is found desirable to provide means on the device whereby the contact segment may be extended so that its length will agree with and determine the period or duration of electrical contact. To accomplish this in a simple and effective way I have provided an extending finger 43 on the end of the extendible portion 22 of the segment and I have pivoted a latch 44 at 45 on the bearing 46 which latch is provided with a handle 47 adapted to extend forward through the front wall 35 of the clock mounting, or in any desired operative position, and this latch is normally pressed into engaging position by means of a spring 48 and when it is desired to remove the latch from operative position it is only necessary to press the handle 47 downwardly and cause the same to engage a notch 49 see Figure 10, in the front wall to hold the latch out of engagement and against pressure of its operating spring 48. By this construction it will be seen that when the latch is in operative position it engages the end 43 on the segment 22 so that when the fiber disc 18 which carries the hollow section 20 of the segment is rotated in one direction through the setting knob 31 and gears 33 and 29, the member 22 of this segment is extended a distance to correspond to the setting movement of the pointer and when the setting knob is rotated in the opposite direction the segment member 22 is rehoused in the member 20.

By this arrangement the extendible portion 22 of the segment is supposed to be completely housed when the pointer 34 is at 12 o'clock midnight by the setting dial and in order that this portion shall be drawn out to extend the period of contact with the rotation of the pointer, I move the segment-controlling latch 47 into operative position, and then by moving the pointer to the right to any designating hour, say for instance, 4 a. m., the rotating of this pointer simultaneously rotates the disc 18 through gears 29 and 33 with its housing contact member 20 to withdraw the extendible portion 22 a corresponding distance, so that the contact brush 17 will have reached the end of the contact segment at the period set.

Circuit wires 41 will be provided with a switch 42 whereby the circuit may be broken at the will of the operator independently of the clock mechanism, when desired.

The device is extremely simple and practical in construction and effective in its operation and by its use the time at which the circuit may be completed, may be readily determined and the duration of the circuit may also be readily controlled.

The foregoing description is directed solely towards the construction illustrated,

but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In an electric time switch, the combination with a motor, of a rotatable contact segment, a flexible contact arm driven by said motor and in engagement with said segment, and means including a graduated dial and set of gears by which said segment may be rotated and so positioned to contact with said arm at a predetermined time to close the electric circuit.

2. In an electric time switch the combination with a clock mechanism, of a rotatable disc of insulating material, a hollow segmental contact strip carried by said disc, a slidable contact segment adapted to be housed in said hollow segment, means for securing the slidable segment in adjusted position, and a contact arm rotated by said motor to contact with said segments, said arm and segments being in an electric circuit.

3. In an electric time switch the combination with a motor, of a contact segment, a contact member in engagement with said segment and driven by said motor, and means for adjusting the working length of said segment by rotating said disc to determine the duration of time that the circuit shall be closed.

4. In an electric time switch the combination with a motor, of a rotatable but normally stationary disc of insulating material, a segmental contact member carried by said disc, an adjustable contact arm mounted to engage said segment and be rotated by said motor, and means for adjusting the working length of said segment through a rotation of said disc.

In testimony whereof I affix my signature.

THOMAS J. H. PEIRCE.