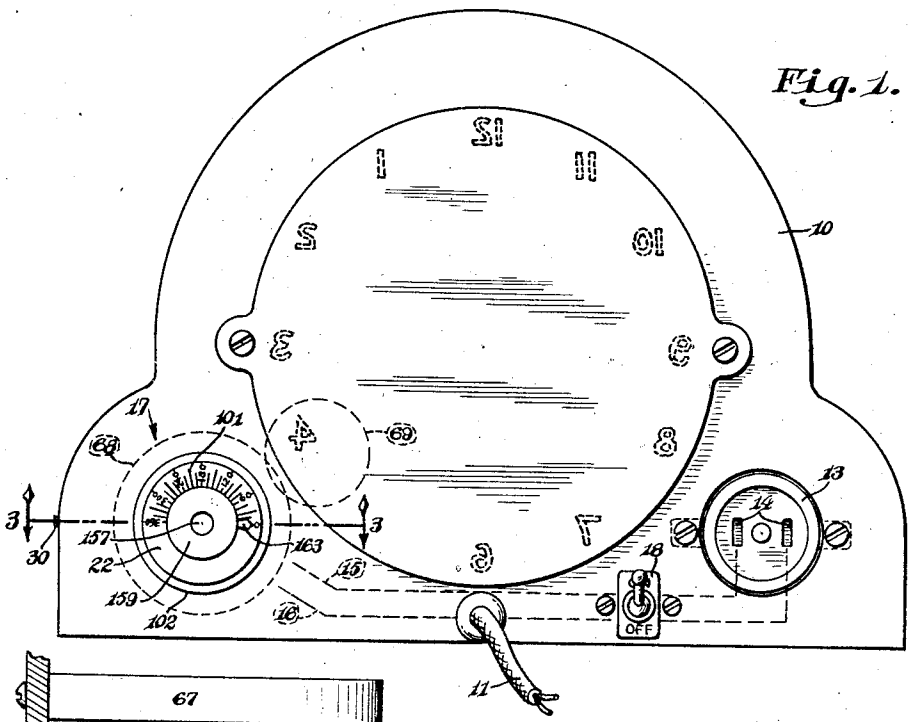
Jan. 4, 1949. F. R. VAN SICKLE 2,458,322

TIME SET CONTROL

Filed June 24, 1946 3 Sheets-Sheet 1

Fig. 1.



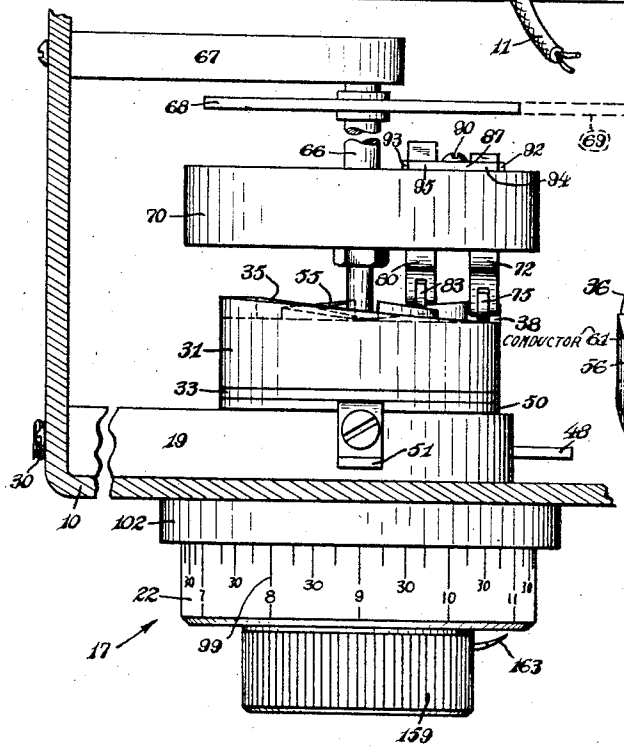


Fig. 2.

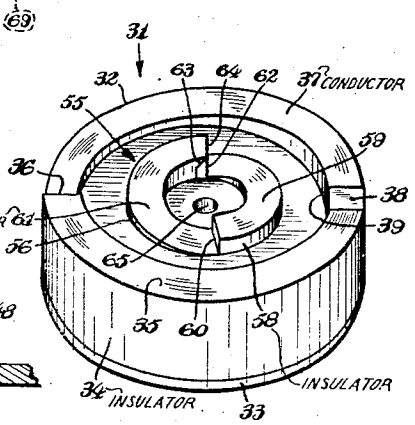


Fig. 4.

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TIME SET CONTROL

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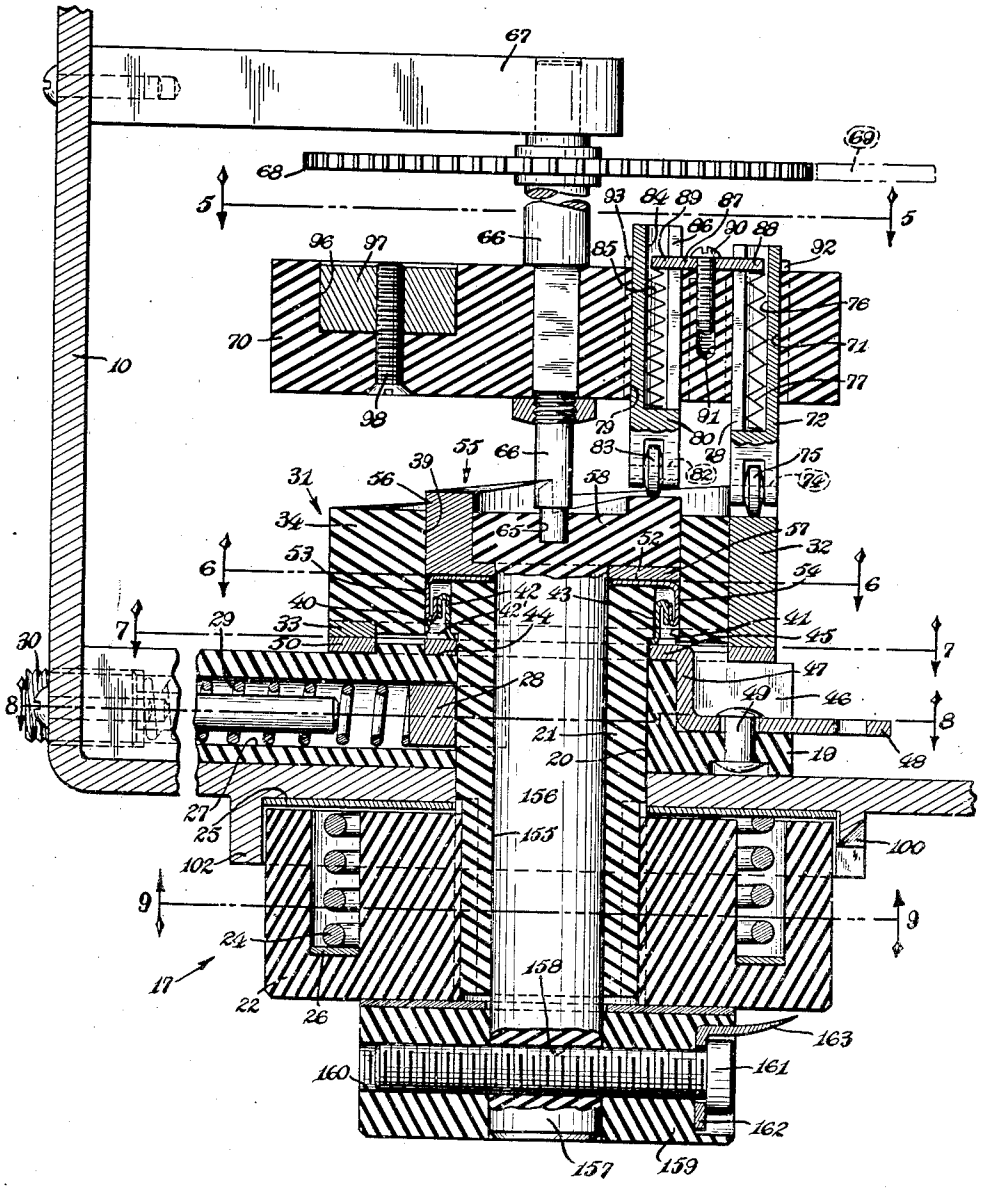


Fig. 3.

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TIME SET CONTROL

Filed June 24, 1946

3 Sheets-Sheet 3

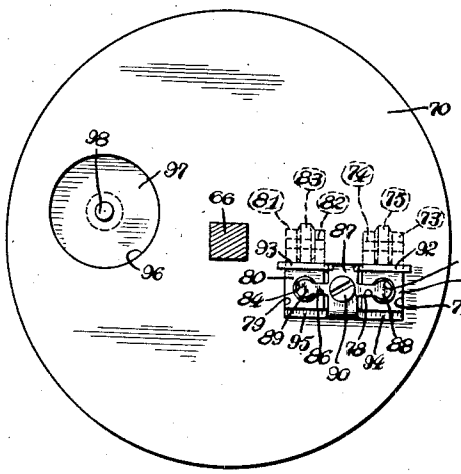


Fig. 5.

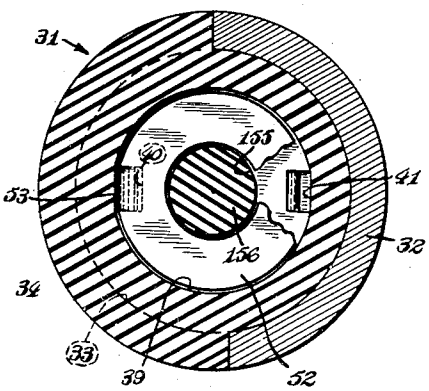


Fig. 6.

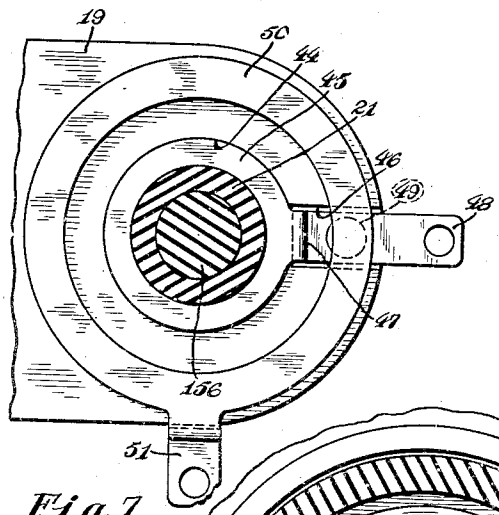


Fig. 7.

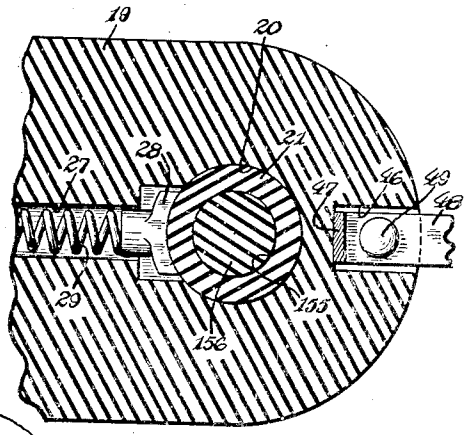


Fig. 8.

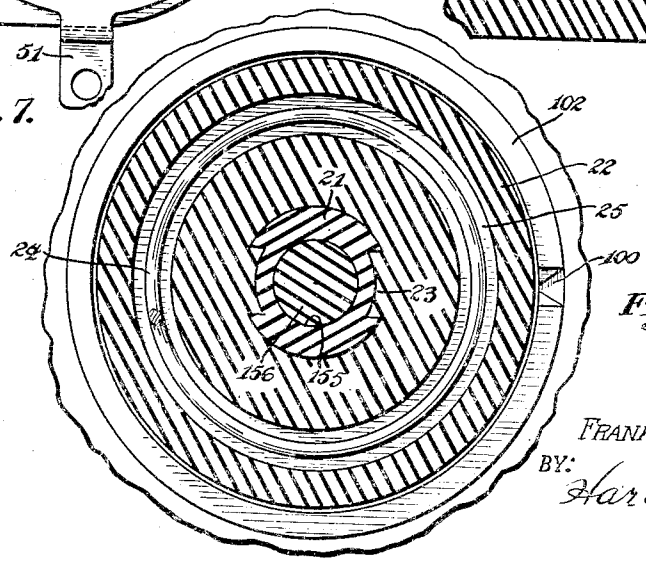


Fig. 9.

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Patented Jan. 4, 1949

2,458,322

UNITED STATES PATENT OFFICE

2,458,322

TIME SET CONTROL

Franklin R. Van Sickle, Beech Grove, Ind.

Application June 24, 1946, Serial No. 678,966

20 Claims. (Cl. 200—36)

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The present invention relates to a time set control, and more specifically to means for controlling an electric circuit, so designed that it may be set to close the circuit at a specific hour, and to re-open the circuit after a specific period, the time when the circuit is closed and the duration of that period being independently adjustable. While my invention is admirably adapted to accomplish that function in an improved fashion, it will be recognized that the mechanism may be used in numerous associations, and that the "specific hour" may be frequently recurrent, and the "period" may be very short. The cycle of the mechanism may be of any desired extent. Customarily, that cycle will be 12 hours, though it may be 24 hours, or a very much shorter period, if, for instance, the mechanism is to be used for flashing a signal. The time extent of a complete cycle of the mechanism will depend, of course, upon the speed of the driving means and/or the gear ratio between the driving means and the mechanism of my invention; and these factors may be chosen at will.

The invention will probably find its most important application in the control of electric ranges, radios, electric signs, and the like; and therefore it will normally be driven by a clock mechanism; but that is not an essential feature of the invention. My invention may readily be built into the housing of a clock, although it may equally well be built into a separate housing for association with a clock or any other suitable driving mechanism; and therefore it has been illustrated, and will herein be described, as enclosed in a clock casing and driven from an element of the clock mechanism.

The objects of the invention, in addition to those above-described, are to simplify and improve the construction of signalling switch mechanisms.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described, so long as the scope of the appended claims is not violated.

Fig. 1 is a rear view of a clock casing with my invention built thereinto;

Fig. 2 is an enlarged, fragmental transverse section through a portion of the clock casing, and showing my circuit controlling mechanism in plan;

Fig. 3 is a further enlarged section, taken substantially on the line 3—3 of Fig. 1 and looking in the direction of the arrows;

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Fig. 4 is a perspective view of the nested heads of the two controlling spindles;

Fig. 5 is a section taken substantially on the line 5—5 of Fig. 3;

Fig. 6 is a section taken substantially on the line 6—6 of Fig. 3;

Fig. 7 is a section taken substantially on the line 7—7 of Fig. 3;

Fig. 8 is a section taken substantially on the line 8—8 of Fig. 3; and

Fig. 9 is a section taken substantially on the line 9—9 of Fig. 3.

Referring more particularly to the drawings, it will be seen that I have illustrated a clock casing 10 which, in the illustrated embodiment, houses an electrically driven clock mechanism energized through an electrical lead 11. As illustrated, an electrical socket 13, having blade-receiving apertures 14, is built into the casing 10, said socket having electrically connected thereto leads 15 and 16 which extend to the circuit controlling mechanism indicated generally by the reference numeral 17, and likewise built into the clock casing. If desired, a hand switch 18 may be provided for dominating the leads 15 and 16.

A base 19 of electrically-non-conductive material is suitably secured, according to the illustrated embodiment, upon the inner surface of the rear wall of the clock casing 10, and is formed with a journal bore 20 therethrough in which is journal mounted a hollow spindle 21, the clock casing 10 being apertured to register with said bore 20. Outside the casing, a knob 22 is supported upon the spindle 21, being splined thereon in the manner illustrated at 23 in Fig. 9, or otherwise suitably secured against relative rotation with respect thereto. As shown, the knob 22 may be formed with an annular socket receiving a coiled spring 24 confined between wear plates 25 and 26, respectively, located between the knob 22 and the wall of the casing 10 and at the base of the spring-receiving socket. The spring 24 is desirable to hold the parts against possible chattering, but is by no means essential to my invention.

Base 19 is formed with a second bore 27 intersecting the bore 20; and a brake shoe 28 is reciprocably received at the inner end of said bore and frictionally bears against the outer surface of the spindle 21, being resiliently urged thereagainst by a spring 29 received in the bore 27 and backed by a plug 30 adjustably threadedly received in the outer end of the bore 27.

At its inner end, the spindle 21 is formed to provide an enlarged head, indicated generally by the reference numeral 31, and comprising a metallic element 32 having a continuous annular bottom portion 33, but having a peripheral extent, above said bottom portion, less than 360°; said element 32 having molded thereupon a ring 34 of electrically-non-conductive material. The outer periphery of the head 31 is continous, being partially formed of the non-conductive element 34 and partially formed of the metallic element 32.

As is most clearly illustrated in Fig. 4, the end face of the head 31 comprises an annular trackway, substantially one-half of the peripheral extent of which comprises electrically-non-conductive material, while the other half thereof comprises electrically-conductive material. The portion of said trackway formed on the element 34 is inclined or cammed in an axial direction, as at 35, and terminates in a sharp declivity 36 at the juncture of said portion with the portion of the trackway formed on the metallic element 32. The portion 37 of said trackway formed on the element 32 is similarly cammed or axially inclined as at 37 and similarly terminates in a sharp declivity 38 at the juncture thereof with the low point of the surface 35.

The head 31 is formed with a central cavity 39 for a reason which will later become apparent.

At diametrically spaced points, the base of said cavity is formed with axially extending pockets 40 and 41, and metallic brush members 42 and 43 carried by a ring 42' are received in said pockets to move with the spindle 21. The base 19 is formed to provide an annular groove 44 immediately surrounding the bore 20, and a metallic ring 45 is received in said groove, the rings 42' and 45 being always in electrical contact. A slot or notch 46 is formed in the base 19 to accommodate a down turned portion 47 of a finger 48 projecting radially from said ring 45 and integral therewith; and said finger (and therefore the ring 45) may preferably be secured in place by a rivet 49 passing through said finger and through a portion of the base 19. One of the wires 15 or 16 will be electrically connected to the terminal finger 48.

Upon a suitable annular seat formed on the base 19 there is mounted another annular ring 50, concentric with, but radially spaced from, the ring 45; and said ring 50 is provided with a radially projecting terminal finger 51 to which the other of said wires 15 and 16 will be electrically connected. Said ring 50 is positioned for registration with the continuous bottom ring portion 33 of the metallic element 32.

Resting upon the base of socket 39 is a metallic ring 52 formed, as is most clearly shown in Figs. 3 and 6, with a pair of down turned brushes 53 and 54 adapted to register with, and to engage, the brushes 42 and 43, respectively. The ring 52, of course, will turn with the spindle 21.

Journal mounted in the hollow 155 of the spindle 21 is a second spindle 156 having a portion 157 projecting beyond the outer end of said spindle 21 and formed with a transverse bore 158. A manipulating knob 159 may be mounted upon said projection 157 and, in the illustrated embodiment of the invention, is provided with a transverse bore 160 adapted to register with the bore 158 and to receive a screw 161 which may also secure in place upon the knob an indicator piece 162 having a finger 163. At its inner end, the spindle 156 carries an enlarged head 55 nested

in the socket 39 of the spindle head 31. Approximately one-half of the periphery of the head 55 is defined by a metal element 56 whose bottom face comprises the continuous metal annulus 57 which rests always in contact with the ring 52. Molded upon said annulus 57 is the electrically-non-conductive element 58 which makes up the remainder of the periphery of the head 55.

Referring again, to Fig. 4, it will be seen that the end faces of the elements 56 and 58 are formed to provide an annular trackway made up of the inclined portion 59 terminating in the sharp declivity 60, and the inclined portion 61 terminating in the sharp declivity 62. In order to minimize arcing, the upper end of the portion 61 of the element 56 is undercut, as at 63, to define a shallow edge 64, the undercut being filled by the non-conductive material of the element 58. The end 38 of the portion 37 of the element 32 will preferably be similarly formed.

The head 55 is centrally formed with a socket 65 in which is journalled one end of a shaft 66, the other end of which is journalled in a suitable hanger 67 carried by the casing wall 10. The shaft 66 has secured thereto a gear 68 which will mesh with a driving pinion 69. In the illustrated embodiment of the invention, the pinion 69 is any suitable element of the clock mechanism, and the element chosen, and its ratio to the gear 68, are such, in the illustrated embodiment of the invention, that the gear 68 and shaft 66 will make one revolution in 12 hours; but it will be obvious that the factors controlling the frequency of the gear 68 may be chosen as desired.

Upon a squared portion of the shaft 66 is mounted a follower block 70 which, in the illustrated embodiment of the invention, is cylindrical, but which may take any desired form. As is most clearly shown in Figs. 2, 3 and 5, an opening 71 is formed through the block 70 upon a line parallel to the shaft axis. Reciprocably mounted in said opening 71 is a plunger 72 whose lower end is turned rearwardly, as at 73, with respect to the direction of rotation of the block 70, and carries an axle 74 upon which is mounted a roller 75. The opening 71 is so formed as to register with the trackway upon the head 31, so that the roller 75 will ride the cammed surfaces 35 and 37. The plunger is formed with a longitudinally extending socket 76 upon the bottom of which bears one end of a spring 77 received in said socket; and a slot 78 opens from said socket through one side wall of the plunger.

A similar opening 79 is formed through the block 70 at a point spaced from the opening 71, and a plunger 80 is reciprocably mounted in said opening 79. The lower end of the plunger 80 is turned rearwardly as at 81 and carries an axle 82 upon which is mounted a roller 83. The opening 79 registers with the trackway formed on the head 55 so that the roller 83 will ride upon the cammed surfaces 59 and 61 thereof. The plunger 80 is formed with a longitudinally extending socket 84 in which is received a spring 85 bearing upon the bottom thereof; and a slot 86 opens from said socket through one side wall of the plunger.

From an inspection of Fig. 5, it will be seen that the axes of the openings 71 and 79 are formed upon a chordal line spaced forwardly, in the direction of rotation of the block 70, from a parallel radius of said block; and that the rearwardly turned feet 73 and 81 of the plungers 72

and 80 are so proportioned and designed that the axles 74 and 82 are disposed in the said radius parallel to the chordal line common to the openings 71 and 79. Thereby, the rollers 75 and 83 are held in tangency to the center lines of the trackways upon which they ride.

The openings 71 and 79 and the plungers 72 and 80 are preferably rectangular in cross section in order to prevent possible oscillation of said plungers about their longitudinal axes. A bridge piece 87 is formed with oppositely extending wings 88 and 89 which extend through the slots 78 and 86 and into the sockets 76 and 84 to provide abutments for the upper ends of the springs 77 and 85, said wing piece being secured in place upon the block 70 by a screw 90 entering a tapped socket 91 located between the openings 71 and 79. In order to avoid the subjection of the springs 77 and 85 to carrying material amounts of current, I prefer to insert metallic liner fingers 92 and 93 behind the plungers 72 and 80, said fingers engaging substantial proportions of the lengths of said plungers at all times, and being electrically connected to each other through the bridge piece 87. As illustrated, the fingers 92 and 93 are integral with said bridge piece, as are also metallic fingers 94 and 95 which are inserted in the openings 71 and 79 in front of the plungers 72 and 80, and which also engage substantial proportions of the lengths of said plungers. I deem it advantageous to make the piece comprising the bridge piece 87 and the fingerds 92, 93, 94 and 95 of resilient, highly conductive material, so that the finger pairs 92 and 94 and 93 and 95 will resiliently grip the respective plungers tightly enough to maintain electrical contact at all times, though not tightly enough to interfere materially with free reciprocation of said plungers in their openings.

Preferably, at a point diametrically removed from the plungers, the block 70 will be formed with a socket 96 receiving a counterweight 97 which may be held in place by a screw 98, to balance the block against the effect of said plungers. In the particular embodiment of my invention illustrated, a time scale 99 is formed upon the periphery of the knob 22, and a duration scale 101 is formed upon its exposed face. I prefer to provide a screening curb 102 upon the casing wall to surround the inner end of the knob 22, and that curb may be formed with a pointer 100 cooperatively positioned with respect to the scale 99. Of course, the pointer 163 movable with the knob 159 is cooperatively positioned with respect to the scale 101.

Obviously, the gear 69 will be so associated with the pinion 68, and with the knob 22, that when the clock hands point to 12 o'clock and the figure "12" on the scale 99 registers with the pointer 100, the roller 75 will have just dropped off the declivity 36 at the end of the cammed surface 35, and so into contact with the conductive surface 37. It will be seen that the declivities 36, 38, 60 and 62 do not rest upon common diametrical planes, but are backed slightly away therefrom so that, when a roller strikes the surface 37 or the surface 61, its point of contact will be in a diametrical plane including the declivity 38 or 62.

Similarly, the head 55 and the knob 159 are so associated with the head 31 that, when the pointer 163 points to zero on the scale 101, the declivity 62 will register with the declivity 36, so that the conductive surfaces 37 and 61 are completely out of registry. Thus, when the pointer 163 registers with the numeral "360" on the scale 101, the declivity 62 will register with the declivity 38, and the conductive surfaces 37 and 61 will be in registry throughout 180°. When the parts are in the relative positions illustrated in Fig. 4, the pointer 163 will register with the figure "180" on the scale 101. Assuming a 12 hour cycle, the conductive surfaces of the two heads will then be in registry over a path traversed by the plungers 72 and 80 in three hours.

If, now, it be assumed that the mechanism is suitably connected to a source of electrical energy, and that the figure "9" on the scale 99 registers with the pointer 100, while the pointer 163 registers with the figure "180" on the scale 101, and if it be assumed that it is earlier than 6 o'clock, the heads 31 and 55 will be substantially in the relative positions illustrated in Fig. 4. The roller 83 will be on the surface 59 close to the declivity 60, and the roller 75, of course, will be on the surface 35 in radial alignment with the roller 83. Precisely at 6 o'clock, the roller 83 will drop off the declivity 60 and into electrical contact with the conductive surface 61 of the head 55, whereby said roller and its plunger will be electrically connected, through the ring 52, brushes 40, 41, 42 and 43, ring 42', and ring 45, to that wire connected to the terminal finger 43. Since, however, the roller 75 is still in engagement with the non-conductive surface 35, no circuit will thereby be established.

During the three succeeding hours, the rollers 75 and 83 will slowly traverse the surfaces 35 and 61 until the roller 75 drops off the declivity 36 into contact with the conductive surface 37. Thereby, said roller 75 and its plunger will be electrically connected, through the ring 50, to that wire which is connected to the terminal finger 51; and the two wires will be bridged through the roller 75, plunger 72, liner fingers 94 and 92, bridge piece 87, liner fingers 93 and 95, plunger 80, and roller 83.

As the follower block 70 moves slowly on, the rollers will continue to move along the conductive surfaces 61 and 37 until the roller 83 drops off the declivity 62 into engagement with the non-conductive surface 59, whereby the circuit will be broken.

I claim as my invention:

1. A time-set control switch mechanism comprising a first circular trackway and a second circular trackway, a portion of a continuous surface of each of said trackways comprising electrically-conductive material and a portion of such surface of each trackway comprising electrically-non-conductive material, said trackways being mounted for independent adjustment about a common axis, a follower mounted for rotation about said axis, means for driving said follower at constant speed, an electrically-conductive element carried by said follower and bearing constantly on said surface of said first trackway, a second element carried by said follower and bearing constantly on said surface of said second trackway, electrically-conductive bridge means constantly in electrical contact with said elements, and separate stationary terminal members constantly in electrical contact with the conductive portions of said trackway surfaces, respectively.

2. A time-set control switch mechanism comprising a first circular trackway and a second trackway, a portion of a continuous surface of

each of said trackways comprising electrically-conductive material and a portion of such surface of each trackway comprising electrically non-conductive material, said trackways being mounted for independent adjustment about a common axis, a shaft journalled for rotation upon said common axis, means for driving said shaft at constant speed, a block carried on said shaft, said block being formed with a pair of openings therethrough, said openings registering, respectively, with said trackway surfaces, a plunger reciprocably mounted in each of said openings, abutment means removably secured to said block and bridging said plungers, spring means for each of said plungers, confined between said respective plungers and said abutment means and resiliently urging said plungers into contact with said trackway surfaces, respectively, said plungers and said abutment means establishing, at times, an electrically-conductive path between said trackway surfaces, and separate stationary terminal members constantly in electrical contact with the conductive portions of said trackway surfaces, respectively.

3. In the device of claim 2, counterbalance means carried by said block at a point diametrically opposed to said plungers.

4. In the device of claim 2, rollers carried by said plungers at the bases thereof and directly engaging said trackway surfaces.

5. The device of claim 2 in which said block openings are offset from a radial line in the direction of rotation of said shaft, in which each of said plungers terminates, at its end remote from said abutment means, in a foot turned rearwardly relative to the direction of rotation of said shaft, in which the foot of each plunger carries an axle disposed in a line radial with respect to said shaft, and in which a roller is mounted on each such axle and is pressed by said spring means resiliently into contact with said surface of its associated trackway.

6. In a device of the class described, a base formed with a journal opening therethrough, a hollow spindle journalled in said opening, means moving with said spindle and providing an annular, axially-facing surface, a portion of said surface comprising electrically-conductive material and another portion thereof comprising electrically-non-conductive material, a second spindle journalled within the hollow of said first-named spindle for rotation independently of said first-named spindle about a common axis, means moving with said second spindle and providing an annular, axially-facing surface concentric with said first-named surface, a portion thereof comprising electrically-conductive material and another portion thereof comprising electrically-non-conductive material, a follower mounted in facing relation to said surfaces for rotation on said common axis, means for driving said follower at constant speed, separate electrically-connected, electrically-conductive means carried by said follower and respectively continuously contacting said surfaces, separate stationary terminals, and means continuously establishing electrical contact between said terminals and the electrically-conductive portions of said surfaces, respectively.

7. The device of claim 6 in which the conductive portion and the non-conductive portion of each of said surfaces come into juxtaposition in planes normal to said common axis and differently spaced from said follower.

8. The device of claim 6 in which the conductive portion and the non-conductive portion of each of said surfaces come into juxtaposition in planes normal to said common axis and differently spaced from said follower, and in which said separate means carried by said follower are independently reciprocable in lines parallel to said common axis.

9. The device of claim 6 in which the conductive portion and the non-conductive portion of each of said surfaces come into juxtaposition in planes normal to said common axis and differently spaced from said follower, and in which said separate means carried by said follower are independently reciprocable in lines parallel to said common axis, and means resiliently pressing said separate means respectively into contact with said surfaces.

10. In the device of claim 6, brake means frictionally engaging said first-named spindle.

11. The device of claim 6, in which said base is formed with a bore intersecting said journal opening, a brake shoe reciprocably mounted in said bore for engagement with said hollow spindle, a spring mounted in said bore and urging said shoe into such engagement, and a plug threadedly mounted in said bore and comprising an adjustable abutment for said spring.

12. A time-set control mechanism comprising a first circular trackway and a second circular trackway, a portion of a continuous surface of each of said trackways comprising electrically-conductive material and a portion of such surface of each trackway comprising electrically-non-conductive material, said trackways being mounted for independent adjustment about a common axis, a follower mounted for rotation about said axis, means for driving said follower at constant speed, said follower being formed with a pair of openings therethrough registering, respectively, with said trackway surfaces, a plunger of electrically-conductive material reciprocably mounted in each of said openings, each of said plungers being formed with a socket providing an abutment facing away from said trackways and having, in its side facing the other plunger, a slot opening into said socket, a spring received in the socket of each plunger and bearing against such abutment, an electrically-conductive bridge piece secured to said follower and having portions entering said plunger sockets through said slots and abutted by said springs, electrically-conductive liners entered respectively in said openings, engaging a substantial portion of the lengths of said respective plungers and electrically connected to said bridge piece, said springs urging said plungers continuously into engagement with said trackway surfaces, respectively, and separate stationary terminal members constantly in electrical contact with the conductive portions of said trackway surfaces, respectively.

13. The device of claim 12 in which said liners are integral with said bridge piece.

14. The device of claim 12 in which each of said liners is a metal piece comprising opposed fingers biased toward each other and gripping its associated plunger therebetween.

15. In a device of the class described, a base of electrically-non-conductive material formed with a journal opening therethrough, a hollow spindle mounted in said opening, a substantially continuous metallic ring carried by said base and surrounding said spindle, a brush carried by said spindle in contact with said ring, means moving with said spindle and having an end face present-

ing an annular surface one portion of which is electrically-conductive and another portion of which is electrically-non-conductive, a second metallic ring concentric with said first-named ring and carried by said base, means providing continuous electrical contact between said conductive surface portion and said second ring, a second spindle journal mounted in said hollow spindle for independent rotation with respect thereto about a common axis, means moving with said second spindle and having an end face presenting an annular surface concentric with said first-named annular surface, one portion of said last-named surface being electrically-conductive and another portion thereof being electrically-non-conductive, a metallic ring interposed between said spindles and having means constantly in electrical contact with said brush, said last-named ring being constantly in electrical contact with the conductive portion of said last-named annular surface, and means rotating at constant speed about said common axis for electrically bridging, at times, the conductive portions of said annular surfaces when said portions are in radial registry.

16. In a device of the class described, a base of electrically-non-conductive material and formed with a journal opening therethrough, a hollow spindle mounted in said opening, a substantially continuous metallic ring carried by said base and surrounding said spindle, a brush carried by said spindle in contact with said ring, said spindle being provided with an enlarged, centrally recessed head formed at its inner end to provide a metal annulus, and formed at its outer end to provide an annular surface of metal, electrically joined to said metal annulus, for a part of its peripheral extent and of electrically-non-conductive material for the remainder of its peripheral extent, a second metallic ring concentric with said first-named ring and carried by said base, said metal annulus registering with and engaging said second metallic ring, a second spindle journal mounted in said hollow spindle for independent rotation with respect thereto about a common axis, said second spindle being provided with a head received in the recess of the head of said hollow spindle and formed at its inner end to provide a metal annulus and formed at its outer end to provide an annular surface, formed of metal electrically joined to said last-named metal annulus, for a part of its peripheral extent and of electrically-non-conductive material for the remainder of its peripheral extent, a metallic ring moving with said hollow spindle, engaging the metal annulus of said second spindle and formed for continuous electrical contact with said brush, and means rotating at constant speed about said common axis for electrically-bridging, at times, the metallic portions of said annular surfaces when said portions are in radial registry.

17. The device of claim 16 in which each portion of each annular surface is axially inclined, and terminates, at its juncture with the next adjacent portion, in an abrupt axial step.

18. In a device of the class described, an element driven by a clock mechanism, a member mounted for manual adjustment about the axis of rotation of said element, said member presenting, toward said element, an annular surface substantially one-half of whose peripheral extent is metallic, the remainder of the peripheral extent of said surface being electrically-non-conductive, a second member mounted for manual adjustment about said axis and presenting, toward said element, an annular surface substantially one-half of whose peripheral extent is metallic, the remainder of the peripheral extent of said surface being electrically-non-conductive, means electrically connecting the metallic portions of said surfaces, respectively, to the two sides of a source of electrical energy, and electrically-conductive means carried by said element and travelingly engaging both of said annular surfaces upon a common line radial to said axis.

19. In the device of claim 18, a reference point, a manually engageable unit operatively associated with said first member and carrying a time scale movable past said reference point in cooperative relation thereto, and a second manually engageable unit operatively associated with said second member, one of said units carrying a duration scale and the other carrying an indicator in cooperative relation to said duration scale.

20. In a device of claim 18, a reference point, a shifting knob carried by said first member and provided with a time scale on its periphery, said knob being mounted with its periphery closely adjacent said reference point, a second shifting knob carried by said second member and located closely adjacent an end face of said first knob, a duration scale marked on said knob face, and an indicator moving with said second knob in cooperative relation with said duration scale.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,537,136	Pierce	May 12, 1925