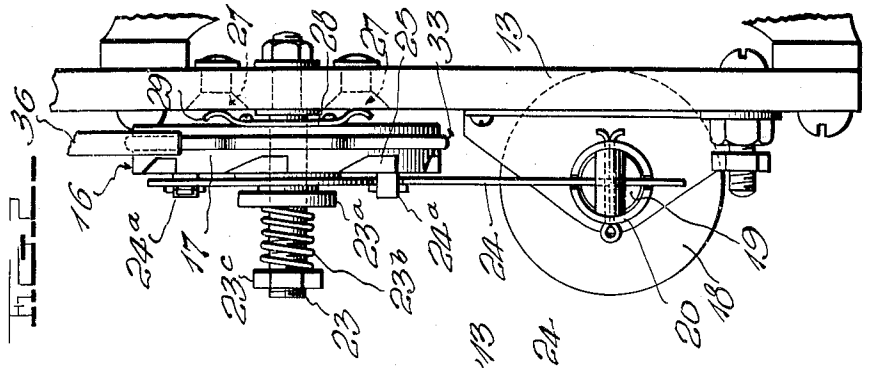
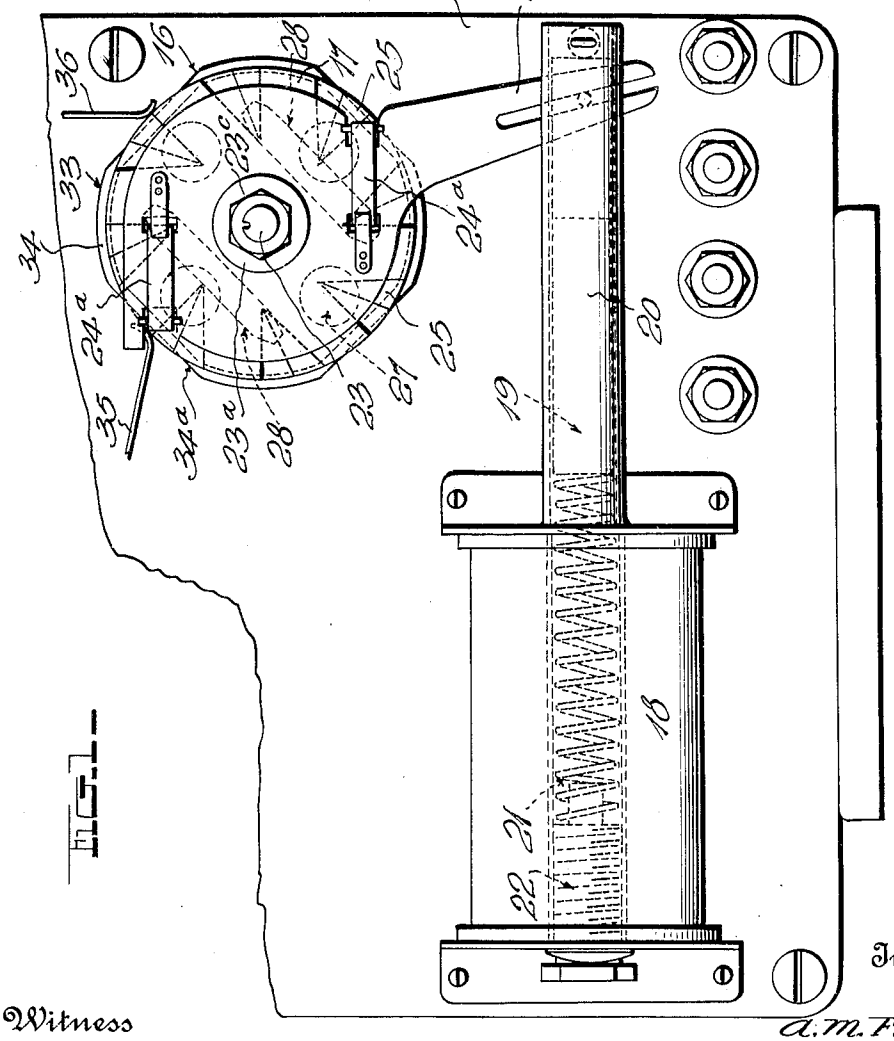
Aug. 29, 1933. A. M. FLANDERS ET AL 1,924,776

ROTATABLE SWITCH

Filed Dec. 6, 1932 2 Sheets-Sheet 1





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Filed Dec. 6, 1932 2 Sheets-Sheet 2

Fig. 3.

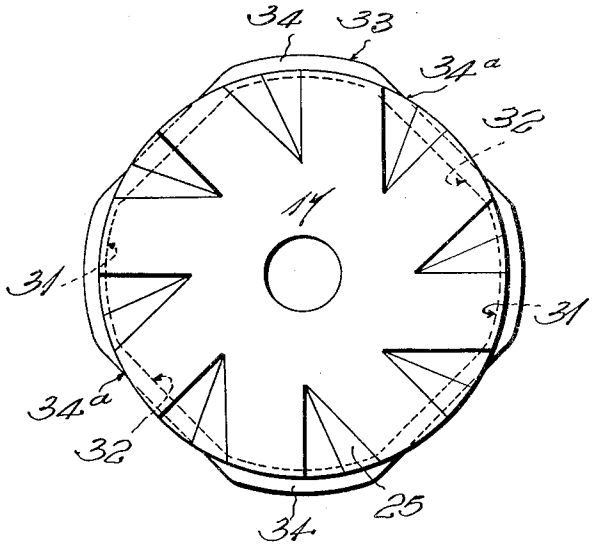


Fig. 5.

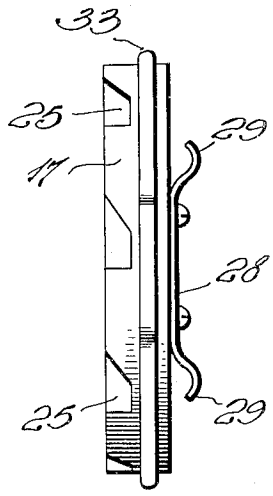


Fig. 4.

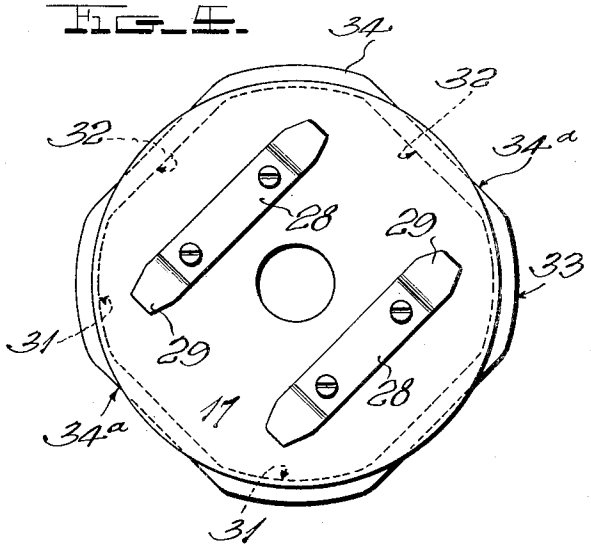
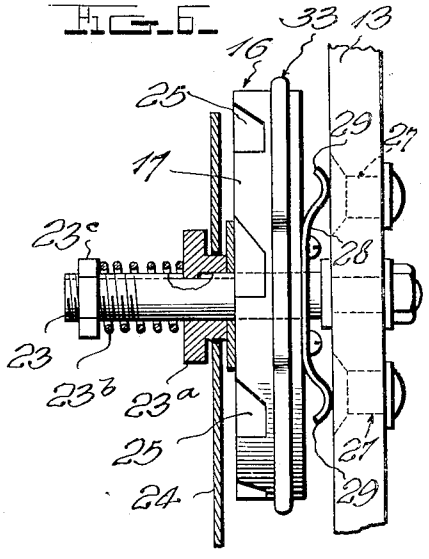


Fig. 6.



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UNITED STATES PATENT OFFICE

1,924,776

ROTATABLE SWITCH

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Barre, Vt.

Application December 6, 1932. Serial No. 646,006

3 Claims. (Cl. 200—7)

This application is a continuation in part of our parent U. S. application, Serial No. 612,318, filed May 19, 1932, relating to Motor controlling means including a novel rotatable switch to which this case is directed.

The principal object of the invention is to provide a rather simple and inexpensive, yet an efficient and reliable switch which is well adapted for actuation electro-magnetically and may be used for controlling any desired circuit or circuits.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Fig. 1 is a side elevation of the switch and the solenoid for actuating it.

Fig. 2 is an edge view.

Fig. 3 is an outer side elevation of the rotatable switch member.

Fig. 4 is an inner side elevation of said rotatable switch member.

Fig. 5 is an edge view of the member shown in Figs. 3 and 4.

Fig. 6 is a detail vertical sectional view showing the rotatable switch member and its mounting means.

A preferred construction has been illustrated and this construction has proven to be highly efficient and advantageous. While it will be herein specifically described, it is to be understood that within the scope of the invention as claimed, numerous variations may be made.

The switch is denoted in a general way at 16, said switch being mounted upon a panel or base 13. While the switch may be used for any desired purpose or purposes, it is designed primarily for effecting driving of an electric motor first in one direction, for then stopping said motor, for later effecting motor driving reversely, and for still later again stopping said motor. The switch includes a rotatable switch member or wheel 17 preferably formed from fibre or the like, and for operating said wheel in a step-by-step manner, we have shown a solenoid 18 and ratchet mechanism actuated thereby. In the present showing, the solenoid core 19 is guided by a tube 20 in which is a core-projecting spring 21 and an adjustable stop screw 22, the latter serving to limit the inward movement of the core 19. This core is pivotally and slidably connected at 22 with an oscillatory lever 24 which is mounted at the outer side of the wheel 17, co-axially with the latter, the guide tube 20 being of course slotted to receive the lower end of said lever 24. The wheel 17 is mounted upon a stub shaft 23 projecting rigidly from the panel or base 13, said wheel being held toward said panel or base and being frictionally held in any position to which turned, by a thrust collar 23^a and a spring 23^b, said thrust collar being slidably keyed on the stub shaft 23 and said spring being interposed between said collar and an abutment 23^c on the outer end of said stub shaft. Lever 24 is mounted on a reduced part of the thrust collar 23^a and carries spring-pressed pawls 24^a which are co-operable with eight ratchet teeth 25 with which the outer side of said wheel 17 is provided, and each time the solenoid 18 is energized, it swings lever 24 sufficiently to cause the pawls 24^a and the ratchet teeth 25 with which they can then co-act, to turn the wheel 17 one-eighth of a revolution. Of course, with a solenoid or the like having a different stroke and with a different number of ratchet teeth, the wheel could be turned to any desired extent upon each operation of said solenoid or the like.

The panel 13 carries four stationary contacts 27 which are spaced equidistantly about and equidistantly from the stub shaft 23 as seen in Figs. 1 and 2. Co-operable with these four contacts 27, are two metal bridges 28 secured to the inner side of the wheel 17, the ends 29 of said bridges constituting contacts to engage said fixed contacts 27. Proper contact engagement is insured by the spring 23^b. When the bridges 28 extend horizontally, their contacts 29 engage all of the contacts 27 but as soon as said wheel 17 is turned one-eighth of a revolution, all of the contacts 29 clear all of the contacts 27. When the wheel 17 is turned another eighth of a revolution, the bridges 28 are disposed vertically and the contacts 29 again engage all of the contacts 27, and when said wheel is again turned one-eighth of a revolution, the contacts 29 are again freed from engagement with the contacts 27. It will thus be seen that switch means are provided to alternately make and break contact, and that said switch means may be employed for controlling any desired circuit or circuits.

The peripheral face of the wheel 17 is provided with circumferentially spaced, circumferentially extending, relatively deep grooves 32 and with circumferentially extending, relatively shallow grooves 31, said grooves 31 connecting the ends of said grooves 32. A contact ring 33 is secured in the grooves 31 and 32, said ring having circumferentially extending contact portions 34 in the shallow grooves 31 and projecting radially beyond

the peripheral face of the wheel, and also having intervening circumferentially extending portions 34ª in the deep grooves 32 and sunk inwardly beyond said peripheral face of the wheel. Fixed contacts 35 and 36, wider than the grooves 31 and 32, coact with the portions 34 of the contact ring 33, in forming additional switch means which also will alternately make and break a circuit or circuits as the wheel 17 is rotated. Obviously, this switch means, like that above described, may be employed for controlling any desired circuit or circuits.

It will be seen from the foregoing that novel provision has been made for carrying out the objects of the invention, and while a preferred construction has been illustrated, attention is again invited to the possibility of making numerous variations, within the scope of the invention as claimed.

We claim:—

1. In a switch, a wheel whose peripheral face is formed with circumferentially spaced circumferentially extending grooves, and a contact ring tightly surrounding said wheel and having circumferentially extending portions received in said grooves and sunk inwardly beyond said peripheral face of the wheel, said contact ring also having circumferentially extending contact portions between said groves and projecting radially beyond said peripheral face of the wheel.

2. In a switch, a wheel whose peripheral face is formed with circumferentially spaced circumferentially extending relatively deep grooves and with additional circumferentially extending relatively shallow grooves connecting the ends of said relatively deep grooves, and a contact ring tightly surrounding said wheel and having circumferentially extending portions received in said relatively deep grooves and sunk inwardly beyond said peripheral face of said wheel, said contact ring also having circumferentially extending contact portions received in said shallow grooves and projecting radially beyond said peripheral face of the wheel.

3. In a switch, a base having a flat face and a fixed contact flush therewith, a stub shaft projecting rigidly from said flat face of said base near said contact, a wheel rotatably mounted on said stub shaft and having a laterally facing contact to slide on said flat face of said base and on said fixed contact, a thrust collar slidable and non-rotatable on said stub shaft in abutting relation with the outer side of said wheel, a compression spring on said stub shaft for forcing said collar toward said base to frictionally hold said wheel in any position to which it is turned and to insure contact engagement, an oscillatory lever mounted on said collar, and ratchet means for operatively connecting said lever with said wheel.

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