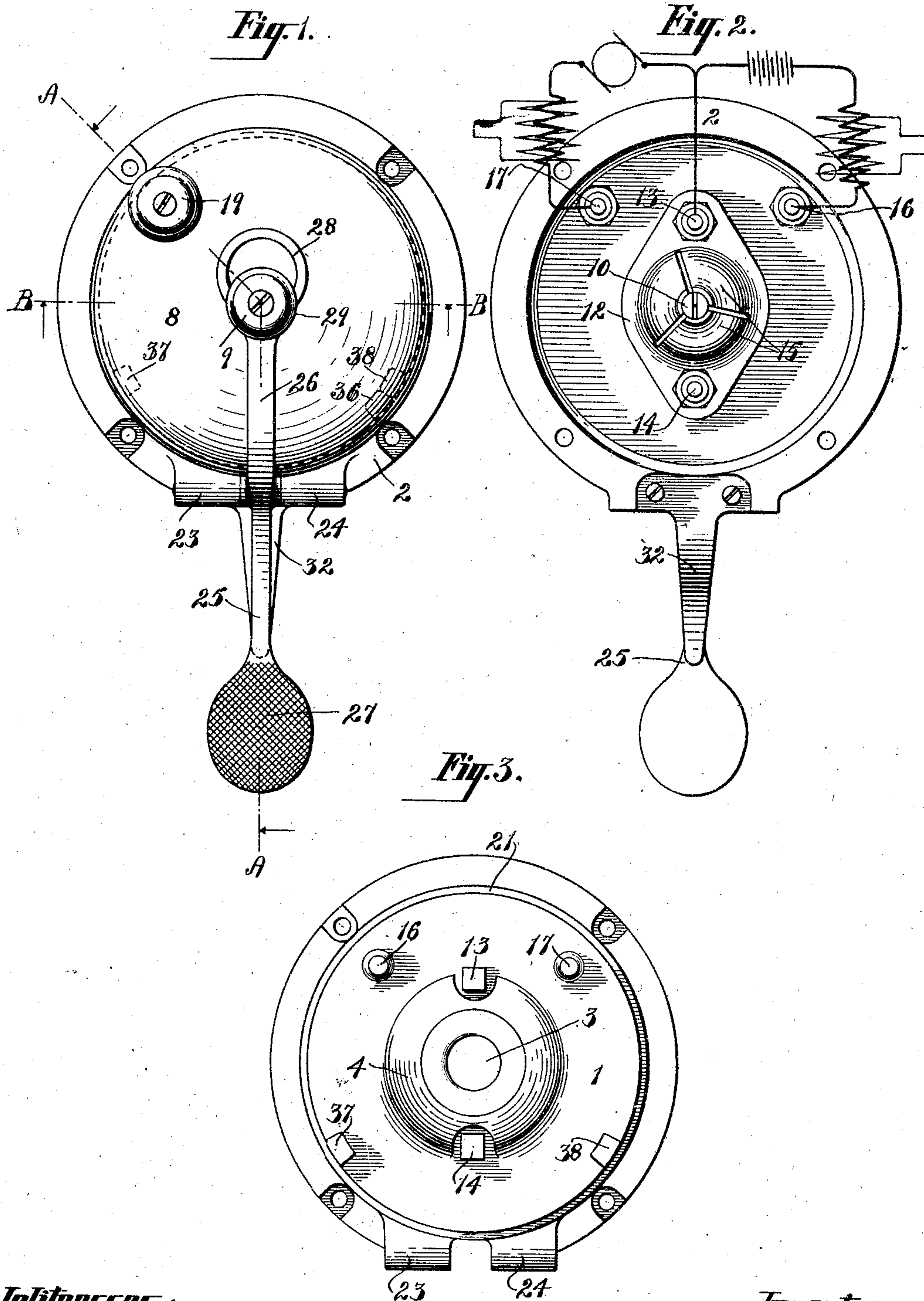


No. 789,975.

PATENTED MAY 16, 1905.

G. L. HERZ.
ELECTRIC SWITCH.
APPLICATION FILED OCT. 7, 1904.

2 SHEETS—SHEET 1.



Witnesses:

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Inventor:

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2 SHEETS—SHEET 2.

Fig. 4.

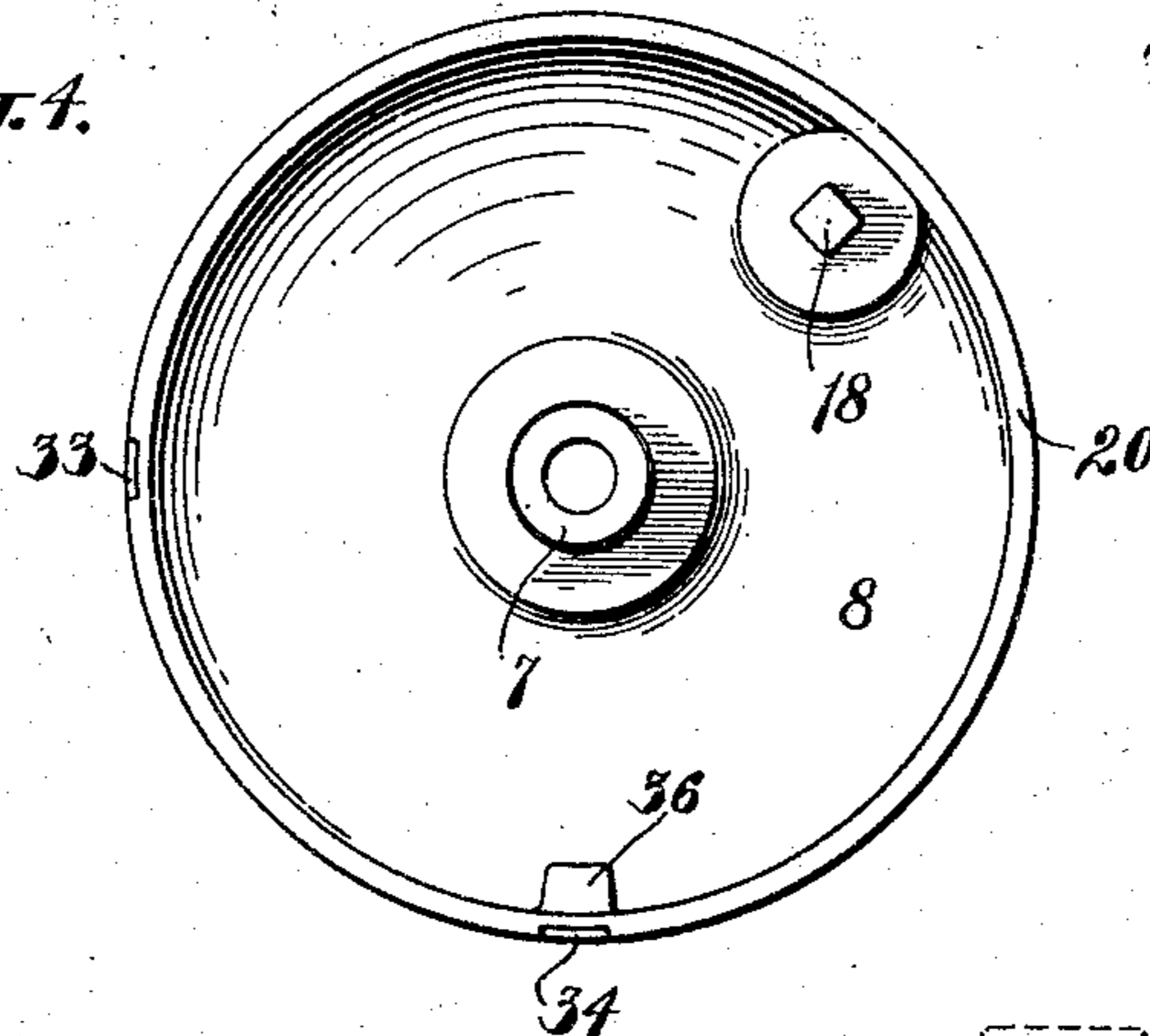


Fig. 5.

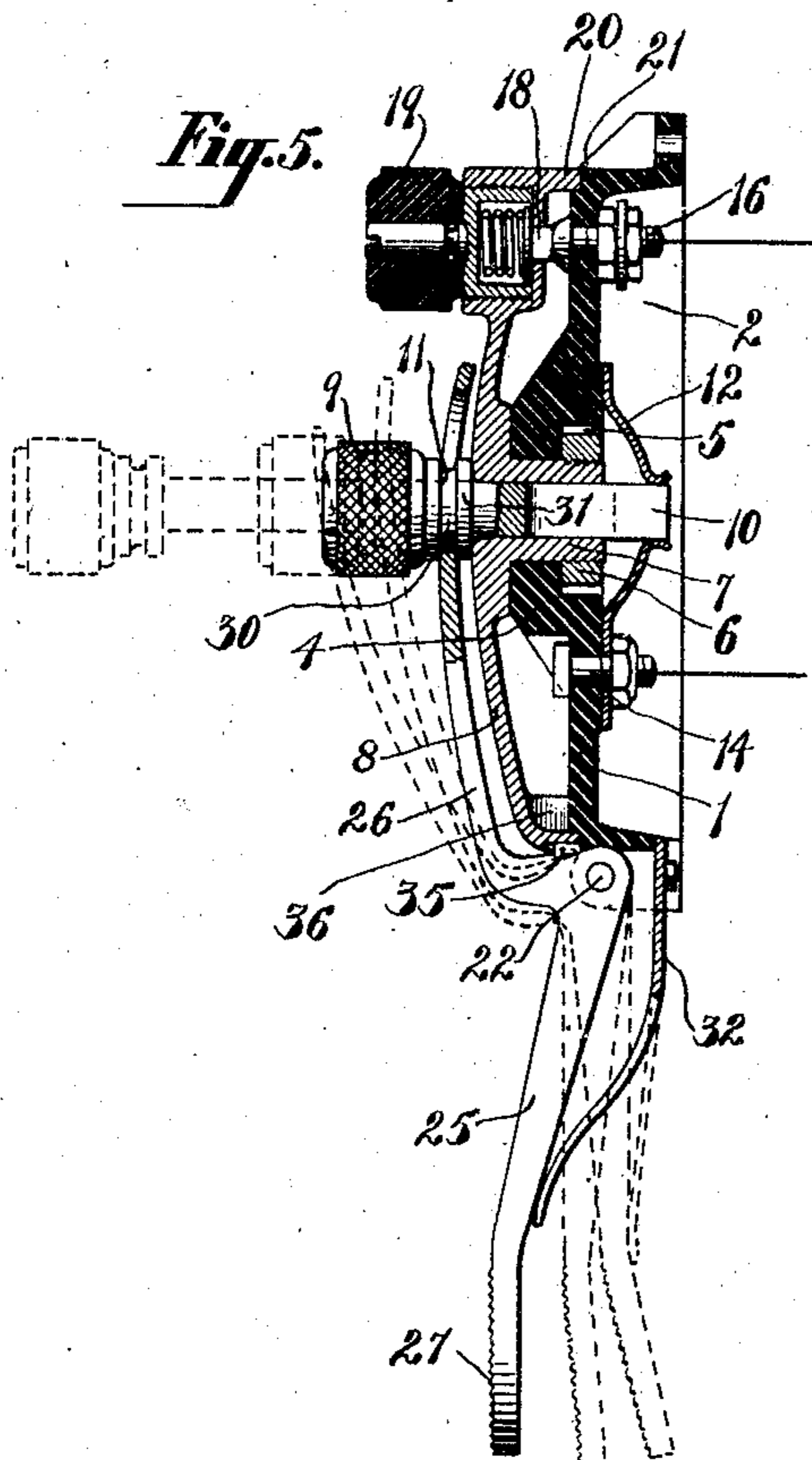
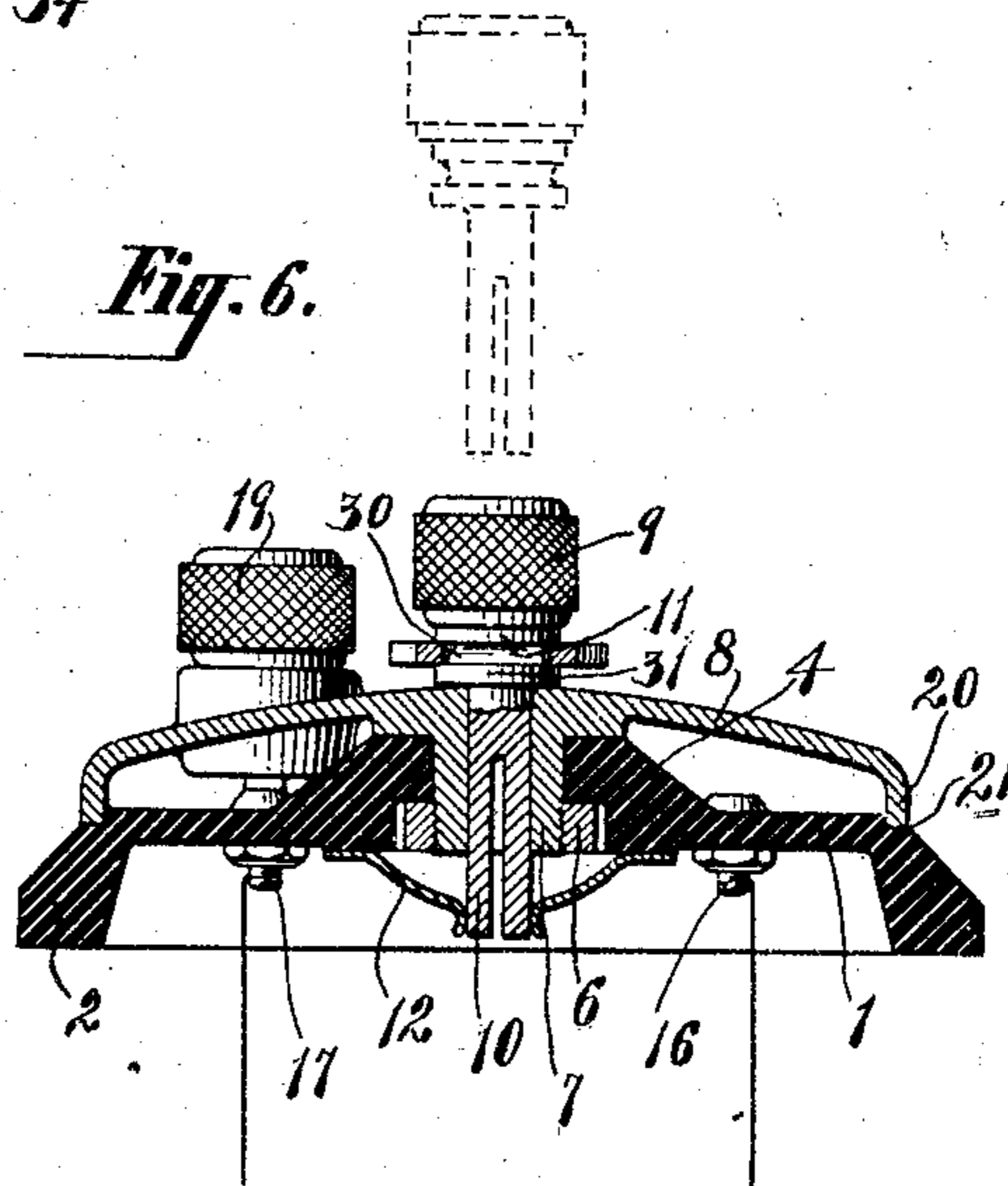


Fig. 6.



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UNITED STATES PATENT OFFICE.

GUSTAVE L. HERZ, OF NEW YORK, N. Y.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 789,975, dated May 16, 1905.

Application filed October 7, 1904. Serial No. 227,532.

To all whom it may concern:

Be it known that I, GUSTAVE L. HERZ, a subject of the Emperor of Austria-Hungary, and a resident of the borough of Manhattan, in the city and State of New York, have invented new and useful Improvements in Electric Switches, of which the following is a specification.

The object of this invention is to provide certain improvements in the construction, form, and arrangement of the several parts of an electric switch of that type in which a removable plug, included in the circuit, is employed for controlling the making and breaking of the current.

My improved switches are particularly well adapted for use in connection with the electric ignition devices of explosive hydrocarbon-engines employed in connection with motor-vehicles and boats wherein it is advisable to utilize a plug in the electric switch, which may be removed by the operator when he leaves the engine to prevent the same from being started. My invention provides for a switch of this character in which the plug may be slid into and out of operative position by a spring-actuated rocking lever without removing the plug from its bearing, the connection between the lever and plug being such that when the lever is rocked to a predetermined point the plug may be released therefrom and removed from the switch.

In the accompanying drawings, Figure 1 represents the switch in top plan. Fig. 2 is an inverted plan view of the same. Fig. 3 is a top plan view of the base. Fig. 4 is an inverted view of the movable contact-supporting shell. Fig. 5 is a longitudinal section through the switch in the plane of the line A A of Fig. 1 looking in the direction of the arrows, the plug-sliding lever being shown in full lines in its normal position and in dotted lines in two other positions; and Fig. 6 is a transverse central section in the plane of the line B B of Fig. 1 looking in the direction of the arrows, the plug being shown in dotted lines removed.

The base of the switch is denoted by 1, and it is made of any suitable insulating material—such, for instance, as vulcanized rubber. This base is of general cylindrical form and is pro-

vided with a circumferential depending flange 2, forming a hollow chamber on the inner side of the base. The base is provided with a central hole 3 therethrough, and the outer face of the base is provided with a conical projection 4, surrounding the hole.

The inner face of the base 1 is provided with a recess 5, surrounding the hole 3, for the reception of a retaining-nut 6. This nut 6 has a screw-threaded engagement with the exterior wall of a hollow depending lug 7 of the movable contact-supporting shell 8, a plain portion of the said lug 7 having a rotary fit in the hole 3 in the base.

A removable plug is mounted in the shell 8, as follows: The head of the plug is denoted by 9, from which head projects a split shank 10, which shank has an easy sliding fit in the hole, which extends centrally through the shell and lug. A shoulder 11 on the plug serves to limit its inward movement. The inner end of the shank 10 of the plug is arranged to be brought into and out of contact with a plate 12, secured to the inner face of the base 1, in the present instance by screw-bolts 13 14. This contact-plate 12 is provided with a central hole, formed by the ends of a plurality of tongues 15. These spring-tongues 15, together with the split shank 10, serve to insure a good connection between the plug and plate.

One or more contacts are provided on the outer face of the base 1, arranged to be engaged by a movable contact carried by the shell 8. In the present instance two of these contacts are shown, the contact 16 being located in the circuit leading to one source of energy—such, for instance, as a storage battery—and the contact 17 being in a circuit including another source of energy—such, for instance, as a dynamo. These contacts are arranged at equal distances from the axis of the movable contact-carrying shell.

A spring-actuated movable contact 18 is carried by the shell 8. This shell may be provided with a suitable operating-handle 19. The contact-point 18 is shown at the required distance from the axis of the shell 8 to permit it to be brought into engagement with the one or the other of the contacts 16 17.

The two sources of electrical energy are

connected to one of the screw-bolts, which secure the contact-plate 12 to the base 1, in the present instance the bolt 13. It will thus be seen that the contact-plate and movable plug

are included in the circuit of either of the two sources of electrical energy, according to the position of the movable contact 18 on the one or the other of the stationary contacts 16 17.

The shell 8 is provided with a circumferential flange 20, which fits within a circumferential seat 21 on the base 1 for protecting the contacts.

A spring-actuated rocking lever is hinged to the base 1 by a pintle 22, passing through ears 23 24, formed on the base. One arm of this lever is denoted by 25 and the other arm by 26. The arm 25 extends away from the disk 1 and may be provided with a roughened surface 27 for the engagement of the foot of the operator for the purposes of operating the lever. The other arm, 26, of the lever projects centrally over the shell 8 and is provided with a slot in its outer end having a large portion 28 and a small portion 29. The large portion 28 of the slot is of sufficient size to permit the shoulder 11 of the plug to be passed therethrough, while the walls of the small portion 29 of the slot may be engaged with the circumferential groove 30, formed on the plug between the shoulder 11 and another shoulder 31.

A spring 32 is secured to the flange 2 of the base in position to bear against the inner side of the arm 25 of the rocking lever, tending to swing the arm outwardly, and thereby the arm 26 inwardly.

The peripheral flange 20 of the shell 8 is provided with two depressions 33 34, which are successively engaged by a lug 35 on the arm 26 of the rocking lever for holding the movable contact 18 upon the stationary contact 16 or 17, respectively. The rotary movement of the shell is also limited in both directions by means of a lug 36, which is brought into engagement with either the lug 37 or the lug 38 on the outer face of the base, according to the direction in which the movable contact and its shell are moved.

In operation when it is desired to remove the plug for rendering the electric apparatus inoperative the foot-lever is swung into a position to swing the smaller portion 29 of its slot out of engagement with the plug and bring its larger portion 28 into alinement with the head of the plug. This will permit the plug to be removed entirely from the switch. Where it is desired to simply temporarily put the electric apparatus out of operation, the arm 25 of the lever may be forced inwardly against the tension of the spring 32—as, for instance, by the foot of the operator. This will swing the arm 26 of the lever outwardly and slide the plug out of its engagement with the plate. The moment it is desired to cause the ignition apparatus to resume its operation the le-

ver may be permitted to swing back to its normal position under the tension of the spring 32.

It will be seen that by grasping the handle 19 the movable contact 18 may be brought into engagement with the one or the other of the stationary contacts 16 and 17 to close the switch to the one or the other separate sources of electrical energy, or the contact 18 may be moved into an intermediate position to open the switch. It is to be understood that this operation is quite separate from the opening and closing of the switch by the removable plug.

What I claim is—

1. In an electric switch, a suitable base, a contact-plate and a removable plug included in the circuit, and means removably engaged with the plug for sliding the plug into and out of engagement with the plate without removing the plug.

2. In an electric switch, a suitable base, a contact-plate and a removable plug included in the circuit and a rocking lever removably engaged with the plug arranged to slide the plug into and out of engagement with the plate without removing the plug.

3. In an electric switch, a suitable base, a contact-plate and a removable plug included in the circuit, and a rocking lever arranged to slide the plug into and out of engagement with its plate, the plug being removable from the lever when the lever is at the limit of its movement in one direction.

4. In an electric switch, a suitable base, a stationary contact on its outer face connected to a source of electrical energy, a rotary shell mounted on the base and inclosing its outer face, a movable contact carried by the shell in position to be brought into and out of engagement with the stationary contact, a contact-plate fixed to the inner face of the base and connected to the said source of electrical energy, and a plug carried by the shell arranged to be slid into and out of engagement with the said contact-plate.

5. In an electric switch, a suitable base, a stationary contact on its outer face connected to a source of electrical energy, a rotary shell mounted on the base and inclosing its outer face, a movable contact carried by the shell in position to be brought into and out of engagement with the stationary contact, a contact-plate carried by the inner face of the base and connected to the said source of electrical energy, a plug carried by the shell and means for sliding the plug into and out of engagement with the contact-plate.

6. In an electric switch, a suitable base, stationary contacts on its outer face connected to separate sources of electrical energy, a rotary shell mounted on the base and inclosing its outer face, a movable contact carried by the shell in position to be brought into and out of engagement with either one of the sta-

tionary contacts, a contact-plate carried by the inner face of the base and connected to the said sources of electrical energy and a plug carried by the shell arranged to be slid into and out of engagement with the said contact-plate.

7. In an electric switch, a suitable base, a stationary contact on its outer face, a rotary shell mounted on the base and inclosing its outer face, a movable contact carried by the shell, a contact-plate carried by the base, a plug carried by the shell, a rocking lever arranged to slide the plug into and out of en-

gagement with the contact-plate, the said lever and shell having an engagement for yieldingly holding the shell in position with its movable contact in engagement with the stationary contact on the base.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of October, 1904.

GUSTAVE L. HERZ.

Witnesses:

FREDK. HAYNES,
C. S. SUNDGREN.