

G. E. STEVENS.
ELECTRIC SNAP SWITCH.
APPLICATION FILED OCT. 7, 1909.

951,347.

Patented Mar. 8, 1910.

Fig. 1.

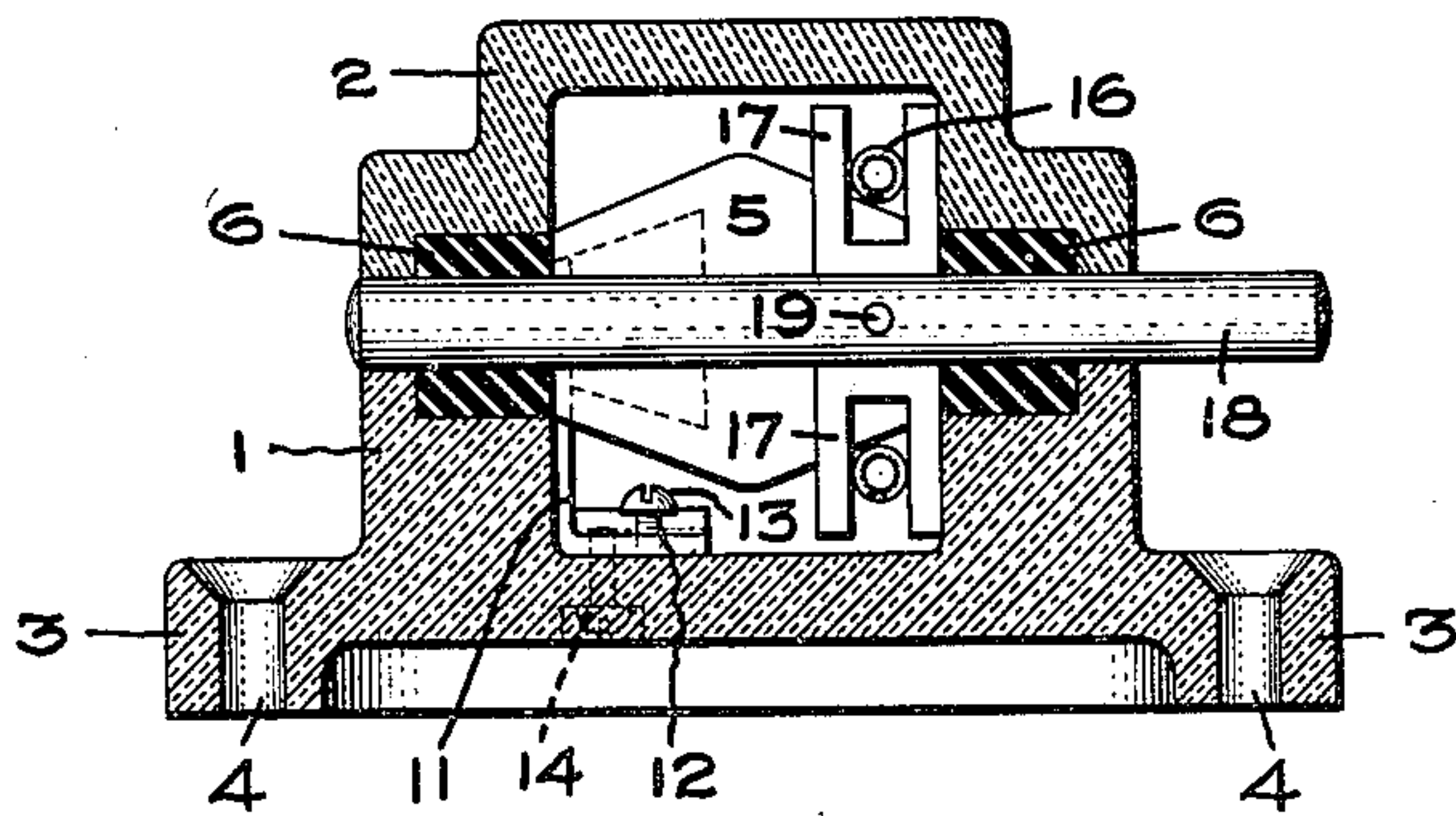


Fig. 2.

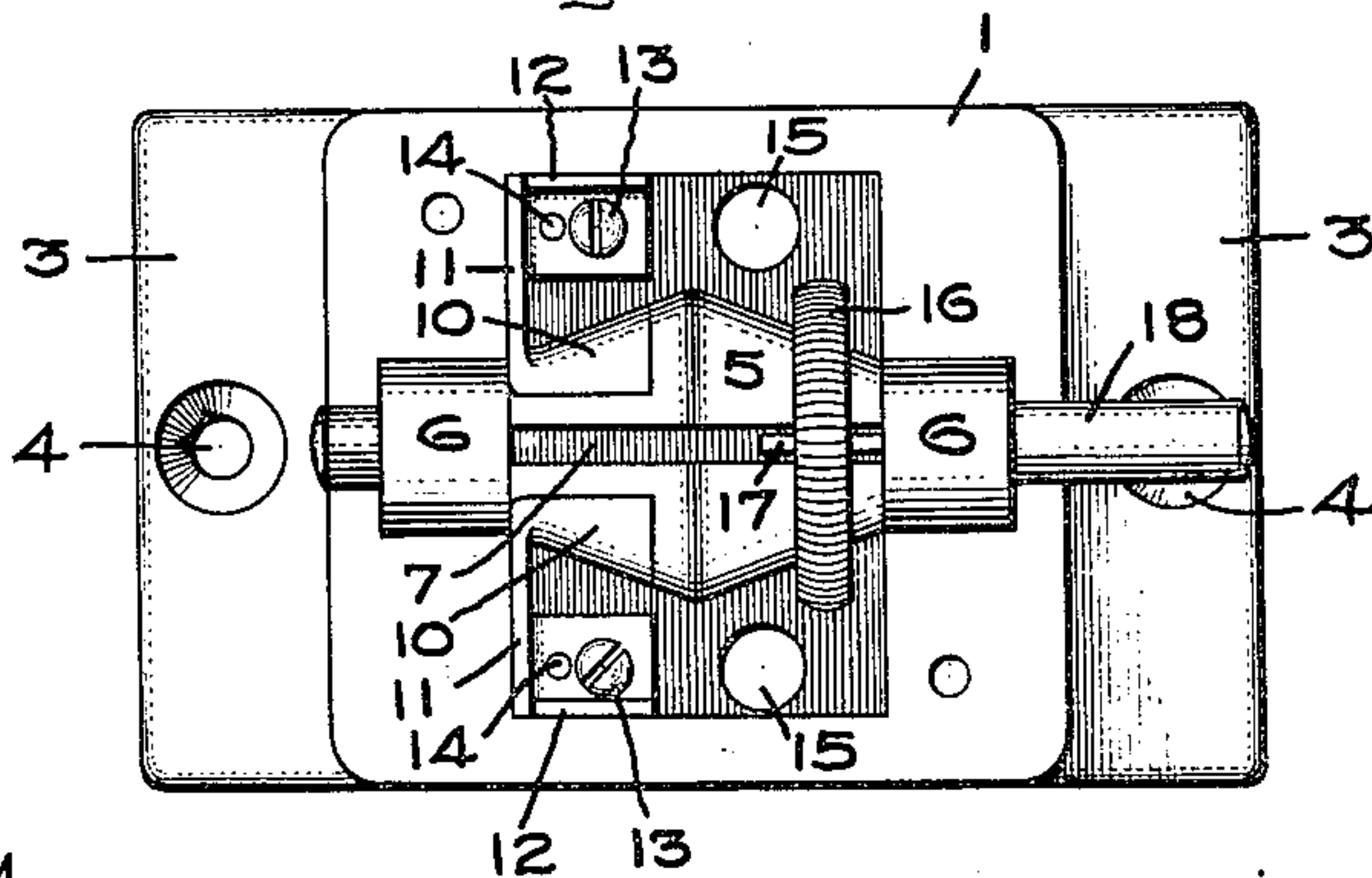


Fig. 4.

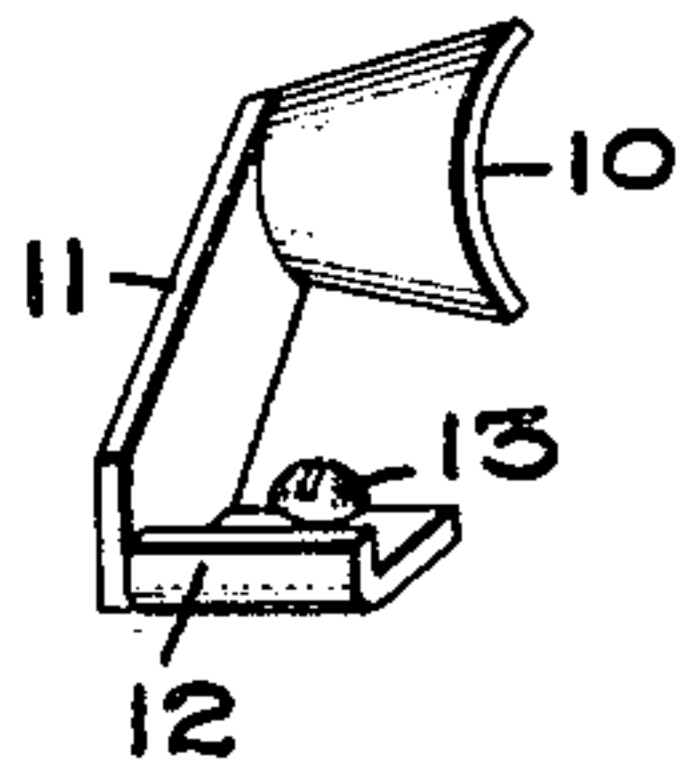


Fig. 3.

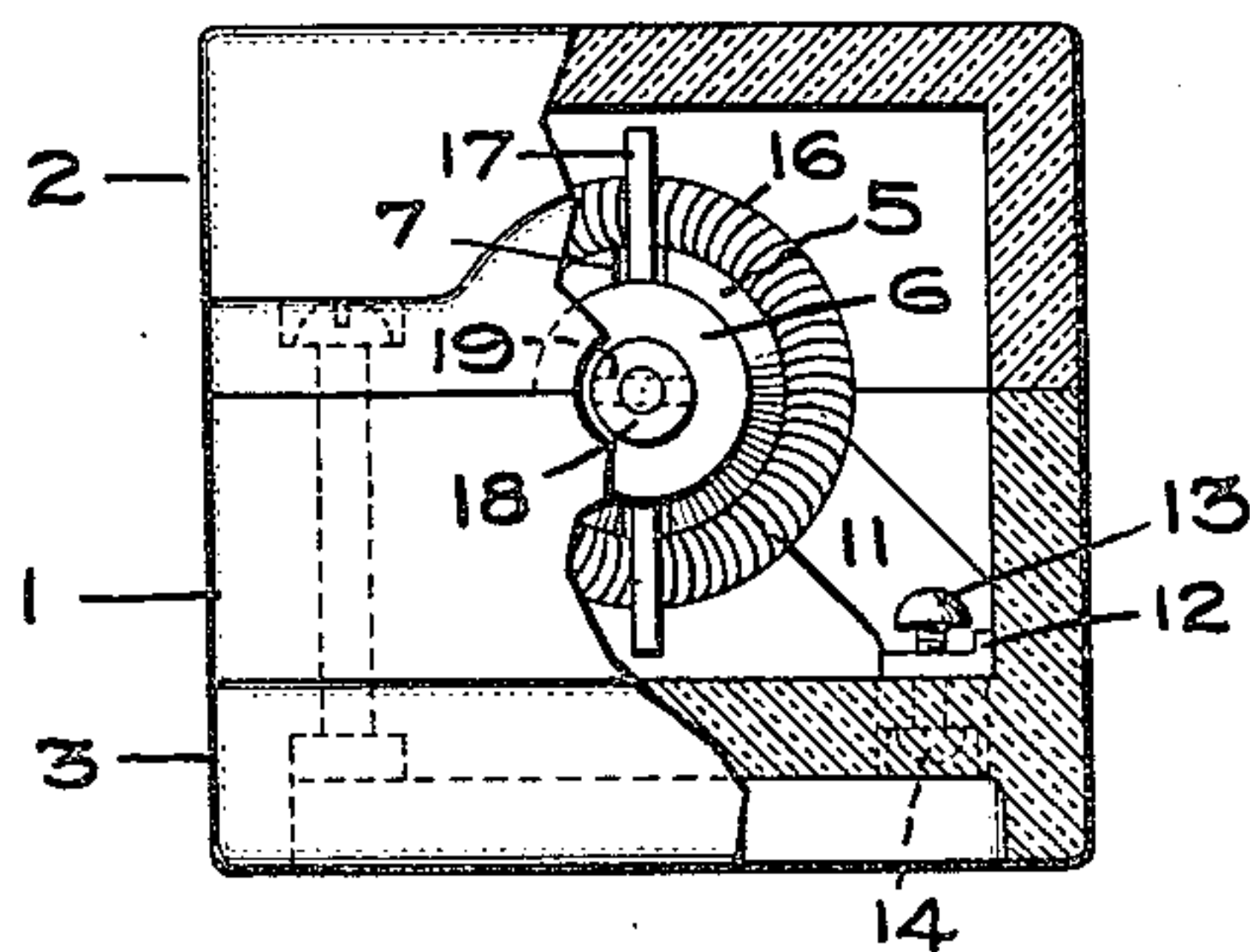
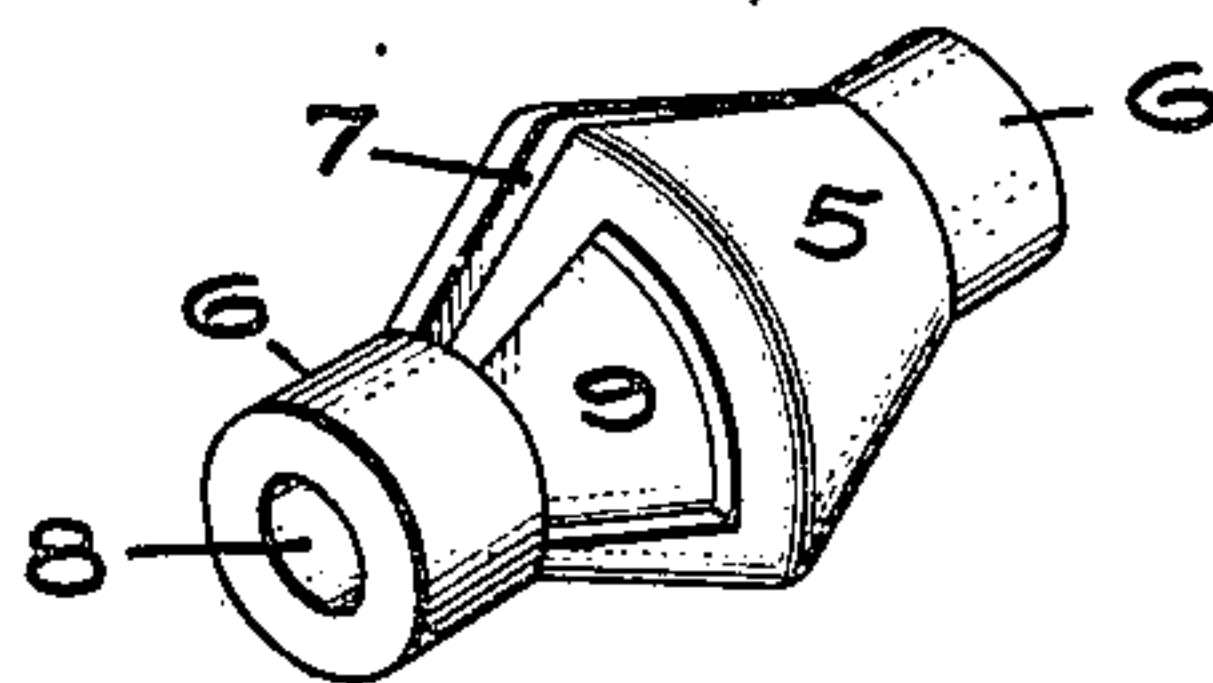


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE E. STEVENS, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC SNAP-SWITCH.

951,347.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed October 7, 1909. Serial No. 521,443.

To all whom it may concern:

Be it known that I, GEORGE E. STEVENS, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Electric Snap-Switches, of which the following is a specification.

This invention relates to devices for opening and closing electric circuits, and its object is to provide a quick-action or "snap" switch of low cost, few parts, and durability in service.

It consists essentially in a stationary spindle-shaped member, having circuit terminal contacts on opposite sides at one end, a garter spring closely encircling the spindle and capable of completing the circuit between said contacts when it embraces them, and a carrier engaging with said spring and operating to move it positively from one end of the spindle to the other. As the carrier proceeds toward the central large diameter of the spindle, the spring is expanded by the conical surface along which it is carried, but the instant it passes the greatest diameter or bilge of the spindle its contractile force urges it toward the end of the spindle, so that its closing upon the contacts is effected quickly. Conversely, in opening the switch, the spring retreats quickly from the neighborhood of the contacts as soon as it passes the bilge of the spindle.

In the accompanying drawing, Figure 1 is a longitudinal section of a switch embodying my invention. Fig. 2 is a plan view with the cover removed. Fig. 3 is an end view, partly broken away and in section. Fig. 4 is a perspective view of one of the contacts, and Fig. 5 is a perspective view of the spindle.

The casing comprises a body 1 and cover 2 which are molded from porcelain or other insulating material, the body having a flange 3 at each end containing holes 4 for screws by which the switch can be fastened to a support. Extending lengthwise of the casing is a spindle 5 of porcelain or other insulating material, having at each end a cylindrical head 6 which is held in suitable semicylindrical recesses in the meeting faces of the body and cover, the spindle itself extending from end to end of the interior of the casing. A narrow slot 7 runs transversely through the spindle on an axial plane terminating at the heads 6, and a central longitudinal hole

8 extends from end to end of said spindle. In each side of the spindle near one end is formed a shallow recess 9 to receive a sheet metal plate 10 forming a terminal contact. The plate has a laterally-extending leg 11 resting against the end of the casing and having a bent end forming a foot 12 in which is a binding-screw 13. The feet 12 stand on the bottom of the casing at opposite sides thereof and are secured by screws 14 passing up through the bottom of the casing. Adjacent to each foot is a hole 15 through which a line wire can be brought to the binding screw 13. Closely hugging the spindle is a metallic garter spring 16 and engaging with said spring is a carrier located in the slot 7 and having arms 17 standing on opposite sides of the spring both above and below the spindle. A push-rod 18 slides freely in the central bore 8 of the spindle, and the carrier is fastened to said rod by the pin 19. The rod is of such a length that when the carrier is at either end of the spindle, the adjacent end of the rod projects from the casing, while the other end is flush with the casing.

In the drawing the switch is shown in the open position. To close it, the rod 18 is pushed to the left, which causes the carrier to force the spring 16 over the bilge of the spindle. This expands the spring and puts it under greater tension, so that the instant the bilge is past the contractile energy of the spring is added to the thrust of the rod and snaps the spring onward to the end of the spindle, where it closes the circuit between the two contacts 10. Should the spring for any reason fail to exert enough force to move the rod and carrier, the push exerted on the rod by the operator will positively close or open the switch as the case may be. This is a valuable advantage over those switches in which the spring alone is relied upon to effect the actuation of the switch.

It will be observed that the current divides in two in flowing from contact to contact, each part passing along one-half of the spring, so that the resistance of the spring will not be sufficient to prove a detriment. Moreover, its resilience causes it to make a good electrical connection with the contacts, and its rolling action on the spindle keeps it bright and presents new sur-

faces of contact at each actuation of the switch. The spring is made of wire large enough to prevent heating and consequent loss of temper.

5 What I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a snap switch, the combination with a stationary spindle, of contacts at one end thereof, a garter spring encircling said spindle and adapted to connect said contacts, and means for moving said spring along said spindle.

2. In a snap switch, the combination with a stationary spindle having a longitudinal slot, of contacts at one end of said spindle, a garter spring encircling said spindle and adapted to connect said contacts, and a carrier movable in said slot and engaging with said spring.

3. In a snap switch, the combination with a stationary spindle having a longitudinal slot and a central bore, of contacts at one end of said spindle, a garter spring encircling said spindle, and adapted to connect said contacts, a carrier movable in said slot

and engaging said spring, and a push-rod in said bore secured to said carrier.

4. In a snap switch, the combination with a casing having recesses in each end, of a spindle having heads received in said recesses, said spindle being provided with a longitudinal slot between said heads and a central bore, contacts at one end of said spindle, a garter spring encircling said spindle, a carrier in said slot engaging said spring, and a rod in said bore secured to said carrier.

5. In a snap switch, the combination with a casing, of a stationary spindle therein having recesses in opposite sides at one end, contacts held in said recesses and having feet secured to the casing and provided with binding screws, a garter spring encircling said spindle, and means for moving said spring lengthwise of said spindle.

In witness whereof, I have hereunto set my hand this fifth day of October, 1909.

GEORGE E. STEVENS.

Witnesses:

JOHN A. McMANUS, Jr.,
CHARLES A. BARNARD.