(No Model.)

# J. S. GIBBS.

## SNAP SWITCH.

No. 557,198. Patented Mar. 31, 1896.

Fig. 1

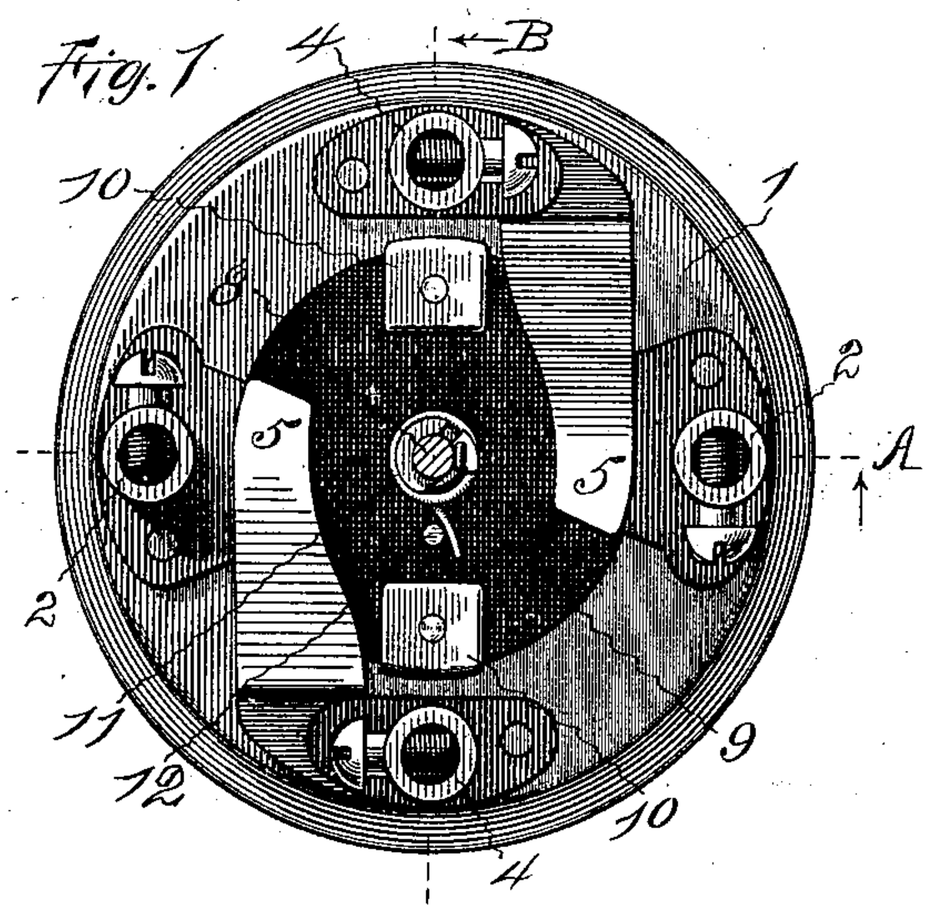



Fig. 4

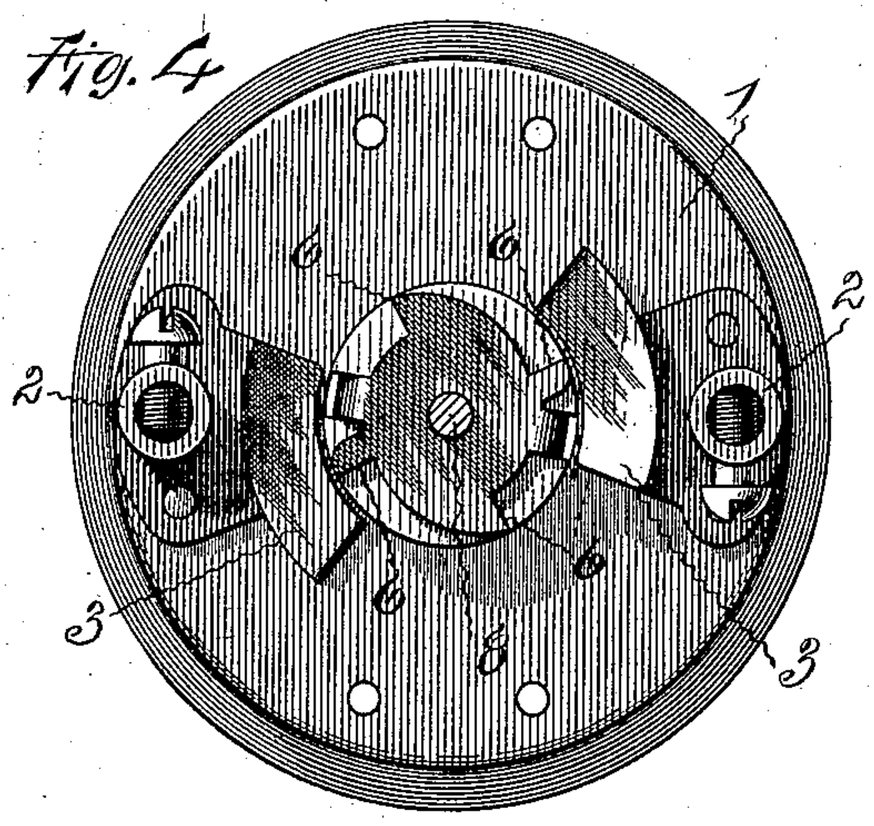



Fig. 2

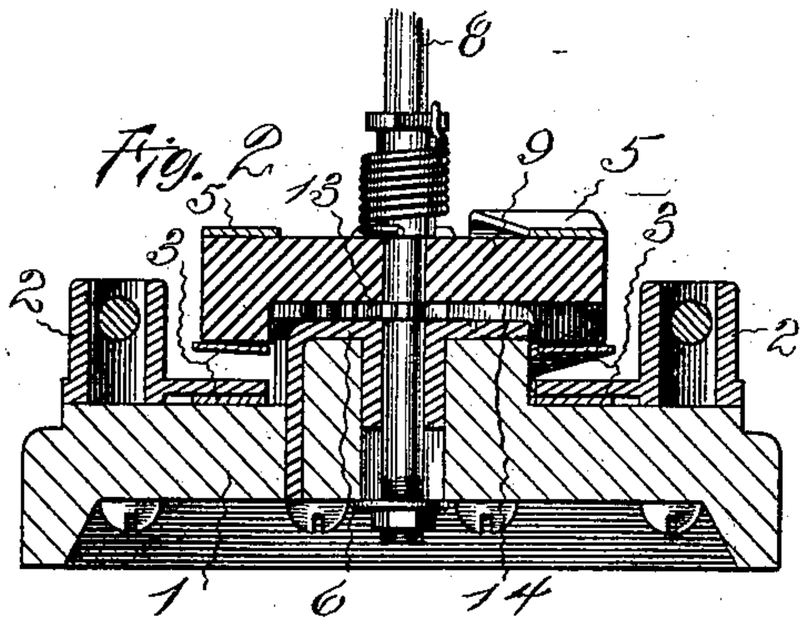



Fig. 3

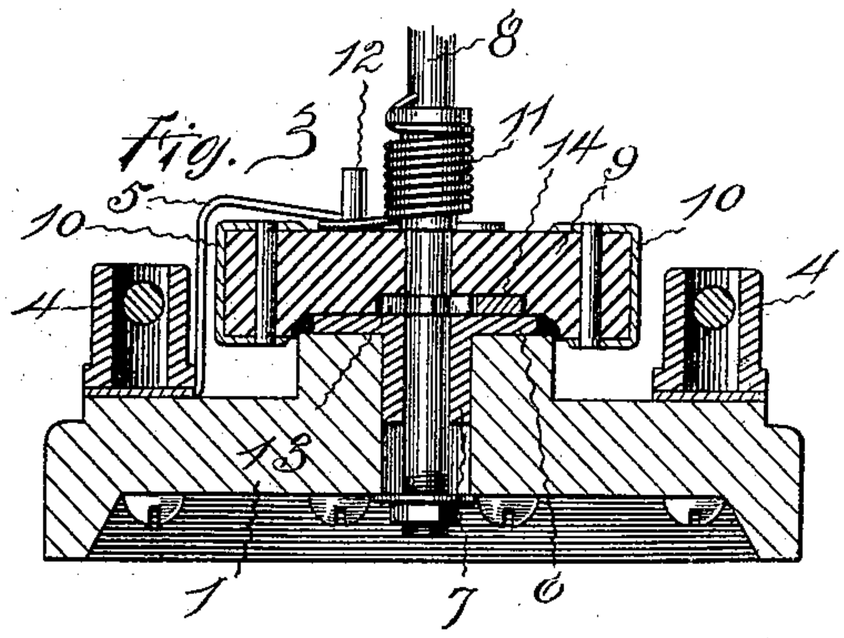



Fig. 5

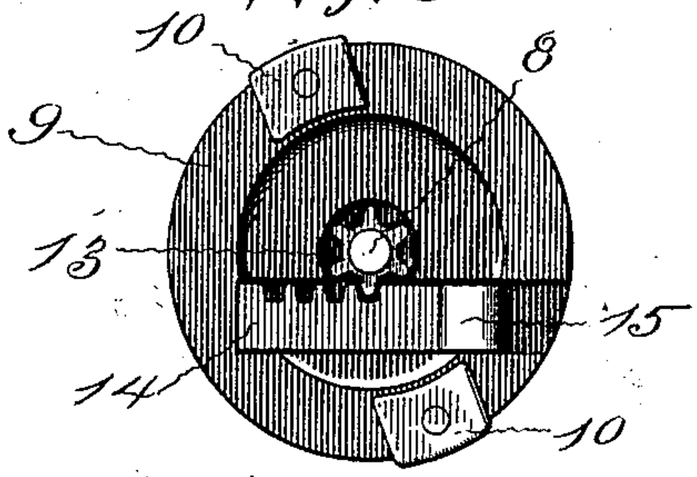
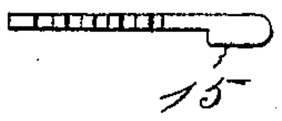



Fig. 6

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# UNITED STATES PATENT OFFICE.

JACOB S. GIBBS, OF HARTFORD, CONNECTICUT.

## SNAP-SWITCH.

SPECIFICATION forming part of Letters Patent No. 557,198, dated March 31, 1896.

Application filed January 20, 1896. Serial No. 576,099. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB S. GIBBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Snap-Switches, of which the following is a specification.

The invention relates to the class of snap-switches that have a commutator-block adapted to be rotated, the rotating-spring being made tense by the turning of the handle and the block being held against rotation until the spring has been made tense to the proper degree, when further movement of the handle causes the parts to unlock the block, so that it is thrown with a quick snap to make or break an electric circuit.

The object of the invention is to provide a simple, cheap, and durable switch of this class in which the parts will be interchangeable, the movement positive and sure, and the degree of strength of the block-rotating spring readily regulated.

To this end the invention resides in a snap-switch having a base of insulating material provided with the usual binding-posts, stationary contacts or poles, and a locking part with a rotary handle-spindle, a rotary block bearing the movable contacts or poles, a spring connection between the spindle and the block, and also a rack-and-pinion lock borne by the spindle and the block and adapted to engage and disengage with the locking part on the base, as more particularly hereinafter described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a plan of the switch with the handle and cover removed. Fig. 2 is a section on the line A, looking in the direction of the arrow. Fig. 3 is a section on the line B, looking in the direction of the arrow. Fig. 4 is a plan of the base, the upper stationary contacts and the commutator-block being removed. Fig. 5 is a plan of the under side of the commutator-block, showing the rack-and-pinion locking device; and Fig. 6 is a detail edge view of the locking-bolt.

In the views, 1 indicates the base, which is usually made circular in outline, of wood, porcelain, or any other suitable insulating material. To this base are secured the pairs of binding-posts 2 and 4, to which the ends of the incoming and outgoing circuit-wires are attached. The binding-posts 2 are connected with the metallic poles 3, which I will term the "lower" stationary contacts, and the binding-posts 4 are connected with the metallic poles 5, which I will term the "upper" stationary contacts. The lower stationary contacts may or may not be formed of spring metal; but it is desirable that the upper stationary contacts be in the form of spring-arms. When these pairs of upper and lower stationary contacts are joined by metallic pieces, the circuit is completed, and when they are not joined the circuit is open.

On the base, at the center, is a disk provided with ratchet-teeth 6, and this toothed disk forms one part of the locking device that retains the commutator-block until the spring has been made sufficiently tense to properly throw the block, so as to suddenly join or disjoin the stationary contacts.

A central opening is formed in the base, and the locking-disk may have the bushing 7 fitting this opening, if desired, and rotarily held against longitudinal movement in this opening or by the bushing is a handle-spindle 8. (The handle provided for this spindle, being of ordinary construction and design, is not shown in the views.)

Provided with a central perforation, so as to be rotarily supported by the handle-spindle, is the commutator-block 9. This block, which is formed of any suitable insulating material, is provided with conducting pieces or clips 10, arranged, preferably, on the edge, so that when the block is rotated into certain positions they metallically connect the pairs of upper and lower stationary contacts; but when the block is rotated into other positions the upper and lower stationary contacts are not connected metallically. The central perforation is of such shape that the block is free to rotate on the spindle except as controlled by the spring and the locking device. A spiral spring 11 is usually wound about the spindle with one end connected therewith and with the other end making contact with a portion of the block, as with the pin 12, so that when the handle is turned the spring tends to wind up and rotate the block.

In a suitable recess in the block is located

a pinion 13 that is borne by the spindle, and meshing with this pinion is a sliding rack or bolt 14. When this bolt is in mesh with the pinion and the block is placed in position on the base, the downturned end 15 of the bolt is in position to be moved into or out of engagement with the teeth 6 on the base. With the throwing-spring tense and tending to rotate the block with relation to the spindle the pinion on the spindle through the rack moves the bolt back into the recess to the limit of its play, as shown in Fig. 5, and when in this position the downward-projecting end engages one of the teeth 6 on the base, so that the block cannot be rotated; but when the handle is turned to make the spring more tense the spindle, through the pinion and rack, moves the bolt outward from the recess until at the proper predetermined time when the spring has been made sufficiently tense by the turning of the handle the bolt is moved to such an extent as to pass out of the locking-tooth and allow the block to be rotated rapidly under the impulse of the now sufficiently-tense spring.

Of course as the block rotates the spindle remains stationary for the time being and the bolt is drawn in by the meshing rack and pinion and engages the next locking-tooth on the base, so as to hold the block in that position until the spring is again made tense and the bolt moved out from the tooth.

With this construction the locking of the bolt against the teeth on the base is positive and the movement is positively determined and the block stopped at the proper position by the next tooth. The throwing tension of the spring can be regulated at any time by changing the relative relation of the pinion and rack, for if the rack is set with relation to the pinion so that but a small turn of the spindle suffices to move the bolt far enough to release the block from the lock then the spring will have but little strength, for the rotation of the spindle will be small; but if the bolt is set way in it will take considerable of a rotation of the pinion to sufficiently move the bolt for unlocking, and thus the spring will be made quite tense before the block is allowed to rotate. This can originally be regulated by properly proportioning the teeth of the pinion and the teeth of the rack for the bolt, and this can also be regulated at any time by changing the meshing of the teeth of the pinion and the rack.

The switch is simple, cheap, durable, and effective on account of this construction, which allows of adjustment and insures a rapid and positive make-and-break movement of the commutator-block.

I claim as my invention—

1. In an electric switch, in combination, a base bearing contacts, binding parts and a number of ratchet-teeth, a spindle, a commutator-block bearing conducting-pieces adapted to connect the contacts on the base, a spring for throwing the block, a locking-bolt adapted to engage and disengage the teeth on the base, and a rack and pinion for moving the bolt, substantially as specified.

2. In an electric switch, in combination, an insulating-base bearing conducting-contacts, wire-binding parts and a plural number of ratchet-teeth, a rotary handle-spindle, a rotary commutator-block, conducting-pieces borne by the block and adapted to connect the contacts on the base, a pinion connected with the spindle, a locking-bolt bearing a rack movable in a recess in the commutator-block, said rack moving with the pinion and a bolt engaging the locking-teeth, and a spring with one end connected with the spindle and with the other end connected with the block, substantially as specified.

3. In an electric switch, in combination with an insulating-base provided with contacts, binding parts, ratchet-teeth and a rotary handle-spindle, a commutator-block bearing on portions of its edges metallic clips adapted to connect the contacts on the base, and supporting in a recess a rack-and-pinion-operated locking-bolt, substantially as specified.

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