No. 660,634. Patented Oct. 30, 1900.

M. GUETT.

ROTARY SNAP ELECTRICAL SWITCH.

(Application filed June 27, 1900.)

(No Model.)

Fig. 1

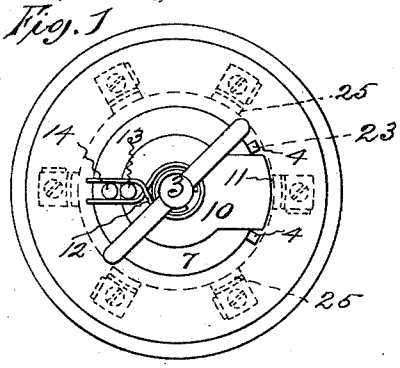


Fig. 7

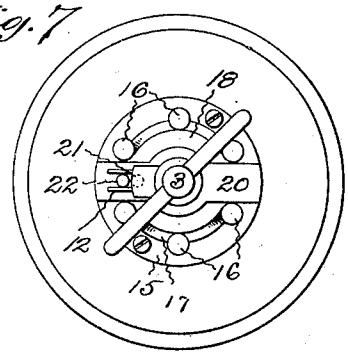


Fig. 2

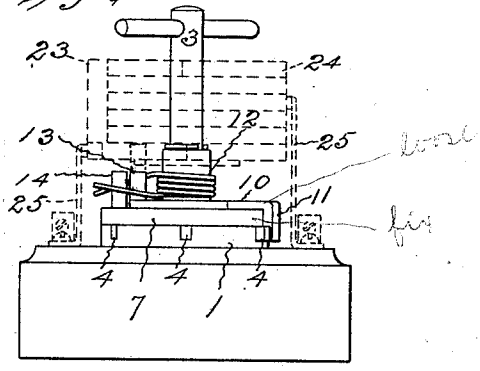


Fig. 8

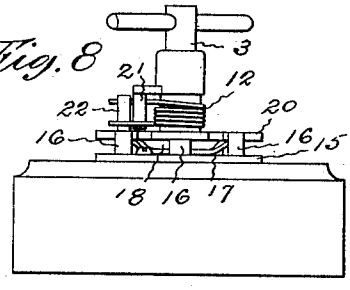


Fig. 3

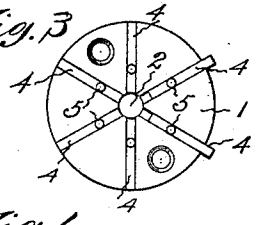


Fig. 5

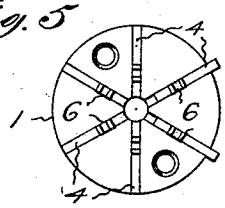


Fig. 9

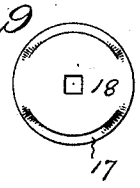


Fig. 4

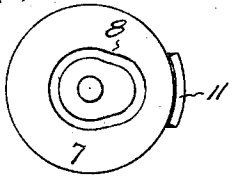


Fig. 6

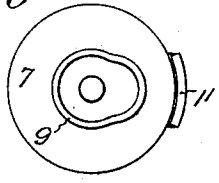
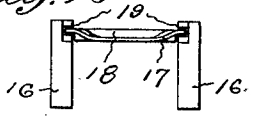


Fig. 10



Witnesses:
V. R. Holcomb.
C. E. Buckland

Inventor:
Monroe Guett, by
Harry P. Williams
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MONROE GUETT, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE HART & HEGEMAN MANUFACTURING COMPANY, OF SAME PLACE.

ROTARY SNAP ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 660,634, dated October 30, 1900.

Application filed June 27, 1900. Serial No. 21,843. (No model.)

To all whom it may concern:

Be it known that I, MONROE GUETT, 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 Rotary Snap Electrical Switches, of which the following is a specification.

This invention relates to a rotary snap electrical switch which will turn in either direction.

The object of this invention is the production of a simple, durable, and quick-acting mechanism for a switch of this nature which may be made to have any desired number of stations for the switch-plates during one rotation of the handle and which may be turned with equal facility in either direction from any station.

The invention resides in a switch having a single actuating-spring that is made tense by the rotation of the handle in either direction and a cam that holds a stud in the path of the spring-plate until the spring by the rotation of the handle has been given the proper tension and the stud next in advance has been projected into the path of the spring-plate. The cam then withdraws the stud that is holding the spring-plate and permits the spring to throw that plate until it is stopped by the stud which was moved out by the cam as the handle was turned. The cam is then caused by the spring to assume such a position that studs on both sides of the spring-plate project into its path and there remain until the handle-spindle is again turned.

Of the accompanying drawings, Figure 1 is a plan of a switch-operating mechanism having radially-movable stopping-studs. Fig. 2 is an edge view of this mechanism. Fig. 3 is a plan of the stud-plate and studs. Fig. 4 is a plan of the cam-plate of this form. Fig. 5 is a plan of a modified arrangement of studs. Fig. 6 is a plan of the cam for this modified arrangement. Fig. 7 is a plan of the operating mechanism of a switch embodying the invention in which the studs are movable longitudinally with relation to the spindle. Fig. 8 is an edge view of this form of mechanism. Fig. 9 is a plan of the cam-plate, and Fig. 10 is an edge view of the last form of cam-plate and two of the studs.

In the form shown in Fig. 1 the stud-plate 1, with a central perforation 2 for the passage of the handle-spindle 3, is secured to the common base of the switch in any desired manner. Radial grooves are formed in the outer face of this plate, and loose in each groove is a stopping-stud 4. There may be any desired number of these grooves and studs, and they may be equal or unequal distances apart. Projecting from each stud may be a pin 5, as shown in Fig. 3, or a notched lug 6, as shown in Fig. 5. The cam-plate 7 is fixed upon the spindle. If the studs are provided with pins, a cam-groove 8 for receiving the pins is formed in the cam-plate, as shown in Fig. 4; but if the studs are provided with notched lugs a cam-rib 9, adapted to extend into the notches in the lugs, is fixed to the cam-plate, as shown in Fig. 6. The spring-plate 10 is loosely mounted upon the spindle and has a downwardly-extending part 11, arranged to move close to the periphery of the stud-plate. The actuating-spring 12 is coiled about the spindle in such manner that its ends bear on opposite sides of the pin 13, that projects from the spring-plate, and the pin 14, that projects from the cam-plate and moves with the handle. The tension of the spring normally keeps these pins together, and when one is moved with relation to the other in either direction the spring exercises greater tension, tending to bring them together. The cam is so shaped that it normally causes a stud to project outwardly on each side of the downwardly-extending part, so as to prevent the spring-plate from moving in either direction. When the handle is turned in either direction, the spring-plate is held by the stud in front until the handle-spring pin has been moved with such relation to the spring-plate pin that the spring is under considerable tension. Then the cam withdraws the stud in front of the spring-plate and allows that plate to be thrown by the end of the spring pressing against the spring-plate pin. As the cam withdraws the stud in front of the spring-plate it causes the stud next in advance to be projected outwardly, so as to stop the plate at the next

station. The cam is so set that the handle must be turned more than the spring-plate moves before that plate is free, and as a result of this after the handle is released the spring moves it backwardly, so that the cam will project the stud that was drawn in to permit movement outwardly into the path of the spring-plate and leave a stud projecting on each side of the spring-plate.

In the form of the mechanism illustrated in Fig. 7 the stud-plate 15 is perforated and the studs 16 are held so that they may be moved longitudinally with relation to the spindle. In this instance the cam 17 is formed on the periphery of the cam-plate 18 and extends into a mortise 19 in the side of each stud. The spring-plate 20 of this form is arranged to extend on both sides of the spindle, and the cam is so shaped that the studs on both sides of both wings of the spring-plate are normally projected. When the handle of this form is turned in either direction, the handle-spring pin 21 moves away from the spring-plate pin 22 and places the spring under tension until the cam has withdrawn the studs in front of both wings of the spring-plate and projected the studs next in advance of both wings. As the cam accomplishes this the spring throws the spring-plate. This cam is so timed that the handle is turned beyond the stopping position of the spring-plate, so that when the handle is free the spring can turn the cam back and cause the studs back of the spring-plate to be projected into its path.

In all of the forms whichever way the handle is turned the cam holds the stud next in front of the spring-plate in position until the spring has become sufficiently tense and the stud next in advance has been projected into the path of the spring-plate. After this has been accomplished the cam withdraws the holding-stud and allows the spring to throw the spring-plate in the direction the handle has been turned, until it makes contact with the advance stud that has been projected into its path.

If the spring-plate extends on one side only, as in the form first described, the cam is so timed that it normally holds a stud projecting outwardly on each side of the plate, so as to prevent its rotary movement; but if the spring-plate extends on both sides of the handle-spindle, as in the second form described, the cam is so timed that it projects outwardly the pin on each side of both wings. The number of stations at which the spring-plate is stopped depends upon the arrangement of the stopping-studs.

The switch-plates, properly insulated, are connected with the spring-plate in any desired manner. As indicated in dotted lines in Figs. 1 and 2, a block of insulation 23, bearing conducting-plates 24, may be loosely mounted upon the spindle, and the spring-plate pin 13 may be extended so as to engage the block and cause it to move with the spring-plate. The stationary terminals 25 (indicated in dotted lines) may be secured to the base in any suitable manner, so as to be connected by the different switch-plates as the handle is turned, and the spring-plate throws the insulating-block with the switch-plates.

The parts of the switch mechanism embodying this invention are simple to manufacture, easy to assemble, and durable in service. The movements are smooth and quick in either direction, and the number of stations may be readily changed. These switches are particularly designed for heating and lighting circuits; but of course they are applicable for circuits for other purposes.

I claim as my invention—

1. In a snap-switch in combination with a rotary handle and its spindle, a rotatable spring-plate, a spring for throwing the spring-plate made tense by the turning of the handle, independent studs movable into and out of the path of the spring-plate, guides for directing the movement of the studs, and a cam engaging the studs and adapted to be rotated by the turning of the handle, substantially as specified.

2. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, a spring for throwing the spring-plate made tense by the turning of the handle, independent studs movable radially into and out of the path of the spring-plate, guides for directing the movement of the studs, and a cam engaging the studs and adapted to be rotated by the turning of the handle, substantially as specified.

3. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, independent studs movable into and out of the path of the spring-plate, guides for directing the movement of the studs, a cam engaging the studs and adapted to be rotated by the turning of the handle, and a spring with each end adapted to be engaged by a part movable with the handle and each end adapted to engage a part movable with the spring-plate, substantially as specified.

4. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, independent studs movable into and out of the path of the spring-plate on each side, guides for directing the movement of the studs, a spring for throwing the spring-plate made tense by the turning of the handle, and a cam for moving substantially simultaneously more than one stud into, and more than one stud out of the path of the spring-plate, adapted to be rotated by the handle, substantially as specified.

5. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, a spring for throwing the spring-plate made tense by the turning of the handle, independent studs movable into and out of the path of the spring-plate, guides for directing the movement of the studs, and a cam engaging the studs and adapted to be ro-

tated by the turning of the handle, the cam being so shaped that the stud is not moved from in front of the spring-plate until the cam has been moved more than the throw of the spring-plate, substantially as specified.

6. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, a spring for throwing the spring-plate made tense by the turning of the handle, independent studs movable into and out of the path of the spring-plate, guides for directing the movement of the studs, and a cam for moving the stud adjacent to each side of the spring-plate out of its path and for moving the stud next in advance into the path of the spring-plate, at each turn of the handle, substantially as specified.

7. In a snap-switch in combination with the rotary handle and its spindle, a rotatable spring-plate, a spring for throwing the spring-plate made tense by the turning of the handle, independent studs movable into and out of the path of the spring-plate, guides for directing the movement of the studs, and a cam for moving the stud adjacent to each side of the spring-plate out of its path and for moving the stud next in advance into the path of the spring-plate, at each turn of the handle, and for moving the stud that was in advance and was drawn out of the path of the spring-plate back into the path of the spring-plate after each turn of the handle, substantially as specified.

MONROE GUETT.

Witnesses:
HARRY R. WILLIAMS,
V. R. HOLCOMB.