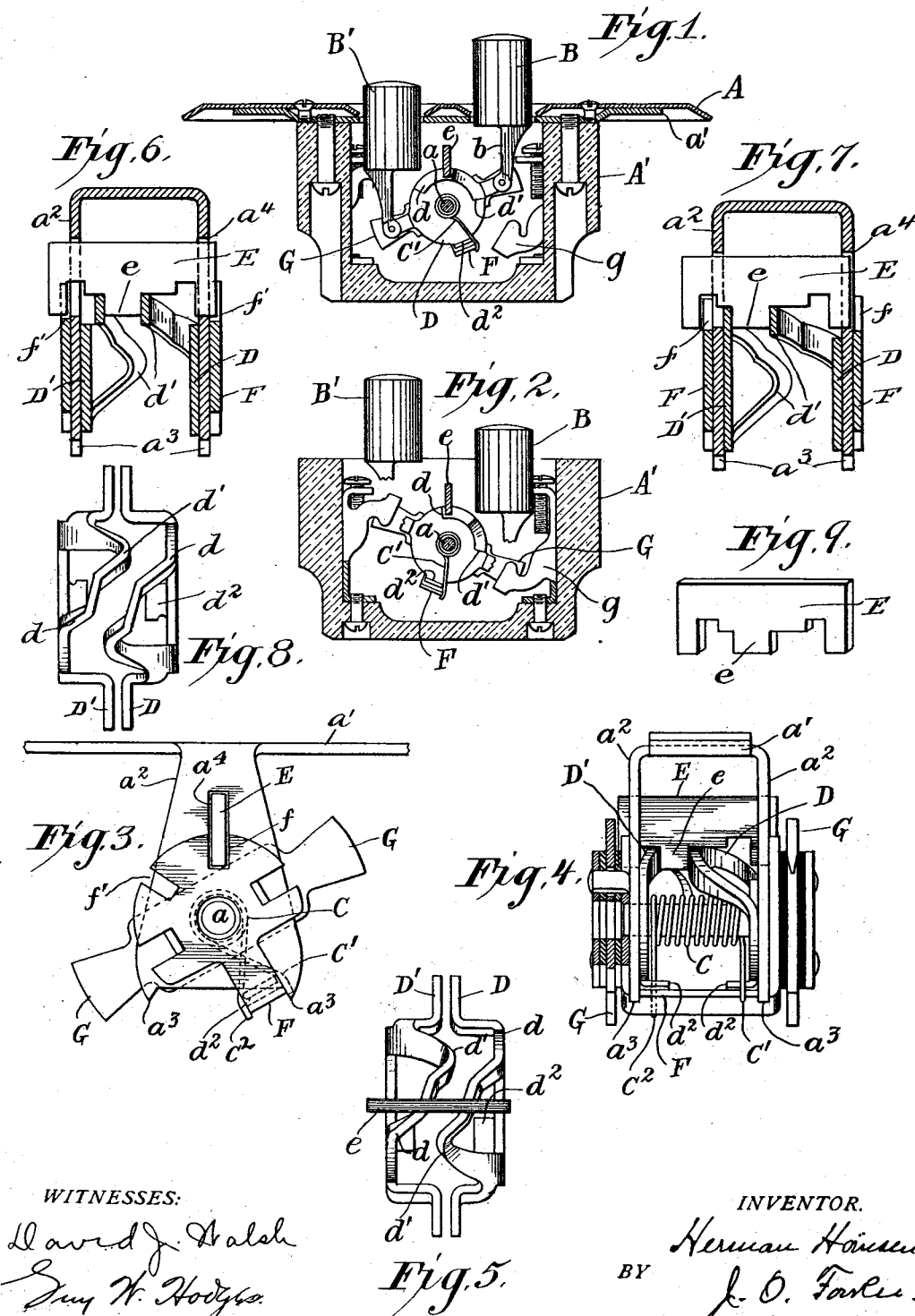


H. HANSEN.
ELECTRIC SWITCH.
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1,057,147.

Patented Mar. 25, 1913.



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ELECTRIC SWITCH.

1,057,147.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERMAN HANSEN, a citizen of the United States of America, and a resident of New York, in the county of New York and State of New York, have invented a certain new and useful Electric Switch, of which the following is a specification, the same being a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to electric circuit changing devices coming generally under the head of push button snap switches and designed for employment in the industrial application of electricity, as for example, in connection with electric lights and house wiring and for small power or heating purposes, and in particular to a switching mechanism of the class named by which the contact terminals may be positively and quickly locked in electric engagement with the main line electrodes, or else held locked in a position disengaged therefrom, the whole being of comparatively simple construction and operating with certainty and precision.

To attain the desired end the invention consists in the construction, arrangement and operation of parts hereinafter set forth.

In the accompanying drawings is illustrated a switching mechanism in which the invention is embodied and in which the separate parts of the improvement are designated by suitable reference characters in each of the views, and in which—

Figure 1 represents a side sectional view of a device constructed according to my invention, Fig. 2 is a transverse section of the operating elements in another position, parts of the apparatus being broken away, Fig. 3 is a side elevation, and Fig. 4 a front view and Fig. 5 a plan view of details of the operative portions of the mechanism, and Figs. 6, 7, 8 and 9 are views in detail.

Referring particularly to the drawings, A denotes the face plate of the device which is preferably made of brass, the same being formed with orifices through which project the push buttons B, B'. The said face plate is adapted to be mounted upon a suitable base of any approved insulating material, as the porcelain casing A', the latter being furnished with electrodes g adapted to be connected with the main line conductors by

means of binding posts or equivalent electric connections of any suitable or approved construction.

Located between the face plate and the porcelain casing is a bridge piece a' having depending extensions a^2 at the extremities of which are formed shoulders a^3 , and also being formed with slots a^4 and with journals for a shaft a around which is coiled a spring C. Rigidly secured to the ends of the shaft a at the exterior faces of the extensions a^2 , is a U-shaped part F, the portions of the same lying adjacent to the said shaft being enlarged and made with peripheral slots f, f' . The said enlarged portions of the part F also carry the switch blades or terminals G, which are thereby oscillated when the part is moved.

A rocking yoke made in two similar parts D, D', each part lying adjacent to the inner face of an extension a^2 , works on the shaft a , to the respective ends of which yoke are pivoted the extensions b of the push buttons. The parts D, D', each have a cam projecting laterally from the same, the high part of which is designated by the reference character d' and the low portion of which is denoted by the symbol d , the two said cams being positioned in parallel. Each part D, D', also has an ear d^2 , which ears extend inwardly, or toward each other. The ends of the spring C, which are respectively designated by the reference characters C', C², lie against the U-shaped part F and against the ears d^2 when the switch is in either an open or closed relation, that is to say, one end, as C' lies against one side of the part F and against one ear d^2 , and the other end, as C² lies against the other side of the part F and against the other ear d^2 . A sliding detent E is formed with an ear e which lies between the said cams d, d' , of the parts D, D', the ends of the detent working in the slots a^4 and resting in either the peripheral slots f , or the slots f' , according to which pair of the same becomes positioned in alinement with the slots a^4 .

The operation of parts is as follows, the same being in the position shown in Figs. 1 and 3, where the electrical connections are shown as being in an inoperative condition so far as connection with the main line conductors is concerned, the circuit being open: By gradually pushing the button B in a downward direction in order to close the

circuit, the extension b forces the right hand end of the rock yoke D, D' , journaled in the extensions a^2 of the part a' , and the ear d^2 of the part D , which previously was in alignment with the part F that lies in a horizontal direction, as shown in Fig. 1, will move the end C^2 of the spring C toward the left, the other end C' of the spring being held immovable by resting against the horizontal portion of the pivoted part F which lies against the right hand shoulder a^3 of the extension a^2 of the bridge piece a' , as shown in Fig. 3. As the pressure on the button B increases, on the continued depression of the same, the rock yoke D, D' , is turned around a greater distance, which movement serves to cause the cams d, d' , thereof to move the detent E , which originally projected out from both sides of the device, sidewise to the left, or rearward from the position shown in Figs. 1 and 3, to the position illustrated in Figs. 4 and 6, by reason of the ear e of the same riding along the edges of and between the cams of the said yoke piece, and becoming forced, in the present instance, toward the left, until the detent E passes out of the slot f at the right hand of the switch, and moves far enough along as not to project from the slot a^4 on the right hand extension a^2 of the bridge piece a' , as is shown in Fig. 7, the right hand depending portion of the part F being thereby free to move across the right hand end of the detent E and the left hand depending portion of the part F being free to move as it lies in the recess formed at the left hand side of the ear e , at which time the button is pressed downward to its lowest limit. The U-shaped part F and attached switch terminals are thereby unlocked and become free to move, and the resilience of the spring C causes the end C' thereof, resting against the horizontal portion of the element F , to move the said part toward the left and to assume the position shown in Fig. 2, the other end C^2 of the spring having been previously distended by the movement of the ears d^2 , against one of which it rests, caused by the said oscillation of the rock yoke D, D' . The left hand movement of the part F , and consequently the end C' of the spring C resting against it is stopped by the impact of the horizontal portion of the same against the left hand shoulder a^3 of the part a' , the consequent rotation of the depending parts of the element F having caused the slot f' , on the opposite side of the axis a , to move to the right until the slots f' come into alignment with the slots a^4 of the part a^2 , and also with the ends of the detent E , the ears d^2 and end C^2 of the spring having been in the meantime moved somewhat still farther to the left of the horizontal part of the element F by the cams d, d' , due to the pressure on the button

B , which causes the detent to assume the position shown in Fig. 7 which position, as stated, is not assumed by the member E until the button B is at the end of its travel at which time the detent E is moved far enough to release the blade carrying device F . Then, when the button B is released, the spring moves the rocking cam yoke D, D' back and the projection at d' positively moves the detent plate E back into locking position in the following manner. Upon releasing the pressure upon the button B , the end C^2 of the spring will react and move backward a little, carrying the ears d^2 , until it rests against the horizontal part of the element F , which movement causes a little oscillation of the cam yoke D, D' , sufficient to move the detent E somewhat to the right a sufficient distance to force the said detent somewhat to the right, by which movement each end of the said detent becomes again locked at each end in a slot f' of the depending portions of the part F as shown in Fig. 6. The resilience of the spring C thus causes in the operation previously described the end C' of the same which rests against the U-shaped part F to move, upon the other end thereof C^2 having been distended, as stated, the said element F and switch blades or terminals G and shaft a in a left hand direction while the other end C^2 of the spring is firmly held in a forward position by the ear d^2 owing to the rocking of the yoke D, D' , caused by the pressure of the finger upon the button B , until the part F , upon becoming released, moves toward the left and rests against the left hand shoulder a^3 of the bridge piece a' , and the button B' will be raised and the ear d^2 and the part F will assume the position shown in Figs. 2, 4 and 6, at which time the switch plates will become engaged with the electrodes of the main line conductors, the right hand end of the part E , in the meantime, having become caught at each end in the slots f' of the part F and projecting through the slots a^4 of the extensions a^2 of the bridge piece, thereby locking the parts in the new position. By pushing down the button B' , after the described operation has taken place, a reversal of the operation will take place, and the button B will become raised once more, and the circuit will be opened.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications within the scope of the claims will occur to persons skilled in the art.

What I claim as my invention is:—

1. In an electric switch, two main line electrodes, a rock device, two push buttons respectively attached to the ends of the rock device, a shaft for the same, a shouldered holder having journals for the shaft and

provided with slots, a cam formed in the said rock device, two ears projecting from the cam, a pivoted bridge piece carrying terminals and also formed with slots, a
5 detent, to work in the slots of the holder and bridge piece and to engage the cam, and a spring coiled around the shaft the ends of which normally rest on opposite sides of the said ears and of the bridge piece, where-
10 by the said terminals may be held either locked in electric connection with the said electrodes, or else held in a position dis-
engaged therefrom.

2. In an electric switch, two main line
15 electrodes, a rock device, two push buttons respectively attached to the ends of the rock device, a shaft for the same, a holder having journals for the shaft and provided with slots, a cam formed in the said rock

device, a pivoted bridge piece carrying ter- 20
minals and also formed with slots, a spring to actuate the rock device and bridge piece, and a detent reciprocating longitudinally in the slots of the holder and bridge piece and
25 to engage the cam, and having slots to re-
lease the said bridge piece, whereby the said
bridge piece is alternately locked and re-
leased according to the position in which it
is moved by the cam.

In testimony of the foregoing specifica- 30
tion I do hereby sign the same in the city of
New York, county and State of New York
this 22nd day of January, 1912.

HERMAN HANSEN.

Witnesses:

HENRY F. KEIL,
F. A. WINGBAH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."