C. J. KLEIN.

ELECTRIC SWITCH.

APPLICATION FILED MAR. 13, 1914.

1,316,900. Patented Sept. 23, 1919

Fig. 1.

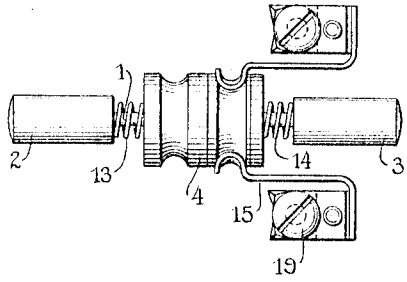


Fig. 2.

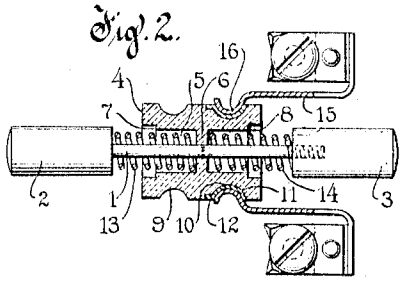


Fig. 3.

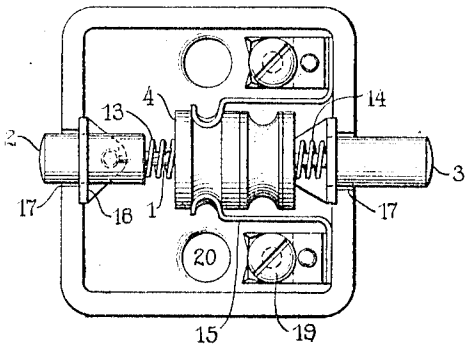
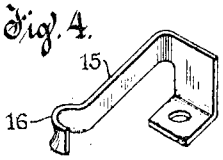


Fig. 4.



Witnesses.

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ELECTRIC SWITCH.

1,316,900. Specification of Letters Patent. Patented Sept. 23, 1919.

Application filed March 13, 1914. Serial No. 824,488.

To all whom it may concern:

Be it known that I, CHARLES J. KLEIN, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Electric Switches, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to electric switches.

The various objects and advantages of the invention will appear hereinafter in connection with the description of the preferred embodiment thereof shown in the accompanying drawing, wherein,

Figure 1 is a plan view of a switch mechanism;

Fig. 2 is a sectional view thereof;

Fig. 3 is a plan view of the switch mechanism incorporated in a receptacle; and,

Fig. 4 is a detail perspective of one of the parts.

The switch mechanism illustrated comprises, in general, a reciprocable operating member having a lost-motion connection with a normally restrained contact member, and an energy storing connection between the members arranged to have energy stored therein during the relative lost-motion of the members and to move the contact after its positive release under the influence of continued movement of the operating member.

Referring more specifically to the drawing, a spindle 1, having push-buttons 2 and 3 on opposite ends, constitutes the operating member and is journaled through a relatively reciprocable contact carrying member 4. This latter member comprises a cylindrical insulating block having an axial bore 5 provided with a medial flange 6 and internal shoulders 7 and 8 adjacent its ends. Peripheral channels 9 and 10 are provided around the block at opposite ends and an annular conducting band 11 is seated in the channel 10. The width of the band 11 is slightly greater than the width of the channel 10 to provide a cylindrical contacting surface 12 sunk flush with the sides of the block. Helical springs 13 and 14 are seated in the bore 5 on opposite sides of the flange 6. The outer ends of these springs bear against the inner ends of the two push-buttons. To enable assembly of the parts, one of the push-buttons is removably secured to the spindle 1 by threading, as shown, or in any suitable manner.

Resilient members 15 are provided to hold the contact carrying member against movement while energy is stored in one of the springs 13, 14 and until a positive connection is established with the operating member for freeing the contact. In practice, the members 15 constitute a pair of stationary contacts having cupped extremities 16 biased inwardly and normally disposed in the channel 9 when the switch is in open circuit position or in the channel 10 when the switch is in closed circuit position.

The switch mechanism is illustrated in Fig. 3 as applied to a receptacle having alined recesses 17 in opposite walls to accommodate the push-buttons. The switch operating member is supported in position by angle frames 18 secured to the base of the receptacle at opposite ends and provided with apertures through which the push-buttons extend. The stationary contacts 15 are also mounted upon the base of the receptacle and provided with binding screws 19 for connection with line wires entering the receptacle through adjacent apertures 20.

Assuming the switch to be in "off" position (Fig. 3) pressure on the push-button 3 effects the following operation: The spring 14 is compressed against the contact carrying member, since the latter is restrained by pressure of the resilient fingers 15 which preponderate the force of maximum energy in the spring 14. As movement of the operating member is continued a positive connection is established with the contact member when the inner end of the push-button 3 abuts the shoulder 8 of the block. Further movement of the former then positively moves the latter to release the same from restraint by the stationary contacts 15. When the contact carrying member is thus freed the energy stored in the spring 14 immediately imparts a snap movement to the member until the fingers 15 snap into the recess of the conducting band 11. Circuit is thus completed between the stationary contacts with a quick snap action. Pressure on the left push-button reverses the operation of the parts in a manner similar to that

described and effects a snap break of circuit. In the latter operation, however, the coil spring 13 is tensioned to impart a snap movement to the contact member and the push-button 2 is moved to engage the shoulder 7 of the block for positively releasing the same. It is also to be noted that the provision of the cylindrical contacting face 12 insures breaking of circuit between substantially flat contacts after accelerated movement of the block.

What I claim as new and desire to secure by Letters Patent is:

1. In an electric switch, in combination, a reciprocally acting contacting member having a pluri-diameter bore providing a shoulder, a shouldered reciprocally acting operating member mounted in said bore and movable for causing abutment of said shoulders, an energy storing connection between said members and resilient restraining and contacting means coöperating with said contacting member to maintain the same stationary during movement of said operating member for storing energy in said connection and to release said contacting member for expending such stored energy following abutment of said shoulders during continued movement of said operating member.

2. In an electric switch, in combination, a reciprocally acting contacting member having a multidiameter bore providing a pair of internally located shoulders, a relatively reciprocable operating member mounted within said bore and having a shoulder arranged to oppose the shoulders thereof and adapted to abut one of the same, an energy storing spring to be compressed between the shoulder of said operating member and the other of said internal shoulders and means for restraining said contacting member during compression of said spring and releasing said member upon engagement of said abutting shoulders.

3. In an electric switch, in combination, a longitudinally bored reciprocally acting contacting member, a shouldered reciprocally acting operating member mounted in said bore, a counterbored shoulder in said contacting member, an expansion spring between said shoulders and surrounding said operating member, a second counterbored shoulder in said contacting member for engagement by the shoulder of said operating member upon movement thereof in one direction and subsequent to tensioning of said spring, and stationary contacting means for coöperating with said movable contacting member and releasably restraining the same in predetermined positions.

4. In an electric switch, in combination, a reciprocally acting operating member, a bored contacting member mounted for independent rectilinear movement thereon, oppositely facing shoulders in the bore of said contacting member, corresponding shoulders on said operating member, an energy storing spring engaged between each coöperating pair of shoulders, a further pair of shoulders upon said contacting member for positive engagement by the respective shoulders of said operating member upon movement of the latter in either direction, and stationary contacting means preponderating the stored energy in said springs for releasably restraining said movable contacting member against movement until directly engaged by said operating member.

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

CHARLES J. KLEIN.

Witnesses:
T. A. WATSON,
TEKLA BAST.