

1,028,112.

Patented June 4, 1912.

Fig. 1.

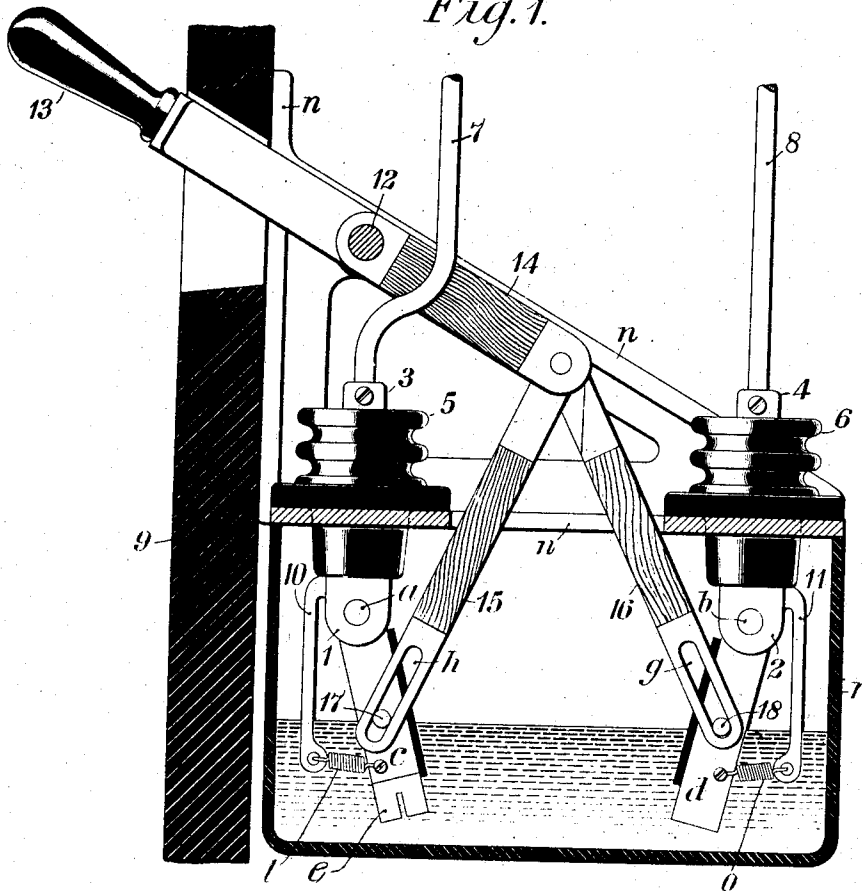
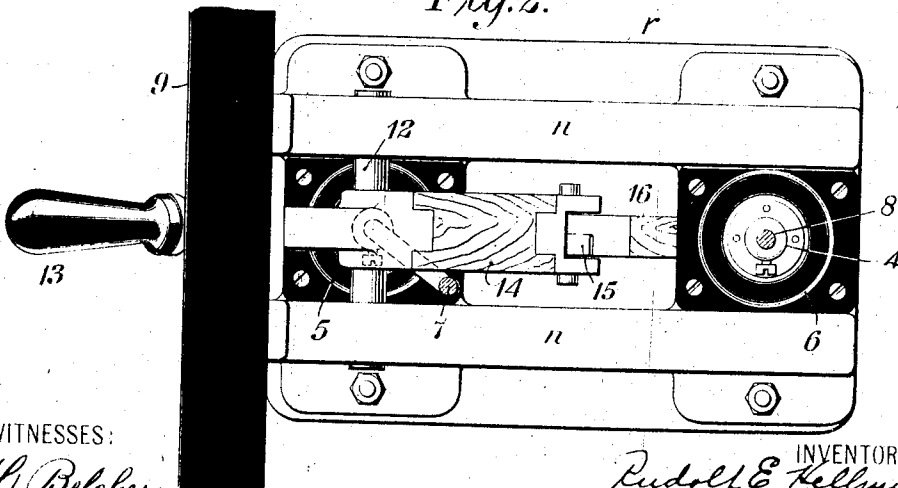


Fig. 2.



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MEANS FOR COUNTERACTING ARCS.

1,028,112.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed February 3, 1905. Serial No. 244,053.

To all whom it may concern:

Be it known that I, RUDOLF E. HELLMUND, residing at Great Barrington, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Means for Counteracting Arcs; and I do hereby declare the following to be 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.

The interruption of electric circuits by means of switches, circuit breakers, cut-outs and similar appliances is usually accompanied by arcing between the separated terminals which causes destructive or injurious burning of the said parts and prevents instantaneous interruption of the circuits. Various auxiliary means have heretofore been proposed for the purpose of quickly disrupting and extinguishing the arcs above referred to, but on account of the complication, expense and generally unsatisfactory operation of apparatus having such auxiliary devices, I have devised a circuit interrupter which will perform the desired function without the use of auxiliary means for disrupting arcs between the separated switch members.

Figure 1 of the accompanying drawing is a view, partially in section and partially in side elevation, of a switch embodying the present invention, and Fig. 2 is a plan view of the same.

A frame or bracket *n* having a rectangular horizontal portion and triangular sides is secured to the rear face of a switch board panel 9, and is provided with tubular insulators 5 and 6 for conducting terminal members 3 and 4, the upper ends of which are respectively connected to circuit conductors 7 and 8. The lower ends of the members 3 and 4 are provided, respectively, with ears 1 and 2 having pivot pins *a* and *b* upon which conducting switch members *c* and *d* are mounted, the former having a contact clip *e* at its free end to be engaged by the free end of the latter. The switch members *c* and *d* are adapted to be given a rotative movement upon the pivot pins *a* and *b* by means of links 15 and 16, the lower ends of which are provided with slots *g* and *h* to receive pins 17 and 18 that project from the sides of the switch members,

and the upper ends of which are pivotally connected to one end of a lever 14 that is fulcrumed at 12 to the side members of the frame *n* and projects through the panel 9, its outer end being provided with a handle 13. The parts 14, 15 and 16 are preferably constructed of non-conducting material in order to protect the operator from the voltage of the circuit. The lower ends of the terminal members 3 and 4 are provided with rigid pendant extensions 10 and 11, the free ends of which are respectively connected to the free ends of the switch members *c* and *d* by helical tension springs *o* and *l* for the purpose of moving the switch members quickly to their extreme opening positions after being tripped by the lever 14 and the links 15 and 16. The switch members *c* and *d* are surrounded by a receptacle *r* for containing oil, or other suitable insulating liquid.

In order to close the switch, the handle 13 is moved downwardly to raise the inner end of the lever 14 and the links 15 and 16 and, consequently, switch members *c* and *d* until the latter are brought into substantial alinement in horizontal position, where the contact clip *e* carried by the member *c* engages the end of the member *d* and thereby establishes the circuit. The friction between the parts *d* and *e* is sufficient to maintain the switch in closed position, it being necessary, in order to open the switch, to raise the handle 13 and thus lower the links 15 and 16 until the upper end walls of the slots *g* and *h* strike the pins 18 and 17. The members *c* and *d* are separated quickly, when started toward open position, by reason of the slots *g* and *h* and the action of the springs *o* and *l*. The arc between the switch members is thus not only quickly distended but is, at the same time, carried downwardly in the oil.

I claim as my invention:

1. A switch comprising terminals, switch members pivoted thereto and adapted for end-to-end engagement in substantial alinement with each other, an operating lever, and links interposed between said switch members and one end of said lever and having lost motion connections to said members.
2. A switch comprising terminals, switch members pivoted thereto and adapted for end-to-end engagement in substantial aline-

ment with each other, an operating lever, links interposed between one end of said lever and said switch members and having slot and pin connections to the latter, and
5 a liquid-containing receptacle in which said members are located.

3. A switch comprising terminals, switch members pivoted thereto and adapted for end-to-end engagement in substantial alignment with each other, an operating lever,
10 links pivotally connected to the lever and having slot and pin connections to the switch members, and springs tending to move the switch members to their open-
15 circuit positions.

4. A switch comprising terminals, switch

members pivoted thereto and adapted for end-to-end engagement in substantial alignment with each other, an operating lever, links interposed between the switch mem- 20
bers and the lever and embodying lost-motion connections, and resilient means tending to maintain the switch members out of engagement.

In testimony whereof I have signed this
specification in the presence of two sub-
scribing witnesses.

RUDOLF E. HELLMUND

Witnesses:

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