H. E. LEPPERT.

PLUG SWITCH.

APPLICATION FILED MAY 5, 1909.

969,787.

Patented Sept. 13, 1910

2 SHEETS—SHEET 1.

Fig. 1.

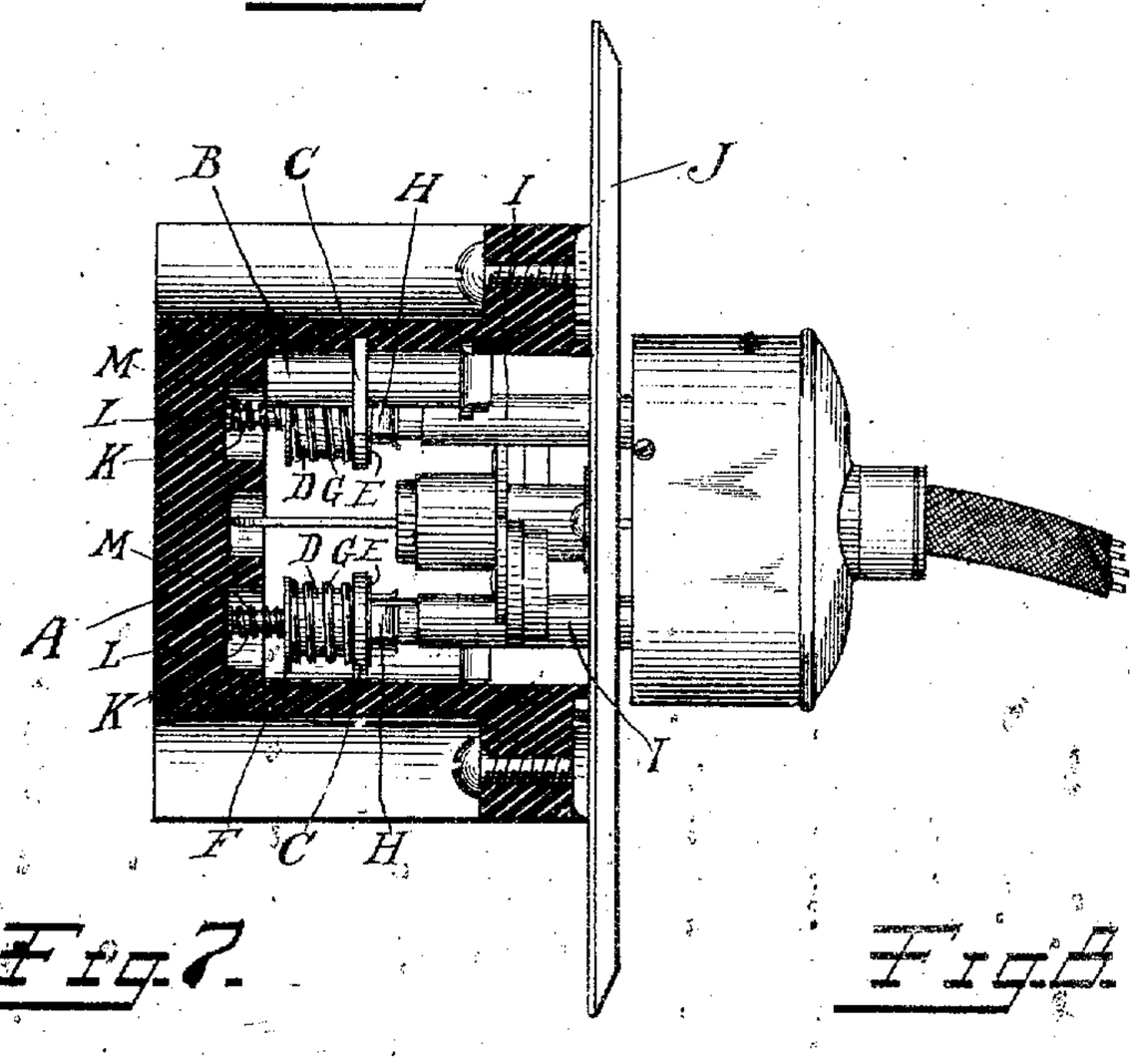
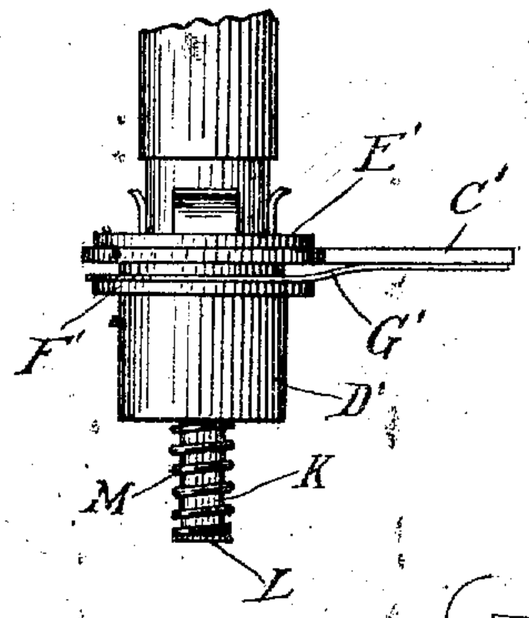


Fig. 7.



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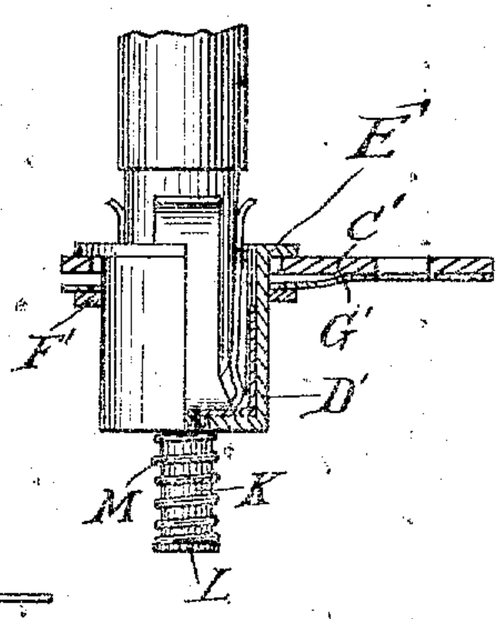
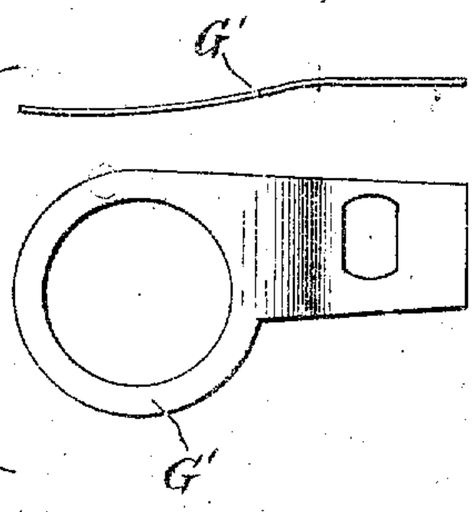


Fig. 9.



Witnesses:
Fred'k. Dannenfelser.
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By his Attorneys
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PLUG SWITCH.

APPLICATION FILED MAY 6, 1909.

969,787.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 2.

Fig. 2.

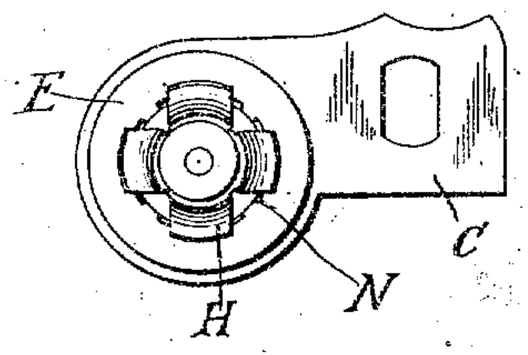


Fig. 3.

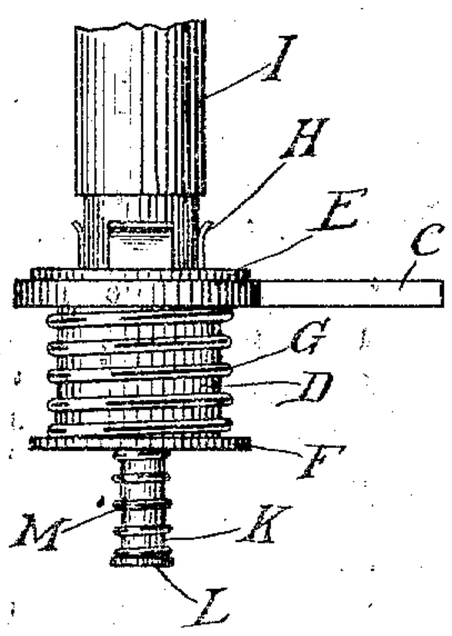


Fig. 4.

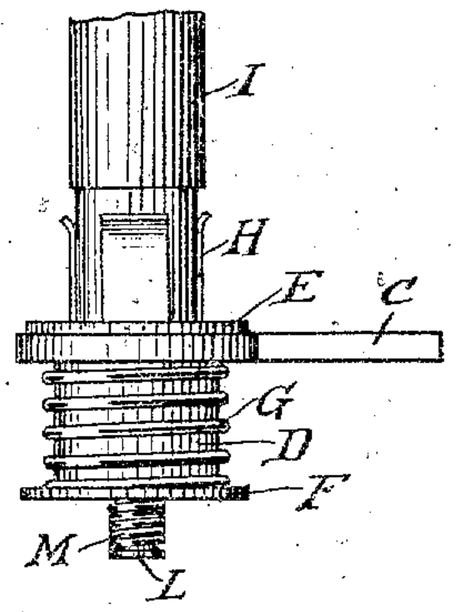


Fig. 5.

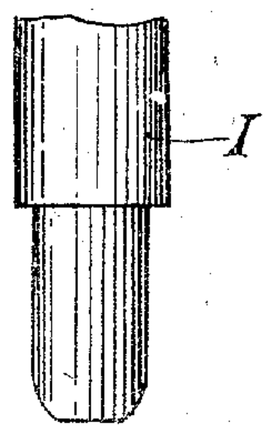
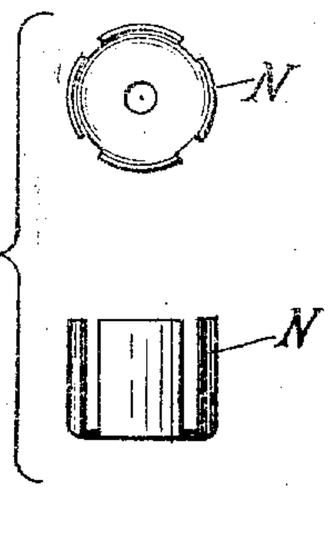
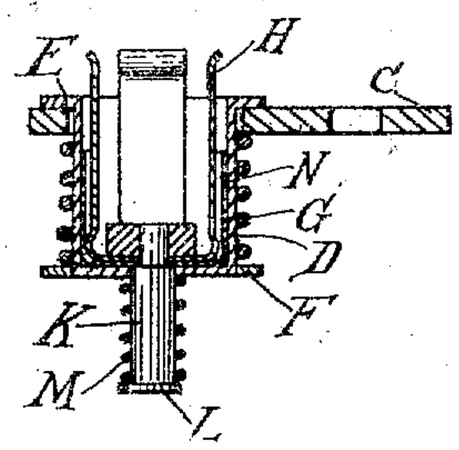


Fig. 6.





Witnesses:
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Chas. A. Pearce

Inventor
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By his Attorneys.
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UNITED STATES PATENT OFFICE.

HENRY E. LEPPERT, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE HART MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

PLUG-SWITCH

969,787. Specification of Letters Patent. **Patented Sept. 13, 1910.**

Application filed May 5, 1909. Serial No. 494,176.

To all whom it may concern:

Be it known that I, HENRY E. LEPPERT, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Plug-Switches, of which the following is a full, clear, and exact description.

My invention relates to plug switches, and has for its object to produce a terminal having a contact so mounted that when the plug is inserted the contact will easily move or float so as to center itself upon the plug, it having been found that contacts heretofore used are oftentimes injured by the insertion of a plug which is not properly centered.

Another object of my invention is to provide a contact floating as above described, of considerable length, in the direction of the axis of the plug, and movably supported at a point in proximity to where the plug first makes engagement.

Another object of my invention is to provide a terminal having a contact which, when the plug is withdrawn, will snap away from the plug so as to always produce a quick break between the contact and the plug. By this means, injury due to burning when the plug is witndrawn while the translating devices are still in circuit, is practically eliminated. In the absence of some such means, if the plug is slowly withdrawn while the translating devices are in circuit, a very considerable burning is liable to occur upon the plug and upon the contact.

The following is a description of a device embodying my invention, reference being had to the accompanying drawings, in which—

Figure 1 shows a plug and plug receptacle embodying my invention. Fig. 2 is an enlarged plan view of the terminal and its contact. Fig. 3 is a side view of Fig. 2 with plug inserted. Fig. 4 shows the same when the plug is about to be removed. Fig. 5 shows the same with the plug just removed, parts being in section. Fig. 6 shows a detail. Fig. 7 shows a modification of the means whereby floating is permitted. Fig. 8 shows the same partly in section. Fig. 9 shows a detail of Figs. 7 and 8.

Referring more particularly to the drawings, A is a switch base carrying terminal supports B, said terminal members each having a bracket C. This bracket is provided with a hole in which is mounted a hollow sleeve D having flanges E and F at its upper and lower ends. Between the bracket and the flange F is a spring G, which holds the upper flange E in intimate contact with the bracket C. The hole in the bracket is considerably larger than the cylinder D, so as to permit the cylinder to move from side to side therein, or, as I term it, float. Secured to the bottom of the cylinder D is a contact H having four spring jaws into which the plug I fits. If the plug, as it passes through the opening in the face-plate J, is not centered relatively to the jaws of the contact H, its engagement with the contact will cause the contact, together with the cylinder, to move laterally until proper centering takes place.

The contact is secured to the bottom plate of the cylinder by a pin K passing through the same, which pin has a head L. Between the head and the bottom of the cylinder is a spiral spring M. As the plug is withdrawn, the contact H follows it until the spiral spring K is compressed. The head prevents further movement, whereupon the plug pulls out of the contact and the contact snaps back under action of the spiral spring K, thereby causing a quick break even if the plug is withdrawn slowly. By properly proportioning the spring G, the snap action can be secured, even though the contact H has no movement relatively to the cylinder D. When the contact moves relatively to the cylinder D, I provide springs N for providing a good electrical connection between the contact H and the cylinder D.

In the modification shown in Figs. 7, 8 and 9, a leaf spring G′ is used instead of a spiral spring surrounding the cylinder, and the lower flange F′ upon the cylinder D′ is brought correspondingly nearer the bracket. This construction also permits of floating. The construction is otherwise the same as the construction shown in Figs. 1 to 6, and the result, so far as floating is concerned, is the same in both cases and similar parts bear the same reference letters with an exponent.

Of the various structures that may embody my invention, those specifically shown and described herein are the preferred forms.

What I claim is:

1. In a plug switch, the combination of a plug, a contact having contact surfaces extending in the direction of the axis of the

plug, one of said members being cup-shaped and the other fitting therein, and a support for said contact located in proximity to the outlet edges of said surfaces, said contact being connected to said support by a sliding connection so as to be transversely movable relatively to said support.

2. In a plug switch, the combination of a plug, a contact having contact surfaces extending in the direction of the axis of the plug, and a support therefor located in proximity to the mouth of said jaws, said contact being connected to said support so as to be transversely movable, and a longitudinally acting spring insuring good electrical continuity between said contact and said support.

3. In a plug switch, the combination of a plug, a spring contact having jaws extending in the direction of the axis of the plug, a support therefor located in proximity to the mouth of said jaws, a carrier for said contact interposed between said contact and said support, said carrier being connected to said support so as to be transversely movable.

4. In a plug switch, the combination of a plug, a spring contact having jaws extending in the direction of the axis of the plug, and a support therefor located in proximity to the mouth of said jaws, a carrier for said contact interposed between said contact and said support, said carrier being connected to said support so as to be transversely movable, said carrier having two flanges on opposite sides of said support, and a spring interposed between one of said flanges and said support.

5. In a plug switch, the combination of a plug, a contact having an opening extending in the direction of the axis of the plug, a support therefor located in proximity to the mouth of said opening, a carrier for said contact interposed between said contact and said support, said carrier being connected to said support so as to be transversely movable, said contact being connected to said carrier by a pin, and a compression spring surrounding said pin.

6. In a plug switch, the combination of a plug, a contact engaged by said plug, a metallic contact-supporting member adapted to be electrically connected to a circuit terminal and in the electrical circuit of which said contact forms a part, a spring tending to move said contact in the direction of the axis of said plug, the engagement between said plug and said contact being sufficient to overcome the tension of said spring as said plug is withdrawn, and a supplemental spring electrically connected to said contact and having a sliding engagement with an adjacent portion of said circuit.

7. In a plug receptacle, the combination of a support, a contact, a plate carried by said support, said contact having a headed pin extending therefrom through said plate and a spring surrounding said pin between said plate and the head of said pin.

8. In a plug receptacle, the combination of a support, a contact, flanges operatively connected to said contact and extending at an angle to the axis of said contact, one of said flanges engaging the support, and a spring between the other flange and said support.

HENRY E. LEPPERT.

Witnesses:
N. H. GLYNN,
J. T. CLARKE.

Corrections in Letters Patent No. 969,787.

It is hereby certified that in Letters Patent No. 969,787, granted September 13, 1910, upon the application of Henry E. Leppert, of New Britain, Connecticut, for an improvement in "Plug-Switches," an error appears in the printed specification requiring correction as follows: Page 2, line 4, the word "outlet" should read *outer;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 4th day of October, A. D., 1910.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.

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