No. 707,952. Patented Aug. 26, 1902.

F. BENZINGER.

CIRCUIT BREAKER.

(Application filed Jan. 29, 1902.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

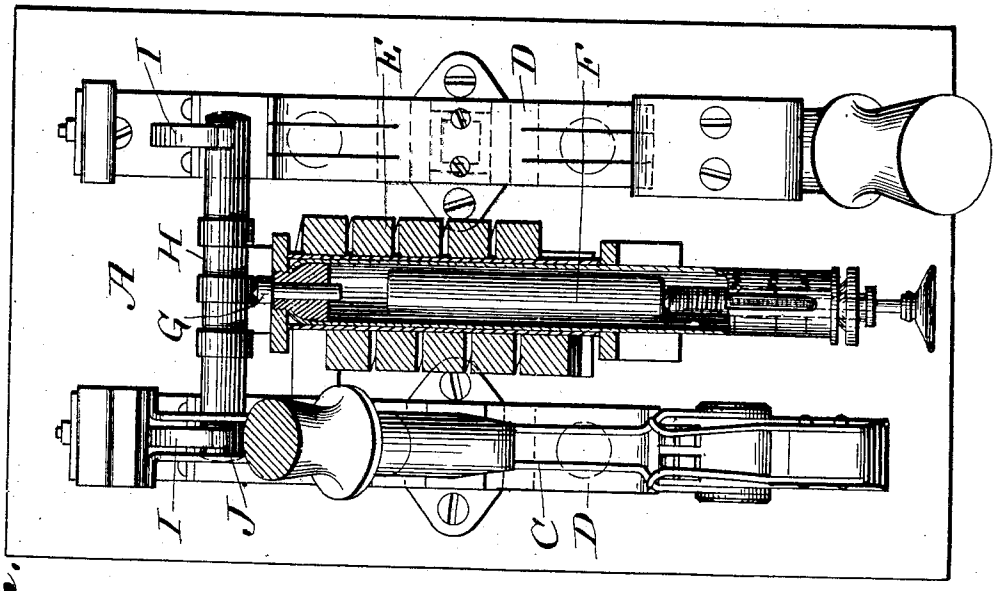
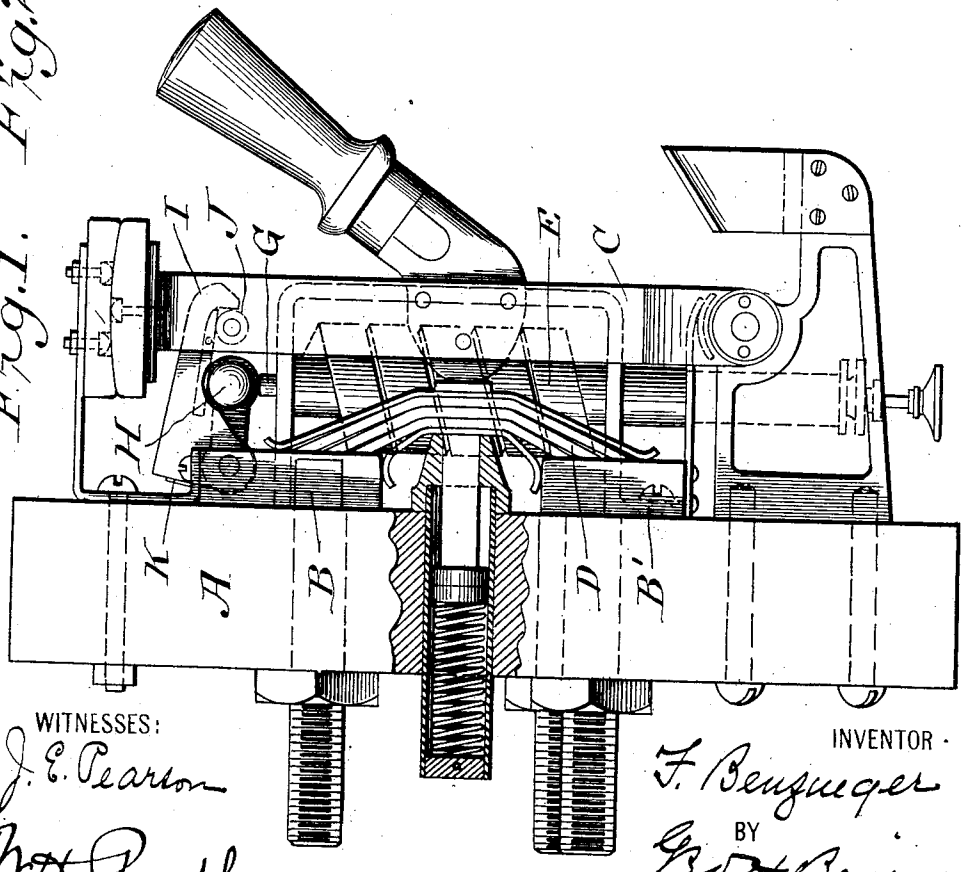


Fig. 1.



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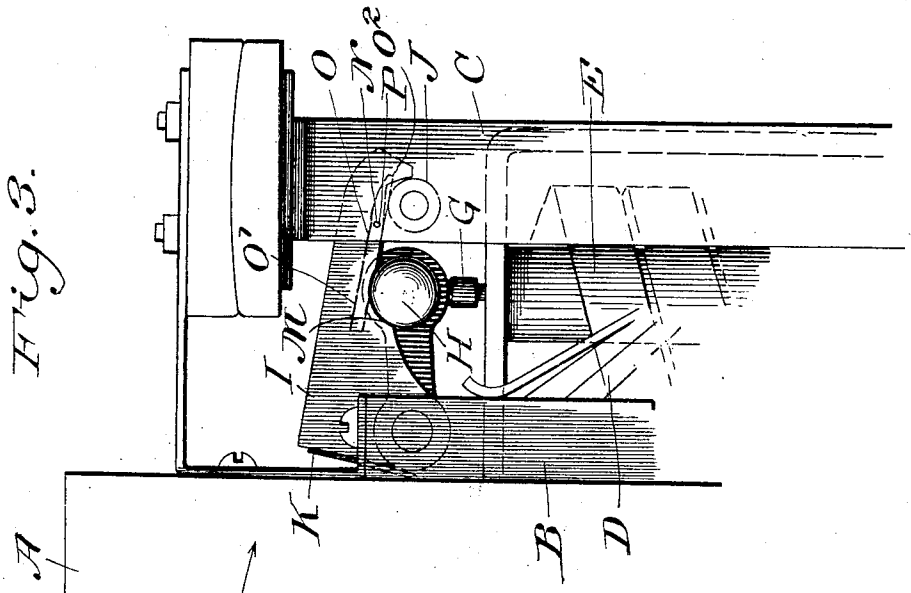


Fig. 3.

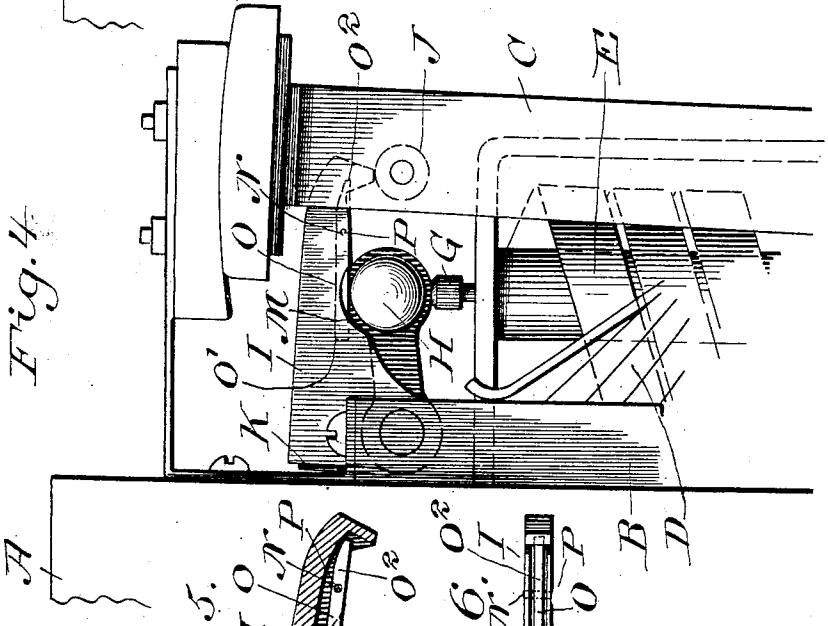


Fig. 4.

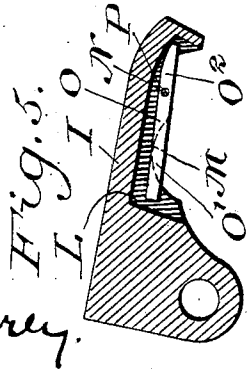


Fig. 5.

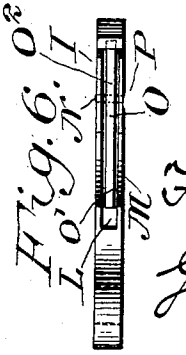


Fig. 6.

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UNITED STATES PATENT OFFICE.

FREDERICK BENZINGER, OF UNION HILL, NEW JERSEY, ASSIGNOR TO GENERAL INCANDESCENT ARC LIGHT COMPANY, A CORPORATION OF NEW YORK.

CIRCUIT-BREAKER.

SPECIFICATION forming part of Letters Patent No. 707,952, dated August 26, 1902.

Application filed January 29, 1902. Serial No. 91,739. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK BENZINGER, a citizen of the United States, residing at Union Hill, State of New Jersey, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification.

My invention consists of an improvement in the latch for the switch-lever shown in United States Letters Patent No. 686,918, dated November 19, 1901, and granted to Henry Price Ball, assignor, for automatic circuit-breaker.

The object of the invention is an improved construction of latch by reason of which the tripping of the latch to release the switch-lever is more readily effected and with the expenditure of less current energy than is necessary with the latch construction described in the above-mentioned patent of Ball.

The accompanying drawings will serve to illustrate my invention and in which similar letters of reference indicate like parts.

Figure 1 is a side elevation and partial section and shows the latch in a locked position. Fig. 2 is a front elevation with the actuating-magnet for the latch in section. Figs. 3 and 4 are side elevations showing, respectively, the latch in a position to unlock and unlocked. Fig. 5 is a longitudinal section through the latch. Fig. 6 is a bottom view of the latch.

The construction of the circuit-breaker shown in the drawings is identical with that shown in the patent of Ball, No. 686,918, above referred to, with the exception of the latch, and I therefore will not describe it, except in part.

In the drawings, A represents a base-plate. Secured to the front of the base-plate are the metallic contact-blocks B B'. Pivotally mounted in front of the contact-blocks are the switch-levers C. Arranged in front of the contact-blocks are the reciprocating spring-bridges D. Located between the levers C is a magnet E, within which is an armature F. Located above the armature is a reciprocating pin G and over this pin a horizontally-disposed bar H, preferably of insulating material. Pivoted in the contact-blocks B are the latches I, which take over pins J in the upper portion of the levers C. Located behind the latches I are springs K, which normally force the latches downward. The latches, it will be observed, are located over the horizontal bar H.

Referring now to Fig. 5, it will be seen that the latch I has a slot L formed in the under part of its projecting portion and, further, that such projecting portion is cut away to form a concave cavity M, which corresponds to the upper surface of the rod H. Pivoted in the cavity L of the latch I at N is a lever O, the pivotal point of which, P, is nearest the forward end, and, as will be seen on reference to Fig. 1, which shows the latch in a closed position, the pivotal point of the lever O is slightly above the bottom of the latch and to the rear of the axis of the pin J in the lever C.

The operation of my device is as follows: When a current of electricity in excess of a predetermined amount is sent through the instrument, the armature F is caused to move rapidly upward in the magnet E. This upward movement is transmitted through the pin G to the horizontal rod H, lifting this rod vertically, which in turn first acts upon the long end O′ of the lever O, which at the time is situated below the concave opening in the latch I, lifting it and depressing the forward end O^2 of the lever O, as shown in Fig. 3, which bearing upon the upper surface of the pin J raises the point of the latch I slightly above the horizontal axis of the pin J and subsequently upon the under portion of the latch itself to carry the point of the latch above the pin J, as shown in Fig. 4, thereby releasing the lever C and allowing the circuit-breaker to open.

My improved latch is applicable for use in single or double pole circuit-breakers or in other instrument or situation where it is desired to supplement the power of the actuating-magnet by a lever device first acting upon the latch.

Having thus described my invention, I claim—

1. In an automatic circuit-breaker, the combination of a switch-lever, a latch for said

lever, mechanism for lifting the latch a limited distance, and mechanism for releasing the latch.

2. In an automatic circuit-breaker, the combination of a switch-lever, a latch for said lever, mechanism energized by a magnet for releasing said latch, and mechanism interposed between said latch and magnet mechanism for aiding said magnet mechanism to release the latch.

3. In an automatic circuit-breaker, the combination of a switch-lever, a latch carrying a pivoted lever adapted to coact with said switch-lever, and mechanism for acting upon said pivoted lever and latch to release the switch-lever.

4. In an automatic circuit-breaker, the combination of a pivoted latch, a pivoted lever carried in said latch, a pivoted arm located under such latch and lever, and means for causing an upward movement of said arm.

5. In an automatic circuit-breaker, the combination of a pivoted latch, a pivoted lever carried in said latch and having its fulcrum near to the forward end of the latch and the long end of said lever normally situated below the under surface of said latch, and means for causing an upward movement of said lever and latch.

6. In an automatic circuit-breaker, a pivoted latch having a recess in the under portion of its forward end, and provided with a lever pivoted in said recess in such manner that the long end of the lever will normally lie below the under surface of the latch.

In testimony whereof I affix my signature in the presence of two witnesses.

FREDERICK BENZINGER.

Witnesses:
J. B. COWEN,
EDWARD M. GERRY.