

No. 698,096.

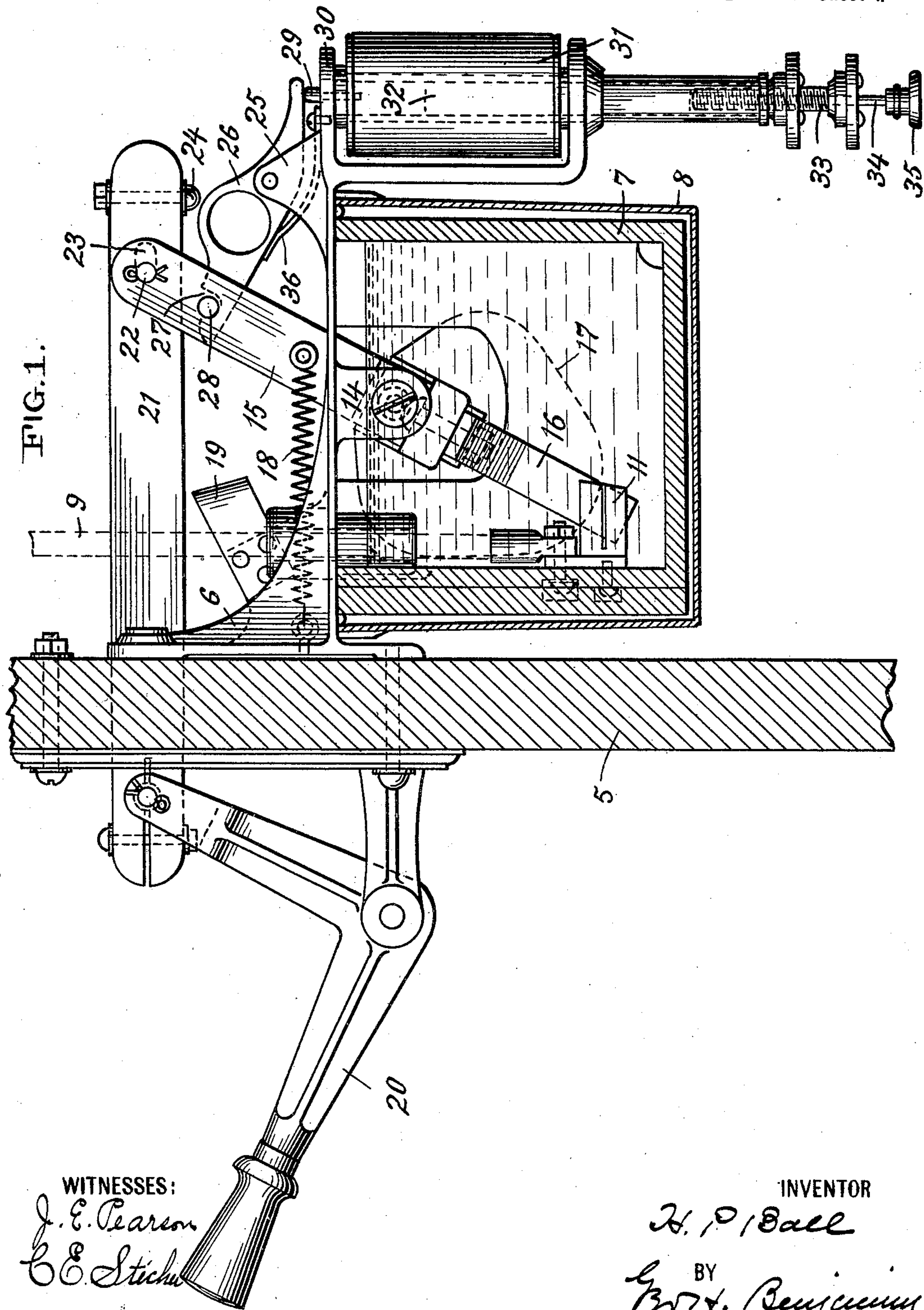
Patented Apr. 22, 1902.

H. P. BALL.
CIRCUIT BREAKER.

(Application filed May 21, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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HENRY PRICE BALL, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL INCANDESCENT ARC LIGHT COMPANY, OF NEW YORK, A CORPORATION.

CIRCUIT-BREAKER.

SPECIFICATION forming part of Letters Patent No. 698,096, dated April 22, 1902.

Application filed May 21, 1901. Serial No. 61,210. (No model.)

To all whom it may concern:

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification.

My invention relates to circuit-breakers of the type designed to automatically break one or more electric circuits when the current or currents transmitted exceed a predetermined amount.

My invention consists in various details of construction, which will be described in the specification and pointed out in the claims.

The object of my invention is a construction by means of which the mechanism to make or break the circuit or circuits may be actuated (independently of the automatic device) from the front of the switchboard.

The accompanying drawings will serve to illustrate my invention, in which—

Figure 1 is a side elevation and section through the oil-case. Fig. 2 is a plan view. Fig. 3 is a rear elevation looking from the right of Fig. 1 and section through the oil-case.

In the drawings, 5 indicates a switchboard. Secured to the back of the switchboard is a bracket 6, from which depends an oil-case 7 and its inclosing casing 8. The oil-case, it will be understood, is adapted to be wholly or partially filled with any suitable insulating-oil.

Located within the oil-case, near to the bottom, and connected to the terminal conductors 9 10 are the spring terminal contacts 11 12. These contacts are separated by the partitions 13, which project upward from the bottom of the oil-case.

Pivoted in the ears 14, which depend from the under side of the bracket 6, is an oscillating lever 15, to the short arm of which is secured a bridge-piece 16, formed of a bent strip of metal, the ends of which coact with the spring terminal contacts 11 and 12. Connected also to the short arm of the lever is a disk of insulating material 17, which is situated and moves between the partitions 13.

18 represents helical springs introduced between the vertical portion of the bracket 6 and

the long arm of the lever 15 and which normally act to break the contact between the bridge-piece 16 and the spring terminal contacts 11 and 12.

19 indicates a spring-buffer secured to the bracket 6 and intended to receive and cushion the lever 15 when released and thrown forward.

Pivotally mounted on the front of the switchboard is a hand-lever 20, having the shape of a bell-crank, and pivotally connected through one arm with a link 21, which latter is connected to the long arm of the lever 15 by means of a pin 22, located in the slot 23 in the link 21.

Secured to the rear of the link 21 in any suitable manner and projecting downward therefrom is a knob 24, and located under this knob and pivoted in ears 25, projecting upward from the horizontal portion of the bracket 6, is a latch 26, the left-hand end of which has formed in its upper surface a recess 27, which takes under a horizontal pin 28 in the long arm of the lever 15. The right-hand end of the latch 26 projects over a vertical pin 29, carried in the frame 30, which supports the magnet 31. Within the magnet is a vertically-movable armature 32.

33 represents a set-screw for adjusting the drop of the armature, and 34 a pin having an external head 35, through the instrumentality of which the armature may be thrown upward and caused to impinge upon the pin 29 to open the circuit-breaker from the back of the switchboard.

Located under the latch 26 is a flat spring 36, which normally acts to lift the left-hand end of the latch and maintain its engagement with the pin 28 in the lever 15.

The operation of my device is as follows: Should a current beyond the predetermined amount be transmitted through the magnet 31, it will attract its armature, which will impinge upon the pin 29, raise the right-hand end of the latch 26, and release the lever 15, which under the action of the springs 18 is drawn forward, thereby breaking the contact between the bridge-piece 16 and the spring terminal contacts 11 and 12. To make contact, the hand-lever 20 is raised, which moves the link 21 backward until the pin 28 in the lever 15 passes into the recess 27 in the left-

hand end of the latch 26. At this time it will be noticed that the pin is in the forward end of the slot in the link 21. When it is desired to open the switch from the front of the switchboard, the hand-lever 20 is drawn downward, the link 21 moved forward, and the knob 24 on the end of the link caused to impinge upon the left-hand end of the latch 26, forcing it downward and releasing the lever 15, which is then drawn forward by the action of the springs 18, breaking the circuit between the contacts.

Having thus described my invention, I claim—

1. In an automatic circuit-breaker, the combination of a switchboard, a hand-lever on the front of the switchboard, a bracket on the back of the switchboard, an oil-case, circuit-terminals in the oil-case, an oscillating lever, a bridge-piece carried by the lever and adapted to coact with the circuit-terminals, a resilient device for normally holding the circuit open between the bridge-piece and the circuit-terminals, a link interposed between the hand-lever and the oscillating lever and provided with a slot near its rear end, a pin located in said slot and pivotally connecting said oscillating lever to said link, an electromagnet, a latch device adapted to coact with said oscillating lever, and a device carried by the link which, when the hand-lever is depressed, will

act to release the latch from its engagement with the oscillating lever and permit the circuit-breaker to open.

2. In an automatic circuit-breaker, the combination of a hand-lever, an oscillating lever carrying a bridge-piece, a spring device adapted to exert tension upon the oscillating lever, a link between said hand-lever and said oscillating lever provided with an elongated slot at its rear end, a pin located in said slot and pivotally connecting said oscillating lever with said link, an electromagnet, a latch device which coacts with said oscillating lever, and a device carried by the link which, when the hand-lever is depressed, will actuate the latch to release the oscillating lever.

3. In an automatic circuit-breaker, the combination of a bracket on the rear of a switchboard, an oil-case carried by said bracket, partitions in said oil-case, circuit-terminals carrying spring-contacts located in said oil-case, an oscillating lever, a bridge-piece carried by said lever, and an insulating-disk carried by said lever, which coacts with said partitions in said oil-case.

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

HENRY PRICE BALL.

Witnesses:

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