H. B. COLLIER.

CIRCUIT CLOSER.

APPLICATION FILED SEPT. 15, 1909.

978,849.

Patented Dec. 20, 1910.

FIG. 1

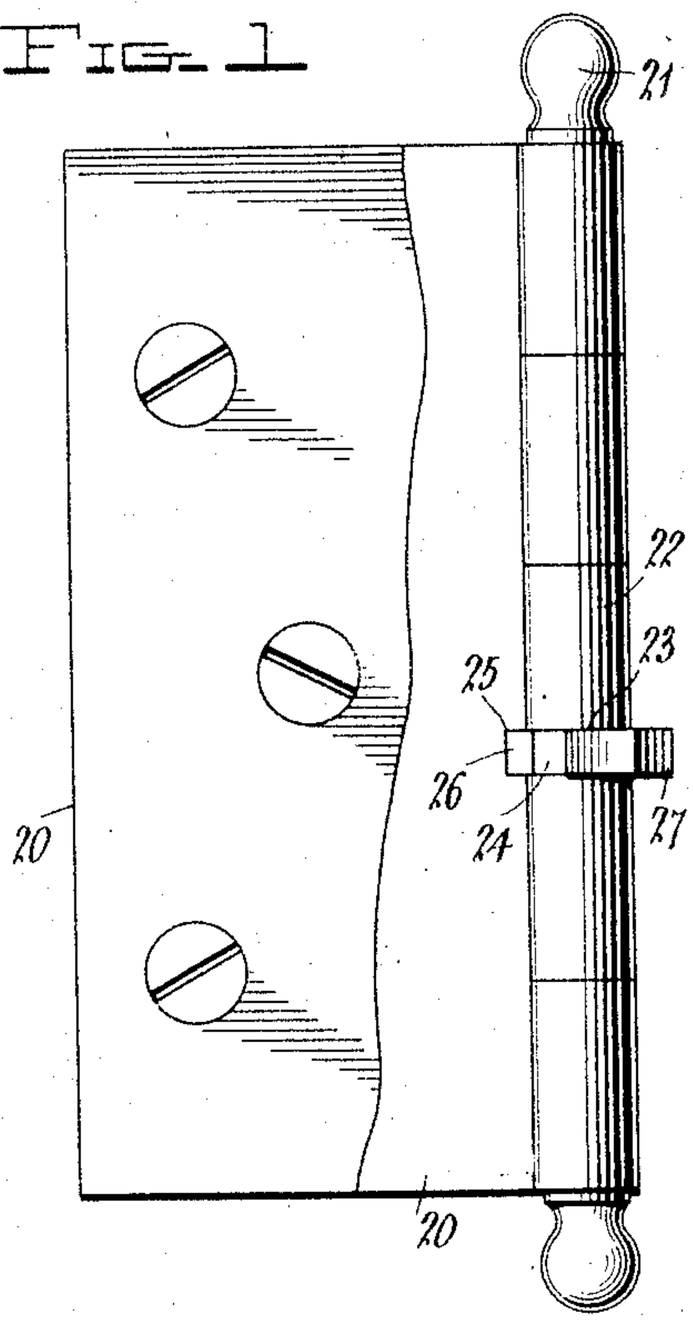
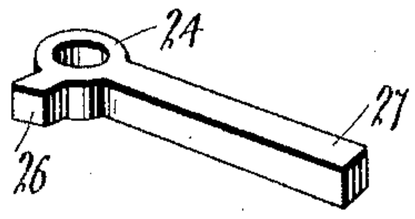


FIG. 3



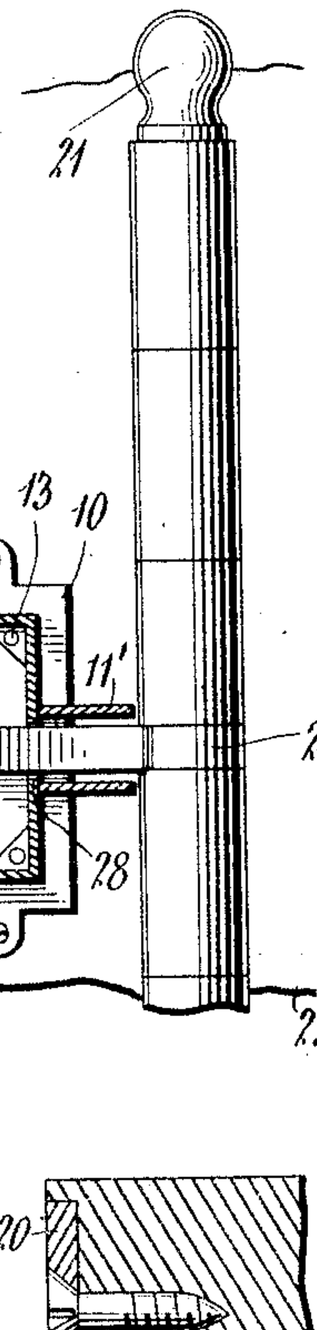


FIG. 2

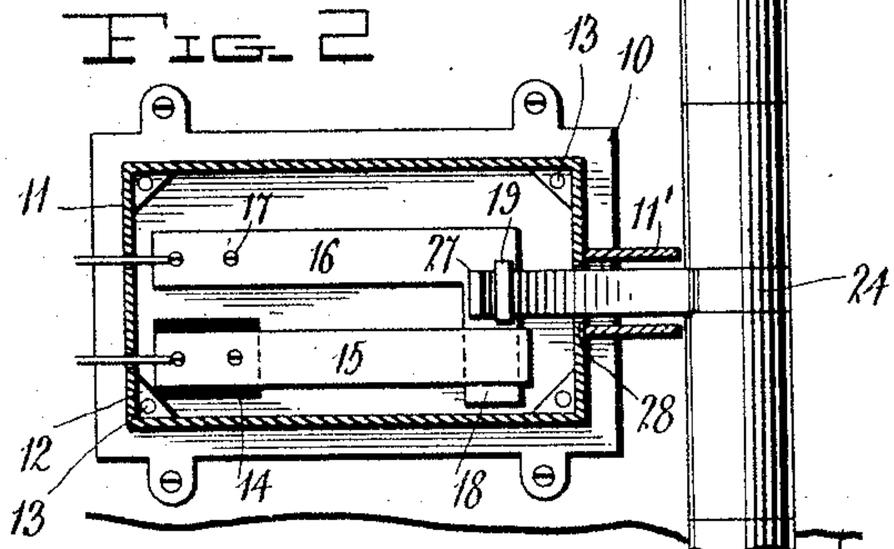
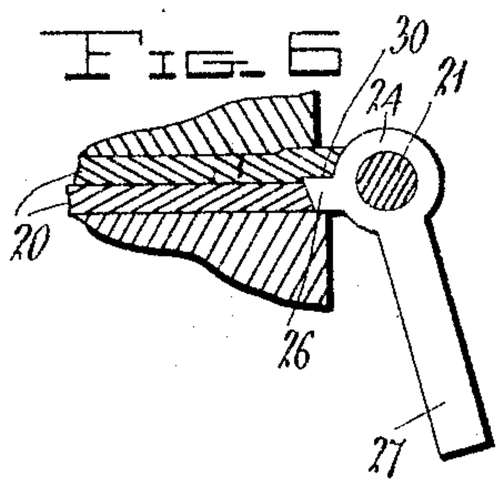


FIG. 6



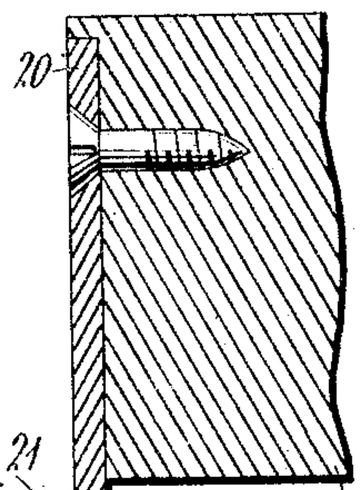


FIG. 4

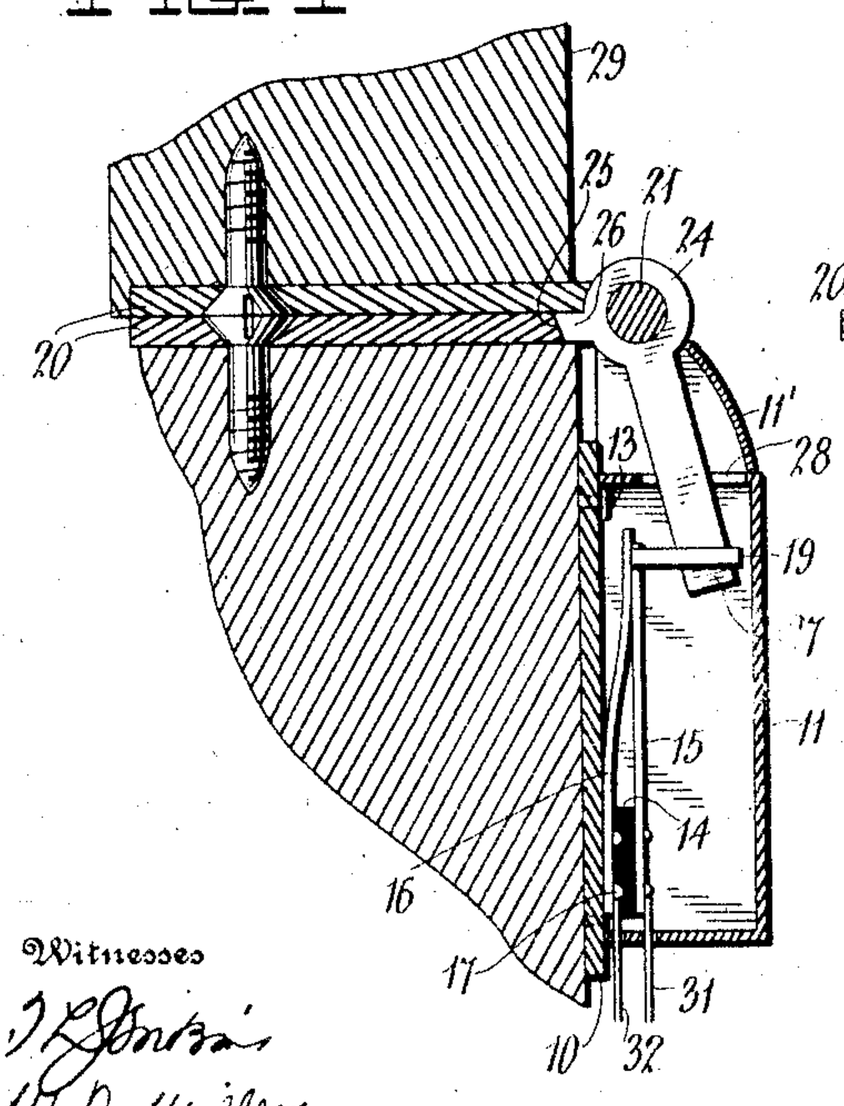
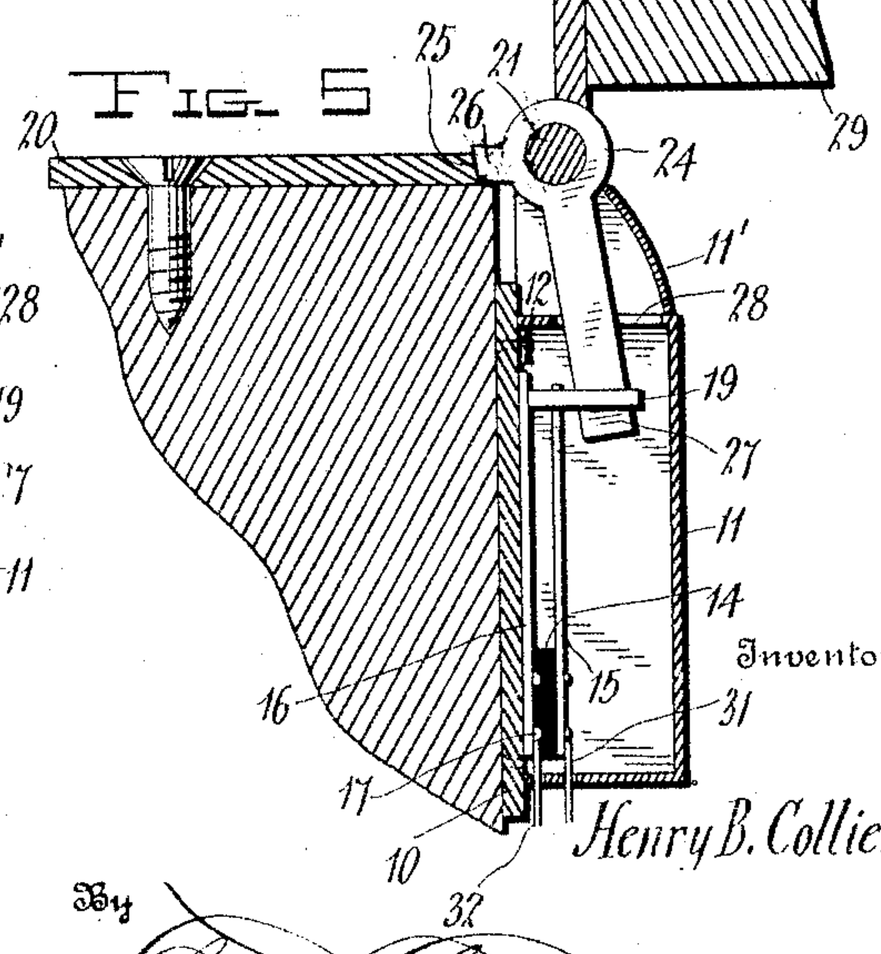


FIG. 5



Witnesses

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UNITED STATES PATENT OFFICE.

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CIRCUIT-CLOSER.

978,849. Specification of Letters Patent. Patented Dec. 20, 1910.

Application filed September 15, 1909. Serial No. 517,865.

To all whom it may concern:

Be it known that I, HENRY B. COLLIER, a citizen of the United States, residing at Prairie Grove, in the county of Washington, State of Arkansas, have invented certain new and useful Improvements in Circuit-Closers; 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.

This invention relates to circuit closers and has special reference to a circuit closer adapted to be used on normally closed circuits in connection with a door or other hinged closure for openings into a building or the like.

One object of the invention is to improve the general construction of circuit closers for doors.

Another object of the invention is to provide a circuit closer for closed circuit alarms which will open automatically upon the swinging of a door on its hinge.

A third object of the invention is to provide a form of hinge adapted to control a circuit closer of this description.

With the above and other objects in view the invention consists in general of a casing wherein is mounted an improved form of circuit closer, together with a novel hinge carrying a member arranged to actuate said circuit closer.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and Figure 1 is a detail view in side elevation of the hinge employed in connection with this closer. Fig. 2 is a view showing the circuit closer together with the hinge and the connection between the hinge and circuit closer, the circuit closer being shown in elevation and the casing in section the better to disclose the parts. Fig. 3 is a detail perspective view of that portion of the circuit closer which is directly connected with the hinge. Fig. 4 is a horizontal sectional view through the circuit closer and the hinge and showing the member illustrated in Fig. 3 in top plan, the door which the hinge supports being shown as closed. Fig. 5 is a similar view but showing the door open. Fig. 6 is a view similar to Fig. 5 but illustrating a slight modification.

This circuit closing device is embodied in a contact device and a specific form of hinge which is associated with the contact device. The contact device comprises a base 10 which is secured by means of screws or otherwise upon the wall of the room in which the device is to be placed, the base being attached adjacent the hinged edge of the door. At 11 is a casing which is secured upon the base before the latter is secured to the wall. In order to provide for this feature the casing is formed at each corner and at its upper side with a small tri-angular web 12 each provided with a threaded opening into which a screw 13 is threaded, said screw being passed through the base from the back face to the front face. The casing 11 is in this manner secured upon the base so that it cannot be removed except by removing the latter from the wall. A block of insulation indicated by the numeral 14 is secured upon the base 10 adjacent one end of the casing 11 and fixed upon this block at one of its ends is a leaf spring contact 15, the free or unattached portion of the spring extending in parallel relation with respect to the base 10 and spaced therefrom as will be readily understood by an inspection of Figs. 4 and 5. A similar contact spring 16 is secured directly to the base 10 as indicated by the numeral 17 and this latter strip is formed with an integral lateral extension 18 which extends beneath the free or unattached end of the strip 15 and is normally out of contact therewith, the said strip being flat normally against the base. The strip 16 has its lateral extension 18 provided with a yoke 19 which projects in a direction from the base 10 at right angles from said extension. The function of this yoke 19 will be presently fully described.

The leaves of the hinge heretofore mentioned are indicated each by the numeral 20 and the pintle of the hinge by the numeral 21, the knuckle 22 of one leaf 20 being cut away as indicated by the numeral 23 to receive a collar 24 which is pivotally engaged upon the pintle 21 and is freely rotatable thereon. Not only is the knuckle 22 of this leaf cut away as described but the leaf itself is formed with a notch 25 which, when the hinge leaves are folded, receives a lug or abutment 26 formed integral with the collar

24. The collar is formed in addition to the lug 26 with an integral finger 27 which projects through a slot 28 formed in one end of the casing 11 and also extends at its end into the yoke 19 upon the lateral extension 18 of the contact 16. From this end of the casing projects a housing 11′ which extends up to the hinge and incloses the finger 27 to prevent tampering therewith. As is clearly shown in the drawings, and more particularly in Fig. 4 thereof, when the door, indicated by the numeral 29, is closed, or in other words when the hinge leaves are folded to lie one against the other, the leaf other than the one in which the notch or recess 25 is formed abuts or bears against the lug 26 and forces the lug into the recess 25 and in doing so, it turns the collar 24 to a slight degree upon the pintle 21 as a pivot and swings the finger 27 in a direction away from the door casing or frame. This movement of the finger 27 serves to pull upon the yoke 19 and in doing so to bring the lateral extension 18 of the spring contact 16 into contact with the free or unattached end of the leaf spring contact 15 thereby closing the circuit so far as this contact is concerned. The contact 16, as has heretofore been stated, is of leaf spring material and normally tends to lie flat against the base 10 so that when the door 29 is opened as illustrated in Fig. 5 of the drawings, the leaf of the hinge other than the one in which the recess 25 is formed will be out of engagement with the lug 26 and the spring contact 16 will act by its resiliency to draw upon the yoke 19 and swing the finger 27 in the direction of the door casing or frame, it at the same time moving out of contact with the spring contact member 15.

From the foregoing, it will be understood that as long as the door is closed, the main circuit is closed as far as the contact associated with the door is concerned and that as soon as the door is opened, the main circuit will be opened. As clearly illustrated in Fig. 5 of the drawings, the lug 26 when released by the hinge leaf which engages with it when the door is closed, projects slightly beyond that face of the recessed hinge leaf against which the other leaf folds so that it will be positively engaged by the last mentioned leaf when the door is closed.

In the form of the contact illustrated in Fig. 6 of the drawings, the lug 26 is formed of greater thickness than the thickness of the hinge leaf 20 in which the notch or recess 25 is formed and the other hinge leaf is formed at that point with a depression 30, which while it partly receives the lug 26, does not interfere with the action of the hinge leaf in engaging the lug and forcing it into the recess 25. The advantage accruing from the provision of a construction such as illustrated in this figure lies in the fact that it is impossible to insert a knife blade between the hinge leaves when the door has been opened to a very slight degree and hold the lug in the recess, thereby preventing opening of the contact 16.

Leading from the contact 15 is a wire 31 and leading from the contact 16 is a similar wire 32. These wires form part of a normally closed alarm circuit not deemed necessary here to be shown as this contact arrangement may be utilized with any normally closed circuit forming a part of an alarm system. It will be readily understood by those skilled in the art that the opening of the door will, in the manner above set forth, break this normally closed circuit and thereby actuate the alarm mechanism.

It is obvious that minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not therefore desired to confine the invention to the exact form herein shown and described, but it is wished to include all such as properly come within the scope of the appended claims.

Having thus described the invention, what is claimed as new, is:—

1. A circuit closer for alarm circuits comprising, in combination with a hinge, a pair of contacts, one of which is movable to position against the other, and a member pivoted upon the pintle of the hinge and formed with a lug which is engageable by one leaf of the hinge when the said leaf is swung to lie against the other leaf, the last mentioned leaf being formed with a recess in which said lug is received when the leaves are folded, said member engaging a portion of said movable contact.

2. A circuit closer for alarm circuits comprising, in combination with a hinge, a pair of contacts, one of which is movable to position against the other, and a member pivoted upon the pintle of the hinge and formed with a lug engageable by one leaf of the hinge upon swinging movement in one direction whereby the said member will be swung upon the pintle, the said movable contact being formed with a yoke in which the member is engaged.

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

HENRY B. COLLIER.

Witnesses:
ED. F. BAIN,
J. W. EDMISTON.