

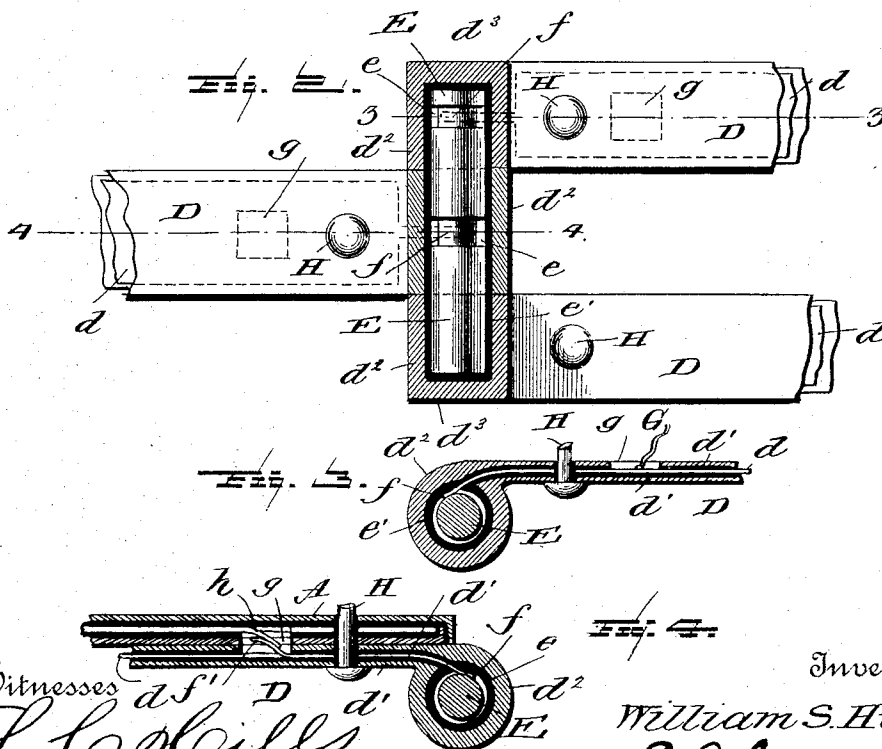
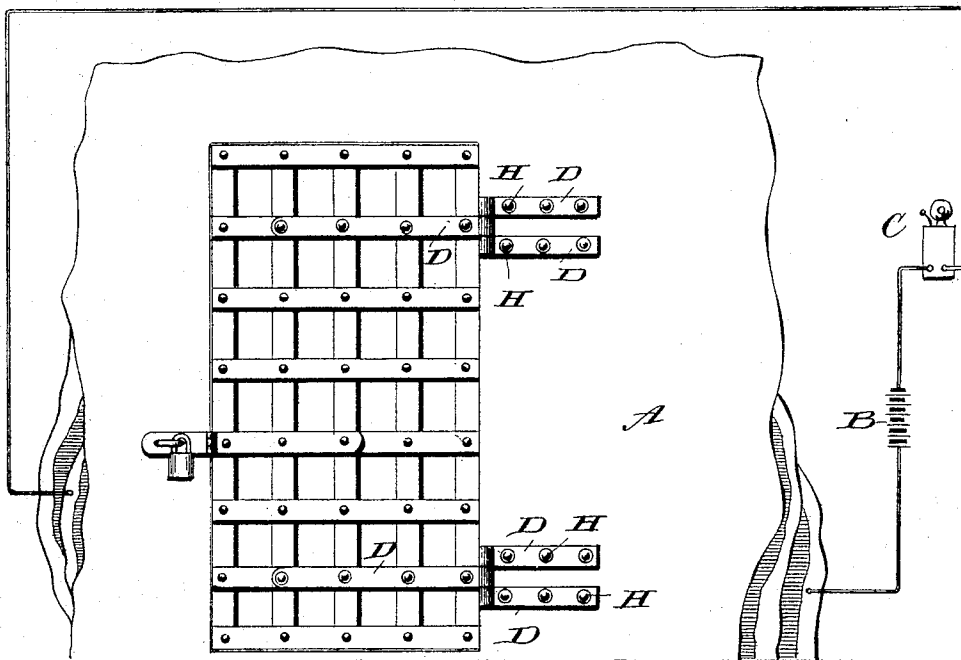
(No Model.)

W. S. HULL.
ELECTRIC HINGE.

No. 499,428.

Patented June 13, 1893.

Fig. 1.



Witnesses

L. C. Mills
E. A. Bond

Inventor:

William S. Hull

By E. B. Stocking
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM S. HULL, OF SHEFFIELD, ALABAMA.

ELECTRIC HINGE.

SPECIFICATION forming part of Letters Patent No. 499,428, dated June 13, 1893.

Application filed November 16, 1892. Serial No. 452,162. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. HULL, a citizen of the United States, residing at Sheffield, in the county of Colbert and State of Alabama, have invented certain new and useful Improvements in Electric Hinges, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has relation to hinges and more especially to that class employed for use in connection with safes, vaults and other structures where electric alarms are to be sounded through the medium of the hinge.
15 Heretofore it has been proposed to employ a hinge for this purpose in which one leaf of the hinge had provision for making or breaking the circuit when it came in contact with the other leaf, or some other part, but in that
20 construction the contact point or points were exposed where they could be readily discerned by a burglar.

The present invention has for its objects among others to provide an improved hinge
25 in which the pintle forms an important function in an electrical way and in which the electric features are concealed or hidden from view, where they cannot be tampered with and in such a manner that their presence will not
30 be detected by any one. The pintle is insulated from the protecting portions of the hinge. I preferably make the leaves of the hinge of compound plates or bars and through a recess or chamber therein is passed the
35 plate or wire which serves as the contact point. I have chosen to show a pair of my improved hinges as applied to a cell door as this is one of the principal forms of application. In this instance the door is in electrical
40 connection or circuit and tampering with any portion thereof will cause an alarm to be sounded.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims, it being premised that the broad feature of novelty in the present invention is a hinge in which the electrical connections or portions thereof are entirely
50 protected or concealed from view; and sec-

ondly in which the pintle is insulated from its protecting portions and serves an important function aside from that of a mere pintle.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a view with portions broken away, showing the application of my improved hinge to a jail cell door. Fig. 2 is an enlarged
60 view of the hinge, with the leaves broken away and the pintle-protecting portions in section. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a section on the line 4 4 of Fig. 2.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings in which I have illustrated what I at present consider the preferable form of carrying
70 out my invention, A designates a portion of the wall of a jail or other structure which is composed of a plurality of plates electrically connected with a suitable battery B and an alarm C, substantially in the manner shown
75 in my Patent No. 480,099, dated August 2, 1892, but it will of course be understood that my present form of hinge is not in any way restricted to use in connection with such a
80 construction of wall.

In constructing my hinge I preferably form the leaves D of a compound plate or bar, the central portion *d* of which is insulated by suitable insulation *d'* from contact with the other or outer portions as seen best in Fig. 3,
85 and each leaf of the hinge has a tubular portion or eye *d²*, that of the end leaves being provided with an end or cap portion *d³* as seen in Fig. 2.

E is the pintle inclosed within and protected by these portions *d²* and this pintle is provided with annular grooves *e* as is also
90 best shown in Fig. 2, for a purpose which will soon be made apparent. The pintle is insulated from the tubular or inclosing portions
95 of the leaves of hinge by suitable insulation *e'* as seen in Figs. 2, 3 and 4.

The intermediate plate, bar or portion *d* of the leaf of the hinge is extended in the form of a tongue or extension *f* to bear upon the
100

pintle in the annular groove thereof as seen in Figs. 3 and 4, and the said plate, bar or portion is further stamped or otherwise treated to form a tongue or lip f' as seen in Fig. 4 which extends through a hole in the portion of the hinge leaf adjacent to the wall A, the adjacent plate of which has a coincident hole or opening g through which extends a lip or tongue h on the intermediate plate, bar or portion of the wall A as seen in Fig. 4, the insulation at these points being also cut away to permit the passage of the said tongues or lips as is also seen in Fig. 4; or, instead of thus forming the tongues or lips a wire G may be connected with the intermediate portion d of the hinge leaf as seen in Fig. 3. The effect is the same.

The wire G, Fig. 3, is assumed to be a substitute and the equivalent of an intermediate plate or ply of a composite wall and the electrical conductor of such a wall.

The leaves of the hinge are secured to the door and wall by any suitable means, as bolts or rivets H.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages. For instance the hinge leaf may, instead of being a compound plate or bar, be of a single piece with a recess or groove therein in which are located the contact points f and f' , or the intermediate portion d when present need extend only to the point where it contacts with the tongue h of the intermediate plate of the wall. The hinge may be composed of two leaves only if desired. The hinge may be used in other and any places where such a hinge is desired. Any suitable material may be employed in its construction. The exterior conductors may be arranged to operate upon what are termed open or closed circuits, as may be deemed best, and in connection with alarms of either character.

While the primary object of my invention is to provide a continuously-operating electric connection between a door and the wall with which it is mechanically connected, in which case the circuit would for some purposes preferably be open so that an alarm would be sounded by the passage of a tool through the wall or through the bars or other portion of the door when said bars are compound in their structure as hereinbefore described and as illustrated in the drawings, still it is apparent that what is known as a closed circuit may be employed so that a severance of the connections or of the conductor or the contact, in the wall, the door or a portion thereof or of the hinge, would sound an alarm. With such a circuit the well-known expedient of providing an insulated point for the contact f to ride upon for instance when the door is open to a greater or less extent, may be used. It is particularly requisite that the electrical conductive portions of the hinge should be wholly concealed as the exposure

of, for example one of the contact points f , would instantly inform a prisoner or a burglar that the structure was provided with electrical protection and the assault or attempted escape would be controlled by a knowledge of that fact.

In this embodiment of my invention the wall A is composed of several plies of sheet metal and interposed insulating material. One pole of the conductor being connected with the battery is connected with one of the plies or plates of the wall, the inner one, and the other pole is connected to the middle plate. The circuit is open so that the passage of a metal tool through the inner plate, the insulation and to the middle plate serves to close the circuit and sound the alarm C. The door might also be constructed of a series of insulated plates in which case the door leaf of the hinge would be electrically connected with the intermediate plate while the wall leaf of the hinge could be connected with either the exterior or inner plate of the wall in which case the tool of metal passing through the plates of the door would close the circuit in the same manner as above specified with regard to the wall. The door, however, in this case is represented as constructed of compound bars, each bar consisting of three plies, the middle insulated from the two outer plies and the inner plies are electrically connected. The contact points f are continuations of the intermediate plies of the door and wall leaf of the hinge whereby a conductor which is continuous through the door and wall is provided. In case a closed circuit is employed it would be secondary to the open circuit, and utilized through the medium of the well known device called an automatic drop which would be operated by a closure of the open circuit so as to open the closed circuit and gain the advantage of a continuous alarm which is not present in the circuit shown and described. Such a combined use of open and closed circuits is shown and described in my patent granted January 10, 1893, No. 489,902.

What I claim as new is—

1. A hinge having a pintle and eyes wholly incasing said pintle for concealment and insulating material between the eyes and pintle, as set forth.
2. A hinge having an insulated pintle provided with an annular groove and a contact spring resting in the groove, as set forth.
3. A hinge having an insulated incased pintle and a contact point concealed within the leaf of the hinge and bearing against the pintle, as set forth.
4. A hinge having an insulated protected pintle with annular groove and a leaf with a contact point concealed therein and bearing against the pintle in the groove thereof, as set forth.
5. A hinge the leaves of which are formed of a plurality of plies with interposed insu-

lating material one of the plies extended to the pintle and insulating material surrounding the pintle, substantially as specified.

5 6. A hinge the leaves of which are formed of a plurality of plies and interposed insulating material the intermediate plies being extended and electrically connected by the pintle of the hinge, substantially as specified.

10 7. A hinge having a pintle and leaves with portions surrounding and protecting the pintle, and contact points within the leaves bearing upon the pintle, as set forth.

15 8. The combination with a wall provided with electrical conductors and with a door having electrical conductors, of a hinge having its pintle insulated and having electrical conductors in the leaves thereof terminating

at its pintle and adapted to be united with the conductors of the door and wall, substantially as specified. 20

9. A wall, and door having electrical conductors, an exterior conductor connected with said door and wall and with an alarm, and a hinge completing the connection of the door and wall with the exterior conductor, through 25 an insulated pintle of said hinge, substantially as specified.

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

WILLIAM S. HULL.

Witnesses:

GEO. P. KEYES,
JNO. T. HULL.