(No Model.)

S. BIRDSALL.

HINGE.

No. 406,988. Patented July 16, 1889.

Fig. 1.

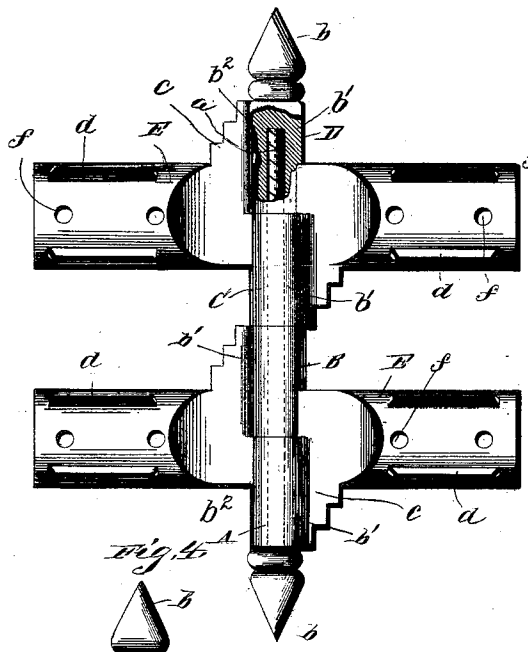


Fig. 2.

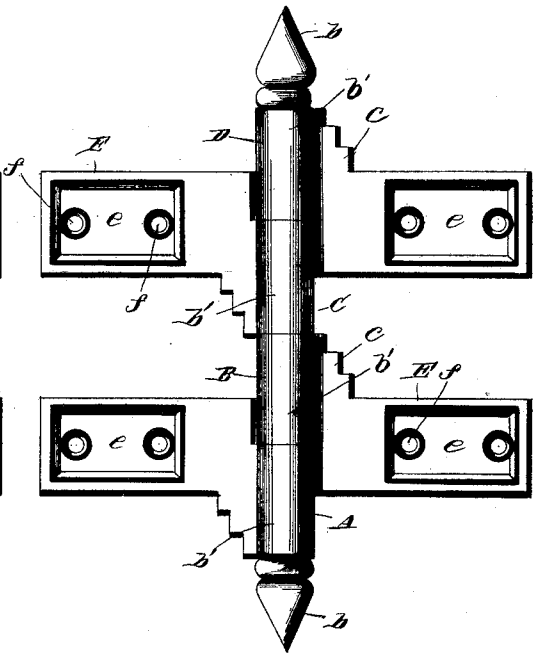


Fig. 4.

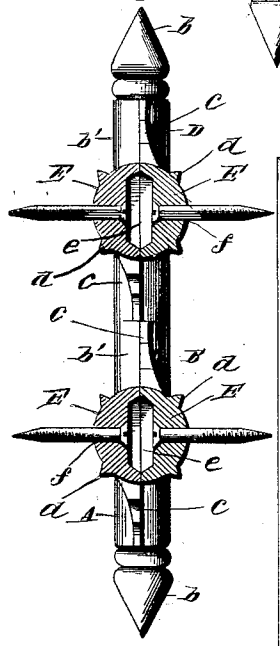
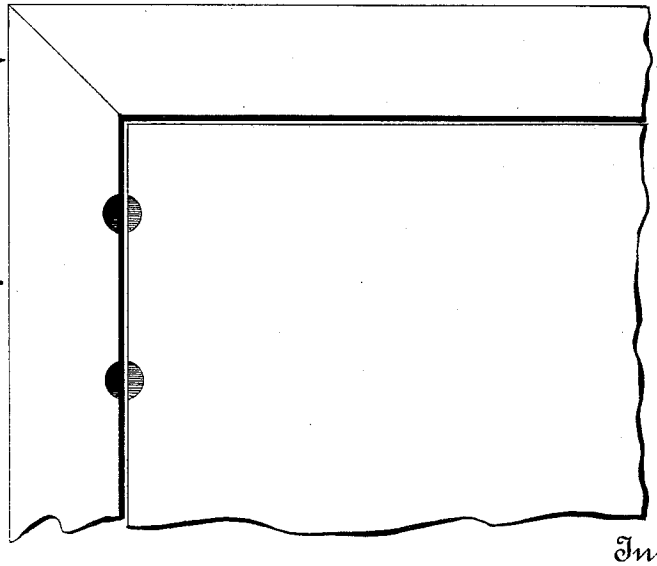


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL BIRDSALL, OF PERRYSBURG, OHIO, ASSIGNOR OF ONE-HALF TO JOHN G. HOFFMAN, OF SAME PLACE.

HINGE.

SPECIFICATION forming part of Letters Patent No. 406,988, dated July 16, 1889.

Application filed February 1, 1888. Serial No. 262,603. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BIRDSALL, a citizen of the United States, residing at Perrysburg, in the county of Wood and State of Ohio, have invented a new and useful Improvement in Door-Hinges, of which the following is a specification.

This invention relates to door-hinges; and it consists in the improved construction hereinafter described, whereby a hinge is presented that not only possesses simplicity, durability, and lightness of form, but the adoption of which will greatly facilitate door-hanging operations.

In the drawings, Figure 1 shows in elevation my improved hinge. Fig. 2 is a rear view of one of the leaf-sections of the hinge. Fig. 3 is an elevation of a door and door-frame, illustrating the manner in which my improved hinge is to be used. Fig. 4 is a transverse section through the wings of the hinge, showing the same closed against each other.

The said hinge consists, preferably, of four independent leaf-sections A, B, C, and D, the lower one A being provided with the pintle *a*. Each of the said sections A, B, C, and D comprises a vertical cylindrical portion *b'*, extending from the center of each leaf E to more than the same length beyond the edge of the leaf, as shown at b^2, that set of leaves upon one side of the hinge having their cylindrical portions extending below the plane of the lower edges thereof, and those leaves on the opposite side of the pintle having their cylindrical portions extending a corresponding distance upwardly and beyond the upper edge of the said leaves. By this arrangement and location of the stock of the hinge I secure a more easily-moving and perfectly-balanced hinge, and also secure a much stronger device, for the reason that I provide an extremely long bearing, and this without correspondingly lengthening the distance between the leaves of the hinge, and each leaf bears its proportionate share of strain and is evenly transferred to the pintle, to receive which the central set of leaves, or those upon one side of the pintle, are bored through and through in the usual manner, one of the end sections—in this instance the upper—having its cylindrical portion terminating in an ornamental cap *b*, provided with a short cylindrical threaded socket or recess, within which the pintle terminates, said pintle being passed through a perforation in the portion *b'* of section A and provided with a head, as *b*, corresponding with that on section C. A notched web *c* connects each leaf E with its extended portion b^2 to provide against weakness, which might be occasioned by having a portion of said leaf extending above or below its said portion b^2. It will be observed that the leaves of each respective pair extend alternately above and below the cylindrical portions *b*, so as to occupy the same horizontal position, so that when they are turned toward each other they will contact and conjointly form a cylinder. The outer curved face of each leaf is provided with an upper and lower horizontal rib *d*, which is arranged radially to the leaf in cross-section, the line of radiation being upon an angle of about forty-five degrees, or, in other words, not with the grain of the wood, thus obviating any liability of splitting when the weight of the door is thrown upon the hinge-leaf.

Each leaf E is recessed or cut away at its rear, as indicated at *e*, so that the sections will not be unduly heavy. A perforation or perforations *f* in each leaf affords a means for attaching the leaf in position by means of a screw or screws.

It will be remembered that in the universal mode of hanging doors it is customary to first place the door in position in the door-frame, temporarily locate the hinges, and mark the relative positions to be occupied by the leaves. The door is then removed, the leaf-recesses formed by chiseling, the door replaced, and the leaves finally secured in place by means of screws. This practice consumes considerable time, and the recesses and leaves are not always accurately located. By the use of my improvement it is only necessary once to place the door in position to secure its proper permanent attachment.

By reference to Fig. 3 it will be seen that while the door is in position in the frame I bore circular openings, each of which has one half formed in the rear edge of the door,

while the balance is located in the adjacent face of the frame. Each opening is of a size sufficient to snugly receive and retain the cylinder formed conjointly by two of the leaves. As will be understood, it will be necessary to form two holes for each hinge, and as the cylinders are forced into the holes the ribs *d* cut into the walls of the holes and serve to hold each leaf securely in its recess. It will be observed that the ribs are arranged longitudinally of the leaf and project radially outward in cross-section, so that when the leaves are driven into the previously-bored openings the ribs will embed themselves in the wood-work across the grain, so as not to split the same. In view of the liability of a door to receive shocks and blows from its inner side, it will hardly be sufficient in many cases to rely upon the ribs to retain each leaf in its recess, so I find it desirable to pass a single screw through the perforation *f* into the portion to which said leaf is attached, the head of the screw occupying the recessed portion *e*, and thereby being located out of the way.

It will be obvious from the foregoing that the improvement described possesses numerous advantages over prior constructions, as has been hereinbefore stated.

It will be found desirable to form the pintle with the lower head *b*, the upper end of said pintle being threaded to receive the upper head *b*, so that the several leaves may be properly secured together. This latter construction will be found particularly beneficial, as it insures all the leaves being alike, and will permit them to be produced from a general pattern in the course of their manufacture.

The ribs *d*, while radial, are so situated as to stand upward and downward on the leaves, so that when the leaves are driven in their seats the ribs will retain them therein when the door is opened. The screws are merely to re-enforce the ribs and prevent them sliding in their seats.

I claim—

The combination, with the leaves A, B, C, and D, each of which is provided with the perforated cylindrical portions *b'*, those of the end leaves A and D being extended beyond their upper and lower edges, respectively, and terminating at about the center of the leaves, and the first mentioned terminating in the threaded socketed cap *b*, and each provided with diagonal bracing-webs *c*, and those intermediate sections B and C having their cylindrical portions beginning at about their centers and projecting beyond their adjacent ends and provided with the webs, as *c*, and the pintle *a*, having head *b* and threaded in the opposite head *b*, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of witnesses.

SAMUEL BIRDSALL.

Witnesses:

D. K. HOLLENBECK,

F. B. HOLLENBECK,

CHARLES SISSON.