2 Sheets—Sheet 1.

I. BUCKMAN.

SPRING HINGES.

No. 180,989. Patented Aug. 15. 1876.

Fig. 1.

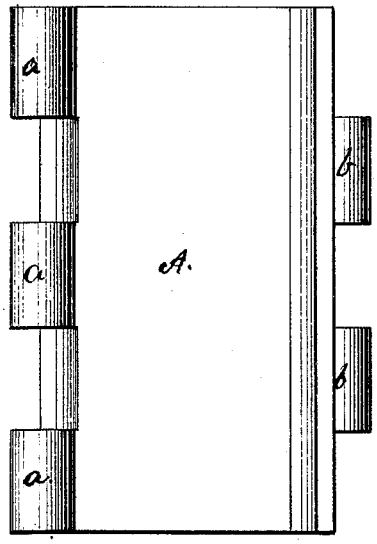


Fig. 2.

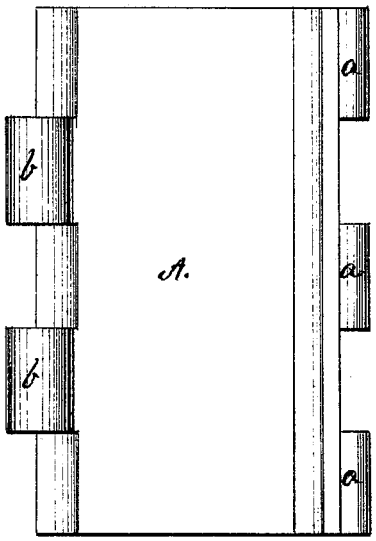


Fig. 3.

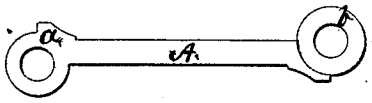
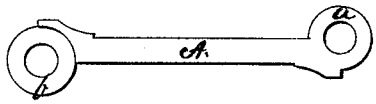


Fig. 4.



Attest.

C. Clarence Poole.

J. B. Woodruff

Inventor:

Ira Buckman.

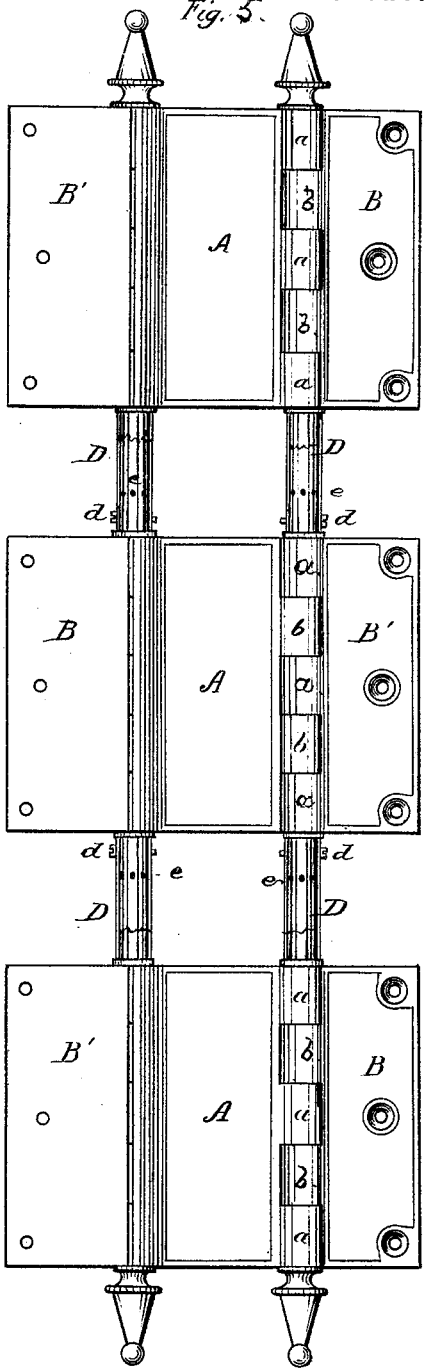
2 Sheets—Sheet 2.

I. BUCKMAN.

SPRING HINGES.

No. 180,989. Patented Aug. 15, 1876.

Fig. 5.



Witnesses.

P. A. Poole

J. B. Woodruff

Inventor.

Ira Buckman.

UNITED STATES PATENT OFFICE.

IRA BUCKMAN, OF BROOKLYN, E. D., NEW YORK.

IMPROVEMENT IN SPRING-HINGES.

Specification forming part of Letters Patent No. **180,989**, dated August 15, 1876; application filed January 13, 1876.

To all whom it may concern:

Be it known that I, IRA BUCKMAN, of Brooklyn, E. D., in the county of Kings and State of New York, have invented certain new and useful Improvement in the Central Connecting-Plate for Double-Jointed Spring-Hinges; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents one of the flat or face sides of the connecting-plates for double-jointed spring-hinge, showing three knuckles upon one of its edges, and only two knuckles upon the other. Fig. 2 shows the reverse or other face side of the same. Fig. 3 shows the top-edge view of the connecting-plate, Fig. 1. Fig. 4 shows the same of Fig. 2. Fig. 5, Plate II, shows a series of three of my improved double-jointed central connecting-plate torsion-spring butt-hinges, as they are arranged in relation to each other in hanging a door.

My invention consists in constructing the continuous central plate for connecting the leaves, which have continuous knuckles, for double-jointed spring-hinges; providing the said plate with one more knuckle on one edge than on the other, whereby the power of a torsion-spring, connected with the knuckle on the leaf of the middle hinge, is transmitted to the knuckles of the center plates of the top and bottom butts, which become stationary while the door is being swung one way, and in operating the other way the power of the spring is transmitted from the knuckle of the center-plate of the middle hinge to the knuckles of the top and bottom leaves of the top and bottom hinges. Thus, it will be seen, that all of the leaves are held to the center-plate by the action of the springs.

For hinging a door with two butts, the leaf having the largest number of knuckles on the bottom hinge is secured to the jamb, thus transmitting the power of the spring from the knuckle of the same to the knuckle of the middle plate of the top hinge, for swinging the door one way; and for operating the door the other way, the power of the spring is transmitted from the knuckle of the middle plate to the leaf of the upper hinge, the same as in using three hinges, the leaves being held firmly to the center plates by the springs.

Referring to the drawings, and the letters thereon, the single continuous connecting-plate A, for double-jointed torsion spring-butts, is made with one more of the knuckles *a a a* on one of its edges than there are knuckles *b b* on the other edge, so that the leaves B, which connect therewith, are made, one having three knuckles and the other only two, to correspond with the central plate A.

The necessity for this construction of the connecting-plate A and the two leaves B B′ is set forth in the foregoing recital of invention, and the backing up or re-enforcing of the knuckles *a a a* and *b b* on the connecting-plate of a double-jointed torsion spring-hinge is of equal importance, for the reason that the weight of the door acts as a lever on this middle connecting-plate A, between the two leaves B B′, which are secured to the jamb and the door, there being no fastenings to the connecting-plate A other than the knuckles *a a a* and *b b;* hence the whole weight and strain are on the knuckles, which, without the backing up or re-enforcing, is the weakest part of the hinge. Then, again, the torsion-springs incased in a tube, D, which connects with the knuckle *a* of each hinge, and fills the space between them, the power required to close a heavy door and hold it against the ordinary pressure of the wind acting alike on both the leaf B that is firmly secured to the jamb or door, and the connecting-plate A that has no fastening other than the knuckles *a* and *b*, requiring the connecting-plate to take the strain of both the torsion-springs on both sides of the door, so that unless the knuckles of the connecting-plate are strengthened by backing up, the hinge will be liable to fail in that place only.

In hanging heavy doors with two or more of my improved double-jointed torsion-spring butt-hinges, they must be so placed in relation to each other that the power of the torsion-spring, incased within the tube D and connected with the knuckle a^2 on the leaf B′ of the middle hinge by the pin *d*, is transmitted to the knuckles *a a* of the center-plates A A of the top and bottom hinges, which become

stationary while the door is swung one way, and in operating the other way the power of the spring is transmitted from the knuckles of the center-plate A to the leaves B′ B′ of the top and bottom hinges, thus enabling the torsion-springs within the tubes D to be set and adjusted both for top and bottom at the middle hinge, and when but two butts are used at the bottom hinge, the setting and adjusting of the springs being effected by inserting a lever in one of the series of holes *e e* in the tube D, and turning it to the required torsion, and securing it by inserting the connecting-pin *d*.

By the above-described arrangement of the butts, a person can set and adjust the springs connected with the largest and heaviest door while standing on the floor, they often requiring more than the strength of one man to set them sufficiently, which is very difficult to be accomplished while standing on a step-ladder.

Another point of utility deserves notice in the construction of my improved center connecting-plate with one more knuckle on the one side than on the other for double-jointed butt-hinges, which is, that all the hinges, whether two or more are used, both on the right or left jamb, they can all be cast from three patterns, which is a large saving in the cost of the manufacture.

I do not claim re-enforcing, broadly, with the angular projecting portion around the eye and extending up a short distance along the leaf of the butt, as such a device is shown in the patent of A. Rankin, No. 61,458, January 22, 1867; but

What I claim as new, and desire to secure by Letters Patent, is—

1. A central plate of a three-part double-acting hinge, furnished upon alternate opposite edges with the curved re-enforcement, concentric, or nearly so, with the knuckles, substantially as and for the purposes herein set forth.

2. In a series of double-acting spring-hinges, the central plates with an unequal number of knuckles upon their sides for the purpose of adjustment of the torsion-springs connecting said plates, all as and for the purposes herein set forth.

IRA BUCKMAN.

Witnesses:

J. B. WOODRUFF,
JNO. D. PATTEN.