

(Model.)

L. M. DEVORE.

SPRING HINGE.

No. 282,858.

Patented Aug. 7, 1883.

Fig. 1.

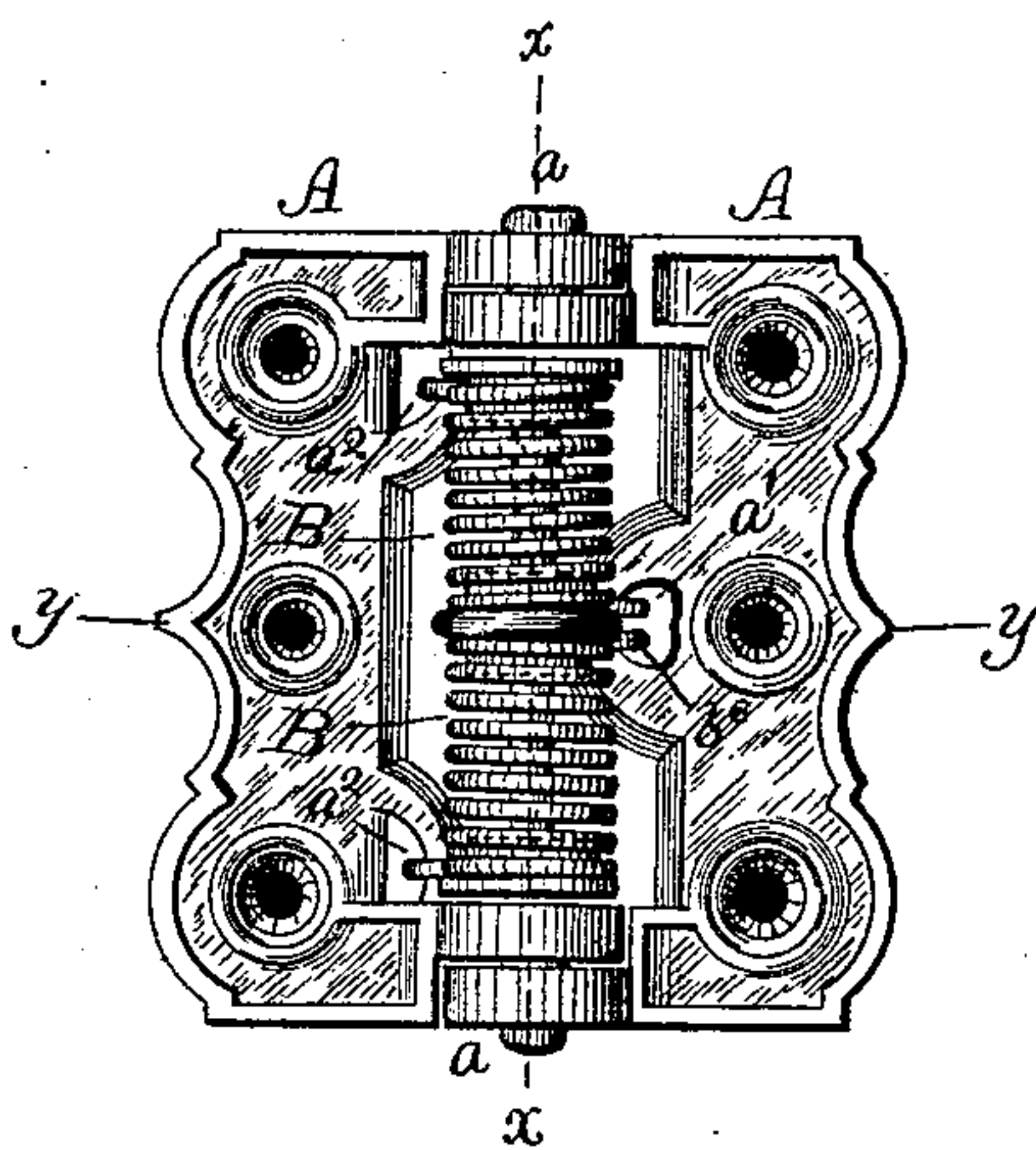


Fig. 2.

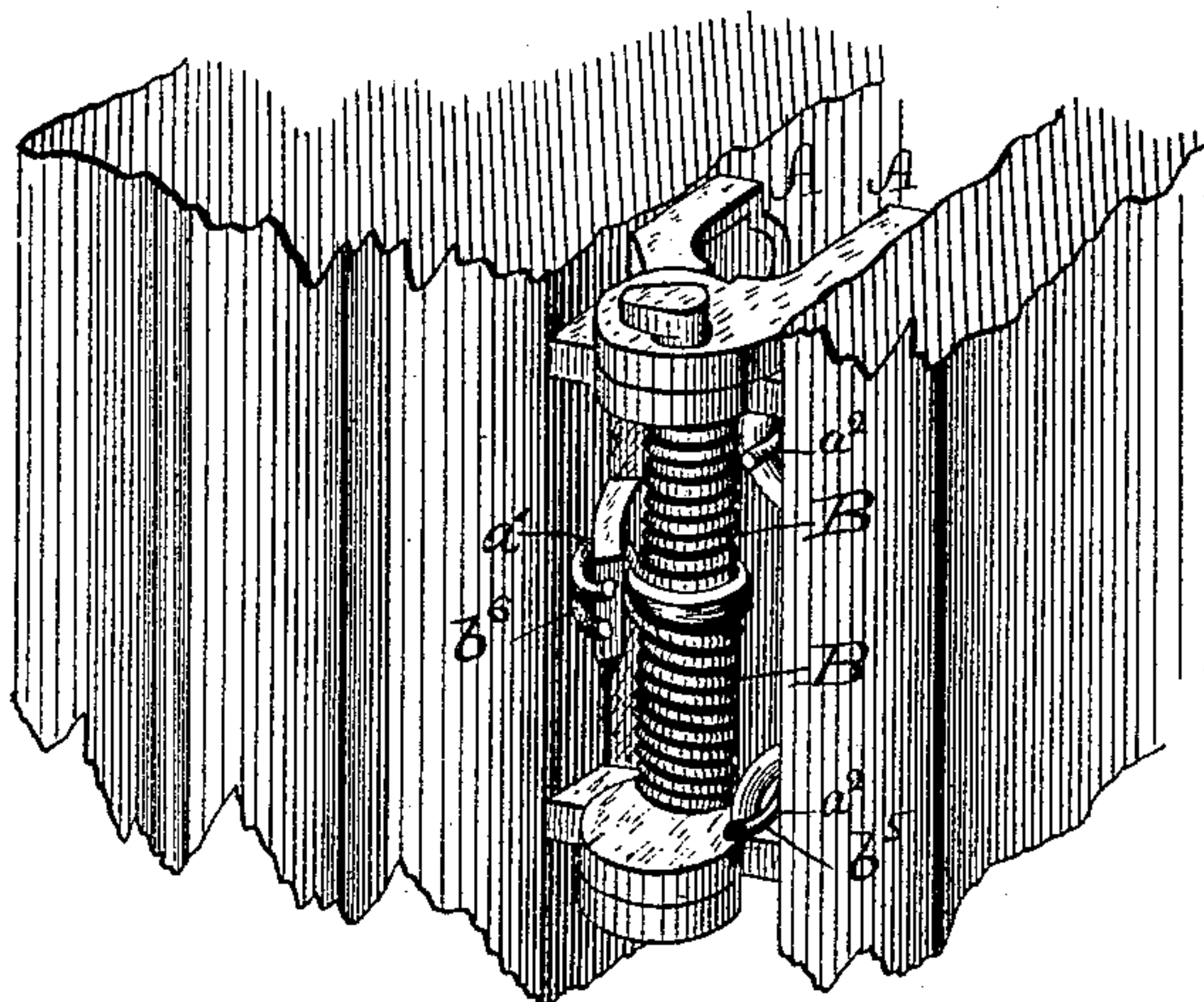


Fig. 3.

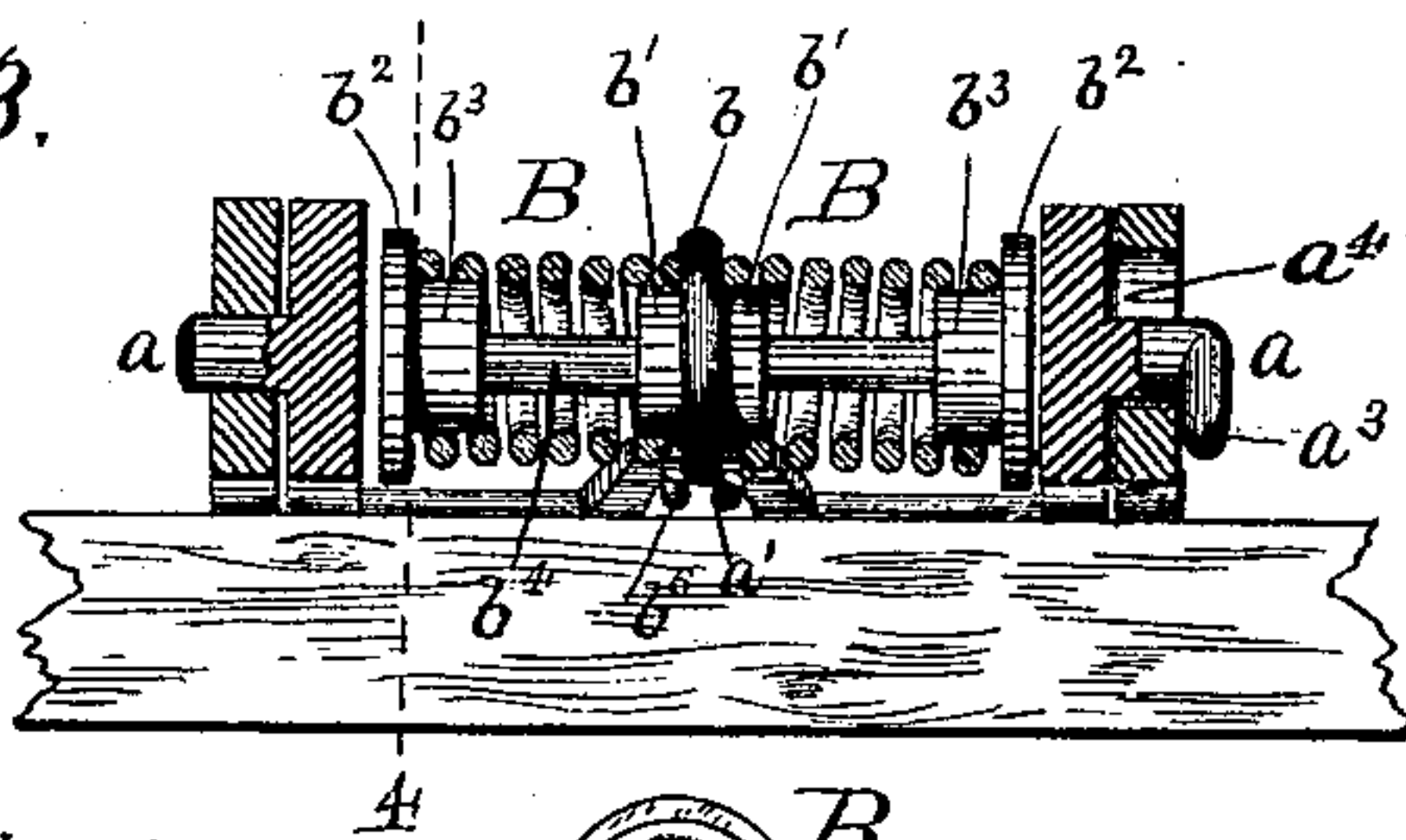
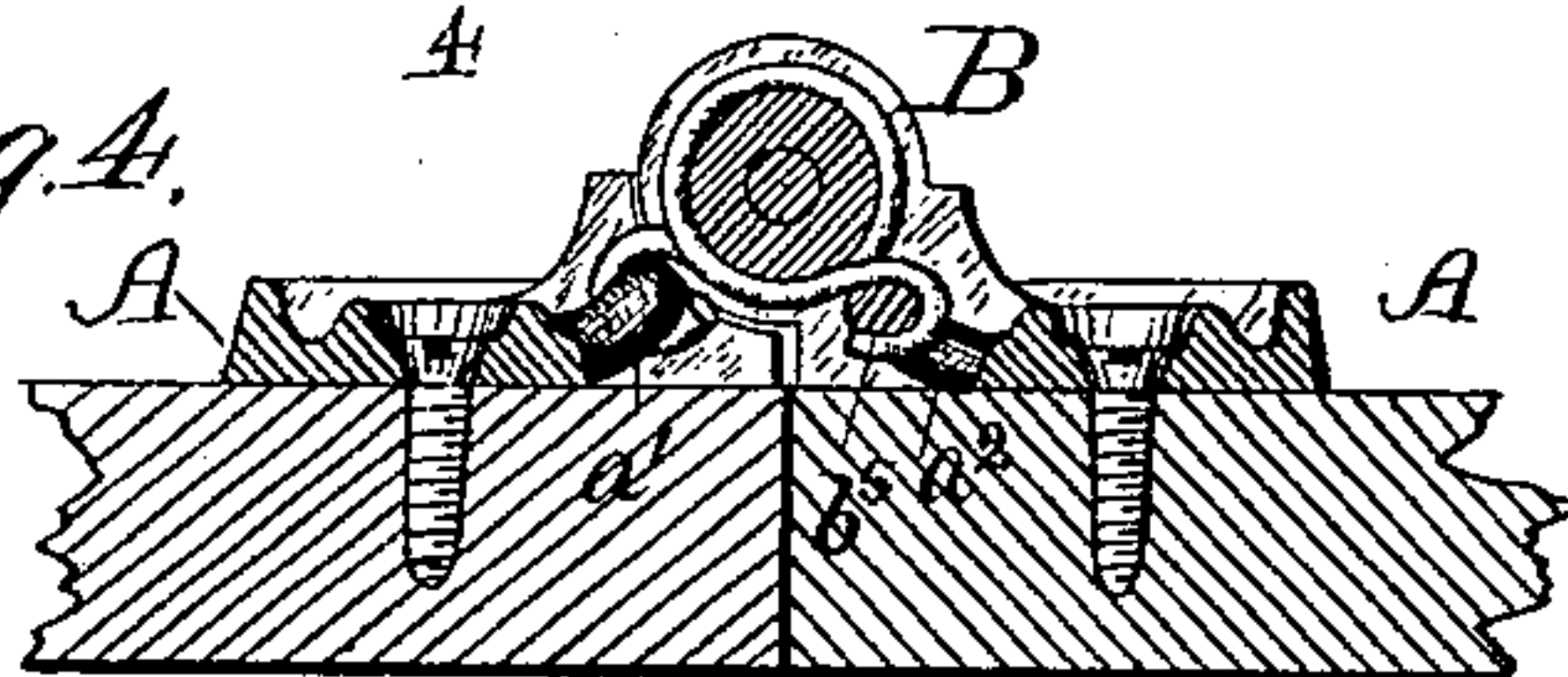


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEVI M. DEVORE, OF FREEPORT, ILLINOIS, ASSIGNOR TO HIMSELF AND ISAAC F. KLECKNER, OF SAME PLACE.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 282,858, dated August 7, 1883.

Application filed December 9, 1882. (Model.)

To all whom it may concern:

Be it known that I, LEVI M. DEVORE, of the city of Freeport, county of Stephenson, and State of Illinois, have invented a new and useful Improvement in Spring-Hinges, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of my improved spring-hinge when the door is closed. Fig. 2 is a perspective view of the same when the door is opened. Fig. 3 is a sectional view taken on the line $x x$, Fig. 1. Fig. 4 is a sectional view taken on the line $y y$, Fig. 1.

The object of my invention is to provide a simple, inexpensive, and durable spring-hinge, so constructed as to hold a door to which it is attached firmly when closed, and resist its accidental opening, and when the door is opened to hold it open until it is purposely closed. Various attempts have been made to provide such a spring-hinge—such, for example, as mounting a single coiled spring, in which the coils all run in one direction, in an independent supporting-frame, with the ends of the coiled spring hooked over the frame upon opposite sides of the coil, that the frame may hold the spring under constant tension and operate the same, and this independent frame being then attached by loose pins to the two leaves of the hinge; but this arrangement of frame-work on loose pins interposed between the coiled spring and the leaves of the hinge is expensive, cumbersome, and liable to derangement in practical use, and is an occasion for frequent repairs. My invention is much more simple in its construction, and is free from these objections, as the coils of the spring therein are attached directly to the leaves of the hinge.

In the drawings, $A A$ represent the two leaves of the hinge united at their ends by pintles $a a$, the ears through which the pintles pass being elevated above the level of the leaves. One of the leaves A is provided with a loop or opening, a' , at or near the center thereof, upon its inner edge, and the other leaf with loops or openings $a^2 a^2$ on the inner edge thereof, near the ends of the same, as shown in the drawings. One or both of the pintles $a a$ may be made with a projection, a^3 , upon the

outer end, which forms a bearing against the outer side of the adjacent ear, and, as in such case the pintles are cast upon the inner ears, one upon each leaf. The projection a^3 forms a bearing supporting a portion of the weight of the door. In attaching the leaves together the projection a^3 passes through a slot, a^4 , in the outer ear when the leaves are opened to their widest extent. Then in operating the door the projection passes around the outer side of the ear, as above set forth.

The springs $B B$ are two ordinary spring-coils coiled in opposite directions, with the ends of each coil formed into hooks. These two coils are placed in the same longitudinal line, and a collar, b , provided on each side with annular flanges b' , Fig. 3, is inserted between them, so that the inner coils of each spring shall rest upon and inclose the flanges b' of the collar b . Collars b^2 , with annular flanges b^3 , are also inserted in the outer ends of each spring, so that the outer coils shall inclose the flanges b^3 . The springs and collars are then united together by the insertion of a loose central arbor or axis of wire, b^4 , the ends of which are upset so as to retain the collars b^2 . The springs are then attached directly to the hinge in the following manner: The hooks b^5 , at the outer ends of the springs, are brought to the same side of the axis and then hooked into the loops $a^2 a^2$ upon the inner edge of one of the leaves A , near its ends. A cord or wire is then passed under the coils and fastened to the hooks b^6 upon the inner ends of the coils, when these hooks are drawn together around under the coils by the cord or wire until the hooks b^6 can be inserted into the loop a' upon the other leaf, A , of the hinge, near the center of the inner edge thereof. After the insertion of the hooks b^6 into the leaf a' the cord or wire is withdrawn and the springs remain attached to the hinge and under strong tension. An important advantage is secured by this arrangement of the springs with the end hooks $b^5 b^5$ hooking into one leaf of the hinge upon the same side, near the ends thereof, and the middle hooks b^5 hooking into the other leaf of the hinge upon the opposite side, as this arrangement equalizes the strain upon the

springs and prevents any twisting or torsion of the longitudinal axis of the springs when in operation.

When the spring-hinge above described is 5 attached to a door, the tension of the spring exerted directly upon the leaves of the hinge forces the door into a closed position; but when the door is opened widely the same tension of the spring operates to hold the door open, owing to the changed position of the leaves A A, 10 with their loops, with reference to the pintles a , the loops being all upon one side of the longitudinal axis of the pintles when the door is closed, and all upon the opposite side of this axis 15 when the door is open, while the tension of the springs is exerted directly upon the loops alike in both cases.

If preferred, instead of two coiled springs being employed, the hooks b^6 at the center of 20 the hinge may be united in a loop, forming a continuous wire, in which case the spring would be coiled from the center in opposite directions; but this substitution of a single spring coiled from the center in opposite directions 25 would perform the same function as my two springs, and would be simply an equivalent of the same; also, in the preferable construction, the collar b is made narrower upon the under side adjacent to the hooks b^6 , as shown 30 in Fig. 3, which enables these hooks to be brought closer to each other and better accommodates the coils of the springs.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a spring-hinge, the combination of two 35 coiled springs set in the same longitudinal line, but coiled in opposite directions, and mounted upon an inclosed arbor detached from the pintles and moving independently thereof, with 40 the leaves of the hinge to which the ends of the springs are attached, substantially as and for the purpose set forth.

2. In a spring-hinge, the combination of the 45 leaves thereof, with two coiled springs set in the same longitudinal line, and within which flanged collars are inserted one at each outer end, and a double-flanged collar in the middle between the springs, the collars being mounted 50 upon a longitudinal arbor detached from the pintles and moving independently thereof, substantially as described.

3. In a spring-hinge, the combination of the 55 leaves A A, provided with loops a' and a^2 , and two coiled springs set in the same longitudinal line upon an arbor moving independently of the axis of the pintles, and provided with the hooks b^5 and b^6 , substantially as and for the purposes set forth.

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Witnesses:

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