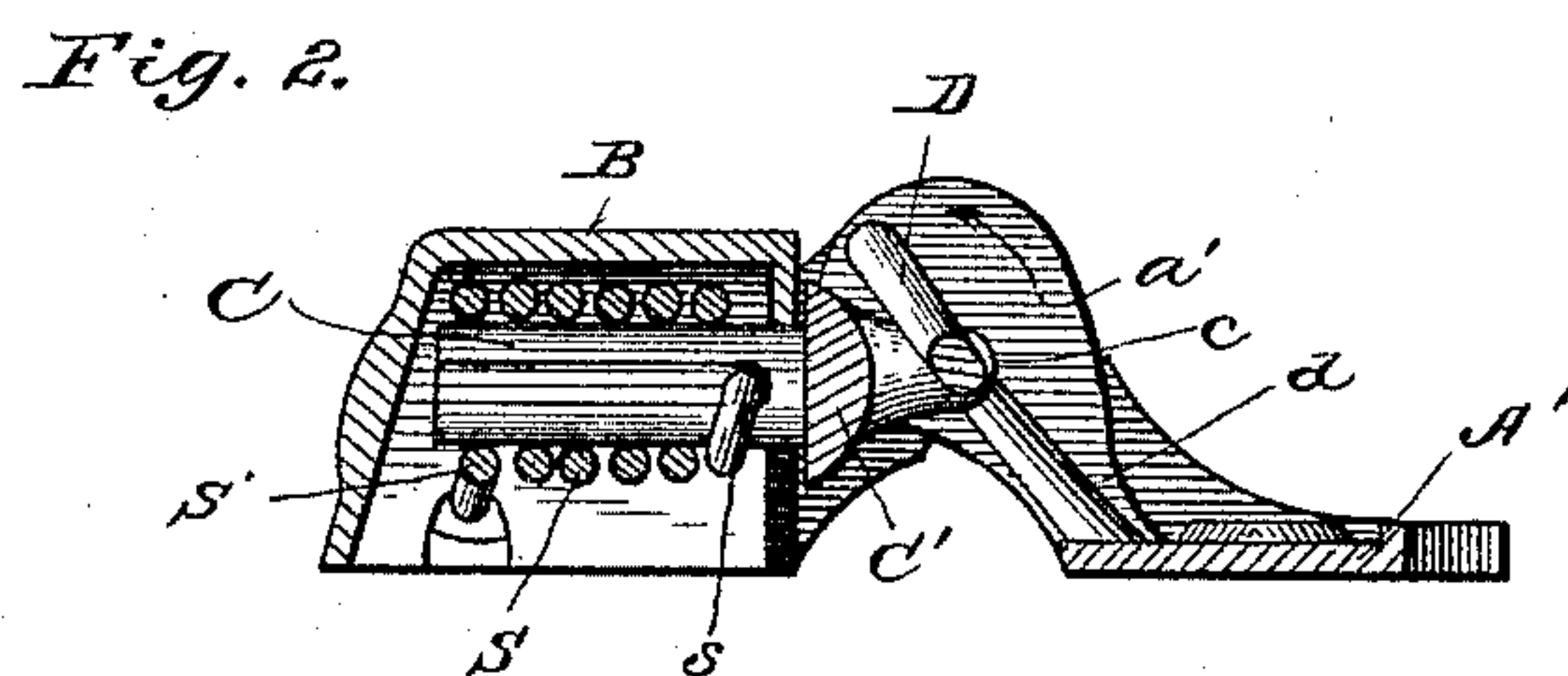
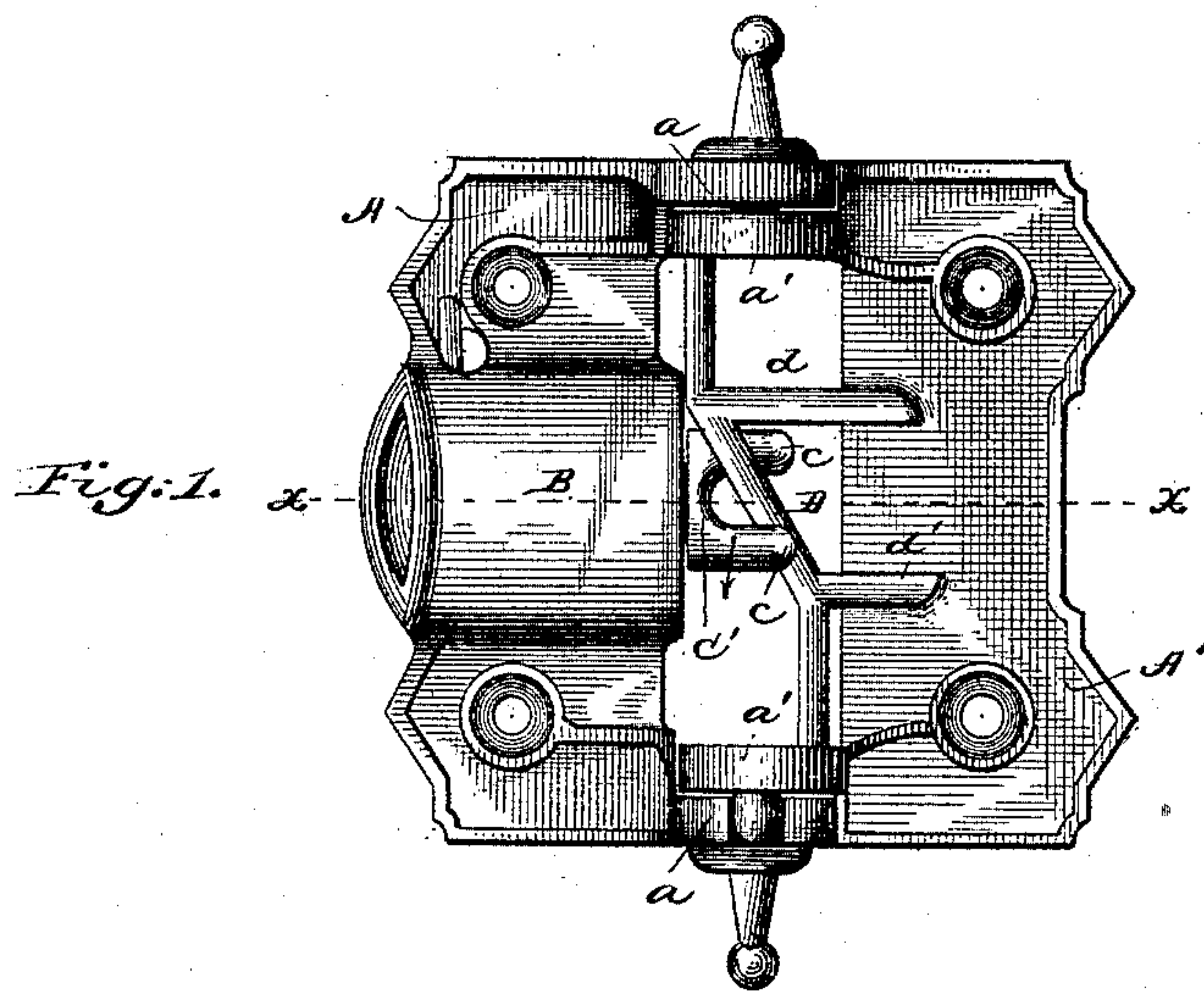


(No Model.)

F. W. HOFFER.  
SPRING HINGE.

No. 443,078.

Patented Dec. 16, 1890.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

FREDERICK W. HOEFER, OF FREEPORT, ILLINOIS, ASSIGNOR TO CHARLES MORGAN, ALBERT BAUMGARTEN, AND EDGAR H. MORGAN, ALL OF SAME PLACE.

## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 443,078, dated December 16, 1890.

Application filed June 14, 1890. Serial No. 355,467. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK W. HOEFER, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges; 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 pertains to make and use the same.

My invention relates to improvements in reversing spring-hinges or hinges in which the force of the spring tends to hold the hinge in either a completely closed or completely opened position.

The invention is fully described and explained in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a top plan of a hinge embodying my improvement; and Fig. 2 is a transverse section thereof through the line *x x*, Fig. 1.

In the views, *A A'* are two leaves of suitable form, provided with ears *a a'*, connected by pintles in the usual manner. On the leaf *A* is formed a raised case or shell *B*, open below to admit a spring *S*, which is coiled about an arbor *C*, lying at right angles to the pintle-line of the hinge. One end *s* of the spring enters a groove in the arbor, or is connected therewith in any other suitable manner, while the other end *s'* passes through an opening in the side of the case *B* and rests upon the leaf *A*. The spring thus arranged tends to resist rotation of the arbor, and any desired degree of tension may be developed in the spring by rotating the arbor, the force of the spring when thus under tension being constantly exerted to rotate the arbor in the direction indicated by the arrow in Fig. 1. The projecting end of the arbor is provided with a head *C'*, on which are formed two lugs or fingers *c c*, lying on opposite sides of the axis of the arbor and preferably equidistant therefrom. The head *C'* is in effect a crank-plate formed on the end of the arbor *C*, and the fingers *c c* are oppositely-placed crank-pins formed on

the plate. On the leaf *A'* is formed an obliquely-placed and preferably cylindrical rod *D*, connected with the leaf by means of integrally-formed braces *d d'*, which stiffen and strengthen the structure and hold the rod securely in position. The central portion of the rod *D* lies between the fingers or crank-pins *c c*, the central point of the rod being preferably in the line of the axis of the hinge and also in the line of the axis of the arbor *C*. It is evident that the point of contact of each of the fingers *c c* with the rod *D* must be eccentric with reference to the axis of the hinge, and that if the leaf *A'* be turned about its axis while the leaf *A* remains stationary each of said points must move approximately in a circle about the axis of the hinge. As the parts are shown, the movements of the leaf *A'* and ear *a'* in the direction indicated by the arrow in Fig. 2 must move the rod *D* and its point of contact with the fingers *c c* in such a direction as to increase the tension of the spring, and when the rotation of the leaf is continued through a sufficient angular space its further rotation must relax or lessen the tension upon the spring. It is evident, therefore, that the rotation of the leaf *A'*, from the position in which it is shown in the direction indicated by the arrow in Fig. 2, will at first be resisted by the spring *S*, but that after the leaf has been swung through a certain angle its further movement will be assisted by the spring; or, in other words, that the spring tends to hold the hinge at either of its limits of movement, and is therefore a reversing-spring. The angle through which the leaf may be swung before the spring reverses its action depends entirely upon the relative positions of the rod *D* and the axis of the arbor *C*.

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

The combination, with two leaves having suitable pivotal connections, of the rod oblique to the hinge-axis, formed integrally with one of the leaves, a spring-arbor mounted



upon the other leaf at right angles to said  
axis and provided with a forked head whose  
branches or fingers rest against opposite  
sides of said rod, and a spring coiled about  
5 said arbor and imparting rotary force there-  
to, substantially as and for the purpose set  
forth.

In testimony whereof I have signed this  
specification in the presence of two subscrib-  
ing witnesses.

FREDERICK W. HOFER.

Witnesses:

JAMES H. STEARNS,  
ALFRED ZAPP.