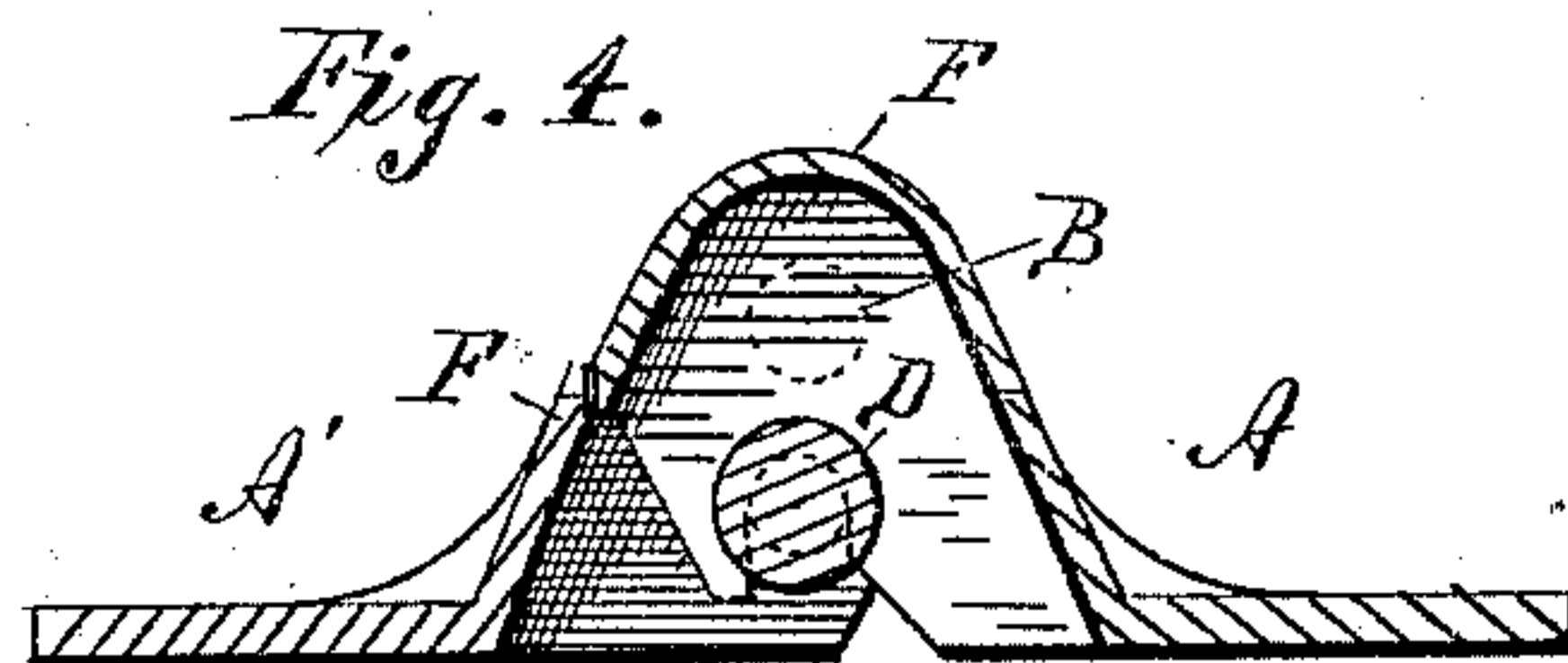
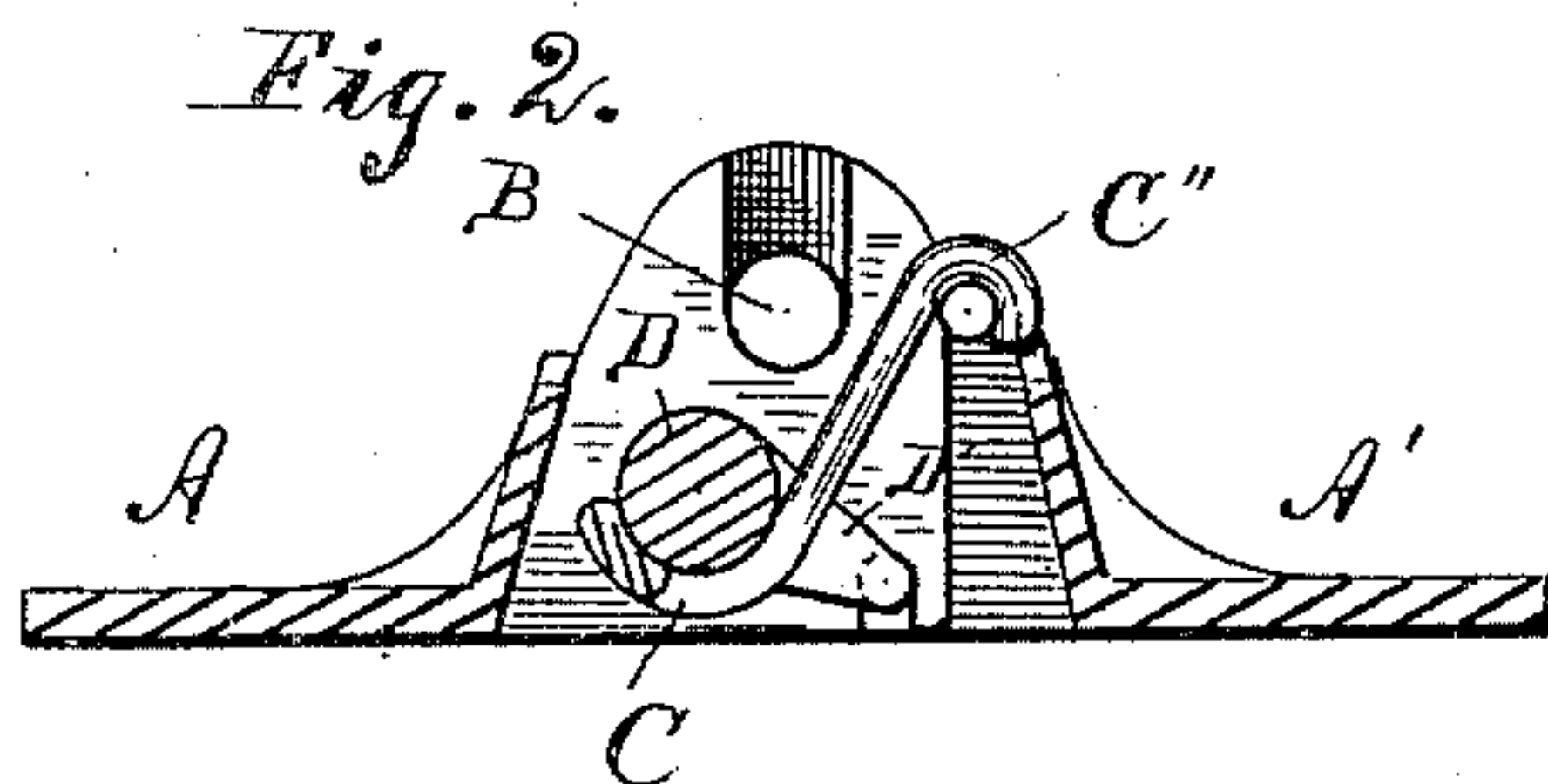
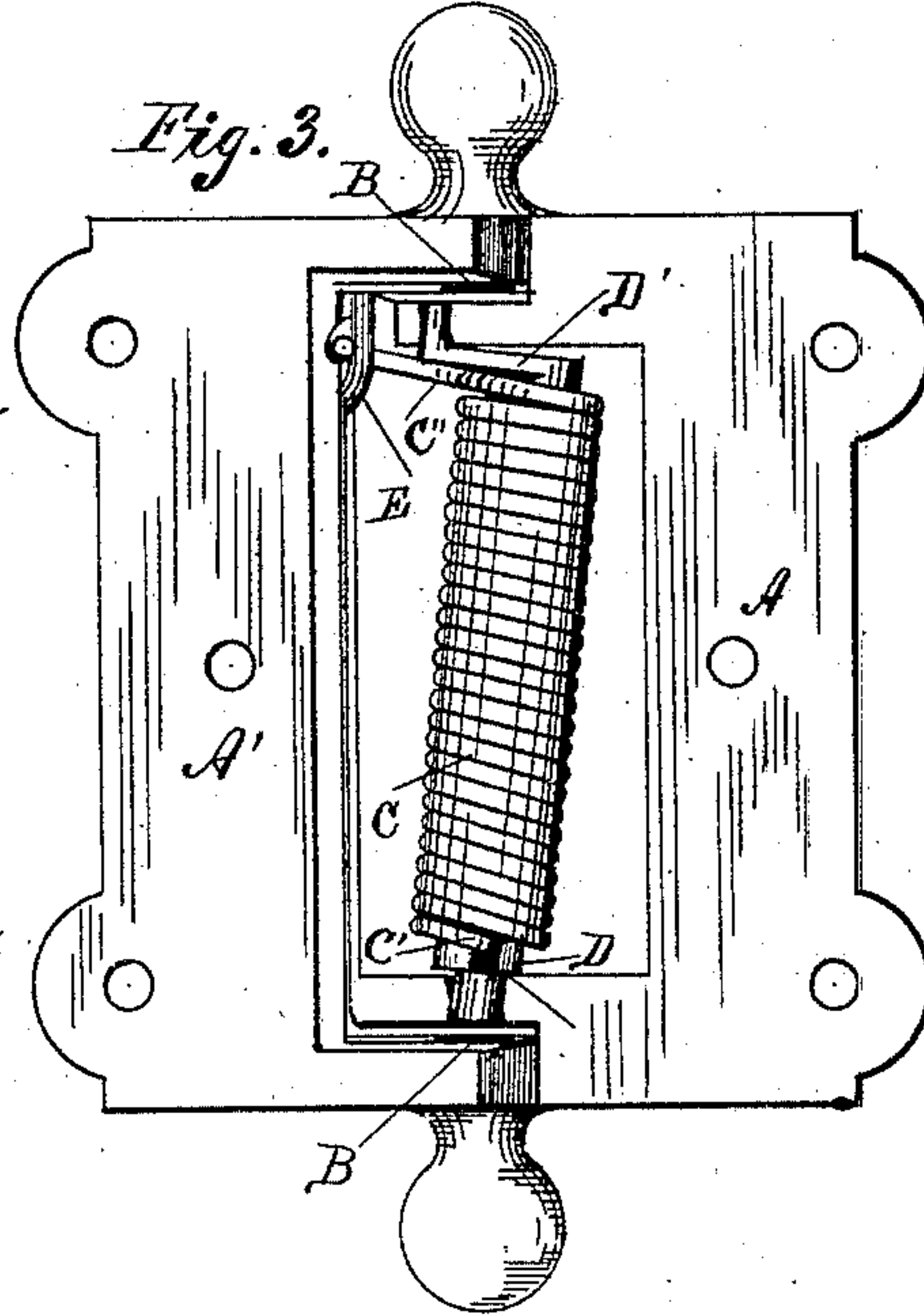
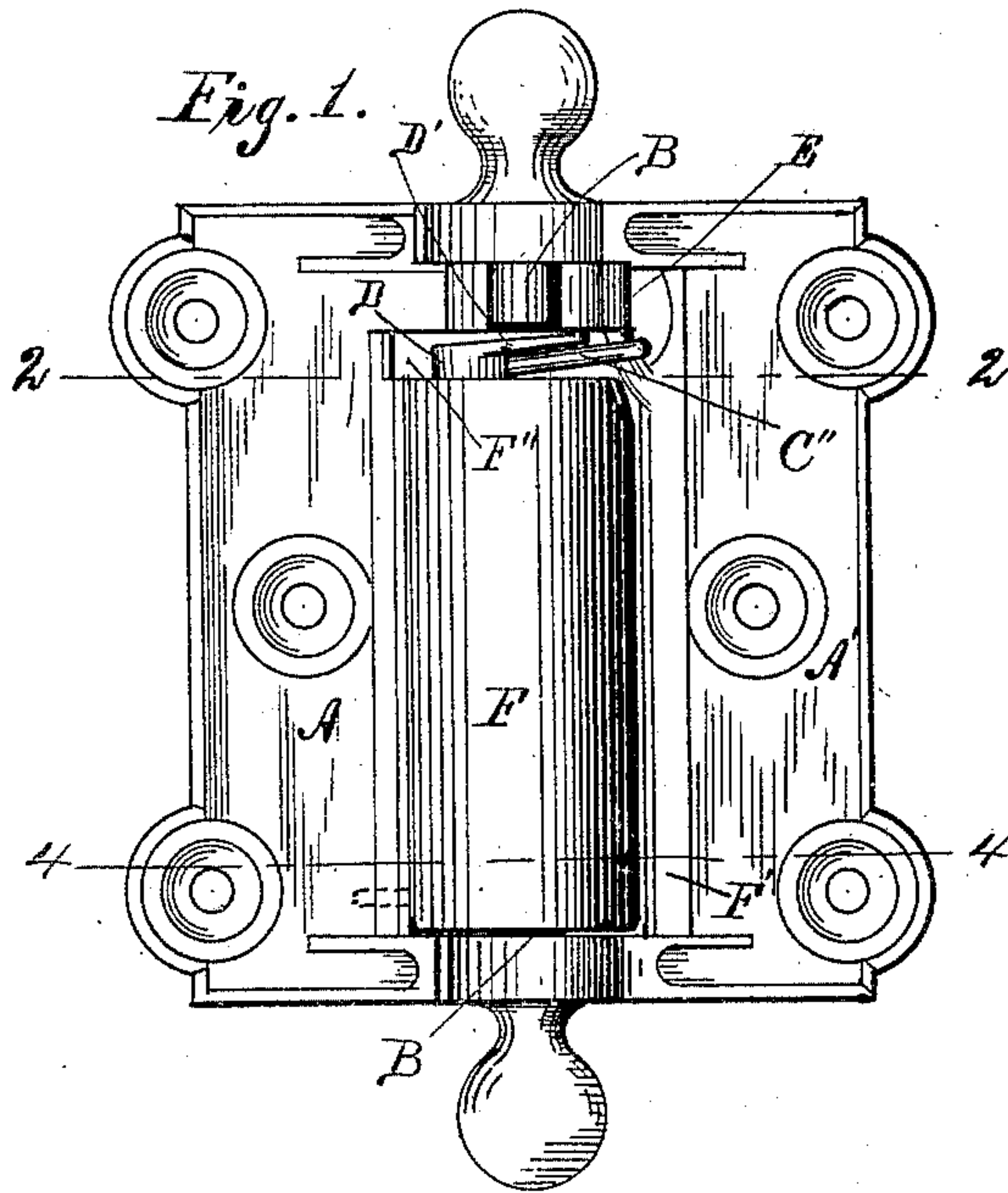


(Model.)

M. REDLINGER.  
SPRING HINGE.

No. 467,472.

Patented Jan. 19, 1892.



Witnesses.  
*Amber Runge*  
*J. L. Curtis*

Inventor.  
*Michael Redlinger*  
By *Wilbur & Co.*  
*Attys.*



# UNITED STATES PATENT OFFICE.

MICHAEL REDLINGER, OF FREEPORT, ILLINOIS.

## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 467,472, dated January 19, 1892.

Application filed February 24, 1891. Serial No. 382,529. (Model.)

*To all whom it may concern:*

Be it known that I, MICHAEL REDLINGER, a citizen of the United States, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This hinge holds the door either shut or fully open, reversing its action when the door is so far opened that the line of strain between the two leaves crosses the pintle-line. It is fully shown in the drawings forming a part of this specification and designated as—

Figure 1, a plan of the hinge, parts being broken away; Fig. 2, a section on the line 2 2, Fig. 1; Fig. 3, a bottom plan of the hinge; Fig. 4, a section on the line 4 4, Fig. 1.

In the figures, A A' are leaves united in the usual way by short pintles B B at some distance outside the general plane of the leaves. In the middle of the hinge lies a coil C, approximately parallel to the pintle-line, and within the coil is an arbor D, whose ends are both pivotally mounted in the ears of the leaf A and a little to one side of the pintle-line. One end of the coil is secured to the arbor at C', and the other is formed into a hook C'', which engages a bail or pin E upon the opposite leaf. The pivot of this end of the arbor is eccentric with reference to the coil, the arbor being bent at the end of the coil to form a crank-arm D', which, when the hinge is closed, is nearly perpendicular to the hook C''. Both pivot-bearings are well down toward the plane of the leaves, and both are open below and slightly conical for reasons that will presently appear. The coil is preferably concealed by a shell F F', integral with the leaves and for the most part belonging to one of them, the greater part turning within the less as the hinge opens. When the shell is present, it is slotted transversely at F'' to form a passage for the hook C''. The hinge being closed, the relative position of the

crank-arm, hook, and hinge-pintle are as illustrated in Fig. 2. If the leaf A be stationary and the leaf A' be swung about the pintle, as in opening the hinge, the bail will rise and swing to the left in the arc of a circle whose center is the pintle. The hook C'' must move with it, but cannot without raising the end of the arbor to substantially the same extent; but as the force thus applied acts at right angles to the crank-arm it is all exerted to produce rotation upon the crank-pivot in a direction contrary to that of the bail's motion and thus to coil the spring through the connection of the latter with the opposite end of the arbor. As the bail rises far more rapidly at first than when in the upper part of its path, the spring is at first wound rapidly, and thus, so far as this part of the apparatus is concerned, has great closing power when the door is only slightly open. As the bail passes on it at length reaches a fixed line passing through the crank-pivot and the pintle-axis, where the whole force of the spring is exerted upon the pintle and without tending to produce rotation. As soon as this point is passed the bail approaches the crank-pivot, and this slight approach allows a rapid uncoiling, for the bail being in nearly the line of the crank a slight approach allows the crank to swing a considerable distance toward its original position.

The action of the parts in closing is evidently the reverse of that described.

As the arbor has a crank at one end only, it moves in a conical path, and hence the bearings at each end must be slightly conical, and the shell must be large enough to permit such motion. This bodily movement of the coil is, however, only slight, as the ear, crank, and spring keep almost the same relative position, except at the beginning and end of the motion, the hook slipping upon the bail or rod as they swing about the pintle.

If that end of the spring-wire that has been described as engaging the arbor be carried out upon the leaf A, as indicated in dotted lines, or be otherwise secured to that leaf, leaving the arbor free to turn in the coil, the hinge is still operative and the description still applies, except that torsion depends, as in most hinges, directly upon the relative movement of the two leaves instead of upon

the rotation of the arbor by means of the crank. It is evident that the dead-point will be varied by varying the location of the eccentric pivot or of the bail. So, too, the  
5 length and location of the crank arm may be changed, and the opening of the closed hinge will be more and more difficult as the crank-arm departs from the perpendicular to the hook C'', this being a change made at the  
10 time of manufacture, unless it be preferred to make the crank adjustable.

What I claim is—

The combination, with two suitably-con-

nected hinge-leaves, of a spring-arbor pivoted at both ends in one of them, but with one 15 end pivot eccentric with reference to the arbor's axis, and a spring coiled about the arbor and provided at the end next the eccentric pivot with an arm engaging the opposite leaf.

In testimony whereof I affix my signature in 20 presence of two witnesses.

MICHAEL REDLINGER.

Witnesses:

G. S. MANSFIELD,  
M. H. WILCOXON.