

(Model.)

C. ZATTAU.  
SPRING HINGE.

No. 421,342.

Patented Feb. 11, 1890.

Fig. 1.

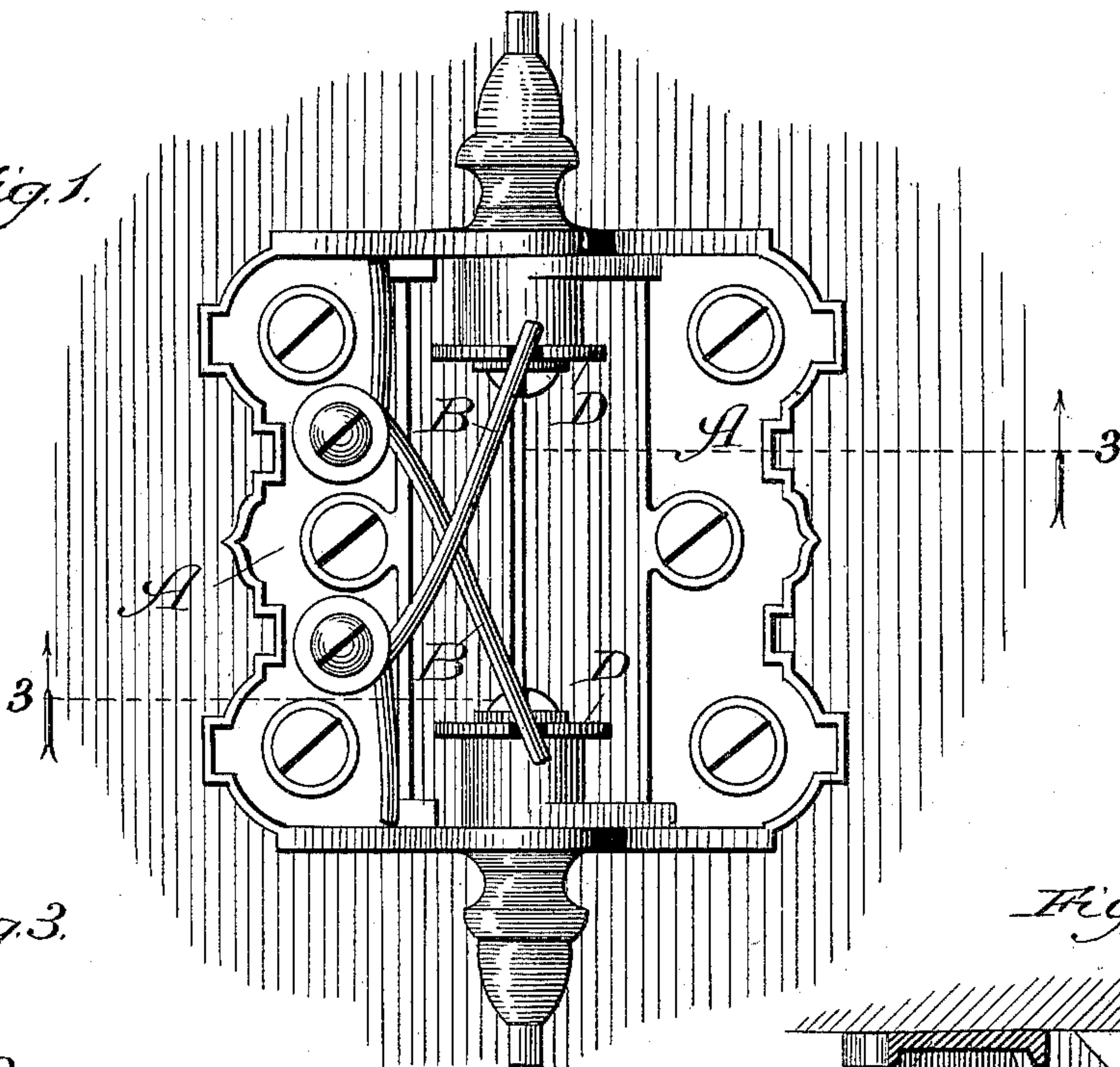


Fig. 3.

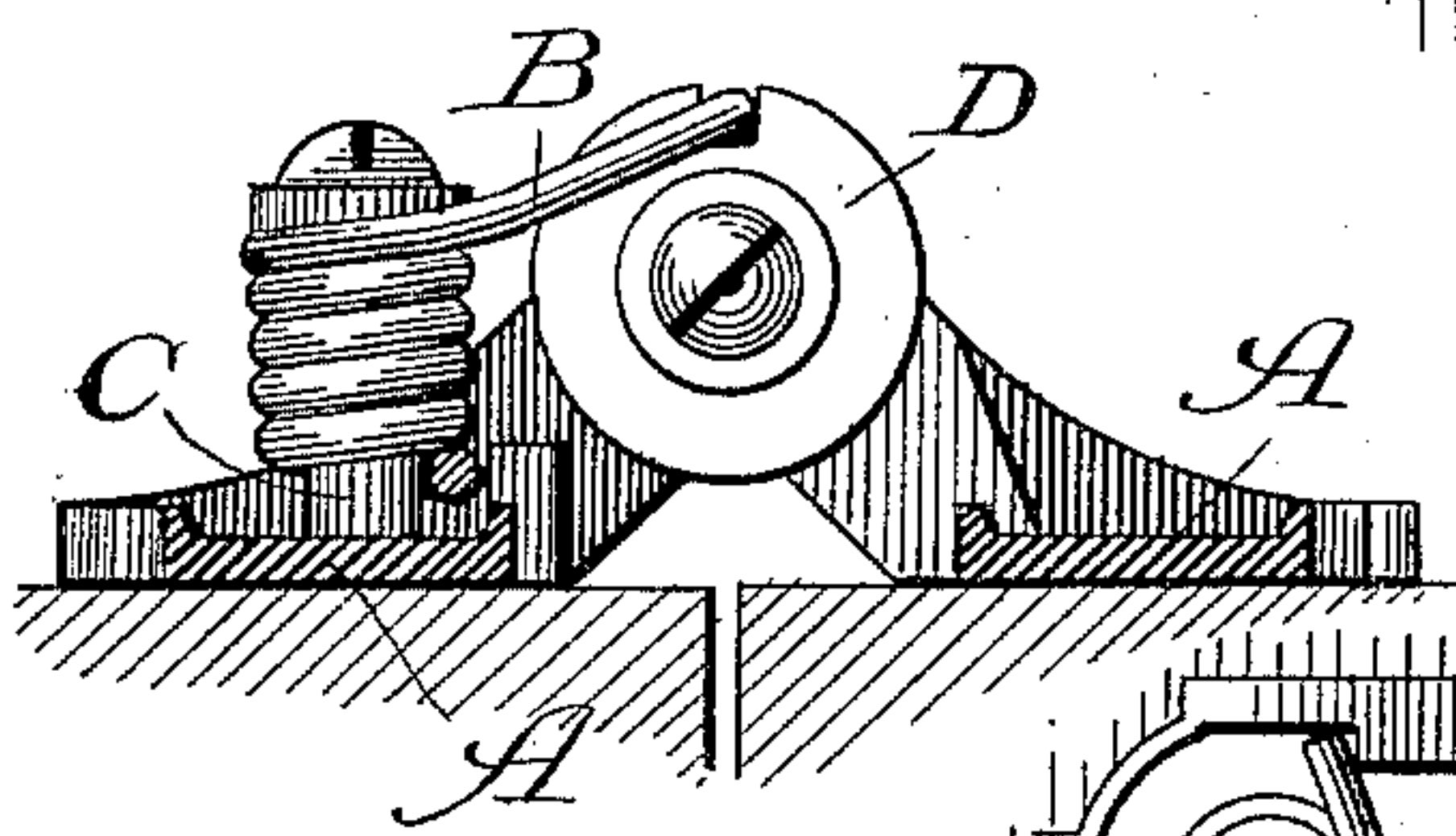


Fig. 4.

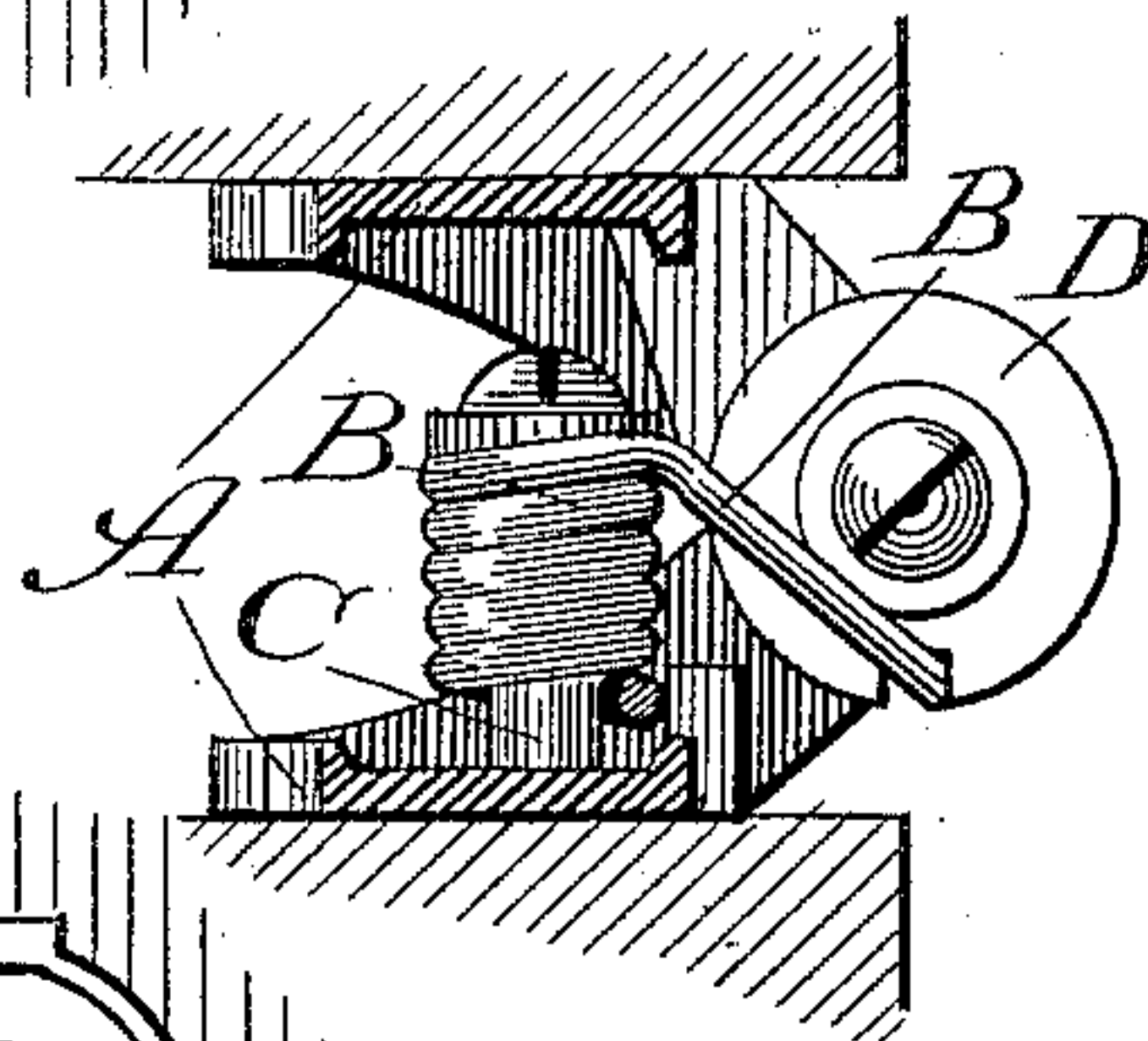
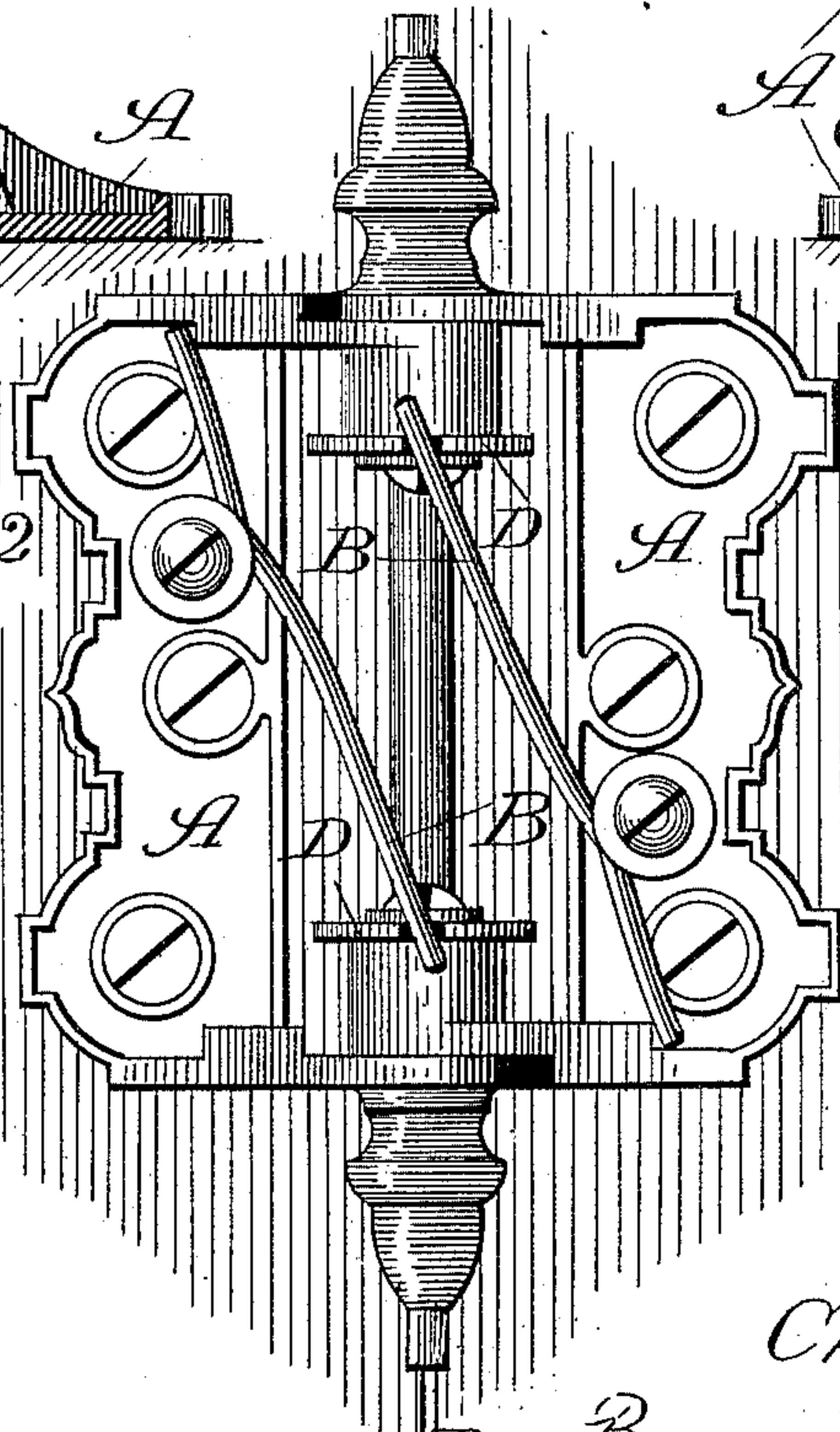


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 421,342, dated February 11, 1890.

Application filed June 22, 1888. Serial No. 278,057. (Model)

*To all whom it may concern:*

Be it known that I, CHARLES ZATTAU, a citizen of the United States, residing at Morris, Grundy county, Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

The object of my improvement is to make a spring-hinge for doors, gates, shutters, and similar purposes, which in operation will tend to hold the door or gate shut until the same is opened beyond a certain point, when it will tend to hold it open; and my invention consists in the features and details of construction, hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of my improved spring-hinge. Fig. 2 is a plan view of the same somewhat modified. Fig. 3 is a transverse section of the hinge open, taken in the line 3 3 of Fig. 1, looking in the direction of the arrows; and Fig. 4 is a transverse view of the same with the hinge closed.

In the drawings, A A represent the leaves of the hinge; B B, the springs; C C, the posts or studs around which the springs are coiled; D D, collars non-rotatably connected to the ears or lugs of one of the leaves of the hinge, in which the free ends of the springs are held during the rotation of the leaves of the hinge on their axes.

In making my improved spring-hinge, I take two leaves of suitable form and provide them with ears or lugs, rising above the plane of the hinge-leaves, as shown in Figs. 3 and 4 of the drawings. These ears or lugs are arranged to embrace each other or fit together in such a way that they may be pivoted together, and thus pivotally connect the leaves of the hinge. The pivot connecting the ears or lugs of the hinge-leaves may consist of rivets or an arbor or pintle extending through from one end of the hinge to the other, as shown in Fig. 2. As the only object of the pintle or rivets is to connect the leaves of the hinge together, so that they may turn or rotate about the pivotal point, which may be termed the "axis of the hinge," I am not particular whether simply rivets, pintles, or other means be employed to connect the leaves of the hinge together. On one of the hinge-leaves, as shown in Fig. 1, or on both of the

hinge-leaves, as shown in Fig. 2, I arrange posts or studs, which project up some distance above the surface of the hinge-leaf. These posts may be cast with the hinge-leaves or may consist of a separate piece, afterward inserted in or firmly secured to the hinge-leaves. They are preferably provided with a cap at the top, and may be of such height as desired. I then take pieces of wire of suitable size, and containing as much elasticity or resiliency as may be desired, and coil one of their ends around the posts or studs as many times as may be desired, and so that the coils will not slip or turn around the posts. I have shown several coils in Figs. 3 and 4, but do not desire to limit myself to any particular number of coils around the studs or posts, as it is obvious that the ends of the wires could be bent so as to form less than one complete coil and still secure the object desired.

When I have coiled the wires sufficiently to bring them upon or nearly upon the same plane as the axis of the hinge, I carry their free ends from the posts to the collars D D, which are preferably arranged upon the inner edges of the inner lugs or ears of the hinge-leaves. These collars may be cast integral with the inner lugs or ears of the hinge-leaves, or may be made in separate pieces and non-rotatably connected with or attached thereto. They are provided, preferably, with notches, although holes may be employed, which receive and hold the free ends of the wires, so that, as they rotate with the rotation of the leaf of the hinge to which they are attached, they will carry the free ends of the wires around with them. Their arrangement will be readily understood by an inspection of the drawings. As before said, these posts, around which the spring-wires are coiled, may be on the same leaf of the hinge or upon both leaves of the hinge. In either case they are intended to be arranged so that the free end of each of the spring-wires will be directed in the coiling toward the collar on the lug or ear nearest the other end of the hinge from that containing the particular post around which it is coiled.

When the parts have been constructed and arranged as above described, and the free end



of each of the spring-wires arranged in the notch or hole of the collar with which it is connected, it is obvious that the rotation of the spring-leaves around the axis of the spring will carry the free ends of each of the spring-wires in that direction which tends to coil them. The tendency of these spring-wires will therefore be to hold the spring against the force rotating the leaves until they have been rotated a quarter-revolution. When this point is reached, the free ends of the spring-wires will have passed beyond the dead-center of the axis of the spring, and will immediately tend to force the spring farther open until a half-revolution is reached. In this way the tendency of the spring will be to hold the door or shutter with which they are connected closed until it has been opened ninety degrees, after which they will tend to open it another ninety degrees, and hold it open until force has been applied to bring it back to a point within the first ninety degrees of its revolution, when they will immediately tend to close the door or gate and hold it shut.

In the claims I shall speak of the spring wire or wires as "fixedly connected" to the hinge-leaves at one end and "loosely connected" at the other, and as being connected to the hinge-leaves at points above and below the "transverse center" of the hinge. While I do not consider these terms ambiguous, yet, to prevent any possible misunderstanding of my meaning, I will say that I speak of the spring wire or wires as fixedly connected at one end to indicate that they are fastened in some way to the hinge-leaf so that they will be held in a condition that will permit the wire to be further bent or coiled to increase its tension, and as loosely connected at the other end to indicate that the wire and the hinge-leaf may move or change their position with relation to each other as the wire is bent or coiled by the opening or closing of the hinge,

and as connected to the hinge-leaves above and below the transverse center of the hinge to indicate that they are connected above and below a line drawn transversely through the center of the hinge measuring from its end.

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

1. In a spring-hinge, the combination of two leaves of suitable form, having their ears or lugs pivotally connected together at a point outside of the plane of the hinge-leaves, and a spring wire or wires arranged at an acute angle to the axis of the hinge, having one end fixedly connected to one of the hinge-leaves and the other end loosely connected to the other one of the hinge-leaves, and moved by the rotation of the hinge-leaves in that direction which increases the tension of the spring wire or wires until the door or gate on which the hinge is mounted is partially opened, after which the further opening of the gate or door diminishes the tension of the spring wire or wires, substantially as described.

2. In a spring-hinge, the combination of two leaves of suitable form, having their ears or lugs pivotally connected together at a point outside of the plane of the hinge-leaves, and a spring wire or wires connected to the hinge-leaves, respectively, at points above and below the transverse center of the hinge and moved by the rotation of the hinge-leaves in that direction which increases the tension of the spring wire or wires until the door or gate on which the hinge is mounted is partially opened, after which the further opening of the gate or door diminishes the tension of the spring wire or wires, substantially as described.

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