

(No Model.)

W. GILFILLAN.

DOOR SPRING.

No. 356,633.

Patented Jan. 25, 1887.

Fig. 1.

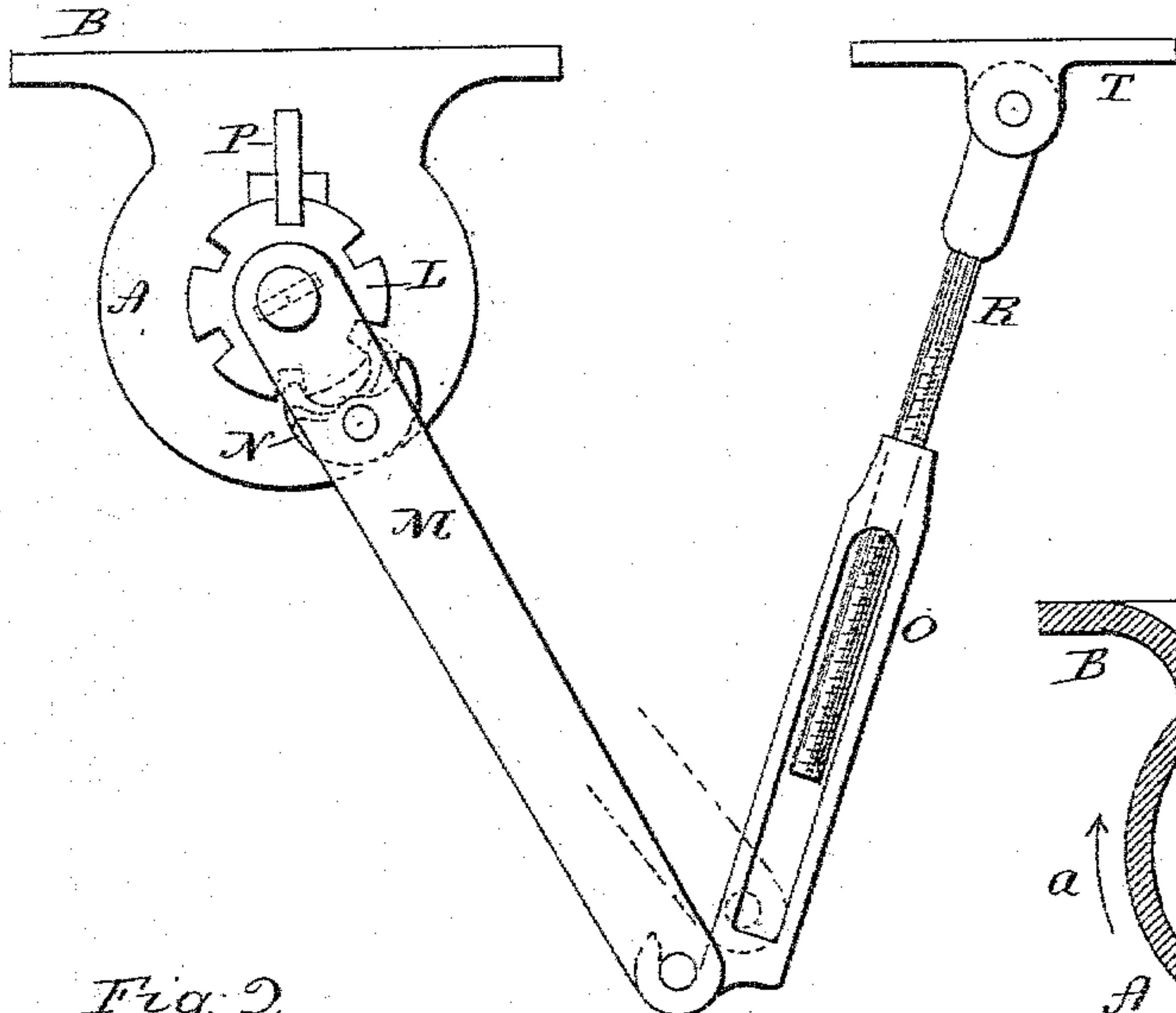


Fig. 3.

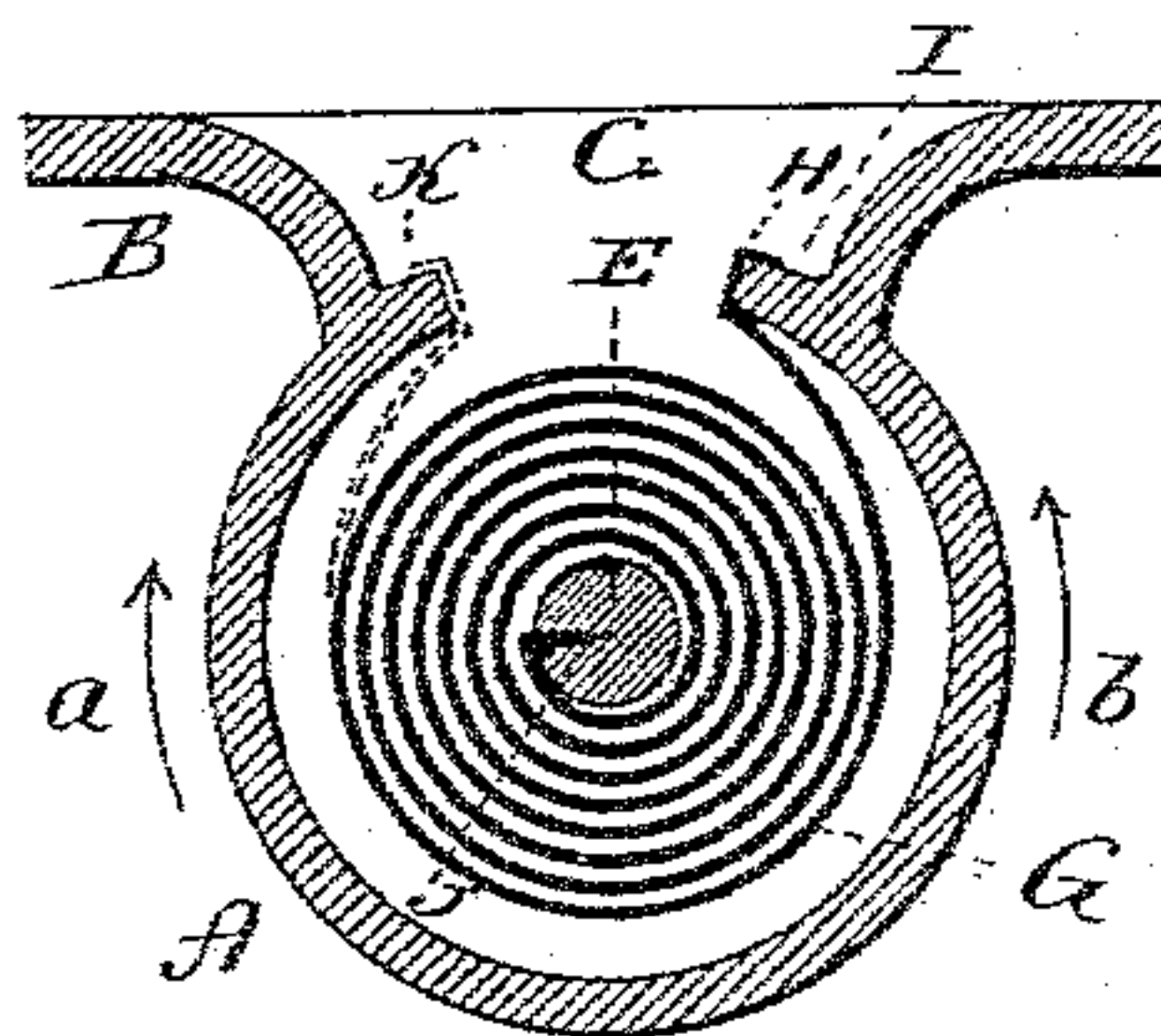


Fig. 2.

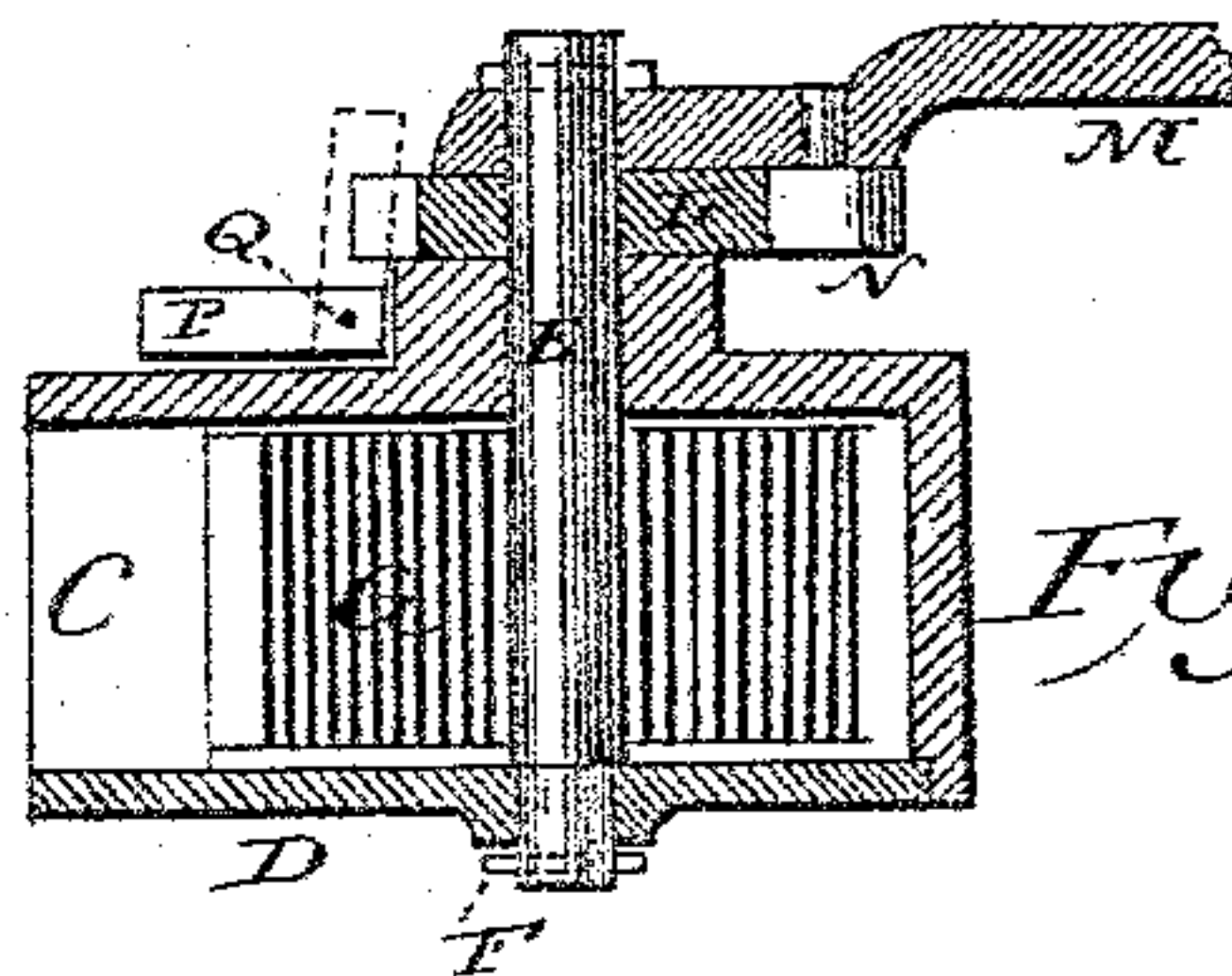
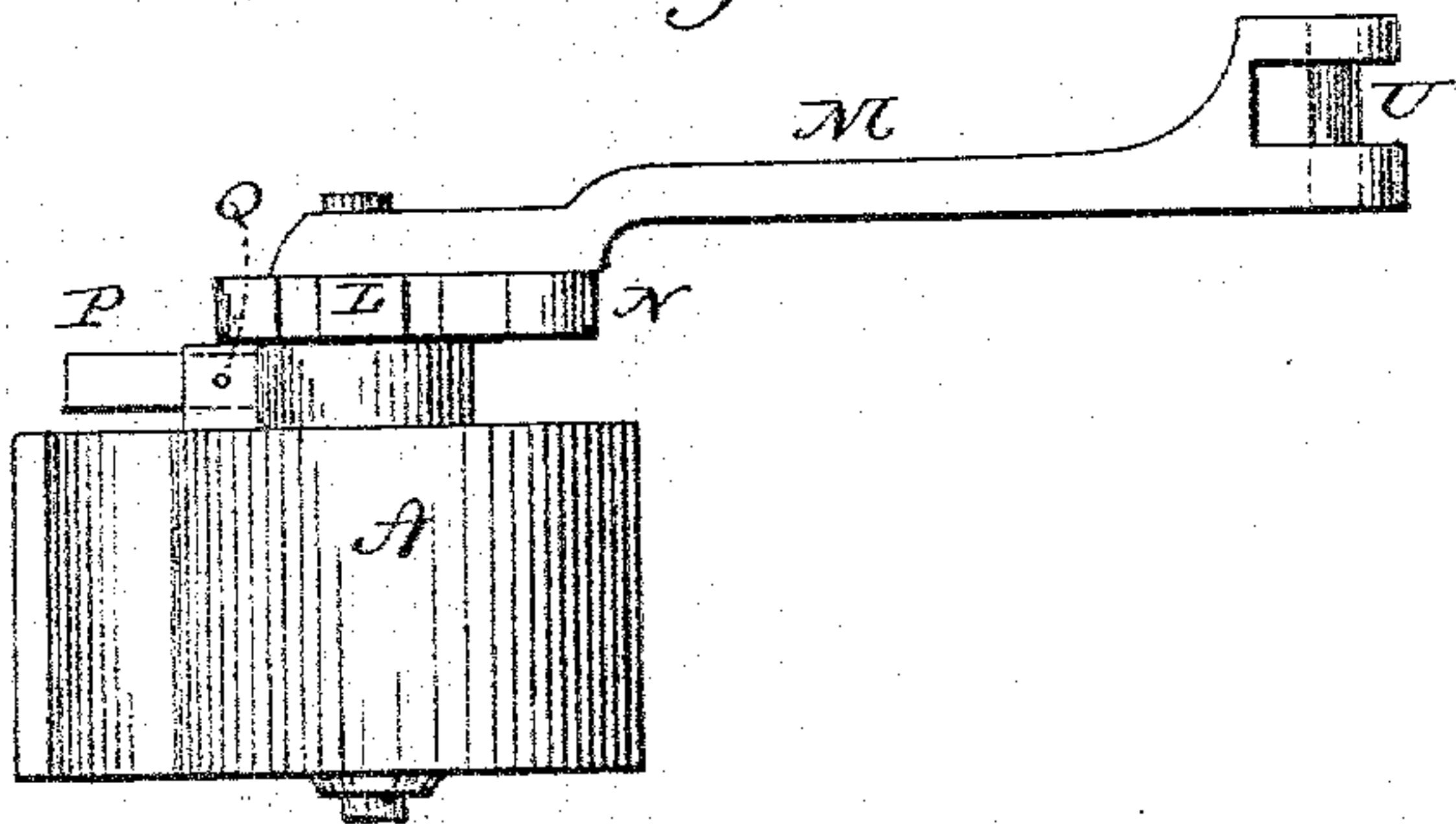


Fig. 4.

Fig. 5.

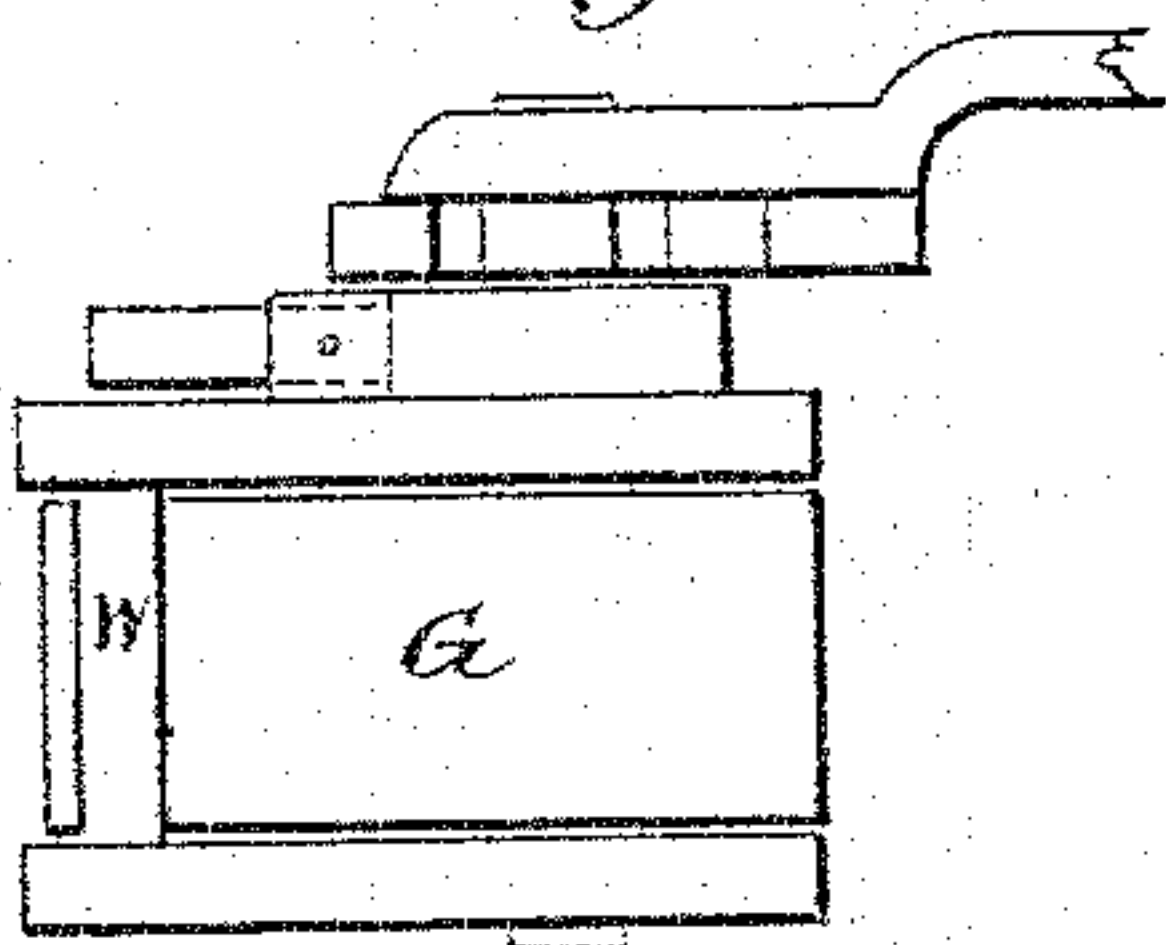
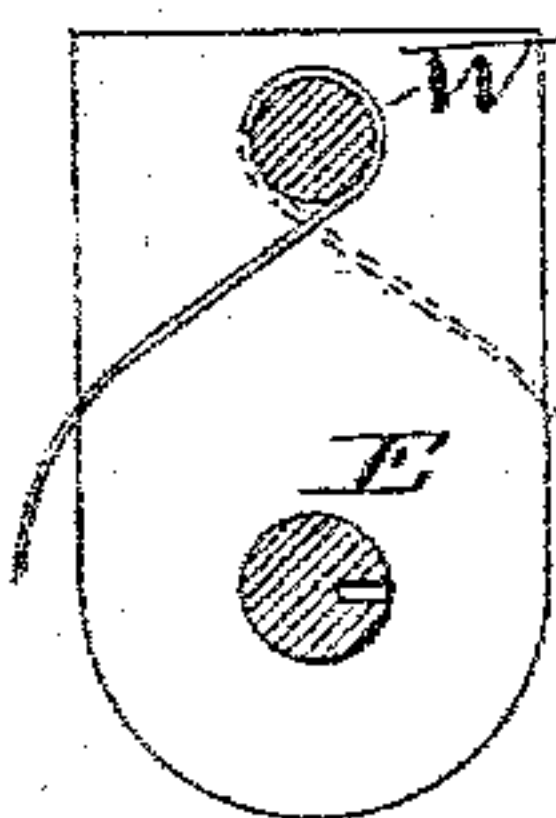


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM GILFILLAN, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO
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DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 356,633, dated January 25, 1887.

Application filed November 4, 1886. Serial No. 217,929. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GILFILLAN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Door-Springs; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a top or plan view; Fig. 2, a side view; Fig. 3, a horizontal section through the bracket, showing the spring coiled around the spindle; Fig. 4, a vertical central section through the spring; Fig. 5, a side view of the bracket open; Fig. 6, a horizontal section of Fig. 5.

This invention relates to an improvement in that class of springs for doors, gates, &c., in which a coiled flat steel spring is employed, one end being fixed and stationary, the other end hung to a rotating part of the device, and so that as the door is opened rotation is imparted to the said rotating part and the spring wound, and so that when free the reaction of the spring will impart its force to the door, the principal object of the invention being to make the spring convertible, so that it may be used upon either a right or left hand door, and thereby avoid confusion in the trade as to the adaptation of a particular spring.

In the preferred construction I make the spring-supporting bracket in the form of a case, A, with an extension, B, therefrom, by which the bracket may be secured to the door, to the jamb, or lintel, as the case may be.

The case is cast with an opening, C, on the back side. One end of the case is cast open, and into it is fitted a removable cap, D. Centrally through the case is a spindle, E, which takes a bearing in the solid end of the case and extends through the cap D at the opposite end, and at the cap end the spindle extends through the cap, and is there provided with a pin, F, or other device by which the spindle may be held to prevent its axial movement, and also serve to hold the cap D in place.

Within the spring-chamber the coiled flat steel spring G is arranged. One end of the

spring is constructed of hook shape, as at H, and so that it may be hung upon one side, I, of the opening C, as seen in Fig. 3. The inner end of the spring is turned inward to form a hook, J, which sets into a corresponding groove in the spindle E, as also seen in Fig. 3, but so that the spring may be easily removed from the spindle and from the case when desired.

At the opening C in the case the side K of the opening, opposite the side I, is of the same construction as the side I, so that the spring may be set into the chamber, one side up, and its hooked end H engage with the side I of the opening C in the case, as seen in Fig. 3, and the spring inverted. The hooked end H then will engage the opposite side, K, of the opening, as seen in broken lines, Fig. 3, and the inner end of the spring be set into the spindle, as before, except that when inverted the spindle will be turned to the opposite side. It will be seen, therefore, that when the spring is hung to the side I of the opening the spring will be wound by turning the spindle in the direction of the arrow a; but when the spring is reversed and hung upon the opposite side, K, of the opening then the spring will be wound by turning the spindle in the opposite direction, and as indicated by the arrow b, Fig. 3.

The removable cap D permits the spring to be changed as occasion may require. Thus if a person purchasing the spring finds it set for a left-hand door, and requires it for a right-hand door, he has simply to remove the cap and reverse the spring, thus avoiding many mistakes and complications in the trade.

To make engagement between the actuating-levers and the spring, I construct the spindle with a toothed ratchet, L, upon its outer end, and loose upon the end of the spindle I hang a lever, M, the lever being free to turn independent of the spindle. On the lever M, and in the plane of the ratchet L, I hang a two-way pawl, N, which is adapted to engage the teeth of the ratchet in either direction; or set at an intermediate point, as indicated in broken lines, Fig. 1, the pawl will be free from the ratchet, and the lever may be turned accordingly; but when the pawl is engaged with the ratchet, as seen in Fig. 1, then a swinging movement, imparted to the lever M in the di-

rection of engagement of the pawl, will impart corresponding rotation to the ratchet L and its spindle E, and the spring being arranged accordingly, will be wound as the spindle is rotated under such swinging movement of the lever M.

As represented in Fig. 1, the engagement of the pawl with the ratchet corresponds to the position of the spring. (Indicated as engaged in solid lines, Fig. 3.) Suppose, for illustration, that the spring-supporting bracket is secured to the jamb or lintel of the door, and from the free end of the lever M a connecting-rod, O, extends to and is hung to the door, if now the door be opened, a corresponding swinging movement will be imparted to the lever M, and the pawl N being in engagement with the ratchet, as seen in Fig. 1, the spring will be wound under such opening movement of the door, and so that when the door is free the reaction of the spring will operate to close the door.

If the spring is to be applied to a door swinging in the opposite direction, the spring itself will be reversed, as before described, and the pawl N will also be turned to bring its opposite end into engagement with the ratchet, and as seen in broken lines, Fig. 1.

It is frequently desired to disengage the spring, so as to leave the door free and independent of it. This may be done by turning the ratchet to the intermediate position, (indicated in broken lines, Fig. 1;) but under such position of the pawl the spring would be free to unwind, and unless such unwinding is prevented when re-engagement is required the spring must be rewound, to give the requisite force to close the door. To permit such disengagement of the spring and yet retain it in its wound position, I hang a dog, P, upon the bracket below the plane of the ratchet, as upon a pivot, Q, and so that when free it will lie flat upon the case, as seen in Fig. 2; but when the dog is raised, as indicated in broken lines, Fig. 4, it comes into the path of the ratchet L, and so that it may stand in one of the teeth of the ratchet, (the teeth being of corresponding shape, the dog holds the ratchet from revolving in either direction,) and when so engaged the pawl may be turned to its intermediate position and the door will be free and independent of the spring. Then, when the spring is again required, the pawl is returned into engagement with the ratchet, and then the dog P removed.

To make the connection between the lever M and the door adjustable, to accommodate different relative positions, the connecting-rod between the lever M and the door is made in two parts, O R, one part—say O—hinged by one end to the free end of the lever M, and the other part, R, hinged to a bracket, T, which is adapted to be secured to the door, or wherever it may be. One of the said parts—say R—is cylindrical, and screw-threaded upon its outside, the other part, O, internally screw-threaded, so that the part R may be

screwed into it to any desirable extent, as seen in Fig. 1. By this construction of the two parts of the connecting-rod it may be extended or contracted as to its length and as occasion may require; and that the adjustment of the connecting-rod may be made after attachment, I construct the end of the part of the connecting-rod which engages with the lever M of hook shape, as indicated in Fig. 1, and in the end of the lever M is a corresponding pin, U, with which the said hook may engage, as seen in Fig. 1, the hook opening toward the door; hence if the rod requires to be extended or contracted, the lever M is simply turned toward the door, as indicated in broken lines, Fig. 1, to disengage the hook, then the part O may be screwed upon the part R to adjust its length to the required extent, and then re-engagement made between the part and the lever M. This hook also permits disengagement to be made between the door and the spring whenever occasion shall require.

It will be understood that the device for securing the spring-case, as well as attaching the end of the rod to the door or jamb, as the case may be, will be varied in its construction, according to the character of attachment required, and the invention is not to be understood as limited to any particular construction of brackets.

While I prefer to make the bracket as an inclosing-case for the spring, the bracket may be open, as seen in Fig. 5, the means for attaching the spring being a vertical post, W, so that the spring may engage upon either side of the post, as seen in Fig. 6, it only being essential that the spindle shall be supported in a vertical position, so that it may revolve freely, and that the spring shall be removably connected at one end with the spindle and the other end removably held in a fixed position on the bracket.

I do not wish to be understood as claiming, broadly, a reversible door-spring.

I claim—

1. In a door-spring, the combination of a lever adapted to swing in the plane of the path of the opening door, one end of said lever engaged with the spring, a connecting-rod made in two parts, the free end of the said lever and corresponding end of the said connecting-rod constructed the one with a hook and the other with corresponding pin, the opposite end of the other part of the rod constructed for hinged attachment, the adjacent ends of the said two parts constructed one with an external and the other with a corresponding internal screw-thread, substantially as described, and whereby said rod may be contracted or expanded.

2. The combination of the case A, the spindle E, concentrically through said case, a coiled spring within said case and around said spindle, the said spring at its inner end removably attached to said spindle and at its outer end removably attached to the case, and

whereby said spring is made reversible, the ratchet L on said spindle, the lever M, hung upon said spindle, double-acting pawl N on said lever, and adapted to engage the ratchet
5 in either direction, as the case may be, with a connecting-rod extending from the free end of said spindle and adapted to make engagement

between the door and the spring, substantially as described.

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Witnesses:

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