

(No Model.)

J. McDONALD & J. P. COURTNEY.

DOOR SPRING.

No. 351,457.

Patented Oct. 26, 1886.

Fig. 1

Fig. 2

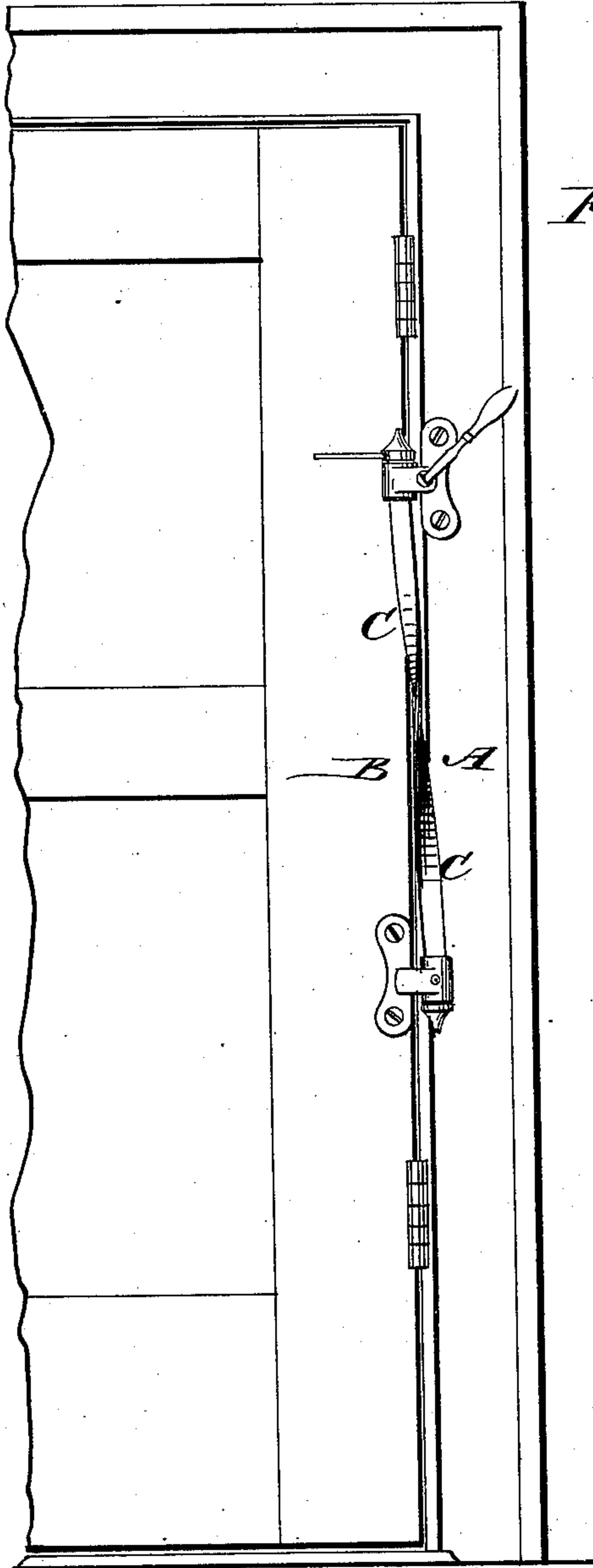
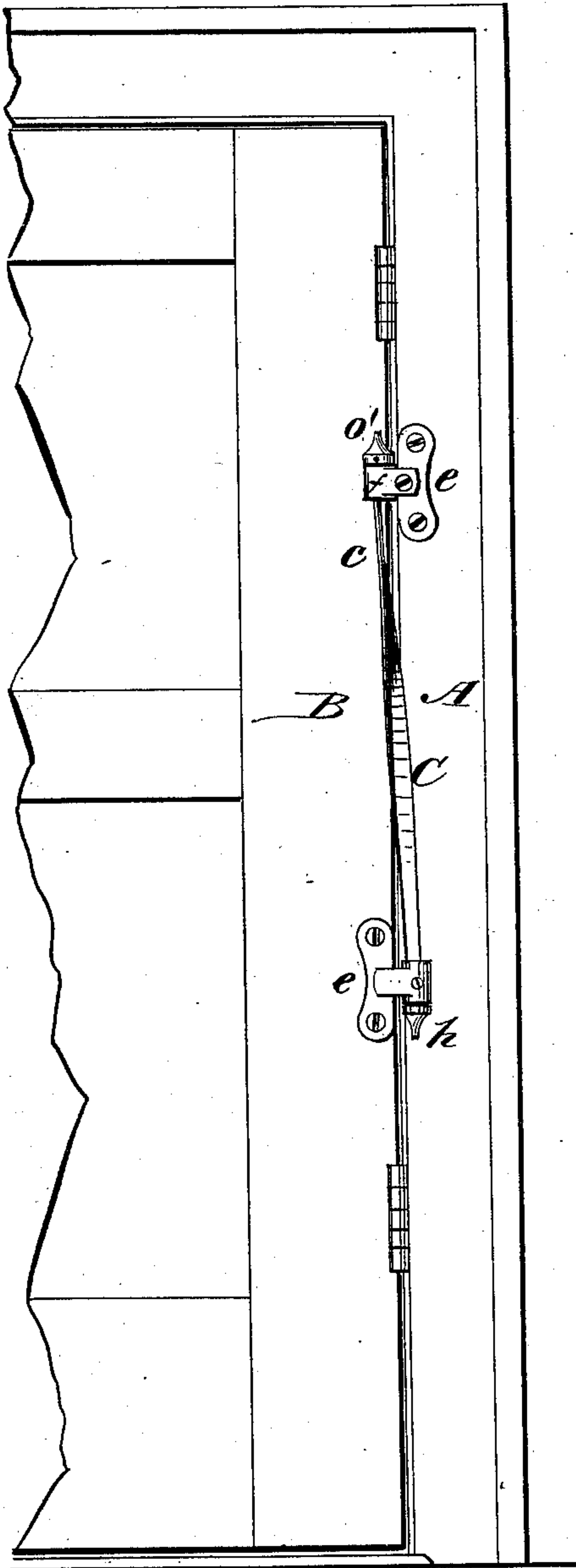
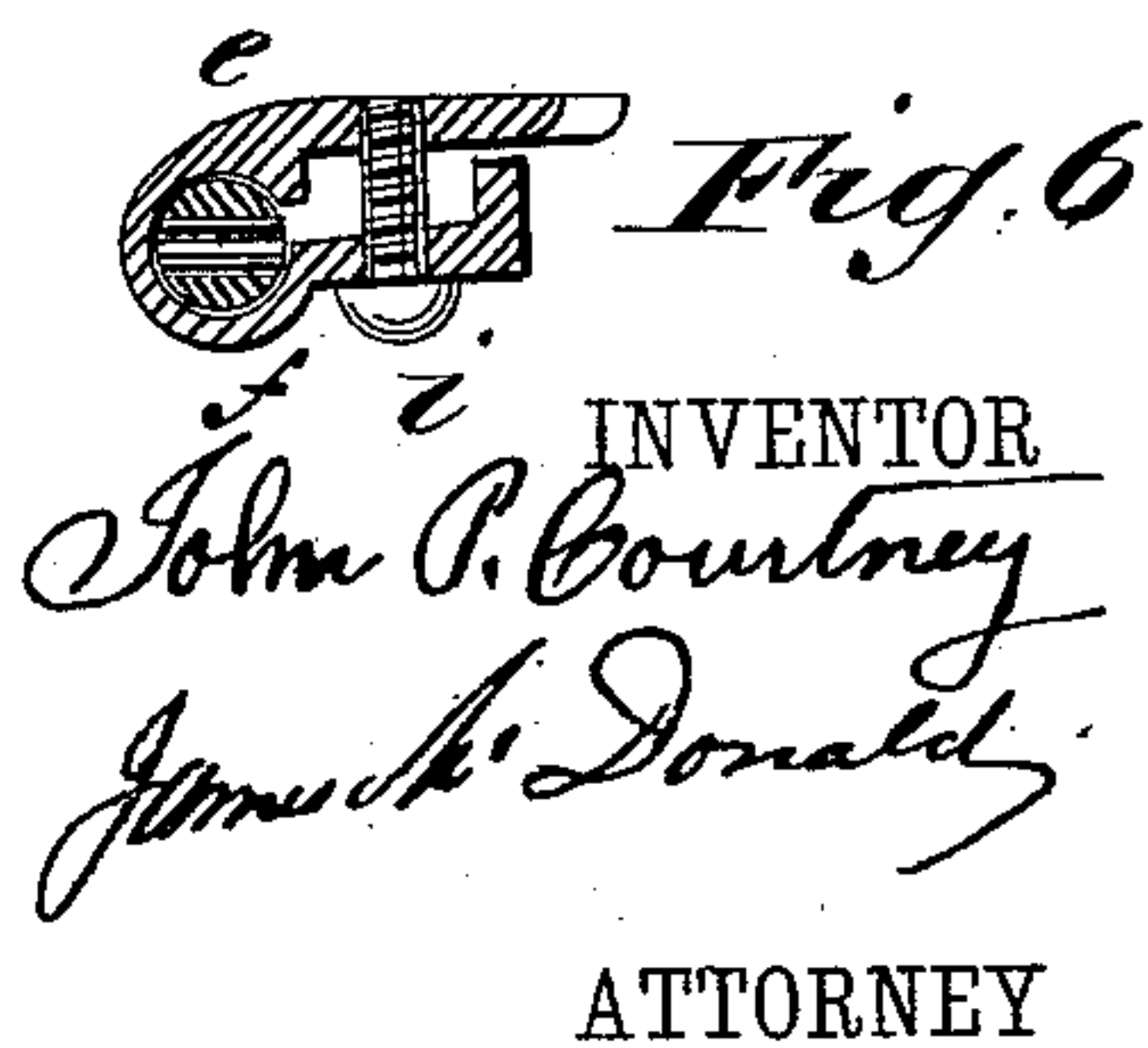
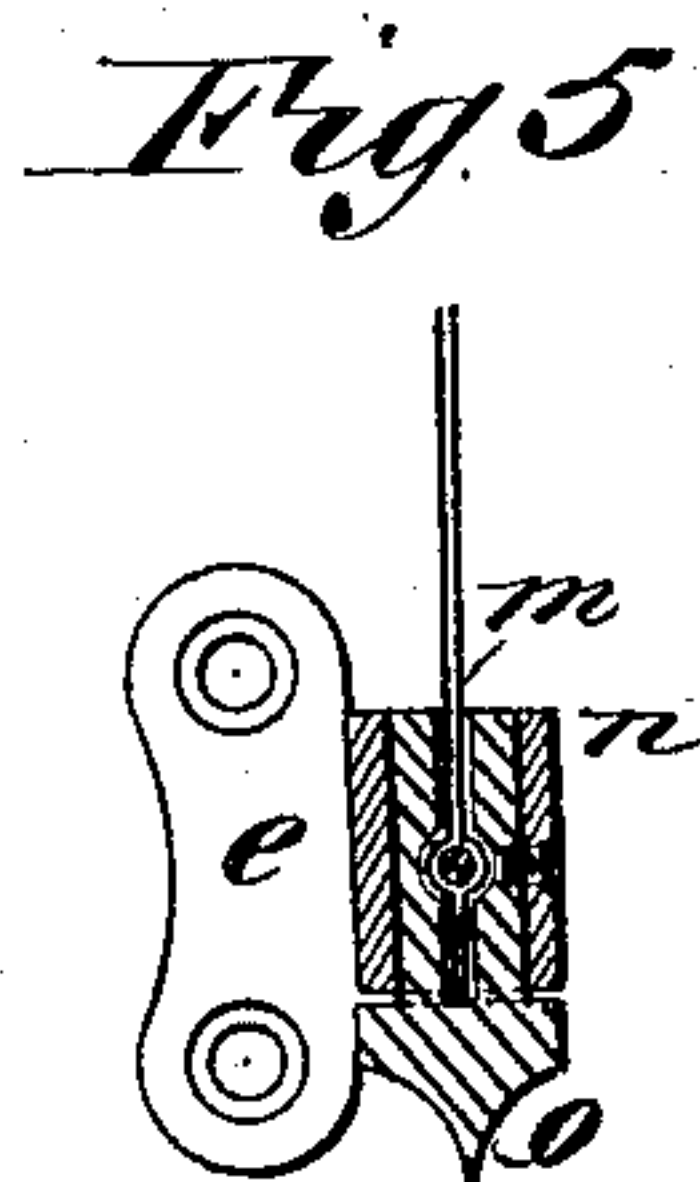
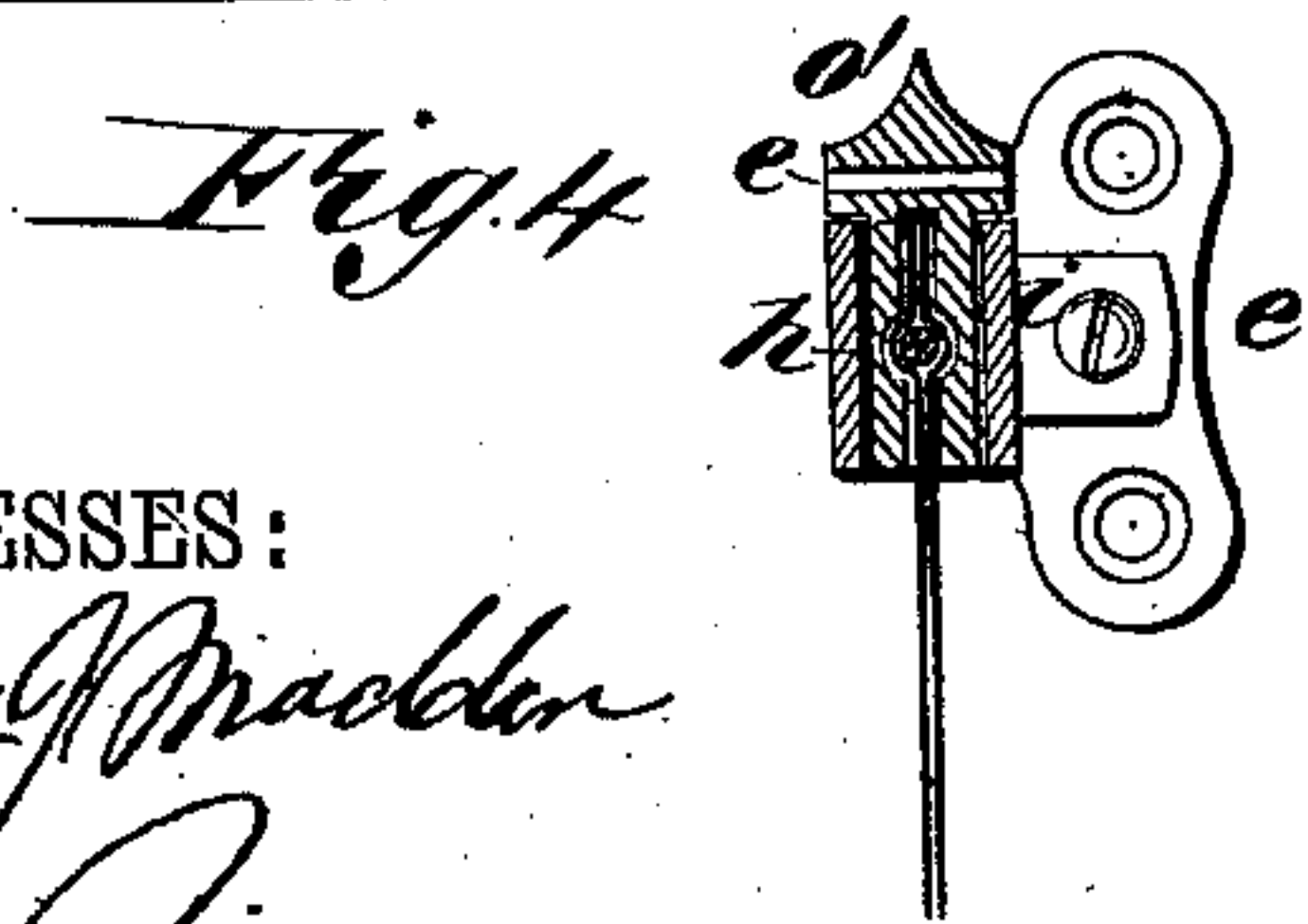
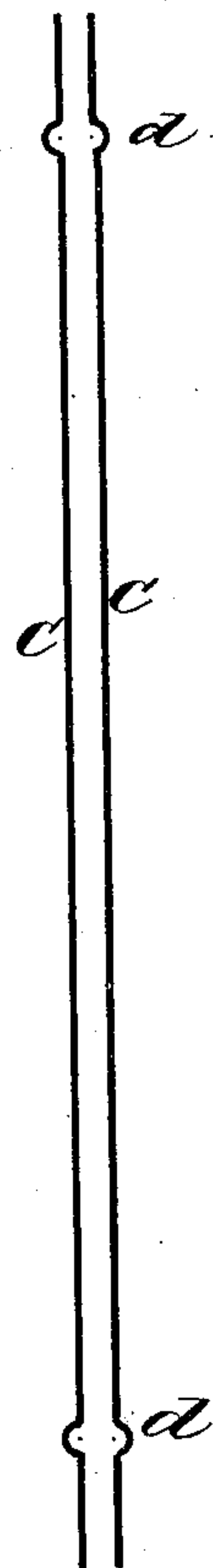


Fig. 3



WITNESSES:
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JAMES McDONALD AND JOHN P. COURTNEY, OF BROOKLYN, NEW YORK.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 351,457, dated October 26, 1886.

Application filed August 21, 1885. Serial No. 174,997. (No model.)

To all whom it may concern:

Be it known that we, JAMES McDONALD and JOHN P. COURTNEY, of the city of Brooklyn, county of Kings, and State of New York, have invented new and useful Improvements in Door-Springs, of which the following is a specification, reference being had to the accompanying drawings, wherein—

Figure 1 is a view of the improved springs applied to a door; Fig. 2, the same, showing the means by which the tension of the springs is regulated. Fig. 3 shows two of the springs employed when set at either end to fasten them. Fig. 4 shows the clamping device for clamping the adjustable end of the spring in longitudinal section. Fig. 5 shows the clamping device for clamping the positive end of the springs, also in longitudinal section; and Fig. 6 shows the clamping device for clamping the adjustable end in cross-section.

The nature of our invention consists in the employment of two or more flat springs so arranged that by twisting them spirally, and properly, securely, and adjustably fastening them they will operate to close or open a door, &c., to the best possible advantage.

The object of our invention is to produce a door-spring which will not only be durable, but capable of adjustment and certainty of operation. I accomplish this by the use of more than one spring co-operating together and in the same way.

In the drawings, A represents a door-frame, and B the door. Preferably at or near the top I attach, by means of a device hereinafter described, two or more flat strips, *c c*, of spring metal, which lie in their entire length against each other, and which are secured at one end upon the door and the other upon the door-frame. These springs in the drawings are marked *c c*, and they may be applied so that the fixed and adjustable ends may be upon either the door or its frame. They extend from top to bottom diagonally across the line between the edge of the door and its frame. In our drawings we have shown them as fixedly secured at the bottom and adjustably secured at the top, although these positions could be reversed for opening, and by reversing the throw of the spring for closing.

As shown, we shall describe the construction and operation of the springs.

At the bottom the springs, be they two or more, enter a slot, *m*, just admitting them in a thimble, *n*, and are securely fastened into a stop or button, *o*, to prevent their longitudinal play. As shown in Fig. 5, the springs run into a slotted pin attached to button *o*, and are secured as in the adjustable end, hereinafter described. Lateral play is prevented by the slot in the inner end of the thimble, which latter is fastened to the door by a screw-plate, from which it extends, and by which it is sustained. At the upper end the springs enter a slotted stop or pin, terminating in a button, *o'*. The slot in the pin extends through it to the button, from side to side, of sufficient width to take in the springs, and at any desired point it is provided with an enlargement or recess, *h*, so that from the side a pin may be driven in through it either between or on the side of a spring, so that the latter may be bent or jammed, as shown at *d*, Fig. 3, into the enlarged space, so as to lock it into the recess. The pin or button *o'* can be provided with holes or recesses, into which a bar can be inserted to turn the pin, and consequently the springs, so as to give any desired twist. This pin is clamped by a piece of metal bent over to embrace and bind it. The ends of this piece, when bent over, are extended beyond the part intended to inclose the pin, so that one—the under or lower end—forms a screw-plate, *e*, by which the device is to be attached to the door-frame. The other or upper end, *f*, is extended over the under or lower end or screw plate, *e*, and is provided with a set-screw, *i*, which is intended to engage with a screw-hole in the under or screw plate, *e*. The upper and under ends so constructed constitute clamping-jaws, and by the use of the set-screw the pin may be securely held at any desired point, and readily released for purposes of adjustment.

In operation, the spring being securely fastened in the bottom device and attached to the door, the upper clamp may be attached to the door-frame. The upper end of the spring is then inserted in the pin, and the latter inserted in the clamp. It is then twisted by revolving

ing the pin until the desired tension is had, when by screwing down the set-screw the spring may be fastened at that tension. The effect is obvious. The advantages of this arrangement are that adjustment is simple and easy, the multiplication of springs insures uniformity of action, the tension being distributed through two or more springs acting in the same way, but independently of each other, and more thoroughly throughout the entire length of each. The relative strength is greater than where a single spring is used, and the tension more evenly distributed. The breaking of one spring does not disable the device.

The device for holding the ends of the springs is simple and more certain.

We are aware that door-springs consisting of a number of flat springs laid one upon the other have been made, and especially as shown in Letters Patent to Z. and H. B. Cobb, August 28, 1877; but such springs have not been employed with a spiral twist, and in the case referred to slide upon each other. We make no claim to such springs.

Having described our invention, what we claim to be new, and desire to secure by Letters Patent, is—

1. In a door-spring, the combination of two or more flat springs with a device for fastening the ends thereof, consisting of a slotted pin with a recess so arranged as to permit the introduction of a pin or bar by which the springs are forced into the recess and locked thereby, substantially as described.

2. In a door-spring, consisting of two or more flat springs twisting spirally, a slotted pin to secure one end thereof, in combination with a clamp to bind the same, provided with a set-screw, whereby the tension of the spring may be adjusted, substantially as described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

JAMES McDONALD.
JOHN P. COURTNEY.

Witnesses:

DANIEL J. MADDEN,
MICHAEL ROGERS.