

(Model.)

P. K. O'LALLY.

DOOR SPRING.

No. 251,457.

Patented Dec. 27, 1881.

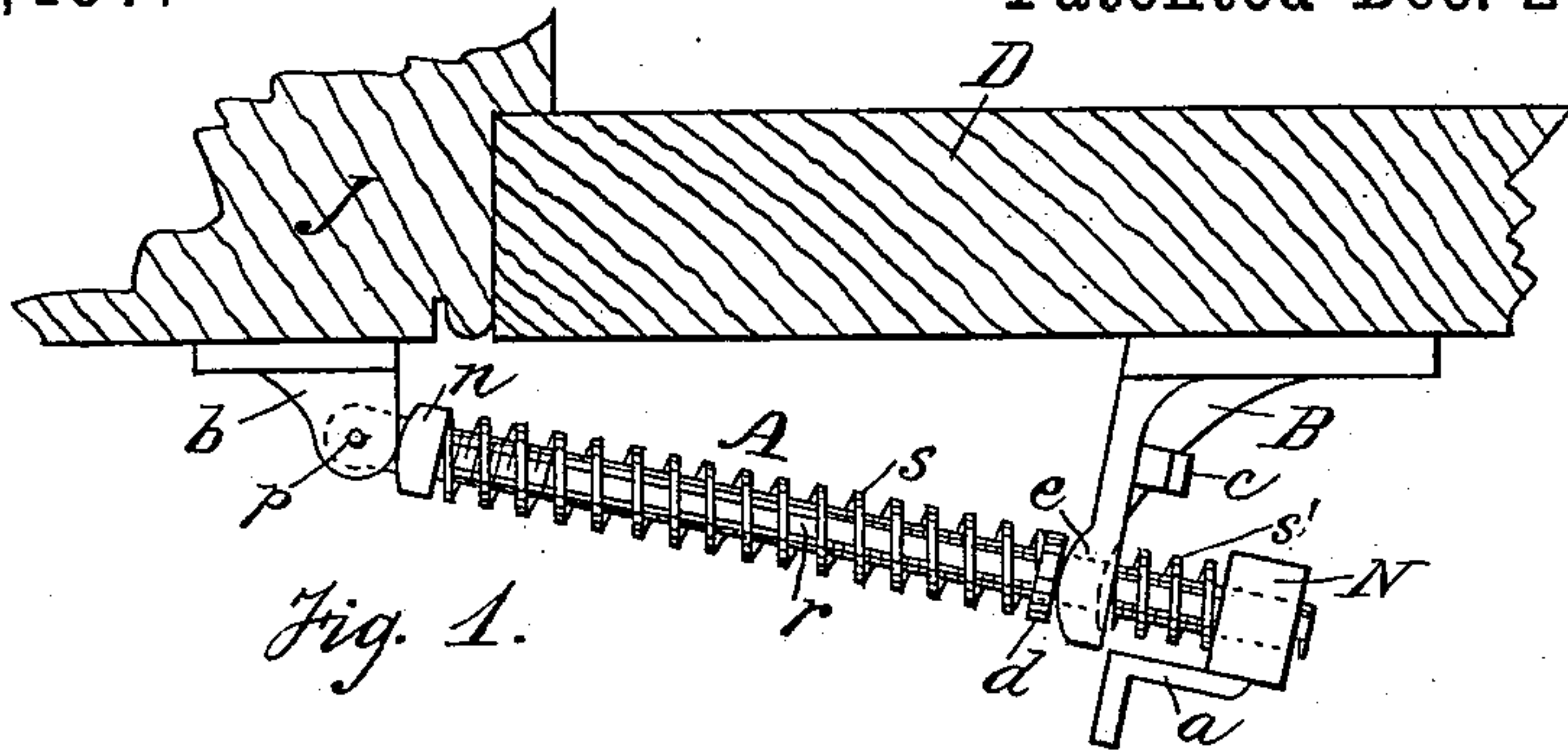


Fig. 1.

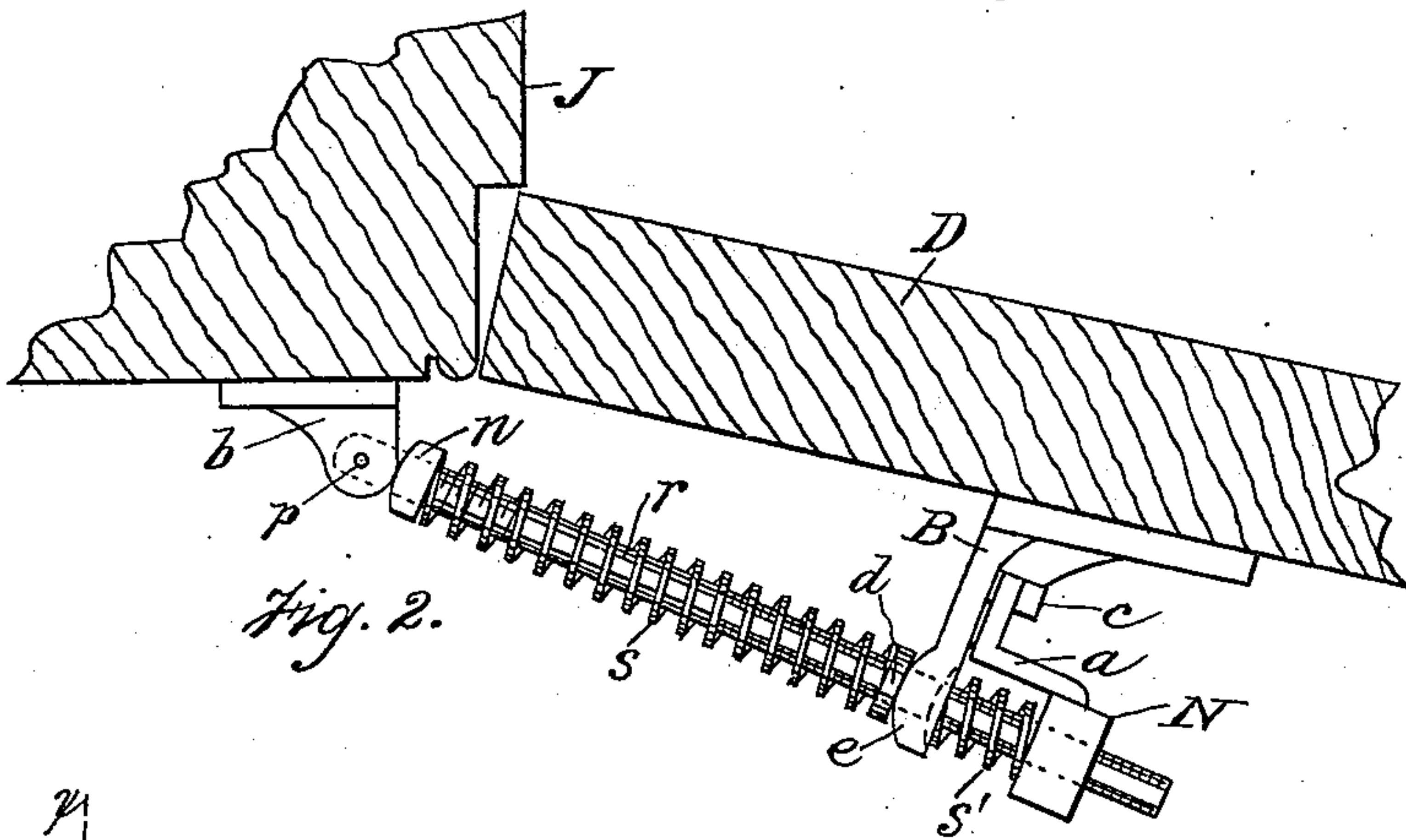


Fig. 2.

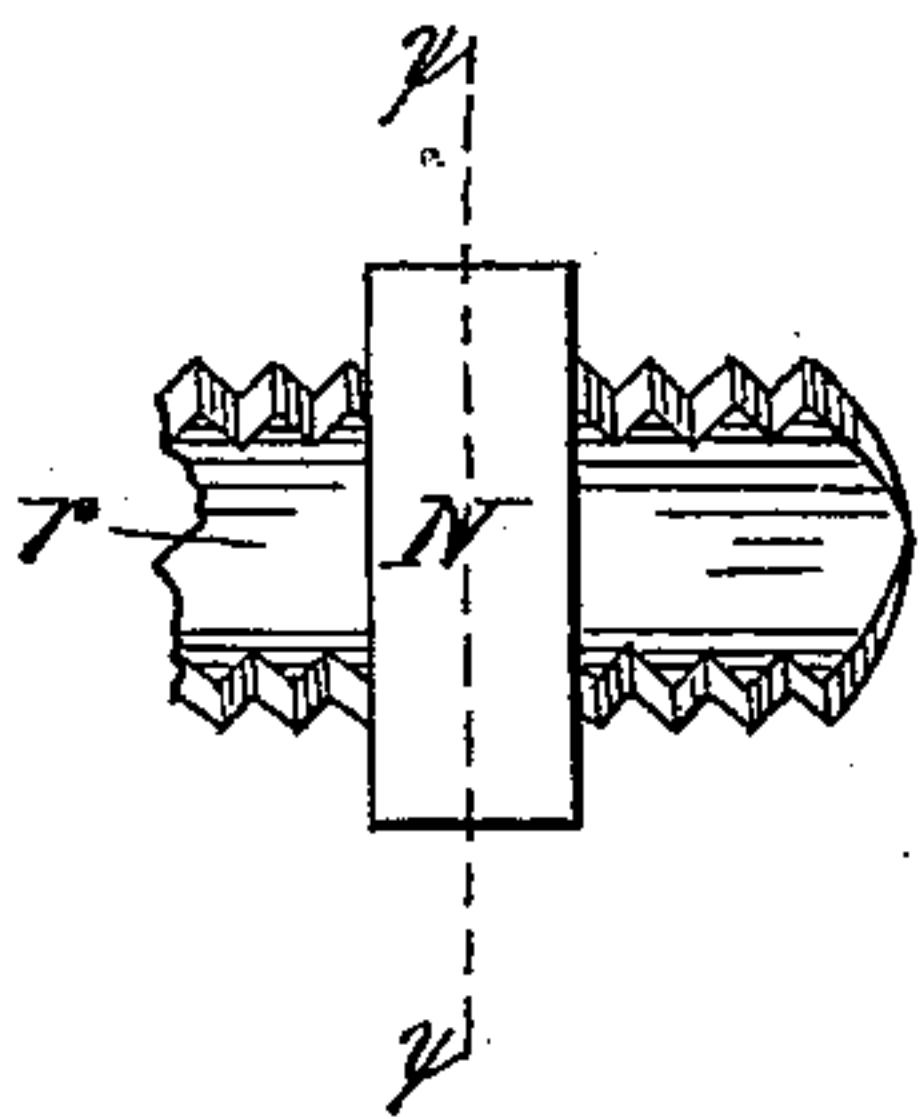


Fig. 2a.

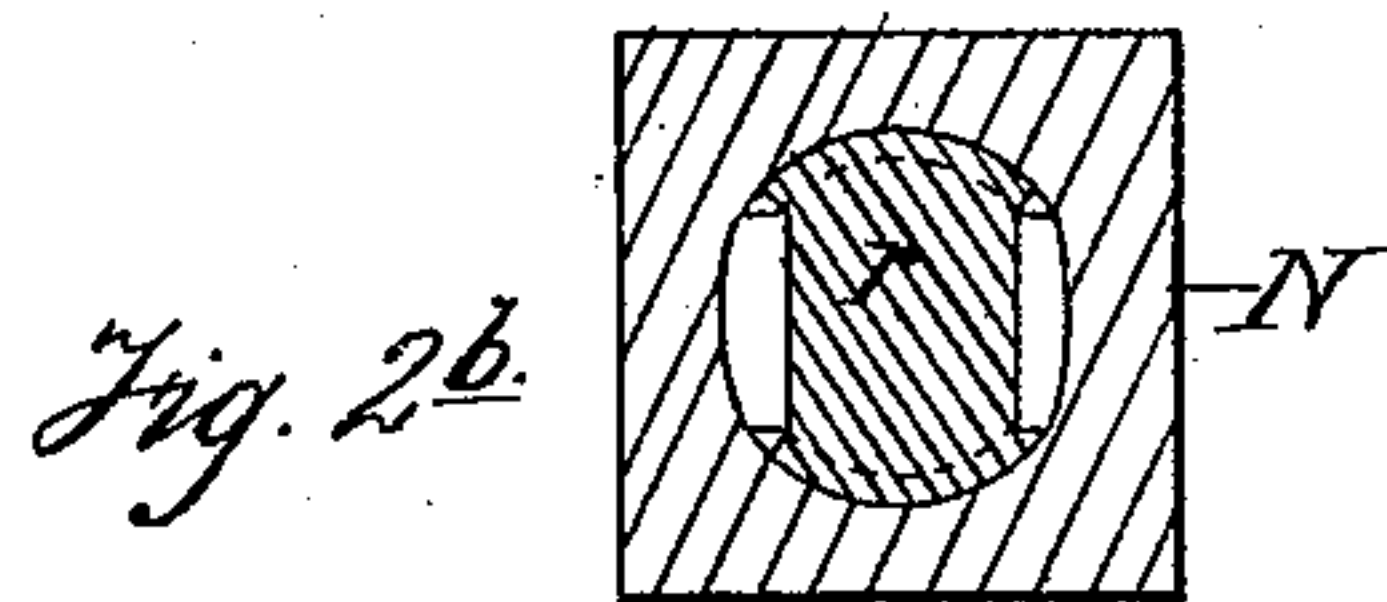


Fig. 2b.

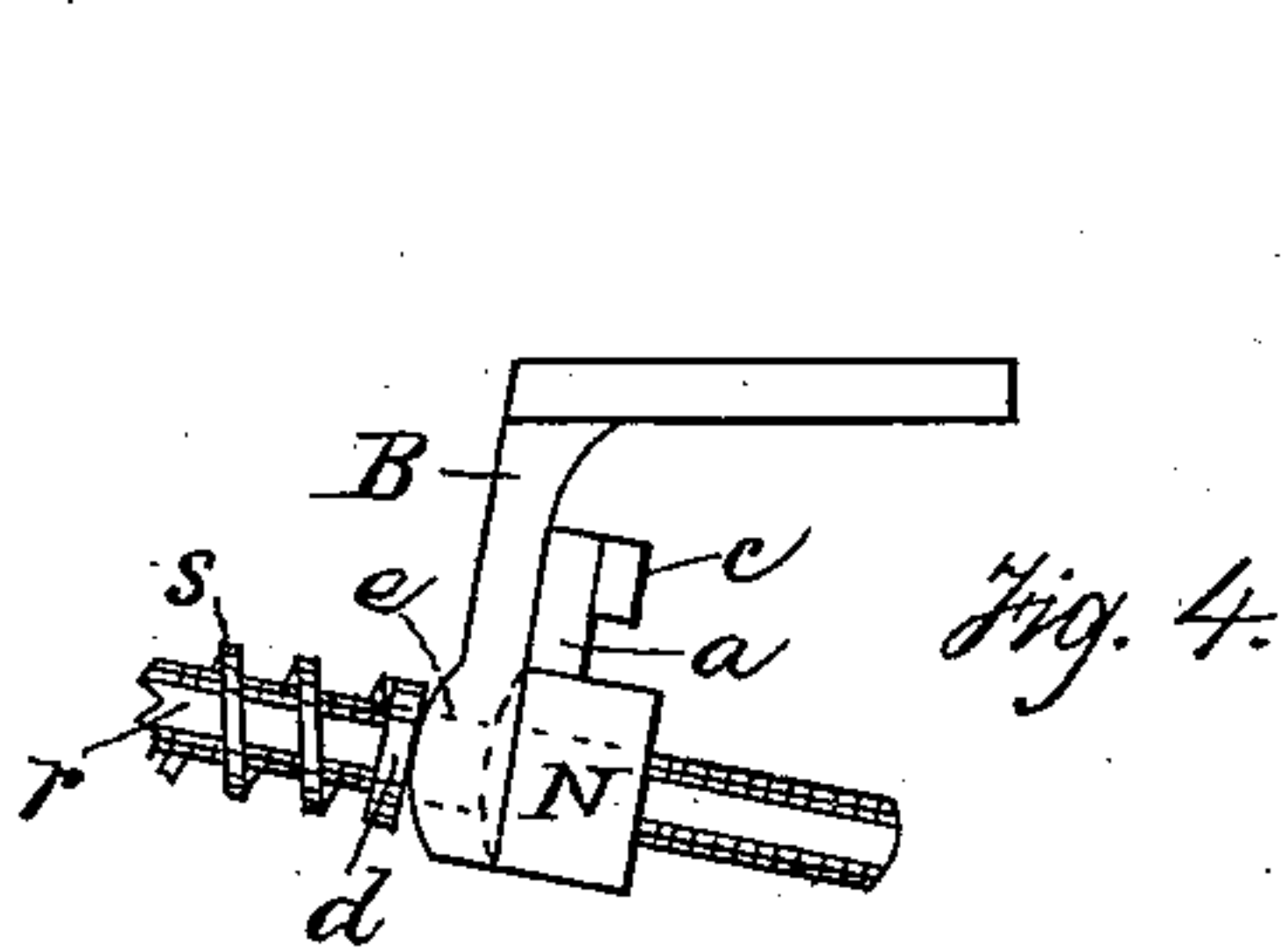


Fig. 4.

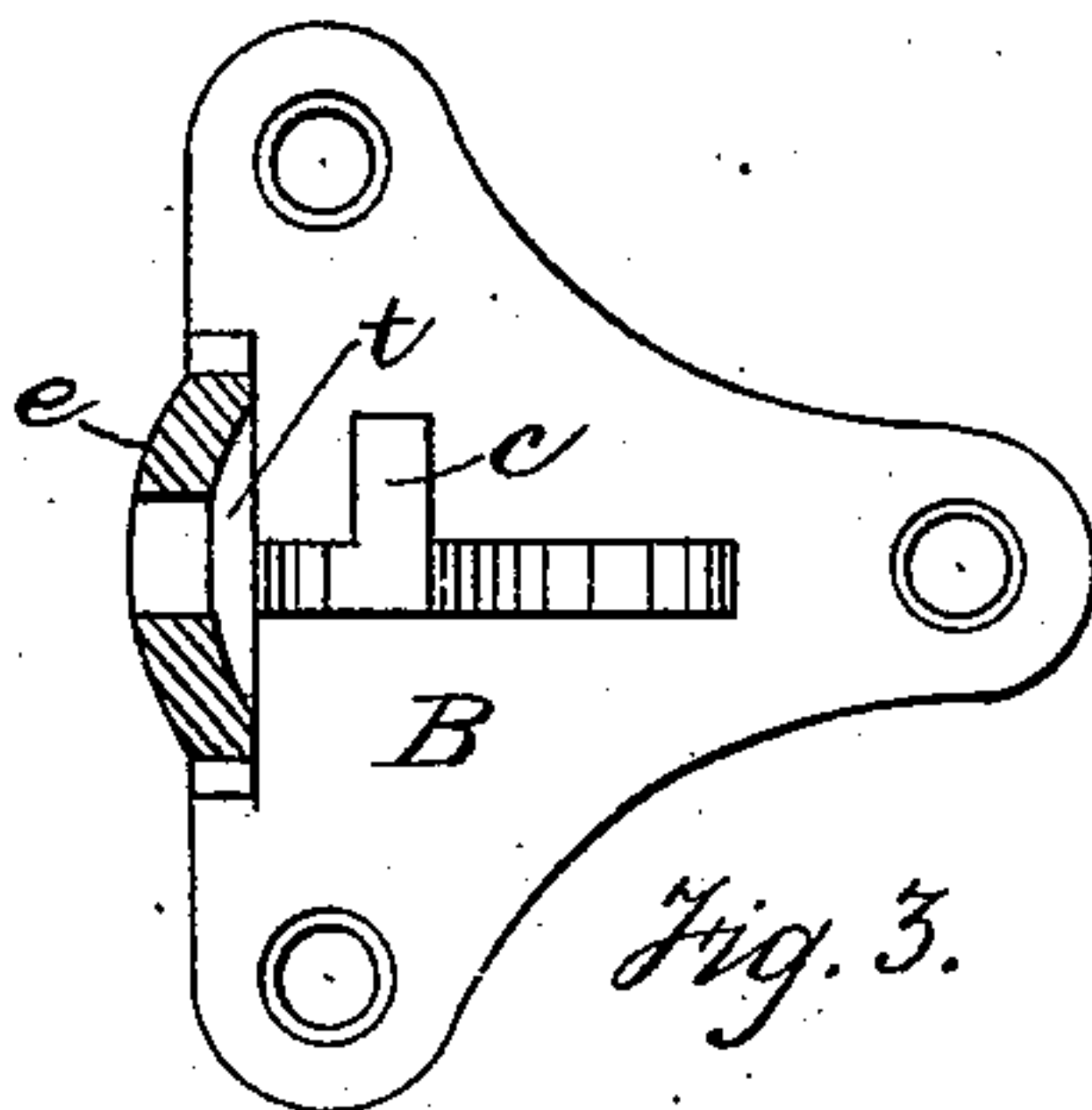


Fig. 3.

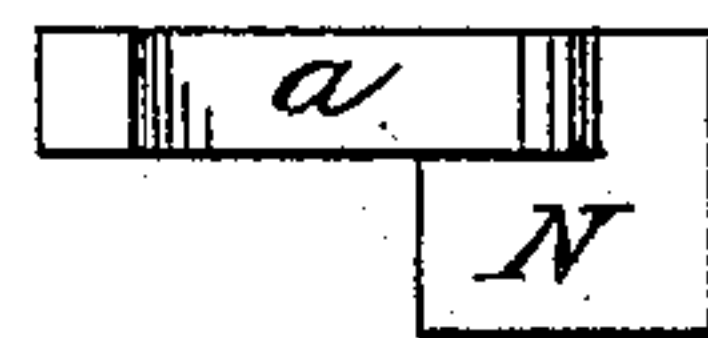


Fig. 3a.

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# UNITED STATES PATENT OFFICE.

PATRICK K. O'LALLY, OF BOSTON, MASSACHUSETTS.

## DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 251,457, dated December 27, 1881.

Application filed February 14, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, PATRICK K. O'LALLY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Door-Springs, of which the following is a specification.

This invention relates to springs for doors, by the action of which the door is rendered self-closing; and the invention consists, first, in the provision of an adjustable device for automatically stopping the door when partially shut, and so that when the door is at rest it will remain open to any desired extent; secondly, in the provision of adjustable devices for holding the door at any desired point and preventing it from being moved in either direction; thirdly, in the provision of a secondary spring to prevent the violent stoppage of the door, and, lastly, in certain details of construction, all of which I will now proceed to describe, reference being had to the accompanying drawings, in which—

Figure 1 represents a top view of a door-spring embodying my invention attached to a door, the door being closed. Fig. 2 represents a similar view, the door being partly open. Fig. 2<sup>a</sup> represents an enlarged view of a portion of the spring-rod and adjustable nut, the spring being removed. Fig. 2<sup>b</sup> represents a section on line *x x*, Fig. 2<sup>a</sup>. Fig. 3 represents an enlarged elevation of the bracket for attaching the spring to the door, a portion of same being shown in section. Fig. 3<sup>a</sup> represents a similar elevation of the adjustable nut. Fig. 4 represents a modification.

In these figures the same letters refer to the same parts.

In the drawings, A represents a door-spring consisting of a steel spring, *s*, surrounding and movable upon a supporting-rod, *r*, one extremity of said rod being pivoted at *p* within a socket formed upon the bracket *b*, which bracket is adapted to be secured to the jamb *J* of the door. The outer extremity of the rod *r* passes through an orifice in the bracket B, secured to the door D, the rod *r* being movable longitudinally through said orifice. One end of the rod *r* is provided with a nut, *n*, which is adjustable upon a thread formed on said rod and adapted to form, when set at any point, a rigid abut-

ment or stop for the spring *s*. By means of the nut *n* the tension of the spring *s* may be regulated. The other abutment of the spring *s* is formed by a circular plate or collar, *d*, resting against a boss or rounded projection, *e*, formed on the back of the bracket B, and movable freely upon the rod *r* in the operation of the door-spring.

N represents an adjustable nut engaging with a thread formed on the rod *r*, and provided with an arm, *a*, projecting from one side of the nut, for the purpose hereinafter described. The bracket B is also provided with a bent arm or socket, *c*.

*s'* represents a secondary spring interposed between the nut N and the front surface of the bracket B, said bracket being countersunk, as shown at *t*, Fig. 3, to receive the extremity of the spring *s'*.

In operation, the door-spring being attached to a door, as shown in Fig. 1, when the door is opened the spring *s* is compressed, its abutment *n* being rigid while the collar *d*, forming its other abutment, is movable upon the rod *r*. When the door is released it is at once closed by the action of the spring *s* in returning to its normal position. In this respect the operation of my invention is similar to that of all door-springs of its class; but the construction of my door-spring presents several improvements which I will now describe.

The nut N on the threaded end of the rod *r* constitutes an adjustable automatic stop, which enables the movement of the door by the spring *s* to be automatically arrested at any desired point, so that if it is desired to have the door partially but not entirely closed this can be accomplished by properly adjusting the nut N.

Heretofore in this class of springs means have been provided whereby the rod supporting the spring may be made fast to the bracket on the door to prevent the movement of the latter; but I am not aware that a stop has ever been provided which acts automatically in arresting the closing movement of the door.

The nut N may be used only as an automatic stop, preventing the closing but not the opening movement of the door; but in case it is desired to hold the door so that it can neither be opened nor closed said nut may be turned to



cause its arm *a* to engage with the arm or socket *c* on the bracket B, as shown in Fig. 2. The movement of the rod *r* in either direction through the orifice in the bracket B is thus prevented, and the door is consequently prevented from moving. The adjustability of the nut N enables it to secure the door, as last described, either when the door is closed or partly open. The secondary spring *s'*, interposed between the bracket B and the nut N, relieves the jar that might otherwise attend the stoppage of the movement of the door by the nut N when the latter is adjusted to form an automatic stop, or by the casing of the door when the nut N is not so adjusted.

In order to enable the nut N to be more easily and quickly adjusted upon the rod *r*, I form the thread upon said rod on opposite sides of the rod only, the remaining portions of its surface being smooth, as shown in Figs. 2<sup>a</sup> and 2<sup>b</sup>. The inner surface of the nut N is similarly formed. When the threaded portion of the nut is engaged with the threaded portion of the rod *r* it cannot be moved upon said rod without being turned in the usual manner; but when the nut N is turned so that its threaded portion is opposite to the smooth portion of the rod *r* it can be moved upon said rod without being turned, and so can be easily adjusted by being slid along to the desired point, when a slight turn of the nut will cause its threads to engage with the threads of the rod, and so hold it fast. When the nut N is adjusted so as to hold the spring *s* in compression, and so prevent the door from being closed beyond a certain point, a turn of the nut N to the right will cause its arm *a* to lock with the arm *c* of the bracket, and so prevent the door from moving in either direction, as previously described, while a turn of the nut N in the opposite direction will remove its arm from the arm of the bracket and permit the door to be moved backward from the point at which it is held by the nut N, while it cannot be closed beyond said point. In adjusting the nut N it is not required to use any pressure to overcome the pressure of the spring *s*, as the opening of the door compresses said spring and allows the nut N to be readily adjusted.

In the modification of my invention shown in Fig. 4 the spring *s'* is not employed, and the nut N is in direct contact with the surface of the bracket B. In this case the arm *a* on the nut N does not require to be bent, but is formed as shown in the figure last named.

The orifice in the bracket B, through which the rod *r* passes, is of slightly greater diameter longitudinally of the bracket than transversely, and the rounded boss or projection *e* upon the bracket in contact with the movable abutment of the spring *s*, and the countersunk surface of said bracket in contact with the spring *s'*, allow a slight lateral movement of the abutment

*d* and the spring *s'* and the supporting-rod *r* as the door is opened or closed; and this insures a direct bearing upon the surface of the bracket B in line with the longitudinal axis of the springs *s s'*, in whatever position the door may be placed. This advantage is not attainable in springs as ordinarily constructed.

It will be observed that the nut N, when moved on the rod *r* toward the bracket B, prevents the force of the spring *s*, expended against said bracket, from moving the bracket and door, the force of the spring being expended against the nut N through the interposed portion of the bracket.

I claim—

1. In a door-spring, the combination of a bracket, B, adapted to be attached to a door, a rod, *r*, pivoted at one extremity to a bracket, *b*, adapted to be attached to a door-jamb, and movable longitudinally through an orifice in the bracket B, a spring, *s*, supported on said rod between the brackets B and *b*, and an adjustable nut, N, supported entirely by the rod *r*, and constituting an adjustable automatic stop to prevent the force of the spring expended against the bracket B from moving said bracket and the door to which the same is attached, and adapted to hold the door at any desired angle by previous adjustment, as set forth.

2. In combination with the pivoted rod *r* and spring *s*, the bracket B, perforated for the passage of said rod, and provided with an arm or socket, *c*, and the nut N, adjustable on the outer end of said rod, to prevent the movement of the door in one direction, and provided with an arm, *a*, adapted to interlock with the arm or socket *c* and prevent the movement of the door in the opposite direction, as set forth.

3. In combination with the pivoted rod *r*, the spring *s*, and the bracket B, the nut N, on the outer end of said rod, and the spring *s'* interposed between the nut N and bracket B, whereby a jar in closing the door is prevented, as set forth.

4. In a door-spring, the pivoted rod *r*, movable longitudinally through an orifice in the bracket B, in combination with the nut N, adjustable to limit the movement of the rod through the bracket, said rod and nut being partially threaded and partially smooth on their surfaces, as shown, whereby the nut may be disengaged from the threads of the bolt and quickly moved from one point to another, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 11th day of February, A. D. 1881.

PATRICK K. O'LALLY.

Witnesses:

H. G. WADLIN,  
W. CLIMO.