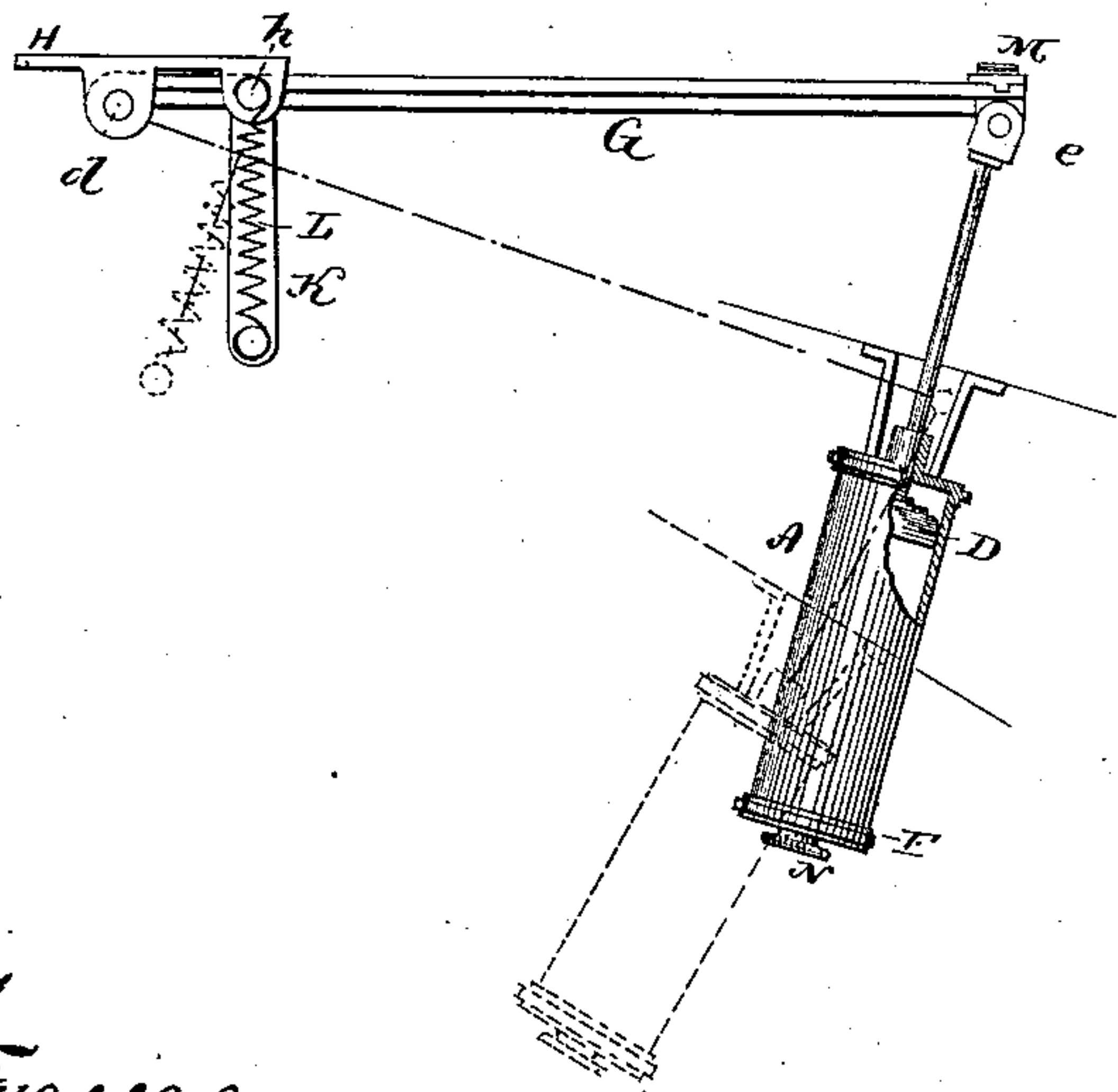
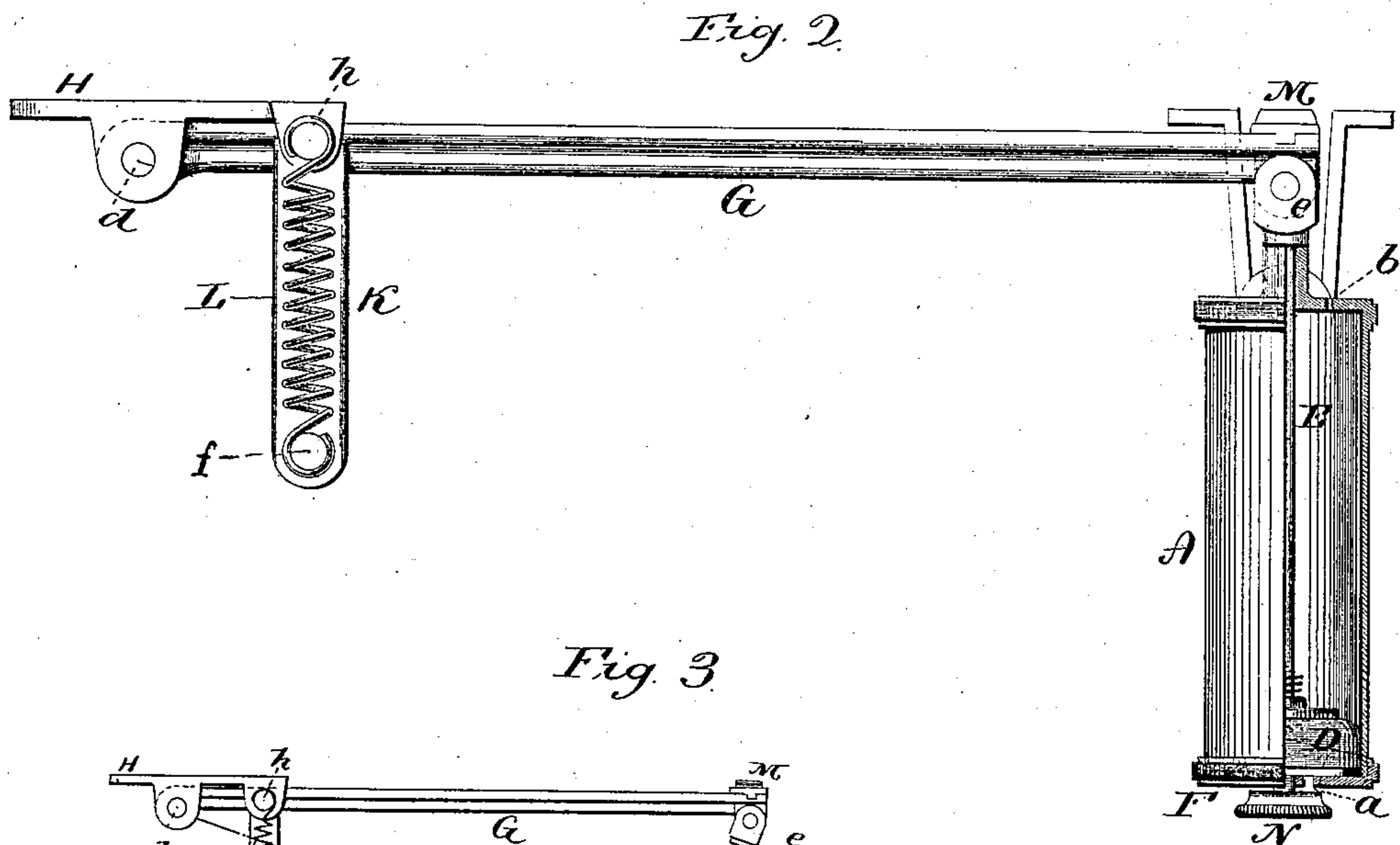
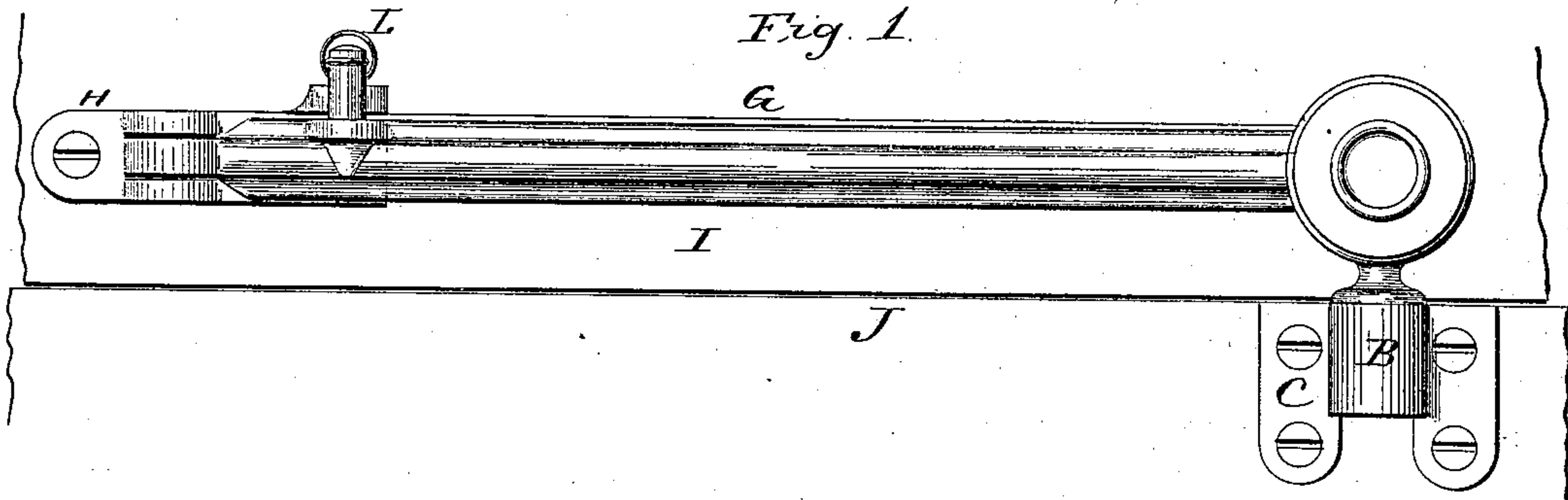


(No Model.)

J. H. SHAW.
DOOR CHECK.

No. 322,648.

Patented July 21, 1885.



Witnesses:
J. H. Shumway.
Fred C. Earle

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UNITED STATES PATENT OFFICE.

JOHN H. SHAW, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & CO., OF SAME PLACE.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 322,648, dated July 21, 1885.

Application filed June 1, 1885. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SHAW, of New Haven, in the county of New Haven and State of Connecticut, have invented new Improvements in Door-Checks; 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 face view showing the check as applied; Fig. 2, top or plan view showing the cylinder in half-section, and the parts in the position of the door closed; Fig. 3, the same as Fig. 2, but showing the first opening movement of the door to bring the piston to a bearing in the cylinder under the action of the spring upon the lever.

This invention relates to an improvement in that class of checks for doors which consist of a pneumatic cylinder arranged so as to retard the closing of the door under the action of a spring which is applied directly to the door, and is an improvement upon the invention for which Letters Patent No. 311,742 were granted to the assignees in this application. In that invention the piston-rod was attached to the lintel and the cylinder hung to the door, and so that in opening the door the cylinder passed entirely from the piston, leaving the piston in a position to enter the cylinder when the door is closed, and that in so entering the cylinder the air in the cylinder formed a cushion, which was gradually relieved under the pressure of the spring upon the door, so that the last closing movement of the door would be an easy one, and prevent slamming.

While that arrangement possesses many advantages over pneumatic cylinder-checks as previously arranged, the possibility of the displacement of the piston renders it open to objections.

The object of this invention is to overcome this difficulty; and it consists in attaching the projecting end of the piston-rod to a lever hung upon a fixed fulcrum, the cylinder being attached to the door so as to move with the door in opening, and a spring applied to the le-

ver sufficient to hold the piston against the first opening movement of the door until the cylinder is drawn from the piston so far as to bring it to a bearing therein; then the lever moves with the cylinder in the opening movement of the door, but the lever returns in advance of the door under the action of its own spring, and so as to permit the piston to cushion in the cylinder in the final closing movement of the door, and as more fully hereinafter described.

A represents the cylinder, which at one end is hung upon a pivot, B, on a bracket, C, adapted to be attached to the door, and so that the cylinder will stand in a plane at substantially right angles to the door, the cylinder extending from the pivot away from the door. Within the cylinder is the piston D, from which the rod E extends longitudinally through the cylinder toward the door. The outer end of the cylinder is closed by a head, F, through which is a small aperture, *a*, the opposite end closed, with an opening through it as a guide for the rod, and with openings *b* to allow free inlet and outlet of the air to or from the cylinder.

G is a lever, which is arranged over the door, but in the plane of the cylinder, and is hung upon a fulcrum, *d*, on a bracket, H, which is fixed to the lintel I, J representing the door. To the free end of the lever the piston-rod E is hung by a joint, *e*, so as to swing thereon as upon a hinge. From the lever, near the fulcrum, an arm, K, extends outward, carrying a stud or hook, *f*, at its outer end. On the bracket is a corresponding hook or stud, *h*. A helical or other suitable spring, L, is arranged between the two studs, its ends attached to the respective studs, as seen in Fig. 2, and so that as the lever is drawn outward the spring will be extended. Then the contraction of the spring will tend to return the lever toward the lintel. The power of the spring L should be somewhat greater than that of the friction or resistance to the movement of the cylinder away from the piston in opening the door. As arranged upon the door the piston stands near the outer closed end of the cylinder, and, as indicated in Fig. 3, as the open-

ing of the door commences the cylinder moves with the door, as indicated in broken lines. The piston held by the lever permits the cylinder to move upon it until the piston comes to a bearing at the opposite end of the cylinder, as seen in Fig. 3; then, the opening movement of the door continued, the cylinder will draw the piston with it and the lever G, to which it is connected, the movement then being opposed by the additional force of the spring L until the door is opened, as indicated in broken lines, Fig. 3. The connection between the lever and the piston holds the piston in its proper relation to the cylinder and permits the movement of the cylinder from the piston, the same as in the patent before referred to; but instead of the cylinder leaving the piston, as in that case, it is carried with it under the guidance of the lever G, so that the proper relation of the cylinder and piston is maintained throughout. In the first movement of the cylinder from the piston the air in the cylinder escapes through the passage *b*, and upon the opposite side air is drawn in through the opening *a*. As the door is closed the lever moves in advance of the cylinder, holding the piston in its full-drawn position until the lever comes to a bearing. This may be by a cushion, M, on the end of the lever, adapted to strike the jamb, or it may be a bearing between the lever and its fulcrum-bracket; but when the lever reaches that closed position, then in completing the closing movement of the door the cylinder moves upon the piston, and such closing will be resisted by the cushion or air within the cylinder and back of the piston, the extent of this cushion depending upon the amount of opening at the opposite end of the cylinder. That opening being small and the escape of the air slow, the final closing movement of the door will be slow, and as that opening is increased the closing movement will be quicker; but after the lever has come to its bearing the final closing movement of the door will be the same as in the patent before referred to, and possess all the advantages of that patent during that part of the operation.

The aperture for the escape of air from the air-cushion may be made at any point through the opening *a* at the extreme end, or through the piston, as in the patent before referred to, that being immaterial to the invention. In

any case, however, it should be of such a nature as to be regulated, and, as represented in this case, it is by means of a headed screw, N, introduced at that end of the cylinder, and so as to cover the opening *a*, and the opening will be greater or less, accordingly as the head of the screw is drawn from or toward the openings.

It will be understood that a spring is applied to the door having sufficient force to close the door against the resistance of the piston in the cylinder, and in the usual manner for pneumatic checks.

I claim—

1. The combination of the cylinder pivoted to a bracket adapted to be attached to the door, a piston within the cylinder, and a rod extending from the piston through the cylinder toward the door, a lever one end hung upon a fulcrum, adapted to be secured in a fixed position, the other end of the lever hinged to the end of the piston-rod, a spring adapted to force said lever toward the door-jamb, the said cylinder constructed for the free admission and exit of air back of the piston, but for slow exit upon the opposite side, substantially as described.

2. The combination of the cylinder A, hung in a pivot, B, forming part of a bracket, C, adapted to be secured to the door, piston D within said cylinder, its rod E extending longitudinally through the cylinder toward the door, the lever G, hung by one end to a fixed fulcrum, *d*, the other end hung to the piston-rod, an arm, K, extending from said lever, carrying a stud, *f*, a fixed stud, *h*, and a spring, L, between said two studs, the said cylinder constructed with openings for the free admission and exit of air on one side of the piston and for slow exit upon the opposite side, substantially as described.

3. The combination of the cylinder A, hung upon a bracket, C, adapted to be attached to the door, piston D, rod E, lever G, hinged by one end to said rod, the other end hung upon a fixed fulcrum, *d*, a spring adapted to bear said lever toward the door, and a stop, M, upon said lever, substantially as described.

JOHN H. SHAW.

Witnesses:

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