

No. 829,601.

PATENTED AUG. 28, 1906.

N. PETERSEN.
COMBINED DOOR CHECK AND HINGE.

APPLICATION FILED AUG. 17, 1905.

Fig. 1.

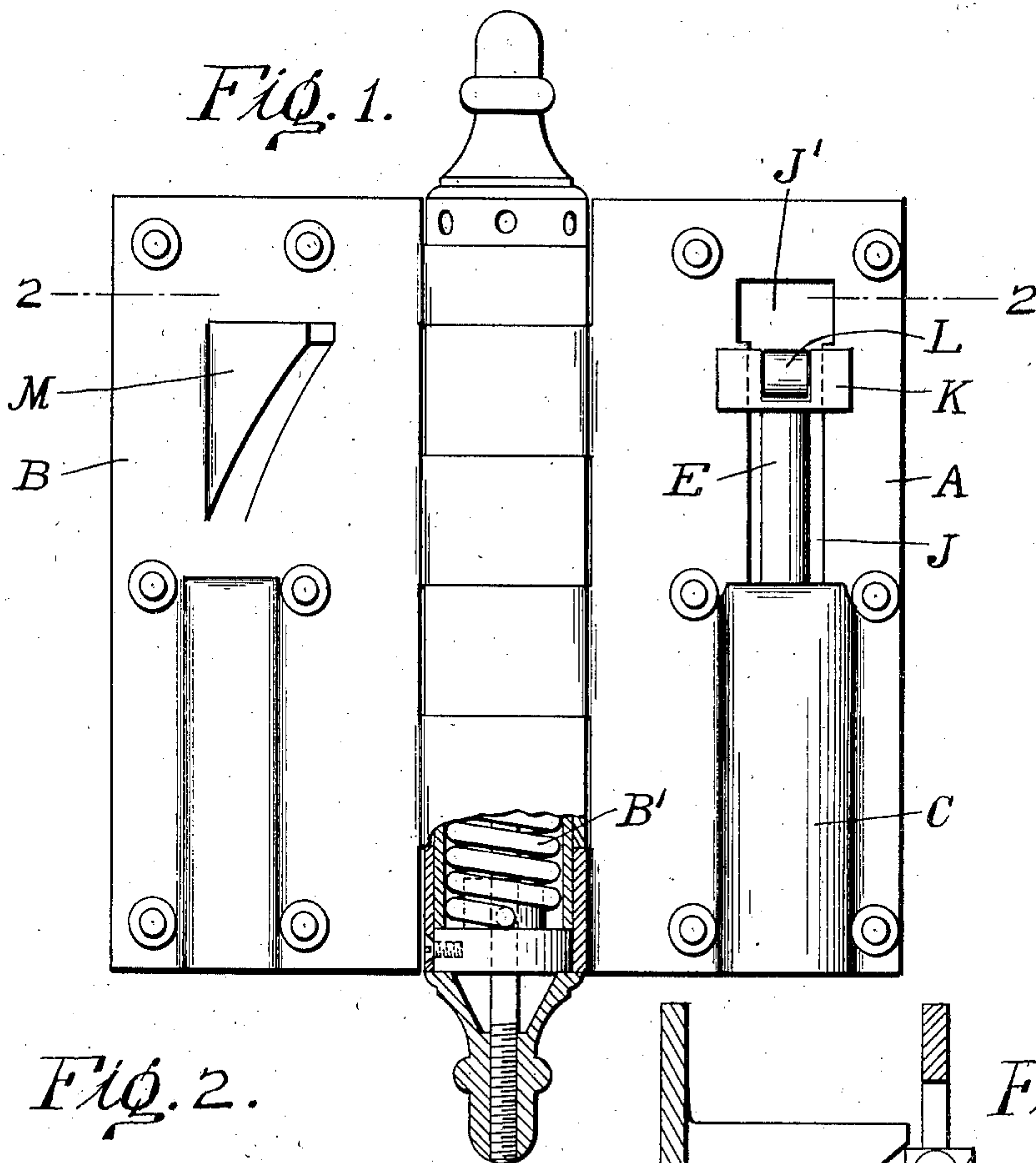


Fig. 2.

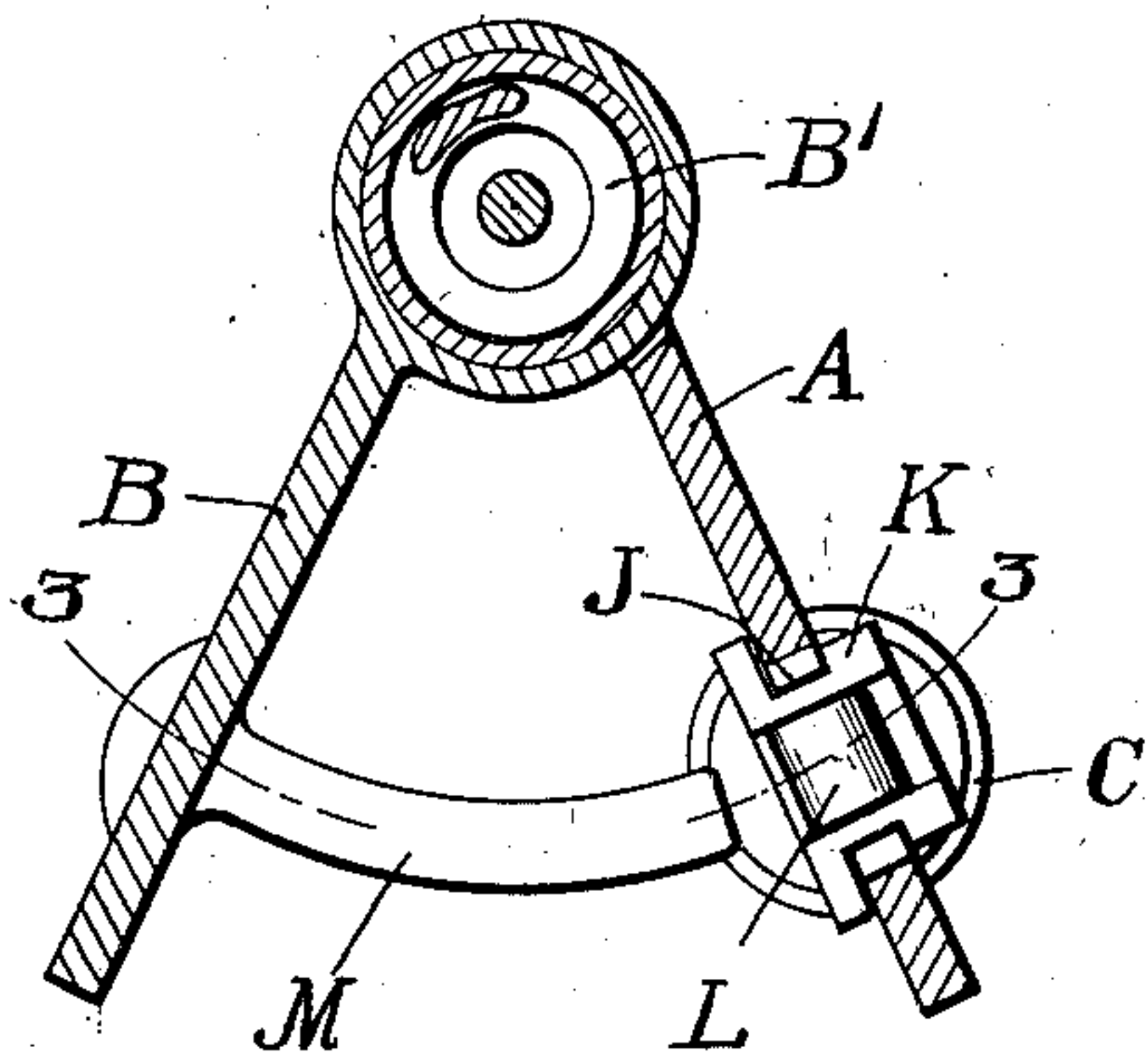
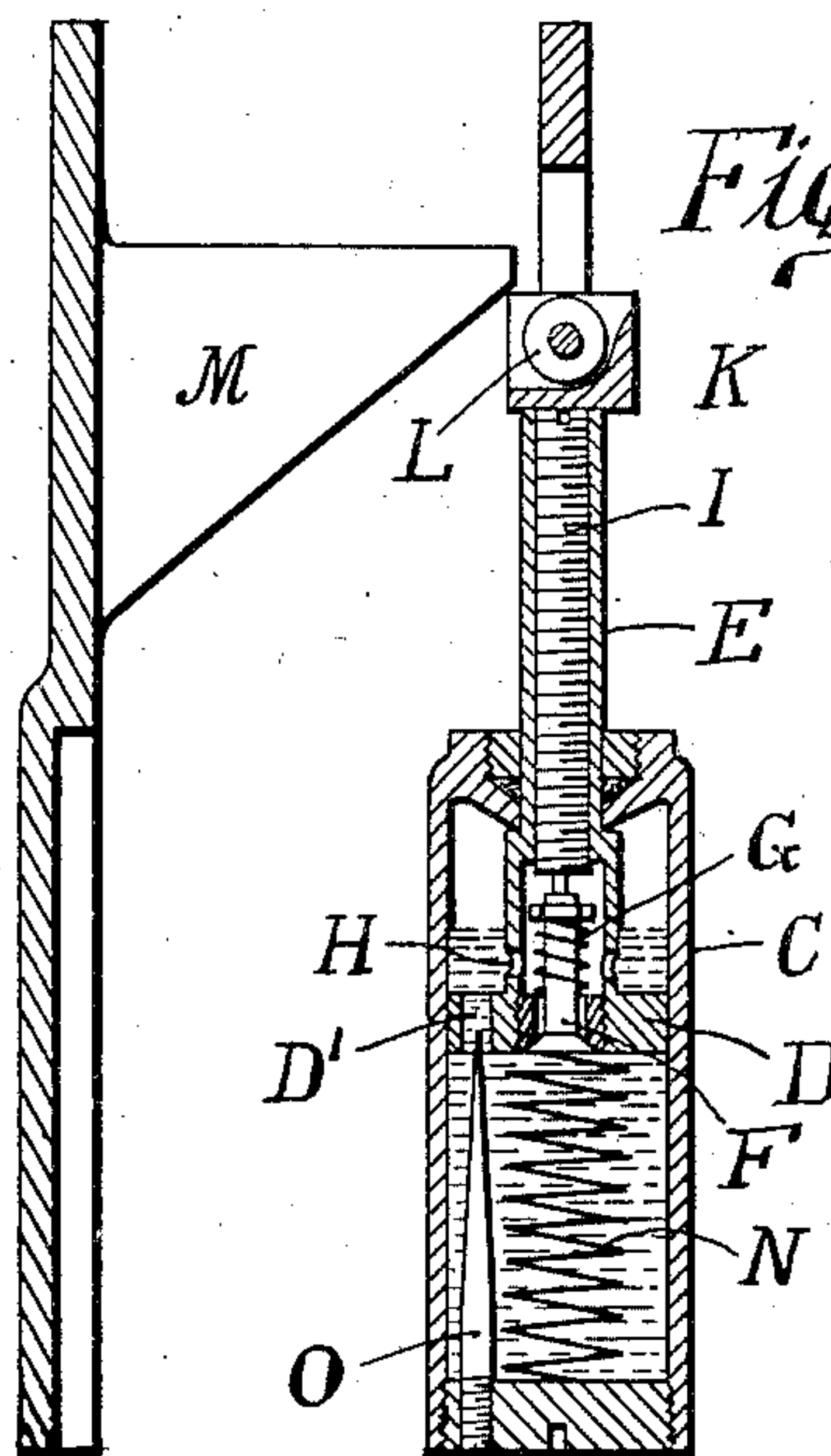


Fig. 3.



WITNESSES

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COMBINED DOOR CHECK AND HINGE.

No. 829,601.

Specification of Letters Patent.

Patented Aug. 28, 1906.

Application filed August 17, 1905. Serial No. 274,547.

To all whom it may concern:

Be it known that I, NIELS PETERSEN, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in a Combined Door Check and Hinge, of which the following is a specification.

My invention relates to a new and useful improvement in a combined door check and hinge, and is intended as an improvement upon an application for patent on a door check and hinge filed by me July 28, 1904, Serial No. 218,520.

The object of this invention is to provide a hinge so constructed that when the leaves are folded together the door will be checked and allowed to close slowly, all the apparatus for checking the door being out of sight when the door is closed.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an elevation of my improved door check and hinge with the hinge open; Fig. 2, a cross-section of the hinge, taken on the line 2 2 of Fig. 1, showing the hinge partially closed; Fig. 3, a section through the two leaves of the hinge.

In the drawings, A and B represent the two leaves of the hinge, said leaves being pivoted together and having a coiled spring B' around the pivot, which spring tends to always force said leaves together to close the door. Any form of spring arrangement could be used, and I make no claim upon this portion of the hinge. In fact, the leaves of the hinge can be pivoted together without the spring and have a spring to act upon the door independent of the hinge, if desired. Of course it is more practical to have the spring included in the hinge, as shown.

C indicates a cylinder formed with the leaf A of the hinge and having a piston D fitted to slide therein.

E is a tubular piston-rod extending up-

ward through the upper end of the cylinder, 55 and the bore of the piston-rod extends entirely through the piston.

F indicates a valve fitting against the under side of the opening through the piston, and G is a spring tending to force the valve 60 upward toward the piston to close the opening formed through the same.

H indicates openings formed through the walls of the tubular piston-rod a little above the piston. Thus if the piston is forced 65 downward against air or liquid pressure the valve F will close the opening through the piston automatically; but if the piston is raised against air or liquid pressure the liquid or air will flow through the openings H. The 70 valve will be removed from its seat automatically to allow the air or liquid to escape to that portion of the chamber underneath the piston. Thus the valve F forms an ordinary check-valve. The upper portion of the 75 tubular piston-rod E is closed by a screw-threaded rod I, which is threaded from the upper end of the piston-rod downward through the same, and the lower end of the rod I may be brought in contact with the up- 80 per end of the valve-stem of the valve F, so that, if desired, the valve F can be kept from entirely closing against its seat.

J indicates a vertical slot formed through the leaf A of the hinge above the cylinder C, 85 and this slot forms a guideway for the sliding block K. This sliding block K is cut away in its center from its upper side downward, so as to form a recess, and in this recess is jour- 90 naled an antifriction-roller L. The ends of the sliding block K are grooved, so as to fit and slide upon the leaf of the hinge within the slot J; but the flange upon one side of the groove is longer than the flange upon the 95 other side of the groove, and the slot J is widened slightly at its upper end, as indicated at J', and is of such a width that the side of the block K having the shorter flanges may pass therethrough until the grooves in the ends of the block are in alinement with 100 the walls of the slot J, and then the block will fall downward by gravity and rest upon the top of the piston-rod E.

Upon the opposite leaf B of the hinge is formed a projecting lug M, beveled from its 105 outer end downward and inward toward the leaf. This lug M is formed concentric with the pivotal axis of the hinge and is in such a

position that when the leaves of the hinge are forced together the inclined surface of the lug M will strike the roller L and force the sliding block K downward, and consequently press the piston D downward.

The cylinder C is designed to be used with either air or liquid as a resisting agent; but this form is made, preferably, for liquid, such as glycerin, oil, or the like, and by the proper adjustment of the screw I the valve F will always be held a certain distance off its seat, so that when the piston D is forced downward the liquid or air can only escape to the upper chamber around the valve, and the rapidity with which the door will close will depend upon how far the valve is held open. Therefore it can be seen that the checking of the door can be adjusted to a nicety.

When the door is opened and the leaves of the hinge spread, the piston will be quickly raised to its highest position by means of a spring N, interposed between the bottom of the cylinder and the piston, which will force the piston upward, and there will be practically no resistance offered against the upward movement of the piston, for the valve F will be free to open to its greatest extent to allow the flow of liquid to the other side of the piston.

It is often found desirable to have the door close quickly when it first meets the resistance and gradually close slowly toward the end. In order to accomplish this, I provide a vertical opening D', formed through the piston, and extending upward from the bottom of the cylinder is a tapering pin O, the base of which is practically the same size as the opening D', but tapers upward to a point. In this instance it will be seen that when the piston is first forced downward the opening D' will be open to practically its fullest extent; but as the piston travels downward the opening will be closed more and more by the pin O, so that the resistance is increased the further the door is closed. Of course this pin need not be used unless desired, or the pin and valve could be used in conjunction with one another.

Of course, if desired, two cylinders could be used the same as in my former patent; but I have found by experience that one cylinder is sufficient.

Having thus fully described my invention, what I claim as new and useful is—

In a combined hinge and door-check, a hinge consisting of two leaves pivoted together, a spring adapted to automatically close the door; a cylinder adapted to contain either air or liquid formed with one leaf of the hinge and extending parallel with the pin-
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In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

NIELS PETERSEN.

Witnesses:

JOHN EWINGS,
 ANNA MAI SCHWENK.