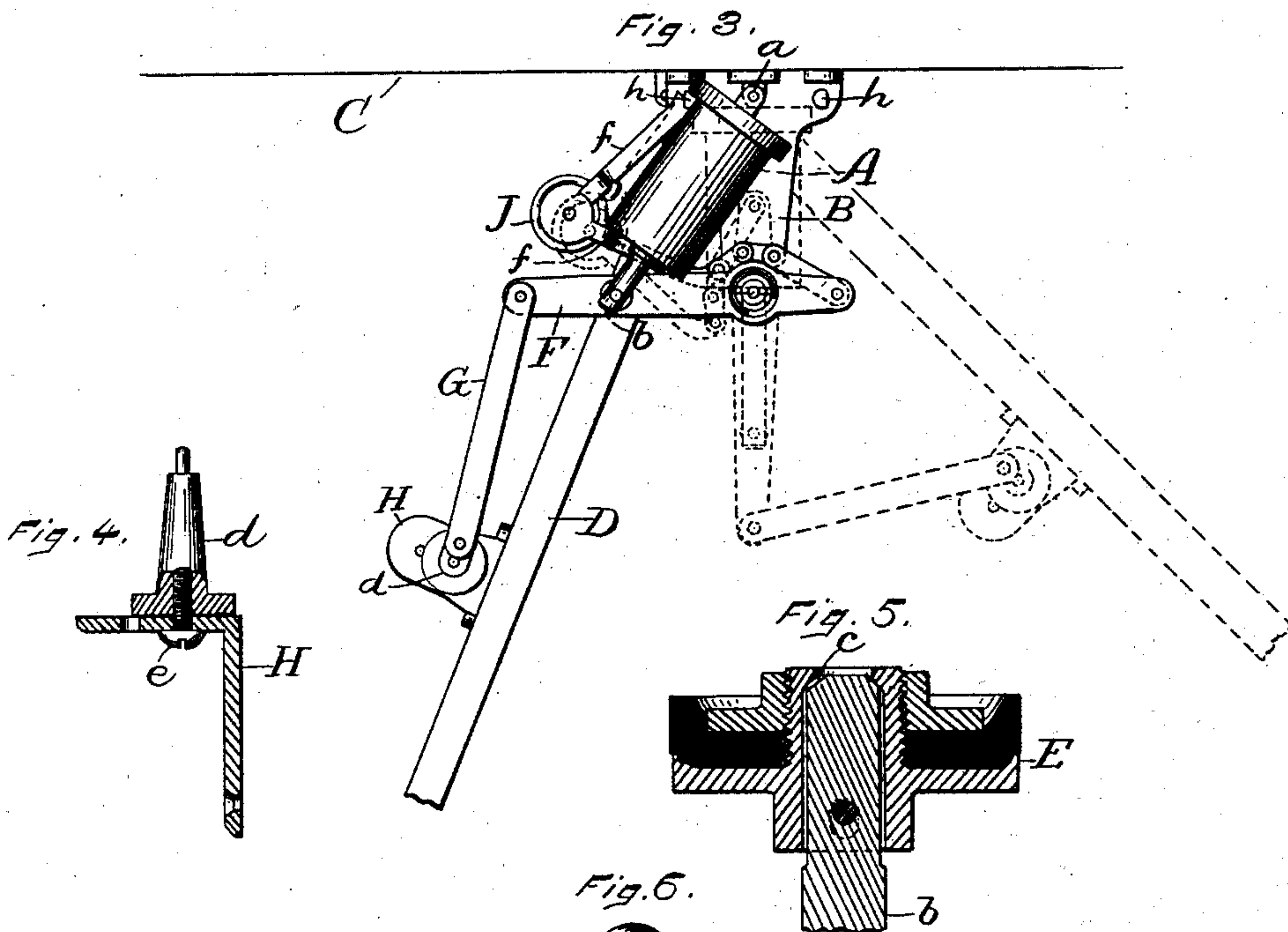
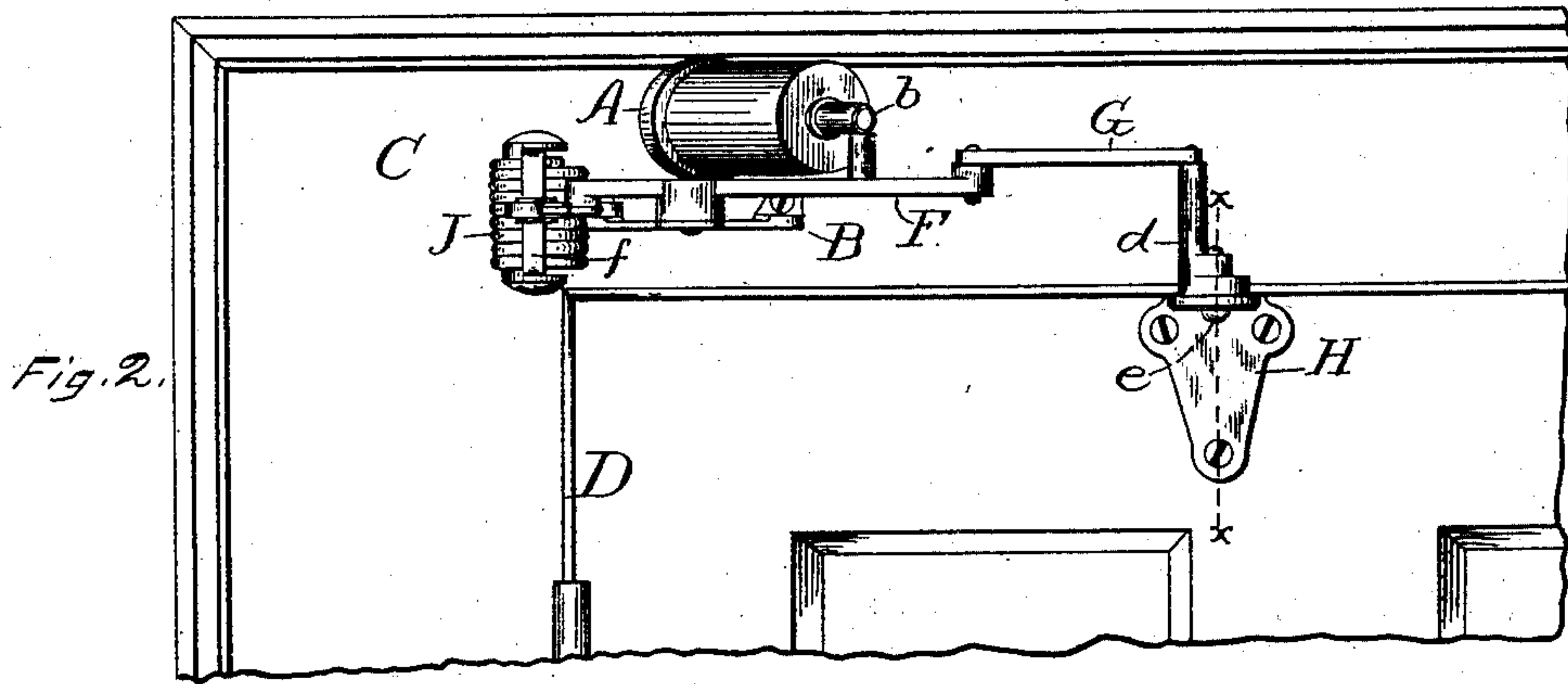
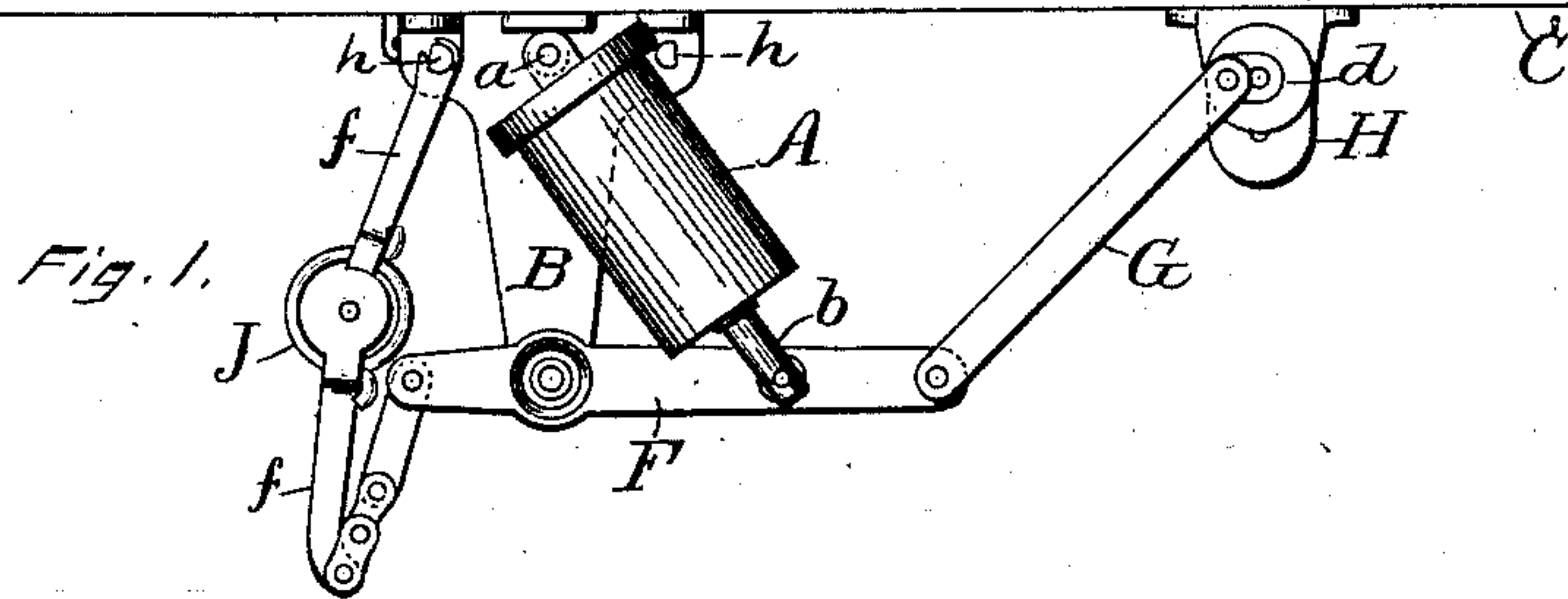


(Model.)

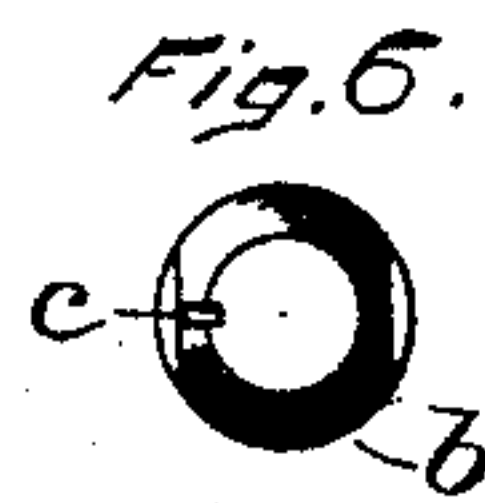
G. GEER.
DOOR CHECK.

No. 374,245.

Patented Dec. 6, 1887.



WITNESSES,
John Edwards Jr.
Theodor Brockway



INVENTOR,
George Geer.
By James Shepard

Att'y.

UNITED STATES PATENT OFFICE.

GEORGE GEER, OF PETERBOROUGH, NEW HAMPSHIRE, ASSIGNOR TO THE
RUSSELL & ERWIN MANUFACTURING COMPANY, OF NEW BRITAIN, CON-
NECTICUT.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 374,245, dated December 6, 1887.

Application filed June 16, 1887. Serial No. 241,501. (Model.)

To all whom it may concern:

Be it known that I, GEORGE GEER, a citizen of the United States, residing at Peterborough, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

My invention relates to improvements in piston door-checks; and the objects of my improvement are to impart a double stroke to the piston for one motion of the door, to produce a check adapted for both right and left hand doors, and, in general, to simplify the construction and improve the efficiency of the machine.

In the accompanying drawings, Figure 1 is a plan view of my door-check as attached to a door. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view with the door opened. Fig. 4 is a vertical section on line *x x* of Fig. 2, partly in elevation, of the bracket by which my check is connected to the door. Fig. 5 is a central longitudinal section of the piston-head and a portion of the piston-rod, and Fig. 6 is an end view of the piston-rod.

A designates the cylinder, which is pivoted by one end to the pivot *a* on the bracket B, which bracket is secured to the door-casing C, so as to clear the door D. The piston-head E, Fig. 5, is secured upon the piston-rod *b* by a slot-and-pin connection, so as to have a limited longitudinal play thereon, whereby its conical end, which serves as a valve, is pressed upon and lifted from the central valve-seat in the piston-head, all substantially as in my former Patent No. 335,575, dated February 9, 1886, the sides of the piston-rod being slabbed off to permit the passage of air through the piston-head during the backward or outward stroke of the piston. Instead of constructing the vent in the cylinder or in a special passage through the piston-head, I form a slot, *c*, in the contacting surface of the valve and valve-seat, so that there is a small vent through the said contacting surfaces when the valve is closed to its fullest extent. This slot is in the conical end of the piston-rod, as shown in Figs. 5 and 6. This vent can be constructed at a very trifling cost, and by being formed in the

tapering end of the piston-rod, which acts as a valve, the air passes through it or by it in both directions, and the vent is also removed from the valve-seat upon every return-stroke of the piston, whereby it is less liable to become clogged than is a vent which is at all times surrounded by a solid wall.

To the projecting end of the bracket B, I pivot the operating-lever F, to which lever I also pivot the end of the piston-rod *b*. The long end of this lever has pivoted to it a link, G, which link is also pivotally connected to the bracket H that is secured to the door. The pivotal post *d* of this bracket I prefer to form of a separate piece and secure the same to the bracket H by means of the fasteningscrew *e*, the hole for said screw in the post *d* being eccentric or to one side of the pivot for the link, whereby, upon loosening the screw and swinging the post partially around it, the pivot may be adjusted and secured at varying distances from the face of the door. In order to provide for a still further adjustment, the flange of the bracket H may be provided with two or more holes through which to pass the fasteningscrew *e*.

The mechanism thus far described completes the check or buffing mechanism, and may be used in connection with any ordinary door-closing spring. I prefer, however, to connect the door-closing spring to the short end of the lever F. J designates the door-closing spring, which is a coiled spring arranged around the axis of a pair of toggle-arms *ff*, the ends of the wire forming the spring being bent out so as to bear upon each of said arms. One of the toggle-arms is hooked upon one of the pivotal studs *h* of the bracket B, and the other arm is connected by a series of links to the short end of the lever F. As will be seen by reference to Fig. 2, the cylinder is elevated above the lever F, so that said lever may swing under the cylinder.

Upon opening the door the bracket H, through the link G, pushes upon the long end of the lever F, so as to draw the piston outwardly, the cylinder meantime swinging upon the pivot *a*. When the door has been opened so as to be at an angle of about forty-five degrees to the casings, the lever F will stand at

about right angles thereto, and the piston will be drawn outwardly the full extent of its stroke, as indicated by the broken lines in Fig. 3. Upon the further movement of the door D the piston is pushed inwardly, thereby cushioning the door in its backward movement. Upon releasing the door the closing-spring J acts to return the door, while the lever F pulls the piston outwardly, thereby opening the valve, so that no air is compressed within the cylinder until after the door has passed the point indicated by the broken lines in Fig. 2. This permits the door to close quickly through the greater part of its stroke and to be suddenly arrested by the formation of an air-cushion within the cylinder during the latter part of its stroke, just in time to prevent the door from slamming. The device is changed from the position illustrated to adapt it for use upon a different handed door by simply swinging the lever F around so that the end to which the piston-rod and link G are pivoted will point in the opposite direction. If the door-closing spring herein shown is used in connection therewith, one of the toggle-arms *f* is unhooked from one of the pivotal studs *h* of the bracket B and hooked upon the like stud at the opposite side of said bracket.

I am aware that prior patents show and describe door-checks having a cylinder and piston, in which the piston is operated by a lever and pivoted link, the lever and link being mounted upon brackets secured, respectively, to the door and its casing, and that in some cases the cylinder has been hung upon a pivot. All of said prior art is hereby disclaimed. It should be noticed that my bracket B has considerable projection from the casing, and that the pivot *a*, to which the cylinder is pivoted, and the fulcrum of the lever F are in a line which is substantially at right angles to the face of the door-casing, whereby I am enabled to impart a double stroke to the piston for one movement of the door, provided the door is opened beyond a given point.

I am also aware that a prior patent shows a pneumatic door-check consisting of a station-

ary cylinder, a piston whose rod is provided with a slotted cross-head, an operating angle-lever having a pin working in the slot of said cross-head, a door-closing spring connected with the axle of the operating-lever, and a pair of toggle-levers having one member pivoted to a stationary bracket and the other member to one end of the operating-lever. Such a door-check is hereby disclaimed.

I claim as my invention—

1. In a door-check, the valve-seat of the piston-head and its valve, having on their contacting faces the vent-slot *c*, forming an inclosed narrow air-passage when said contacting faces are brought together for closing the valve, and an open-sided slot when said contacting faces are separated for opening the valve, substantially as described, and for the purpose specified.

2. The combination of the cylinder and piston with the operating-lever, the link G, the bracket H, and eccentric pivotal post *d*, secured to said bracket, substantially as described, and for the purpose specified.

3. The combination of the link G and its bracket, the cylinder and piston pivotally mounted upon another bracket, the operating-lever F, having its fulcrum in front of the pivot *a* of said cylinder on a line which stands substantially at right angles to the face of the casing, substantially as described, and for the purpose specified.

4. The combination of the link G and its bracket, the operating-lever F, fulcrumed on another bracket and having its long end pivotally connected to the outer end of said link, the cylinder and piston pivoted at one end to a stationary bracket and at the opposite end to the long end of said operating-lever, and the door-closing spring connected with the short end of said operating-lever, substantially as described, and for the purpose specified.

GEORGE GEER.

Witnesses:

THEO. E. SMITH,
CHAS. M. BUGESS.