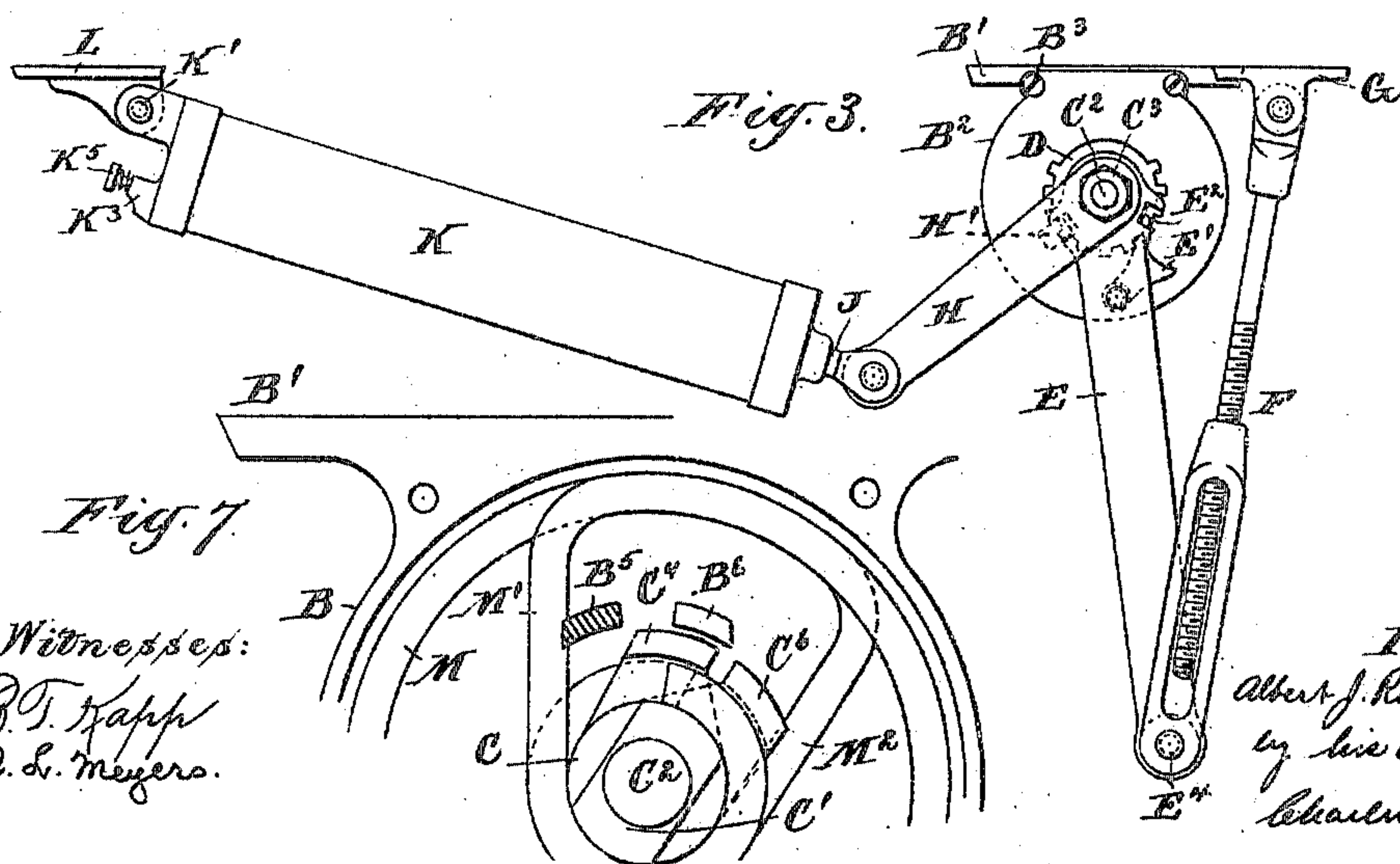
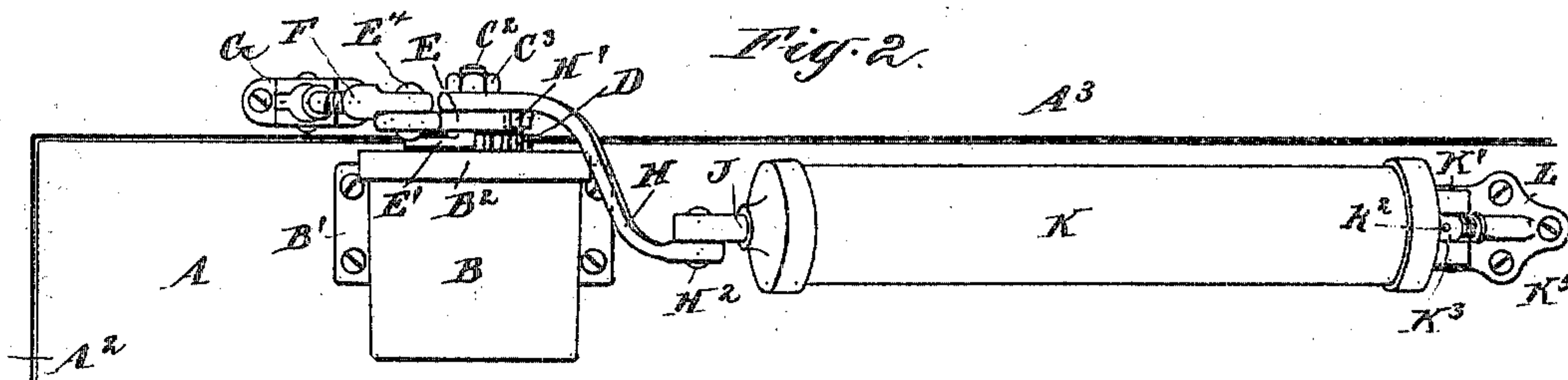
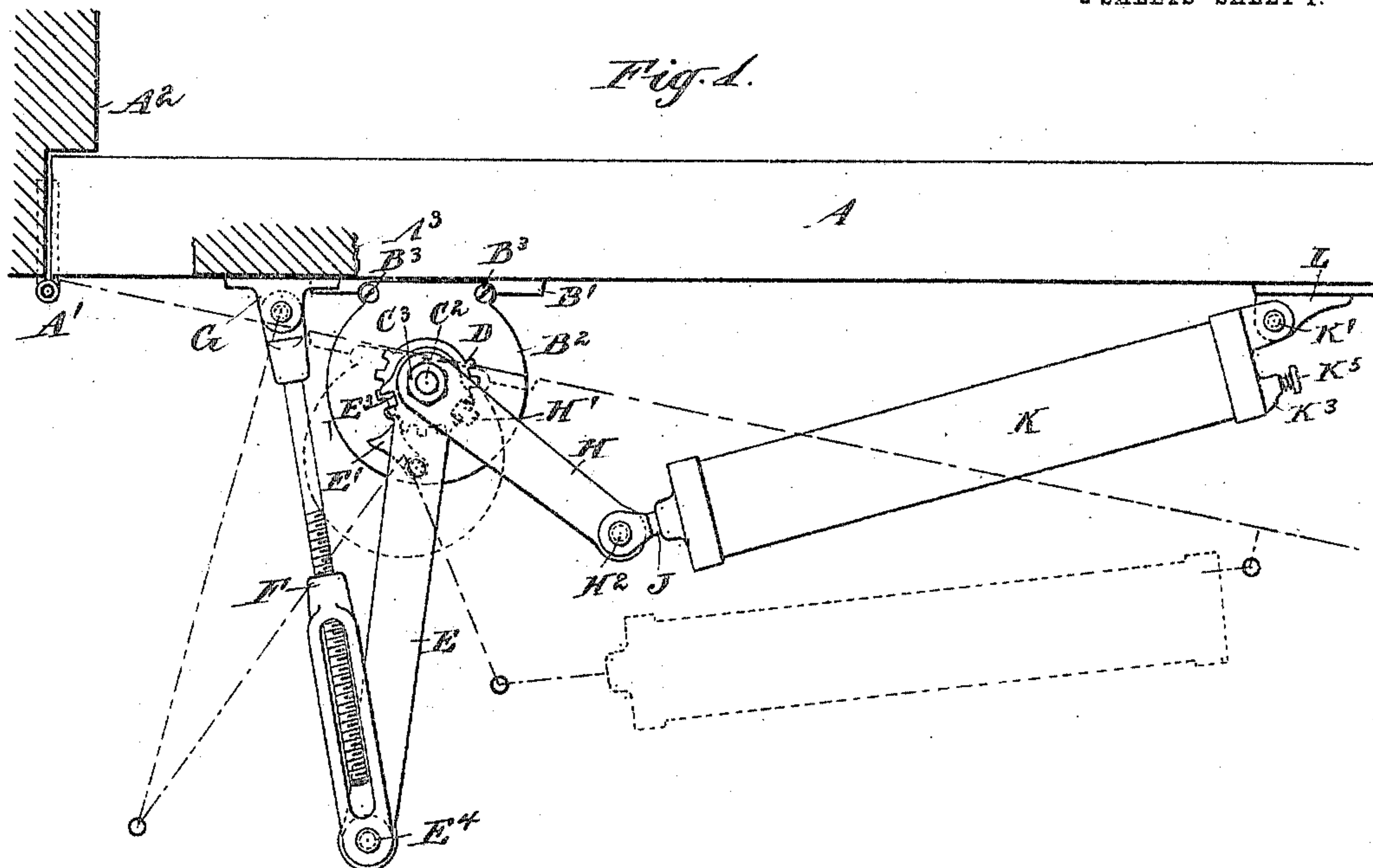


No. 817,393.

PATENTED APR. 10, 1906.

A. J. ROSENTERTER.
DOOR CLOSER AND CHECK.
APPLICATION FILED MAR. 30, 1905.

2 SHEETS—SHEET 1.



Witnesses:
C. T. Hupp
C. L. Meyers.

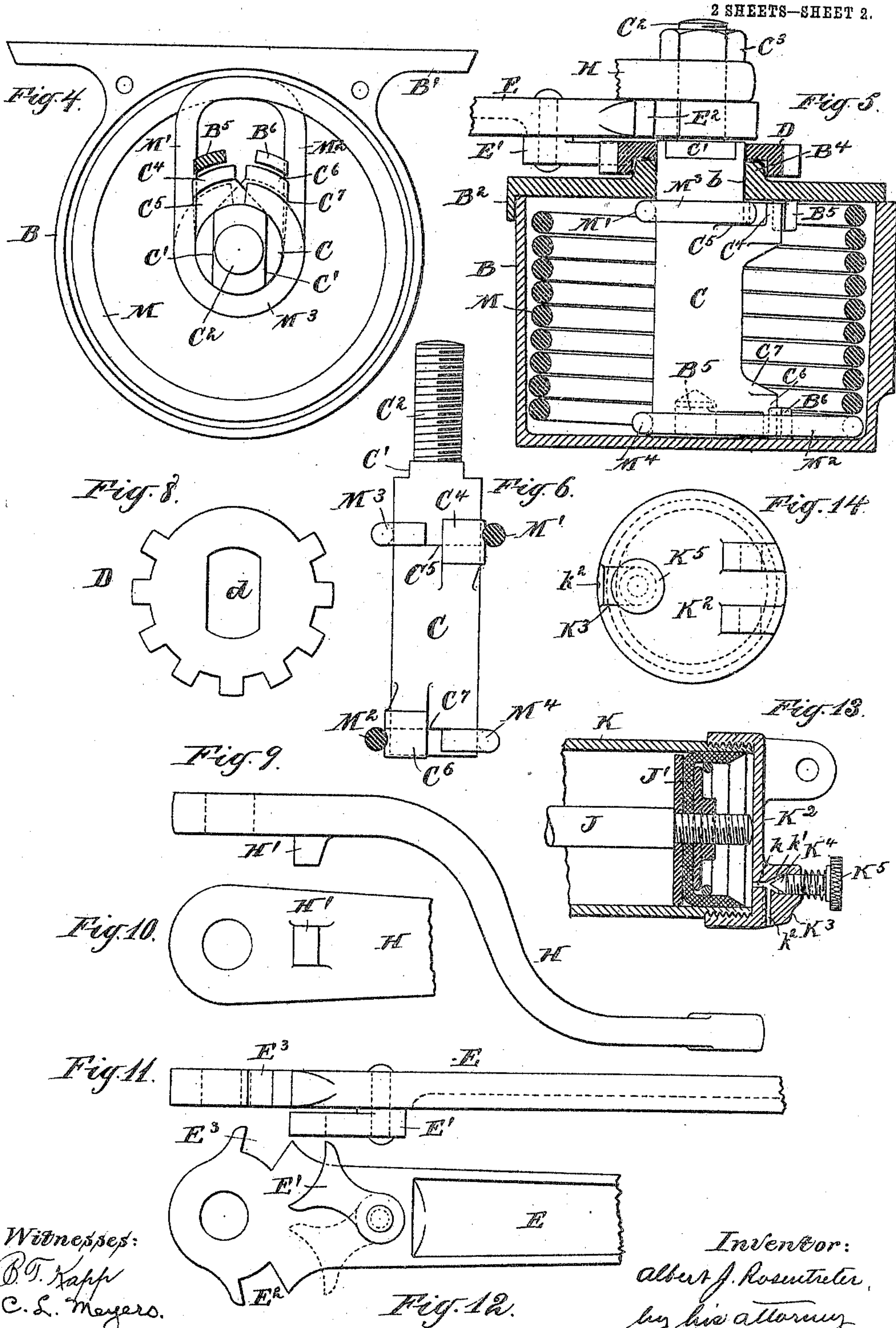
Inventor:
Albert J. Rosentreter,
by his attorney
Charles R. Seale.

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Witnesses:
B. T. Kapp
C. L. Meyers.

Inventor:
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Charles R. Seale.

UNITED STATES PATENT OFFICE.

ALBERT J. ROSENTER, OF BOONTON, NEW JERSEY, ASSIGNOR TO
HIMSELF, AND THOMAS HANNAH, OF PITTSBURG, PENNSYLVANIA,
AND GERALD HANNAY, OF NEWARK, NEW JERSEY.

DOOR CLOSER AND CHECK.

No. 817,393.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed March 30, 1905. Serial No. 252,799.

To all whom it may concern:

Be it known that I, ALBERT J. ROSENTER, a citizen of the United States, residing in Boonton, in the county of Morris and State of New Jersey, have invented a certain new and useful Improvement in Door Closers and Checks, of which the following is a specification.

The invention relates to door closers and checks in which the closing movement is induced by the action of a spring and checked by the slow escape of a volume of imprisoned air or other medium.

The object of the invention is to provide a door closer and check which can be readily applied to either right or left hand doors without changing the spring and which shall be of few parts, strong and durable, and especially adapted to serve with air as the checking medium.

The invention consists in certain novel features and arrangements of parts by which the above objects are attained, to be hereinafter described.

The accompanying drawings form a part of this specification and show an approved form of the invention.

Figure 1 is a plan view of the improved closer and check applied to a right-hand door. The jambs and a portion of the lintel are shown in horizontal section. Fig. 2 is a corresponding elevation, and Fig. 3 is a plan view of the closer and check alone, similar to Fig. 1, but conditioned for service with a left-hand door. The remaining figures are on a larger scale and show portions. Fig. 4 is a plan view of the spring-chamber with the cover removed. The abutment of the cover is shown in horizontal section. Fig. 5 is a vertical section through the spring-chamber and immediately-connected parts, certain portions being shown in elevation. Fig. 6 is an elevation of the spindle, showing in vertical section portions of the spring carried thereby. Fig. 7 is a view corresponding to a portion of Fig. 4, but showing the parts differently conditioned. Fig. 8 is a top or face view of the tension-ratchet. Fig. 9 is a side view of the checking-lever, and Fig. 10 is a plan view of a portion of the under face thereof. Fig. 11 is a side view of a portion of the operating-arm, and Fig. 12 is a plan view of

the under face thereof. Fig. 13 is a longitudinal section through the rear portion of the checking-cylinder and its piston, and Fig. 14 is a corresponding end elevation.

Similar letters of reference indicate the same parts in all the figures.

A is a right-hand door, hinged at A'.

A² A² are the jambs or side portions of the door-frame, and A³ is the lintel.

The casing B for the spring is of cylindrical form, having lugs B' B', by which it is secured to the upper portion of the door near the hinged edge. It has a cover B², held in place by screws B³ B³, in which is a central boss B⁴, having an opening b, serving as a journal for the upper end of a spindle C. The latter is supported on the bottom of the casing and journaled therein by means of a central vertical cylindrical recess on a short cylindrical stud B⁵, cast or otherwise produced on the center of the closed bottom of the casing and projecting upwardly therefrom. The upper end of the spindle is reduced or flattened on opposite sides, as at C', immediately above the boss B⁴ and carries a toothed disk or ratchet-plate D, having an opening d matching such flattened end, and thereby reliably connected to the spindle. On the upper end of the spindle is an axial extension or stem C² of smaller diameter than the body of spindle, on which is mounted the operating-arm E, carrying on its under face a reversible pawl E', adapted to engage the teeth of the ratchet-plate D. The outer end of the controlling-lever or operating-arm E is pivoted at E⁴ to the free end of an adjustable link F, the inner end of which is pivoted to a bracket G, secured to the lintel on a line between the casing B and door-hinge A'.

The operating-arm is notched at E² and E³ on opposite sides of the stem C², one or the other of such notches receiving a lug H' on a curved checking-lever H, mounted on the stem C² above the operating-arm and held in place with the latter and the ratchet-plate by a nut C³ on the screw-threaded stem.

Pivoted to the outer end of the downwardly-projecting checking-lever at H² is a piston-rod J, carrying at its opposite end a cup-leather piston J', received in a cylinder K, pivotally connected at K' to a bracket L, secured to the door. The cylinder-head K², car-

rying the pivot, is provided with a lug K^3 , drilled, counterbored, and tapped to produce a channel k and conical valve-seat k' for a pointed screw-valve K^4 , operated by a head K^5 . A lateral channel k^2 is drilled to the valve-seat k' and permits air imprisoned between the piston and cylinder-head to escape.

The act of opening the door, as indicated by the dotted lines in Fig. 1, causes the operating-arm to turn the spindle and correspondingly to move the checking-lever and draw the piston J' from the cylinder-head K^2 , the space between filling with air entering freely around the cup-leather, and the door is permitted to open easily. The door is returned to the closed position by a spring contained in the casing and acting on the spindle, the tension of which is increased by the turning of the spindle in the opening movement, and the last part of such closing movement is checked by the air in front of the piston, the speed of this portion of the closing movement being governed by the valve K^4 , controlling the escape passages or channels k k^2 .

The spring M is helical and of a diameter to match loosely within the casing, the upper and lower coils ending in arms M' M^2 , extending inwardly and terminating in loops M^3 M^4 , encircling the spindle C , preferably in opposite directions. The loops serve to support the spring and hold it centrally within the casing. The end of the wire from the upper loop M^3 lies upon the upper face of a lug C^5 , cast on the spindle and having an upturned finger C^4 , the space between the finger and body of the spindle being sufficient to receive the loop and maintain it in position. The lower loop M^4 is similarly received in a corresponding space between the body of the spindle and a downwardly-projecting finger C^6 on a lug C^7 , near the lower end of the spindle. The lugs C^5 C^7 extend in the same direction from the same face of the spindle, but are arranged oppositely, as shown, and the arms M' M^2 of the spring are each engaged on its inner face by one of the fingers, thus holding the spring under a slight tension at all times, tending to cause the arms to approach each other. This tension serves to insure the engagement of the spring with the spindle and allow the latter, with the spring, to be handled as a unit in assembling the closer.

On the bottom of the casing and outside the path of the finger C^6 is an upwardly-projecting abutment B^6 , and B^5 is a similar abutment projecting downwardly from the interior of the cover adjacent to the path of the upper finger C^4 . Both abutments are located between the arms M' M^2 and each is adapted to prevent the movement of its arm in one direction, as shown in Figs. 4 and 5, in which figures the parts are represented as they appear when the spring is under the above-mentioned tension alone and as best conditioned for description.

In opening the door, as in Fig. 1, the upper arm M' is held by the abutment B^5 against moving with the pintle, but the lower arm M^2 is forced by the finger C^6 to move therewith and away from its abutment B^6 , resulting in an increased tension or winding of the spring. When conditioned as in Fig. 3, for service with a left-hand door, the spindle is turned in the opposite direction by the opening movement, and the upper arm M' is forced to move, while the lower arm M^2 is held by its abutment, resulting in again winding the spring and increasing the tension, in one instance winding the spring from the top and in the other from the bottom.

As thus described, the closer will perform satisfactorily with extremely-light doors; but in order to increase and adjust the tension, as required in adapting the closer for doors of different weights and resistances, the ratchet-plate D and pawl E' on the operating-arm are supplied. The ratchet is engaged by a suitable spanner or wrench and the spring tightened by turning the ratchet-plate in one direction for a right-hand door or in the opposite direction for a left-hand door, and re-engaging the pawl. Fig. 7 shows the positions of the arms, fingers, and abutments when the spring is thus strained to increase the tension for a right-hand door.

In adapting the closer and check for a left-hand door the nut C^3 is removed, the checking-lever H shifted to engage the lug H' in the opposite notch E^3 , the pawl E' swung to engage in the opposite direction, and the nut again applied and tightened. The parts are then attached to the door and lintel in the same relative positions as before and the spring wound to the desired tension, but in the opposite direction, the lower arm M^2 being held in this case and the upper arm M' moved from its abutment by the opening of the door, as above described.

The upper face of the upper finger C^4 and the lower face of the lower finger C^6 lie so close to the under face of the cover and upper face of the bottom, respectively, as to prevent the escape or derangement of the spring, and with the engagement of the loops with the lugs C^5 C^7 insure the maintenance of the spring axially of the casing without other guiding means, and by reason of dispensing with collars or other holding means for the spring the use of a long spring is permitted.

The curvature of the checking-lever H is important in bringing the connection to the piston-rod to the axial line of the cylinder K ; but the same end may be effected with a straight arm by the obviously alternative expedient of mounting the cylinder on an upward extension of the bracket L , thus elevating it above the door to which it is pivoted and locating it in line with such arm.

Although the invention is shown as adapted for service with a pneumatic check, it will

be understood that a piston and cylinder adapted to serve with oil or other liquid as the checking medium may be substituted.

The closer is of few parts, easily and cheaply made and assembled, and with the pneumatic check is easily and quickly applied to either right or left hand doors. The tension of the spring and the rapidity of the closing and checking movements are easily and exactly governed.

I claim—

1. In a door-closer, a casing adapted to be mounted on a door, a spindle mounted in said casing and having an operating-arm having notches on opposite sides of the spindle and pivoted to a link adapted to be secured to the door-frame, a coiled spring in said casing having axial portions within which said spindle is received, means coöperating with said spring to increase the tension of the latter by the turning of said spindle in either direction by the opening movement of either a right or left hand door, a checking-lever constructed to engage the notches of said operating-arm and be moved thereby, and means operated by said lever for checking the closing movement of such door.

2. In a door-closer, a casing adapted to be mounted on a door, a spindle mounted in said casing and having an operating-arm having notches on opposite sides of the spindle and pivoted to a link adapted to be secured to the door-frame, a coiled spring in said casing having axial portions within which said spindle is received, means coöperating with said spring to increase the tension of the latter by the turning of said spindle in either direction by the opening movement of either a right or left hand door, a checking-lever constructed to engage the notches of said operating-arm and be moved thereby, a piston pivoted to said lever, and a cylinder receiving said piston and adapted to be pivotally connected to the door for checking the closing movement of such door.

3. In a door-closer, a casing adapted to be mounted on a door, a spindle mounted in said casing and having an operating-arm having notches on opposite sides of the spindle and pivoted to a link adapted to be secured to the door-frame, a coiled spring in said casing having axial portions within which said spindle is received, means coöperating with said spring to increase the tension of the latter by the turning of said spindle in either direction by the opening movement of either a right or left hand door, a checking-lever constructed to engage the notches of said operating-arm and be moved thereby, a piston pivoted to said lever, a cylinder receiving said piston and adapted to be pivotally connected to the door for checking the closing movement of such door, and means for controlling the escape of air or other checking medium from said cylinder to govern such closing movement.

4. In a door-closer, a casing adapted to be mounted on a door, a spindle mounted in said casing, a coiled spring in said casing, means coöperating with said spring to increase the tension of the latter by the turning of said spindle in either direction by the opening movement of either a right or left hand door, an operating-arm having notches on opposite sides of the spindle and mounted on said spindle, a pawl on said arm, a ratchet-plate secured to said spindle and arranged to serve with said pawl in adjusting the normal tension of said spring in either direction, a link pivoted to said arm and adapted to be secured to the door-frame, a checking-lever mounted on said spindle angularly to said arm and constructed to be engaged and moved thereby, an air-cylinder adapted to be pivotally secured to the door, and a piston in said cylinder pivoted to said checking-lever.

5. In a door closer and check, a casing adapted to be secured to a door, a spring therein arranged to serve in closing either a right or left hand door, a spindle mounted in said casing and connected to said spring, an operating-arm having notches on opposite sides of the spindle and connected to said spindle, a link pivoted to said arm and adapted to be secured to a door-frame on either side of said spindle, a ratchet-plate on said spindle for adjusting the normal tension of said spring in either direction, a checking-lever moving with said arm and constructed to engage the notches in said operating-arm and be moved thereby, and a checking means adapted to be secured to said door on either side of said casing and operated by said checking-lever.

6. In a door - closer, a casing, a spring therein arranged to serve in closing either a right or left hand door, a spindle mounted in said casing and connected to said spring, an operating-arm connected to said spindle and having notches therein on opposite sides of said spindle, a link pivoted to said arm and adapted to be secured to a door-frame, a checking-lever mounted above said arm on said spindle and extending outwardly and downwardly, a lug on said lever adapted to engage in either of said notches, a piston pivotally secured to said lever, and a checking-cylinder inclosing said piston and adapted to be pivotally secured to the door on either side of said casing.

7. In a door closer and check, a casing adapted to be secured to a door, a spring therein arranged to serve in closing either a right or left hand door, a spindle mounted in said casing and connected to said spring, an operating-arm mounted on said spindle, a pawl on said arm, a ratchet-plate secured to said spindle and arranged to serve with said pawl in adjusting the normal tension of said spring in either direction, notches in said arm

on opposite sides of said spindle, a link piv-
oted to said arm and adapted to be secured to
a door-frame on either side of said spindle,
a checking-lever mounted on said spindle
5 above said arm and extending outwardly
and downwardly, a lug on said lever adapted
to engage in either of said notches, a piston
pivotally secured to said lever, a cylinder in-
closing said piston and adapted to be pivot-
10 ally secured to the door on either side of said
casing, and means for controlling the escape
of air from said cylinder.

8. In a door closer and check, a casing
adapted to be secured to a door, a spindle
15 mounted in said casing, a spring in the latter
actuating said spindle in the direction to close
such door, an operating-arm having notches
on opposite sides of the spindle and secured

to said spindle and connected by a link to the
door-frame, a ratchet-plate on said spindle 20
and means coöperating therewith for adjust-
ing the normal tension of said spring in
either direction, a checking-lever constructed
to engage the notches of said operating-arm
and be moved thereby, a checking-cylinder 25
adapted to be pivotally secured to said door,
and a piston inclosed in said cylinder and
pivotally connected to said lever.

In testimony that I claim the invention
above set forth I affix my signature in pres- 30
ence of two witnesses.

ALBERT J. ROSENTERER.

Witnesses:

CHAS. A. HAUCK,
CHARLES R. SEARLE.