

No. 686,065.

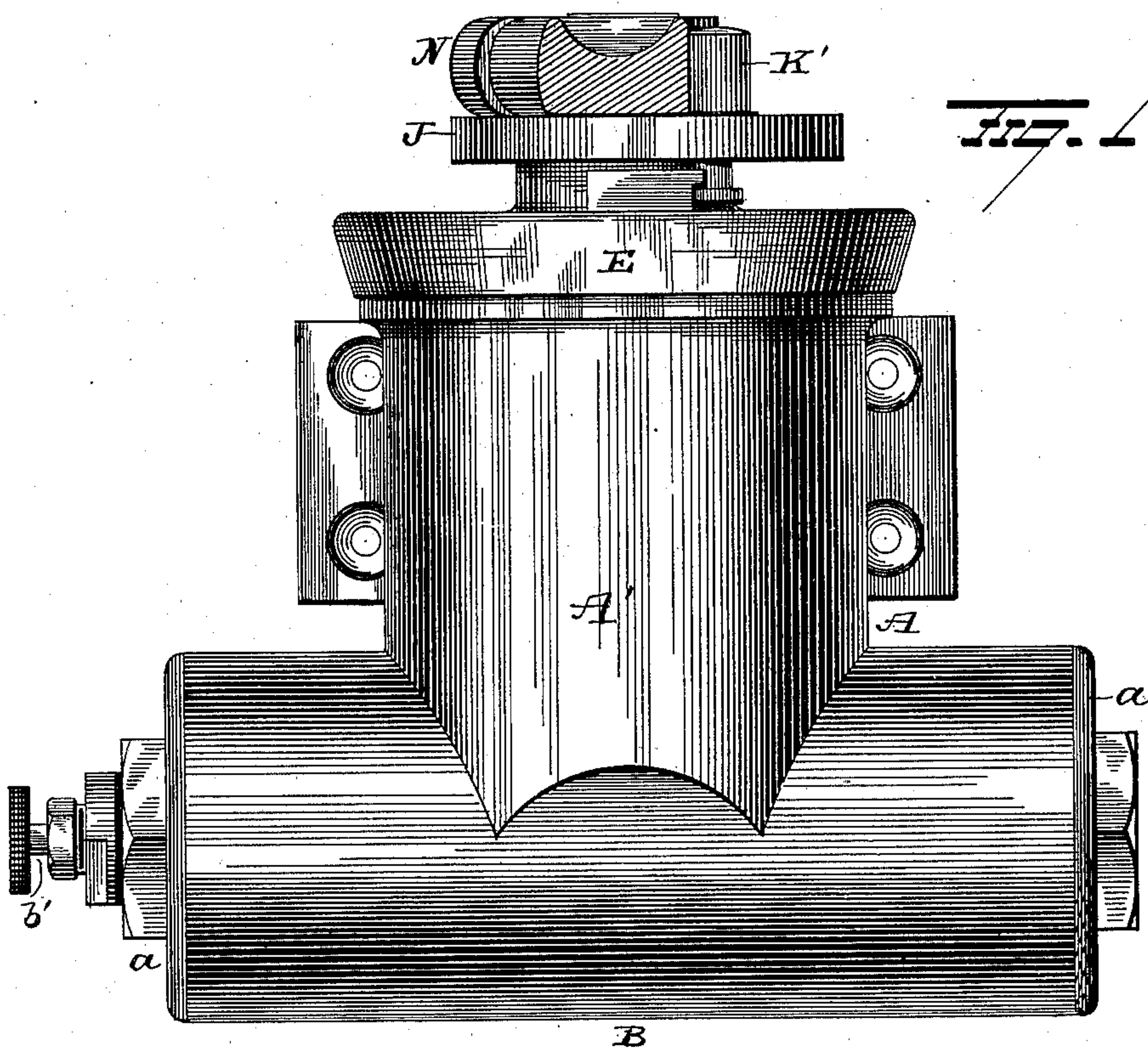
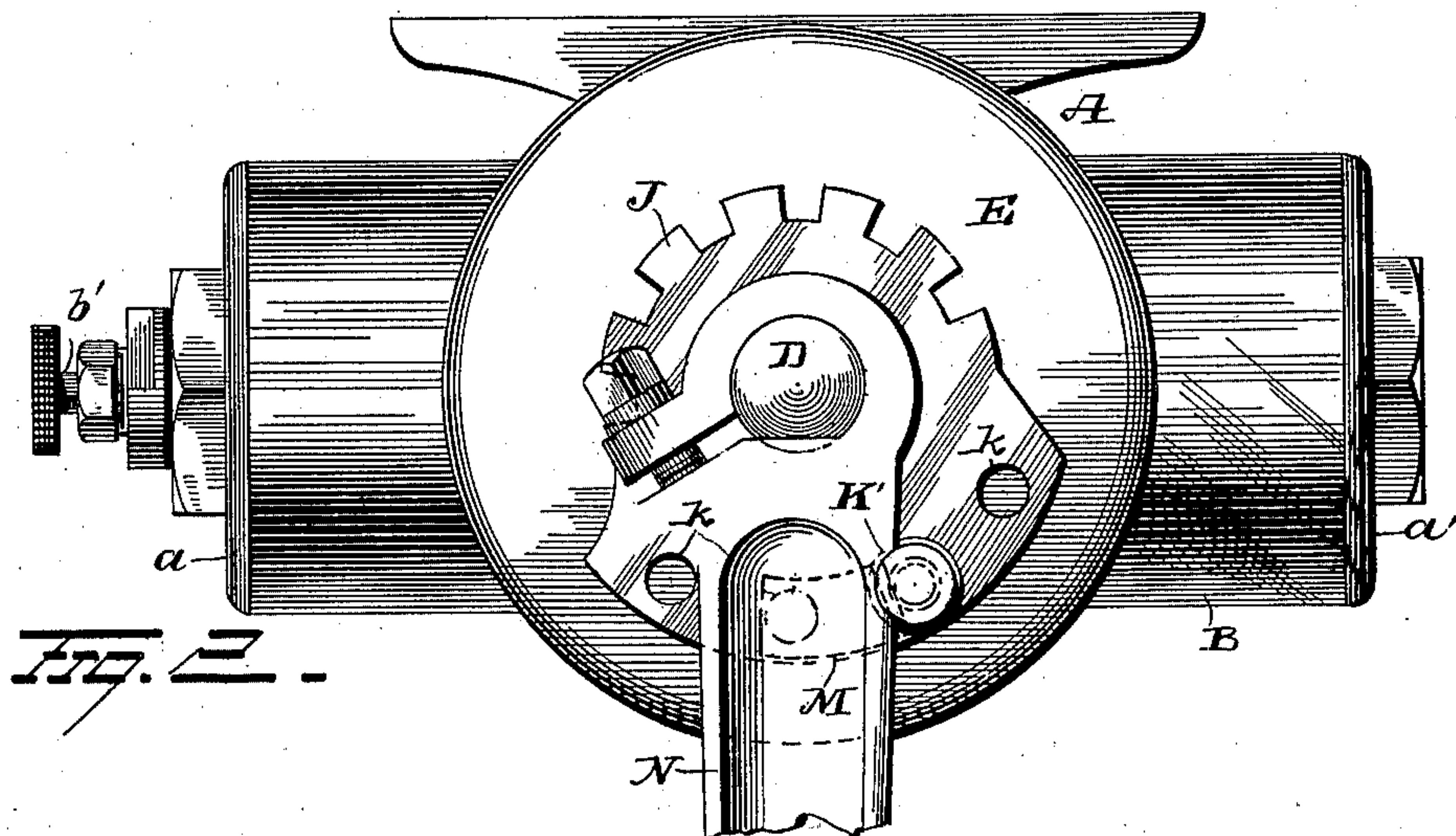
Patented Nov. 5, 1901.

W. K. HENRY.
DOOR CHECK AND CLOSER.

(Application filed June 1, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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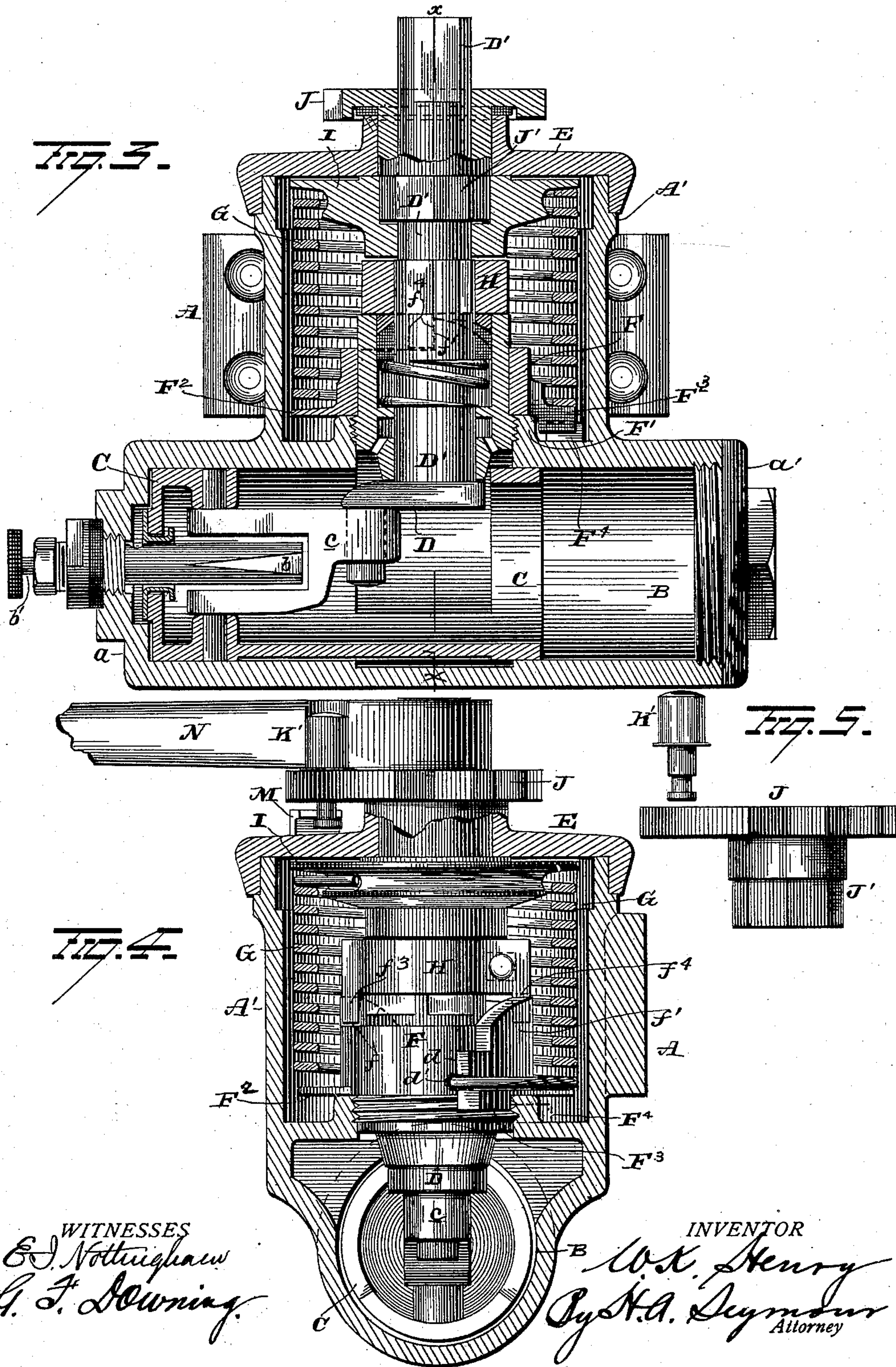
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

WILLIAM K. HENRY, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO P. AND F. CORBIN, OF NEW BRITAIN, CONNECTICUT.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 686,065, dated November 5, 1901.

Application filed June 1, 1901. Serial No. 62,770. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM K. HENRY, of New Britain, in the county of Hartford and State of Connecticut, have invented certain
5 new and useful Improvements in a Combined Door Check and Closer; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

My invention relates to an improvement in a combined door check and closer, the object being to provide a device adapted for use on either right or left hand doors without any
15 change, adjustment, or alteration of any of the parts of the device, so that the latter as it comes from the shop can be applied to either a right or left hand door.

With this end in view my invention consists in the parts and combinations of parts, as
20 will be more fully explained, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in elevation of my improved device.
25 Fig. 2 is a plan view of same. Fig. 3 is a view in vertical section. Fig. 4 is a view in transverse section, partly in elevation, on the line xx of Fig. 3; and Fig. 5 is a view in side elevation of the segmental ratchet-disk.

30 A represents a casing comprising a spring-chamber A' and a liquid-chamber B, the two chambers being integral and preferably located at right angles to each other, as shown. The liquid-chamber is preferably provided
35 with an integral head a at one end and a removable head a' at the other end, the said chamber being provided at its closed end with the by-pass tube b , carrying the valve b' of the usual or any desired form for the escape
40 of the liquid from in front of the piston during the closing movement of the door.

The piston C is located and moves within the liquid-chamber B and is connected by its rod c with the crank D on the lower end of
45 the spindle D', the by-pass tube b passing through the piston, so as to discharge the liquid in rear of the piston during the closing operation of the door, the construction and operation of this by-pass pipe being the same
50 as that shown and described in Patent No. 650,534, granted to me May 29, 1900. The

crank D rests normally in line with the long axis of the center of the liquid-chamber, so that when the spindle is turned in either direction from its position of rest the head of
55 the piston will be drawn toward the spindle, thus permitting the liquid to pass around the by-pass to a position in front of the piston. As the door closes the liquid is forced out through the valved opening in the by-pass
60 tube, and during the early part of the closing movement a part escapes around the reduced end of the by-pass tube; but this passage around the by-pass is gradually lessened as the door closes, so that during the final clos-
65 ing stage the liquid passes solely through the valved opening.

The spindle D' passes upwardly through a suitable packing or stuffing box located in the dividing-wall of the two chambers A'
70 and B, through the spring-chamber, and out through the cap E of the latter and carries or is surrounded at its upper end by the parts which will be hereinafter referred to.

Located within the spring-chamber, at the
75 bottom thereof, is the clutch-ring F. This ring rests on an upwardly-projecting flange F' of the casing and is provided at its lower edge with an outwardly-projecting flange F², which is provided with a depending lug F³,
80 adapted to engage the stop F⁴, projecting upwardly from the floor of the spring-chamber. This ring F is also provided with two upwardly-projecting lugs f and f' , located at unequal
85 distances from the center of the ring and at diametrically opposite points and are adapted to be engaged, respectively, by the depending lugs f^3 and f^4 on the collar-section H of the clutch, the said collar H being se-
90 cured on an angular seat on the spindle D', and hence turns with the spindle. By providing the clutch-ring F with two upwardly-projecting lugs located at unequal distances from the longitudinal center of the spindle
95 and providing the collar H with two correspondingly-placed depending lugs it will be seen that each lug on the collar can engage only the correspondingly-placed lug on the ring, thus permitting the collar to make con-
100 siderably over a half-revolution without the lugs thereon engaging the lugs on the ring. The same result, however, can be accom-

plished by one lug on the ring and a corresponding lug on the collar. When two lugs, however, are used on the collar and ring, as before explained, the pressure is applied
5 evenly to opposite sides of the moving parts, thus lessening wear and liability to binding of the parts.

The body of the ring F is provided with a shoulder d and recess d' for the attachment
10 of the lower bent end of the spiral spring G, while the upper end of the latter is attached to a disk I, loosely mounted on the spindle just below the cap E. With the construction thus far described it is apparent that when
15 the lugs on the collar are moved to engage the corresponding lugs on the ring the depending lug on the latter will be moved away from the stop F^4 on the floor of the spring-chamber, and when the lugs f^3 and f^4 on the collar H move in the direction away from the
20 lugs f f' on the ring that the dependent lug F^3 on the ring F remains in contact with the stop F^4 on the floor of the spring-chamber. Hence when power is applied through the
25 spring in one direction the lug F^3 bearing against the stop F^4 in the floor of the spring-chamber prevents the ring from turning; but when the spindle D' is turned in the opposite direction the ring also turns therewith
30 through the medium of the collar H, which, with the ring, forms a clutch and compresses the spring, starting from the lower end of the latter.

Located under the cap E is the disk I.
35 This disk is detachably connected to the upper end of the spring G and is provided centrally with an opening for the passage of the spindle D' and in its upper face with an angular socket to receive the depending angular
40 stem J' of the ratchet-arm J. Hence by rotating the spindle D' in one direction the lower end of the spring will be wound up or compressed, whereas by rotating or turning the ratchet-arm J in the opposite direction
45 the upper end of the spring will be compressed. In order, however, to effect a compression of the spring from either end, it is essential that while one end is being compressed the other end be held against move-
50 ment. As previously explained, the ring F, to which the lower end of the spring G is secured, is held against movement in one direction by a lug F^3 on the ring engaging a stop F^4 on the floor of the spring-chamber
55 and is moved in the direction in which it is free to turn by depending lugs f^3 f^4 on the collar H engaging upwardly-projecting lugs f f' in the ring. When, however, the spindle turns in the opposite direction, the ring is
60 held by the stop F^4 , before described. When the spring G is being compressed at its lower end, its upper end is held against movement by the pin K' resting in one of the pin-holes k of the ratchet-arm J and engaging the lug
65 M. This arm, as before explained, is seated in an angular socket in the upper face of the disk I, to which the upper end of the spring is

secured. Hence it will be seen that by turning the ratchet-arm (which is done by a spanner engaging the teeth of the disk) the spring
70 will be put under tension, and then by inserting the pin K' in one of the holes k of the ratchet-arm J the spring G will be held under tension by the engagement of the lower
75 end of the pin K' with the lug M, cast integral with the cap E of the spring-chamber. This tension can be increased by simply turning the arm J to the left by the spanner-wrench and inserting the pin in one of the
80 holes k to the right of the hole it formerly occupied, and the tension can be decreased by first withdrawing the pin K' and inserting it in one of the holes to the left of the one it
85 formerly occupied. The pin K' is provided with a shoulder which rests on the top of the ratchet-arm J, and the head of the pin projects upwardly, forming an abutment for the lever-arm N.

When the spring is being compressed at its lower end through the lever-arm, spindle, and
90 clutch previously explained, the upper end is held against movement by the pin in the ratchet-arm engaging the lug M on the cap. This lug and pin prevent the rotation of the ratchet-arm in one direction, but leave it free
95 to turn in the opposite direction. Hence when the lever-arm is turned to the left, or toward the pin K', it turns the ratchet-arm and compresses the spring, starting from the upper end. When the spindle is turned to the left,
100 the collar-section H of the clutch carried by the spindle is disengaged from the ring-section F of the clutch, thus leaving the ring-section held against movement by its engagement with the stop F^4 , projecting from the
105 floor of the spring-chamber. When, however, the spindle is turned to the right, or in a direction away from the pin K', the latter, due to its engagement with the lug M on the cap E, holds the ratchet-arm J and the upper
110 end of the spring G, connected thereto, against movement. The movement of the spindle to the right causes the projections on the collar-section of the clutch to engage the projections on the ring-section of the clutch, and
115 thus turn the latter in a direction to compress the lower end of the spring.

The spring G is preferably of round wire flattened and wound or coiled on edge. This construction permits of the use of three more
120 coils within the space of the spring-chamber, thus rendering the spring more elastic and easy in its motion without impairing in the slightest its strength. With this construction the spring can be put under any desired
125 tension by the ratchet-disk and pin, and as this tension or strain is distributed throughout the spring and against both the ratchet-wheel and ring no greater power is required to turn the lever-arm in one direction than
130 the other.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without de-

parting from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a door-closer the combination with a spindle and a main lever-arm rigidly secured to the spindle, of a double-acting spring indirectly connected at one end with the spindle and adjustable devices for connecting the other end of the spring to the main lever-arm.

2. In a door-closer, the combination with a spindle and a main lever-arm rigidly secured thereon, of a double-acting spring indirectly connected at one end with the spindle so as to be compressed when the latter is turned in one direction, tension-adjusting device for the other end of the spring and means for connecting the latter end of the spring to the main lever-arm.

3. In a door-closer, the combination with a spindle, a main lever-arm rigidly secured thereto, and a double-acting spring, of a clutch one section of which is connected to the spindle and the other to one end of the spring for compressing the latter when the spindle is turned in one direction, a tension-regulating device secured to the other end of the spring and means for connecting the tension-regulating device and the lever-arm when the latter is moved in one direction.

4. The combination with a spindle, of a double-acting spring indirectly connected at one end to the spindle, a ratchet-arm indirectly connected to the other end of the spring and provided with a plurality of holes, a removable pin in any one of said holes, a stop engaging the pin below the arm and a lever-arm engaging the pin above the ratchet-arm.

5. The combination with a spindle, a loose ring thereon engaging one end of the spring and having upwardly-projecting lugs, and a collar fixed on the spindle and having depending lugs to engage the lugs on the ring, the said lugs on the ring being located at unequal distances from the axis of the spindle, and the lugs on the collar being correspondingly located so as to permit the collar to make more than a half-revolution without imparting movement to the ring, of spring-tension-regulating device connected to the upper end of the spring and a lever-arm adapted when moved in one direction to engage said tension-regulating device.

6. The combination with a casing divided into two compartments, a double-acting spring in one compartment, and a piston in the other, of a spindle connected to the piston and indirectly to the spring, a disk connected to the other end of the spring, a ratchet-arm connected with the disk so as to move with same, a pin adjustably secured in said arm and

adapted to engage a stop on the cap of the spring-chamber, and a lever-arm secured to the spindle and adapted when moved in one direction to engage the pin.

7. The combination with a casing, spindle, double-acting spring and means indirectly connecting the spindle and one end of the spring, of a disk connected to the other end of the spring, a ratchet-arm secured to the disk so as to move therewith, a lug projecting from the cap of the casing, a pin adjustably secured in the ratchet-arm and engaging the stop, and a lever-arm secured to the spindle and adapted when moved in one direction to engage the pin.

8. In a door-closer the combination with a spindle and main lever-arm, of a double-acting spring having flattened upper and lower faces, the said spring being indirectly connected at one end to the spindle, and an adjustable arm and devices for connecting the other end of the spring to the main lever-arm.

9. In a combined door check and closer the combination with a spindle, a lever-arm secured thereto so as to move therewith and a piston connected to the spindle, of a double-acting spring indirectly connected at one end with the spindle, tension-adjusting devices connected with the other end of the spring and means for connecting the latter end of the spring with lever-arm when the latter is moved in one direction.

10. The combination with a spindle, a piston connected thereto at one end so as to move with the spindle, and a lever-arm rigidly secured to the other end of the spindle, of a double-acting spring indirectly connected at one end with the spindle, tension-adjusting devices connected with the other end of said spring and means connecting the latter end of the spring with the lever-arm when the arm is moved in one direction.

11. In a door-closer the combination with a spindle and a lever-arm connected thereto, of a double-acting spring connected to said spindle, the said spring having flattened upper and lower faces, substantially as and for the purpose set forth.

12. In a door-closer, the combination with a casing, a spindle and a main lever-arm, of a double-acting spring indirectly connected at one end with the spindle, and at its other end with a tension-adjusting block, means exterior to the casing for adjustably connecting the main lever-arm and tension-adjusting block and also adapted to engage a stop on the casing and restrict the movement of the main lever-arm in one direction, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM K. HENRY.

Witnesses:

C. A. BLAIR,
G. E. ROOT.