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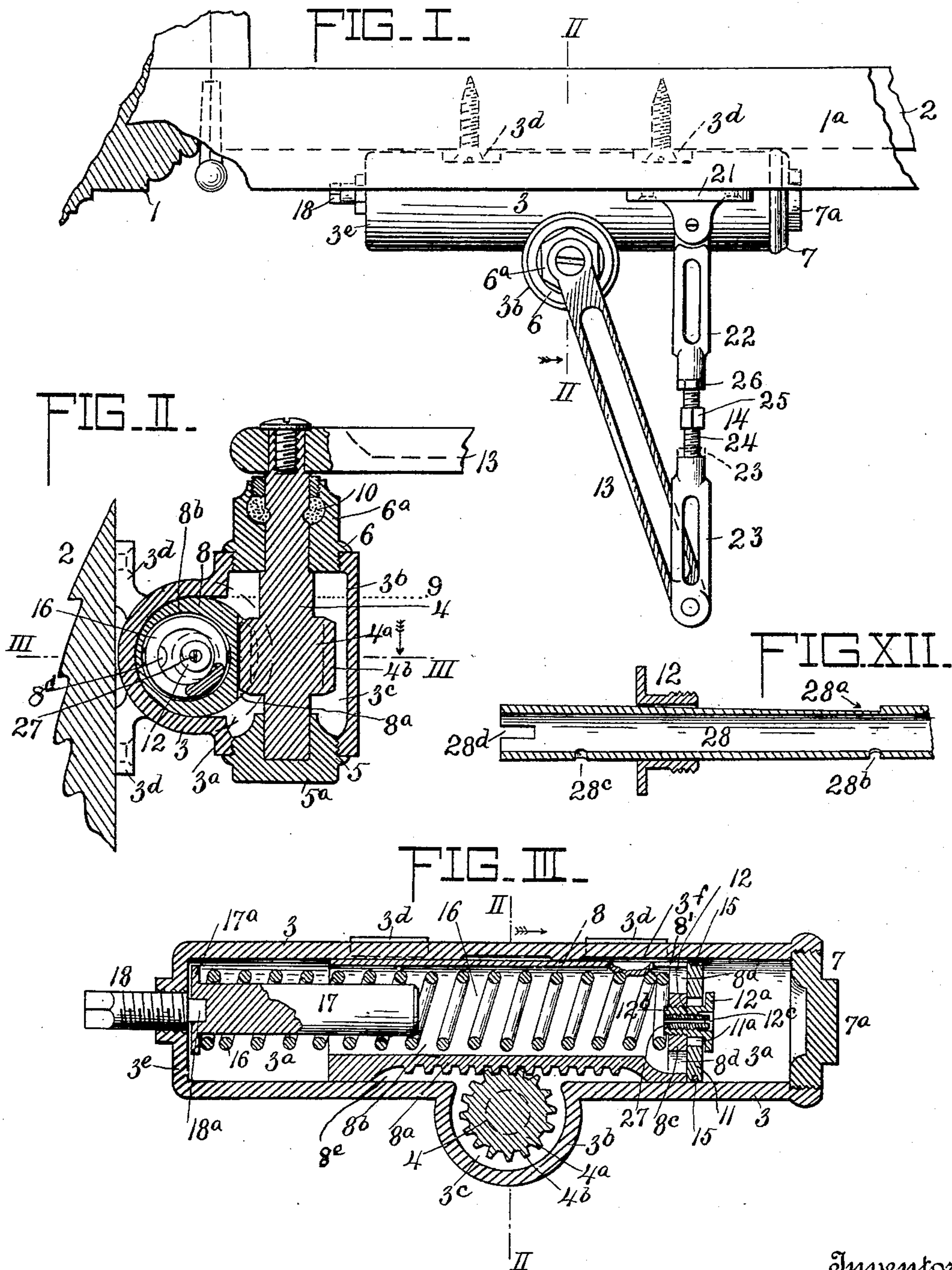
Patented Sept. 12, 1899.

P. J. LENNART.
DOOR CHECK AND CLOSER.

(Application filed Aug. 27, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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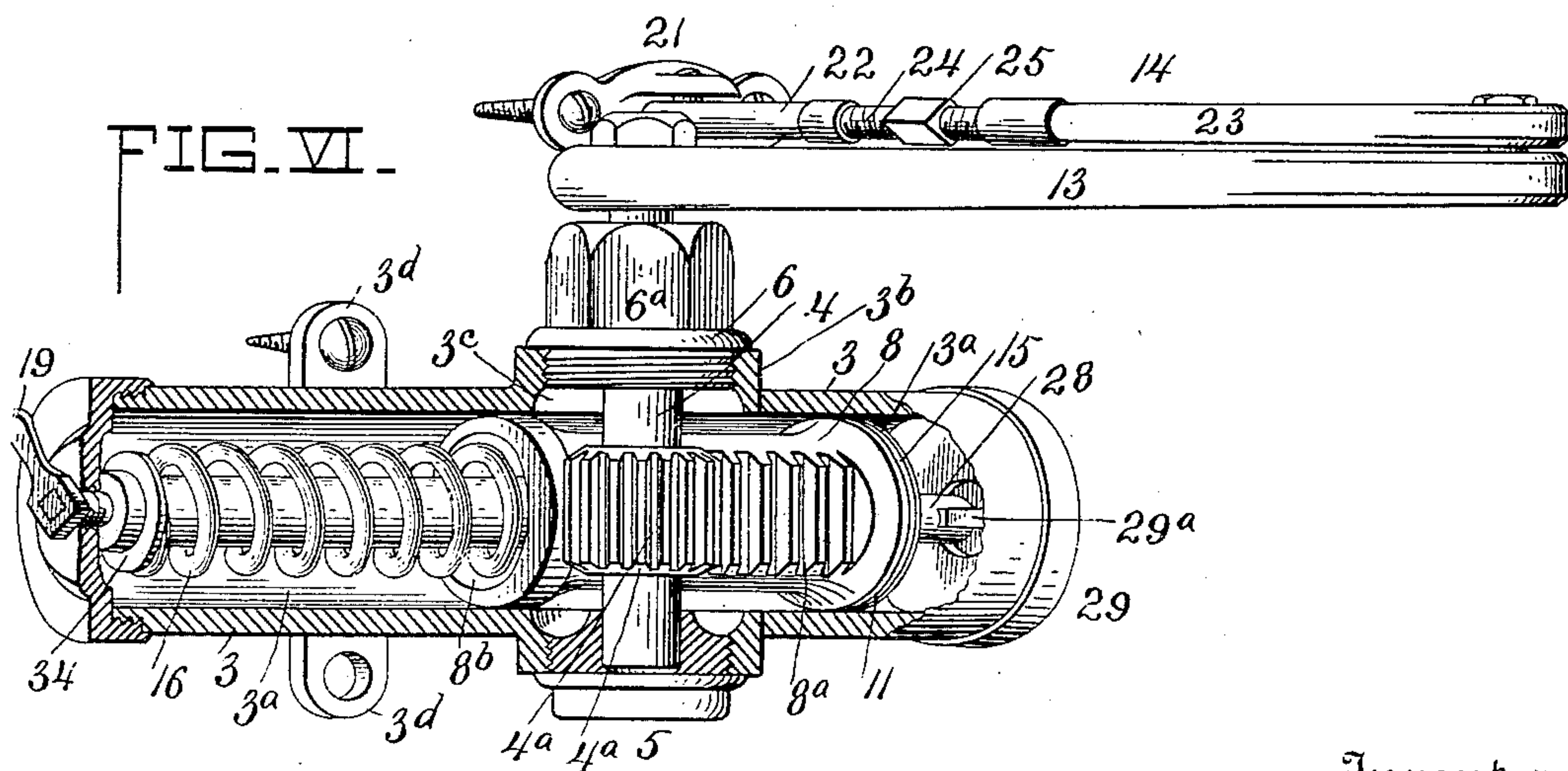
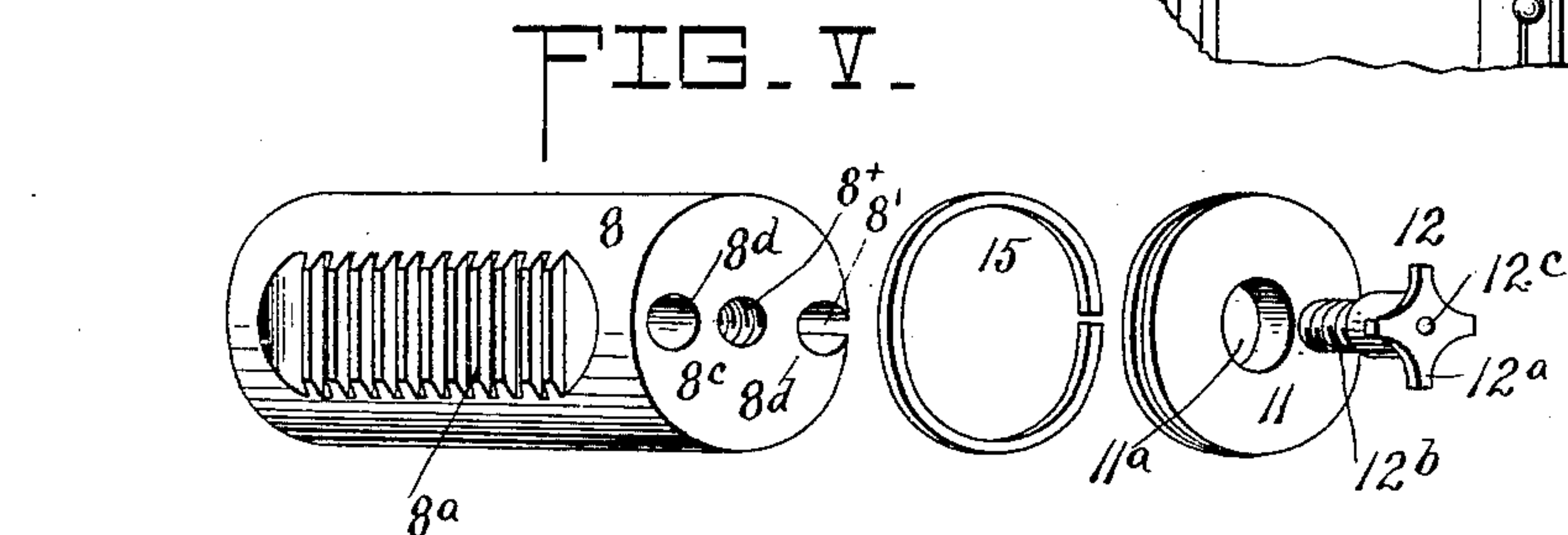
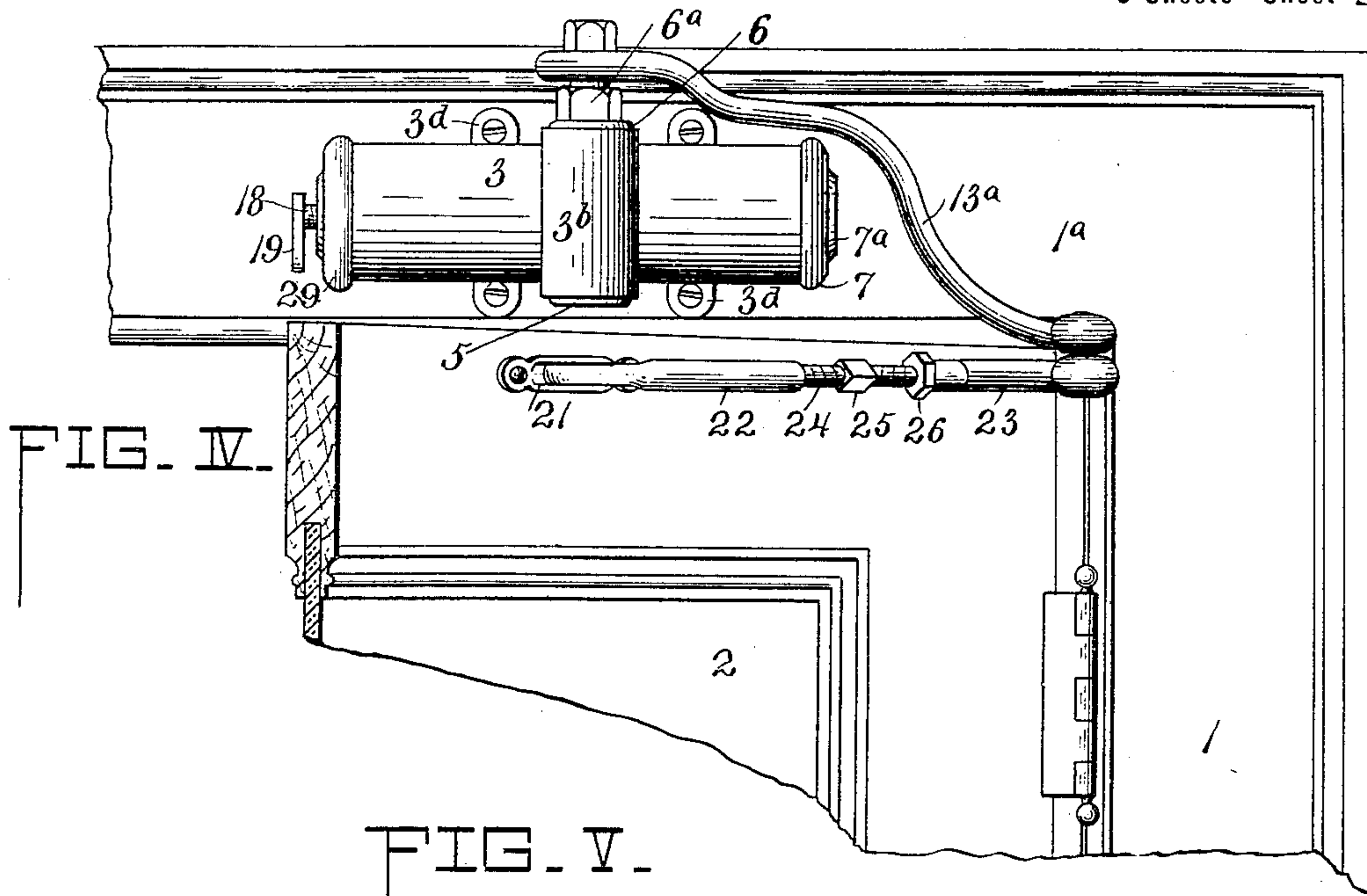
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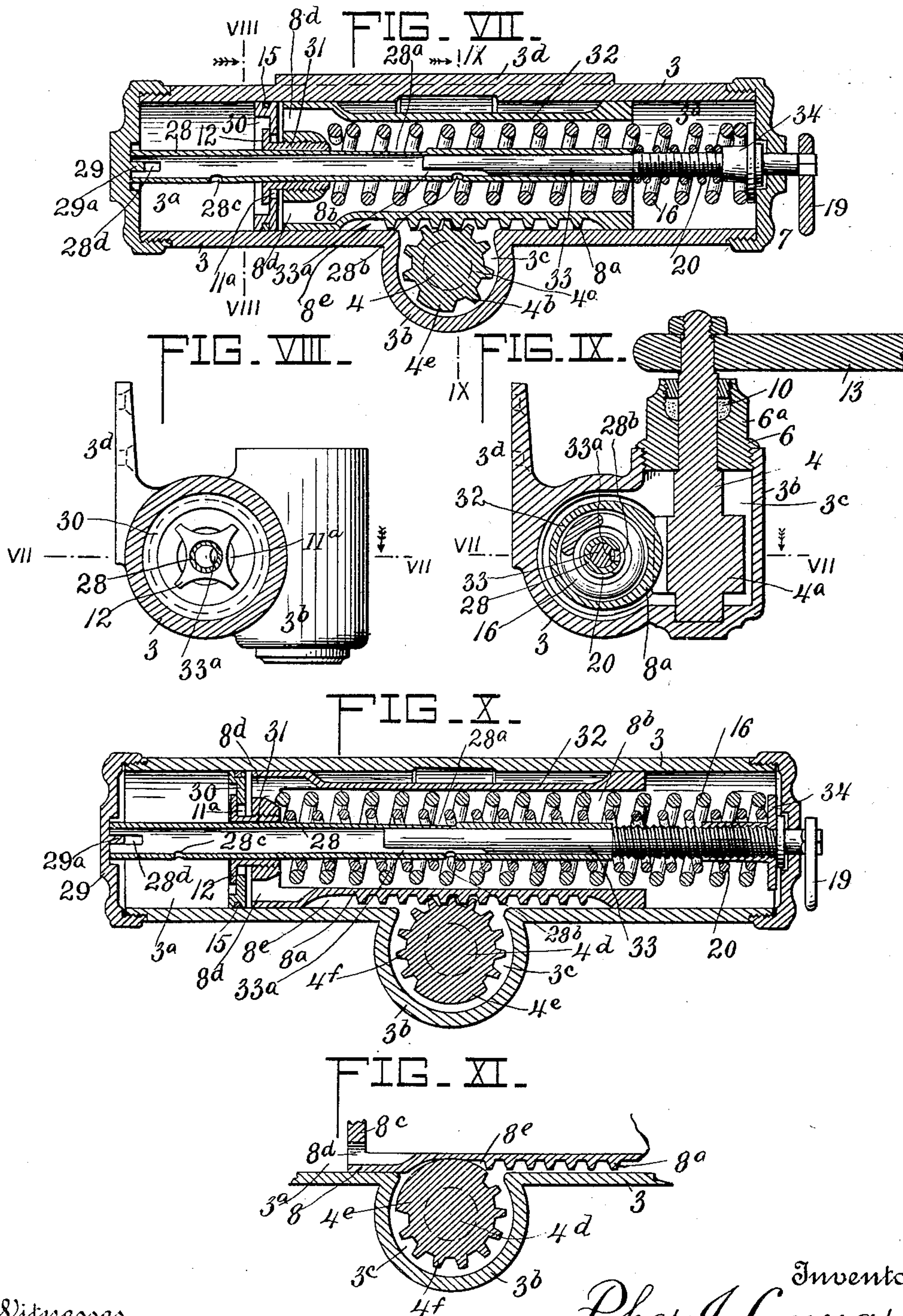
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UNITED STATES PATENT OFFICE.

PHER J. LENNART, OF STAMFORD, CONNECTICUT.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 633,015, dated September 12, 1899.

Application filed August 27, 1898. Serial No. 689,651. (No model.)

To all whom it may concern:

Be it known that I, PHER J. LENNART, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in a Combined Door Check and Closer; and I do hereby declare the following description of the invention to be sufficiently full, clear, and exact to enable others skilled in the art to make and use the same.

My invention relates to improvements in combined door checks and closers of the same kind as that which forms the subject-matter of my Letters Patent No. 615,074, dated November 29, 1898, in which a fluid is employed to check the door.

One object of my invention is to provide a combined door check and closer which shall be less expensive to manufacture and more efficient in use than those heretofore produced.

Another object of my invention is to provide a separate spindle-chamber for the purpose of preventing the liquid from rising to the top and around the loose bearing of the spindle, thus avoiding leakage. This leakage exists in all combined door checks and closers as heretofore made and is due to the pressure on the liquid behind the plunger as the door is opened and the plunger drawn back, thereby causing the liquid to leak over the top of the plunger-chamber.

Another object of my invention is to provide a self-adjustable spring-packing or friction-ring for the head of the plunger whereby the checking medium is more certainly and positively controlled to facilitate in a small space the application of a strong and less expensive spring or springs for the closing of the door and to so arrange the combination of parts as to prevent any lateral deflection of the spring or springs without any special and separate parts for this purpose.

Another object of my invention is to provide an improved device for adjusting the escape of the liquid and the tension of the closing spring or springs.

Another object of my invention is to arrange the construction of parts so as to enable anyone to reverse or, in other words, to change the device into a right or left hand check at will without removing the spring or springs

or disturbing any of the parts in the body of the casing.

Another object of my invention is to provide improved means by which the check may be secured to the lintel or arch above the door for adjusting the connecting link or arm at any time and to a very fine degree without removing either of its connecting ends, to provide improved and simple means for checking the force of the closing spring or springs, whereby the door may be held open, and to provide other improvements in the details which contribute especially to the simplicity and durability of the mechanism, consisting of the devices hereinafter described, and particularly pointed out in the claims.

In order that my invention may be fully understood, I will describe it with reference to the annexed drawings and to the reference-numbers marked thereon, forming a part of this specification, the same figures indicating the same parts or features wherever they occur.

Figure I is a top plan view of my improved combined door check and closer and shows the position of the connecting-arms when the door is closed, the check being secured to the door and connected with the lintel. Fig. II is a vertical transverse section of the same, taken on the line II II, Figs. I and III, and looking in the direction of the arrow. Fig. III is a horizontal section taken on the line III III, Fig. II, looking in the direction of the arrow. Fig. IV is a front elevation of a modification of the combined door check and closer shown in Fig. I and illustrating the application of the check to a position on the lintel above the door. Fig. V is a perspective view of the plunger, the sliding follower or valve, and the spring-packing or friction-ring, the parts being detached for the purpose of showing more clearly its application and detail of parts. Fig. VI is a perspective view illustrating another modification of the combined door check and closer, the casing being shown in section. Fig. VII is a horizontal section of a modification of the construction of parts shown in Fig. III, taken on the line VII VII, Figs. VIII and IX, looking in the direction of the arrow, in which I have shown the application of two springs,

one within the other, and wound, respectively, to a right and to a left hand pitch and pressing against a plunger and a tube, respectively. Fig. VIII is a vertical transverse section of the same, taken on the line VIII VIII, Fig. VII, looking in the direction of the arrow, and shows an adjustable feature for the control of the liquid which does not appear in the first figures. Fig. IX is a vertical transverse section thereof, taken on the line IX IX, Fig. VII, and looking in the direction of the arrow. Fig. X is a horizontal section of a further modification of the construction of parts shown in Fig. III, showing the adjustable devices for controlling the tension of the springs and the flow of the liquid combined and the construction of parts, so arranged as to have their seat at the rear end of the spring-chamber of the plunger and both operated by the same lever or key, thereby reducing the possibility of leakage due to the greater pressure in front of the plunger, and also showing a novel means for checking the force of the spring, the plunger serving as a brake to prevent the door from closing. Fig. XI is a detail horizontal section showing the plunger, rack, and pinion when in a checked position. Fig. XII is a detail horizontal section of the tube and sleeve shown in Figs. VII and X.

1 is a door-frame having a lintel 1^a, and 2 is a door hinged to the door-frame and to which my improved combined check and closer is applied.

The casing of my improved door check and closer comprises in its construction a horizontal cylindrical body 3, providing a plunger-chamber 3^a, and a vertical or transverse cylindrical projection 3^b, disposed at right angles thereto and providing a spindle-chamber 3^c, the cylindrical body and the cylindrical projection merging one into the other at their middle portions, so that the plunger and spindle chambers open one into the other where they cross each other. The body is further provided with brackets 3^d, whereby the casing is secured to the door 2 or to the lintel 1^a at will. The open ends of the vertical cylindrical projections 3^b extend beyond the periphery of the horizontally-disposed body 3 of the casing. In the open ends of the vertical cylindrical projection are seated interchangeable bearing heads or nuts 5 and 6, constructed on the same principle as shown in my Letters Patent hereinbefore referred to and in which is journaled the rotary spindle 4. The plunger-chamber and the spindle-chamber are adapted to contain liquid. The casing is preferably formed in a single piece. One end of the horizontal body has a head 3^e, preferably formed in one piece therewith, while the other end of the body has an interiorly-screw-threaded opening and seat for a removable head 7, having an angular projection 7^a. The open ends of the cylindrical projection are also interiorly screw-threaded to receive the interchangeable removable

heads or nuts 5 and 6, which also have angular projections 5^a and 6^a, respectively.

8 represents a circular elongated tubular plunger externally fitted within the plunger-chamber 3^a and extends across the spindle-chamber, so as to cut off communication between the ends of the plunger-chamber and the spindle-chamber, and thus prevent any appreciable quantity of the liquid in the plunger-chamber from entering the spindle-chamber. The plunger has a longitudinal recess 8^e on its front face, which is provided with a rack 8^a. The rack 8^a of the plunger is meshed by the teeth 4^b of a pinion 4^a, cut integrally on the vertical rotating spindle or shaft 4, located in the spindle-chamber 3^c. The wall of the plunger is imperforate through its entire length and, being tubular, forms a spring-chamber 8^b and crosses the opening into the spindle-chamber, as heretofore stated, through which the pinion projects to engage its rack, whereby the liquid in the plunger-chamber is confined and prevented from free access to the spindle-chamber. It will therefore be clear that when the device is secured in a proper position for operation the liquid in the spindle-chamber will not rise above its normal height, (indicated by the line 9 in Fig. II.) Hence there will not be any tendency for the liquid to crawl up through the bearing at the top of the spindle.

10 is a packing which only serves as a guard against leakage where the spindle projects through the head or nut 6 at such times as when the device may be stored or packed for shipment.

The head 8^e at the rear end of the plunger is provided with ports 8^d near its circumference, with a central screw-threaded opening 8^x, and with a sliding follower or valve 11, provided with a centrally-located port 11^a and loosely secured to the plunger-head by a screw-threaded sleeve 12, having a head 12^a and providing a tubular support, on which the sliding follower or valve is loosely mounted, the stem 12^b of the sleeve being sufficiently long to allow the plunger to move a short distance in opening and closing the door before the follower or disk is carried with it. Thus in opening the door, by which operation the plunger is drawn back through the medium of the spindle 4 and connecting-arms 13 and 14, the follower or valve is withdrawn from close contact with the head of the plunger to freely admit the passing of the fluid from the rear to the front of the plunger; but in closing the door and at the return of the plunger the follower or valve will come in contact with the head of the plunger, thus closing the ports 8^d, leaving the fluid confined, and its only escape is through a port 12^c, provided for the purpose in the sleeve 12. To have the fluid accurately and reliably controlled, I have provided the follower or valve with a spring-packing or friction-ring 15, which spreads against the inner walls of the

plunger-chamber, forming a tight bearing, thereby keeping the follower or valve from moving until it comes in contact with the plunger-head 8^c or the sleeve-head 12^a. The ring, furthermore, forms a packing against the leakage of the fluid around the plunger and will expand as the parts become larger by use or wear, thus providing a permanently tight and an automatically-adjustable ring, which prevents the escape of the liquid from in front of the plunger in closing the door through any other means than the port 12^c, provided for same.

16 represents the closing-spring extending centrally in the spring-chamber of the plunger, bearing against the head of the plunger and having its sides supported against lateral deflection by the inner surface of the plunger. Its outer end is supported on a rod 17 and bears against a flange 17^a thereon. The flanged rod 17 is adjustably supported on the end of a screw-rod 18, having threaded connection with and projecting from the head 3^c of the casing. As the screw-rod is turned by a suitable lever or key 19 to give more pressure on the spring its head is drawn proportionately toward the casing. Thus it will be clear to what extent the spring has been compressed by the projecting screw-rod.

The adjustable link-arm 14 for connecting the main arm 13 of the rotary spindle 4 with a bracket 21 on the door or its frame, as the case may be, consists of two separate links 22 and 23, connected by an adjusting-screw 24, the ends of which have right and left hand threads and an angular head 25 in the center for the purpose of applying a key or tool and a lock-nut 26 at one end for the purpose of holding the arm in its properly-adjusted position. The link-arm may be adjusted to a very fine degree and without disconnecting either of its ends, and the checking power in respect to the time required in closing the door, as well as the angle at which the door will be held open, may be regulated by this link-arm. The reason for this is that as the length of the link-arm is decreased the plunger is drawn back correspondingly. Consequently the teeth on the pinion will disengage the teeth on the rack at a different position on the door than when the arm is longer, and less fluid will therefore be displaced in closing the door, and owing to the travel of the plunger being decreased the result will be a more rapid closing of the door. When the link-arm is extended, the plunger will make a full stroke and the checking power will be increased correspondingly. The main arm 13 is firmly connected at one end to the reduced squared end 4^c of the spindle, its other end being loosely connected to the adjustable link-arm 14, which in turn is connected to the door or jamb, as the case may be, through the bracket 21. As a liquid check must in every case have its loose joint or protruding spindle upward, owing to leakage in any other

position, and to enable me to secure a liquid check to the lintel or arch 1^a above the door 2 without the use of a bracket, I have provided a curved main arm 13^a, reaching from the spindle above the top of the casing to a point below the lower face of said casing, as illustrated in the modification shown by Fig. IV.

In connection with Fig. III, I have shown the port 12^c for the escape of the liquid from in front of the plunger as of a permanent and predetermined size, (which may be controlled by a perforated screw-plug 27,) and the check can be made to work effectually by this means; but as the density of the liquid varies by the temperature and becomes thicker and moves slower when cold than it does when warm it is preferable to be able to adjust this port so as to permit the same quantity of liquid to escape in the same length of time under all circumstances. I will therefore proceed to describe the device for this purpose, as shown in Figs. VII, VIII, IX, and X.

Referring to Fig. X, 20 is a spring similar to spring 16, located inside of and wound to the opposite hand to that of the outer spring 16, so as to permit the springs to mutually support each other. Referring to Figs. VII, VIII, and IX, said device consists of a tube 28, one end of which is secured to the head 29 of the body 3 of the casing in front of the plunger and extends through the follower or valve 30, through the sleeve 31, through the plunger 32 and into the main spring 16, and is provided with a tapered groove 28^a on one side, (see Fig. XII,) the depth of which decreases near the follower end of the plunger-chamber for the purpose of gradually cutting off the escape of the liquid. 3^f is a tapering groove in the body 3 for a similar purpose, (see Fig. III,) communicating with the chamber of the plunger through an opening 8^f into one of the ports 8^d. On the other side of the tube 28 are a port 28^b and a port 28^c. The port 28^b is controlled by a rod 33, located inside of the tube 28, said rod 33 having a groove 33^a on one side, providing a passage connecting the port 28^b with the interior of the tube 28, and on its outer end is provided with a lever or key 19 for the purpose of turning said rod to either the right or left, so as to bring the groove 33^a opposite the port 28^b, and thus form an open passage through the tube between the plunger-chamber 3^a and spring-chamber 8^b. It is obvious that if the rod is turned so as to bring the groove 33^a directly opposite the port 28^b the passage for the flow of the liquid will be at its full capacity; but by turning the rod so that the port 28^b in the tube is partly or altogether cut off by the full face of the rod 33 the flow of liquid will be decreased or altogether cut off, and thus regulate the escape of the liquid and control the closing of the door. To make the check secure from leakage, I have arranged the device so that it can be adjusted from

the rear of the plunger, where the liquid is not under such heavy strain, as the large ports 8^d are always open when moved in this direction. Neither will this point be subject to extraordinary pressure due to draft, and therefore it will be less liable to leakage, and it can be easily and securely packed. Other advantages in connection with the rod and tube running through the entire length of the plunger-chamber are that said rod can be utilized to support the inner spring 20 from deflection, can be also used for adjusting the tension of the springs, as shown in Figs. VII and X, by having said rod screw-threaded at an intermediate point, and the flanged tube 34, supporting one end of the springs 16 and 20, fitted onto the screw-threaded part. It is evident that the rod 33 can be turned a number of times for adjusting the tension of the springs and still be in proper position for regulating the escape of the checking fluid by having the lever or key 19 point at a certain predetermined angle, as the tube 28 will be locked by a slot 28^d with the head 29 by an integrally-formed pin 29^a. In Fig. X, I have also shown a simple device by which the door may be held open, and it consists in the spindle 4^d, having a peripheral blank projection 4^e not having any teeth thereon. This difference, although slight from that shown in Fig. III, is of great importance, inasmuch as the rack-segment 4^f will disengage with the rack 8^a after having turned partly around and withdrawn the plunger sufficiently to admit the fluid to the front of same, and in this position, as shown in Fig. XI, one tooth of the rack will traverse the peripheral face of the spindle 4^d, which enters the depression 8^e of the plunger-wall, and due to the tension of the springs 16 and 20 on the plunger 8 will form a brake, preventing the door from closing until assisted by a force from the outside, such as a pull or push by the hand, until the spindle has reached the position where the rack-segment 4^f or the teeth cut in one part of its periphery will reengage the teeth of the rack, when the plunger will be free to operate and the door will be closed by the spring or springs. By this device it will be clear that the motion of the plunger will be decreased, which will reduce the strain on the spring and yet permit the spindle to turn and allow the door to swing wide open. It will thus be clear that Fig. X shows an illustration of a complete and practical combination possessing cogency in all the features of door-checks and closers by a simple construction of a few number of parts reliable in its operation and perfect security against leakage of the liquid.

Although I prefer to have the spindle-chamber provided with interchangeable nuts at top and bottom as support and bearing for the spindle, as set forth in my former patent hereinbefore referred to and as shown in Fig. II, it is obvious that the bottom may be cast solid with the casing, as shown in Fig.

IX, in which case the check will not be reversible, but would operate to the hand to which it is made equally well. Therefore I do not limit myself to the particular form, but consider myself privileged to use either construction in connection with the spindle-chamber.

The mode of operation is as follows: As the door is opened the plunger is drawn back through the intermediate spindle and connecting-arms, the spring or springs compressed, and the liquid in the plunger-chamber admitted to the front end, and as the door is released the closing spring or springs will force the plunger forward, closing the ports 8^d by contact with the follower or valve 11. Thus the confined liquid will form a cushion and make its escape slowly through the port 12^c, thus gently closing the door.

Although I have described the device as a liquid-check and prefer the details and arrangement of parts as set forth, it is obvious that any fluid, such as air, may be used, and that slight changes may be made in the construction of such parts as the spindle-chamber, the ports for the liquid to escape from in front of the plunger, and the packing spring or springs may be made of round or some other form of wire without changing the combination or departing from the spirit and scope of the invention.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A combined door check and closer comprising a casing constructed with a horizontal cylindrical body providing a plunger-chamber, and with a transverse cylindrical projection providing a vertical spindle-chamber, the plunger-chamber and the spindle-chamber being merged one into the other, a hollow valved plunger, closely fitting in the plunger-chamber, providing a spring-chamber, and having a rack, and a recess for the rack on the outer circumference of the plunger, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber whereby the liquid in the former is prevented from having free access to the latter, a rotary spindle having teeth meshing with the rack, and a closing-spring; substantially as described.

2. A combined door check and closer, comprising a casing constructed with a horizontal cylindrical body providing a plunger-chamber, and with a transverse cylindrical projection providing a vertical spindle-chamber, the plunger-chamber and the spindle-chamber being merged one into the other, a hollow plunger closely fitting in the plunger-chamber, providing a spring-chamber, and having a head provided with ports, and a rack on the outer circumference of the plunger and extending across the spindle-chamber, and cutting off free communication between the ends of the plunger-chamber and the spindle-chamber.

ber, a follower having a central port, a headed sleeve whereby the follower is secured to the head of the plunger, a rotary spindle having teeth meshing with the rack, and a closing-spring; substantially as described.

3. A door-check comprising in its construction a spring-actuated plunger, a spindle operatively connected with the plunger, a head loosely mounted on the plunger and adapted to slide thereon, and means for permitting the liquid to escape past the sliding head; substantially as described.

4. A combined door check and closer comprising a plunger constructed with a head having ports, a sliding follower or valve having a port, and adapted to control the passage of fluid through the head, and means whereby the follower or valve is loosely connected with the head; substantially as described.

5. A combined door check and closer comprising a plunger constructed with a head having ports near its circumference, and a central opening, a sliding follower or valve having a central opening, and a tubular support connected with the central opening of the head, and on which the follower or valve is loosely mounted; substantially as described.

6. A combined door check and closer comprising a plunger constructed with a head having ports near its circumference and a screw-threaded central opening, a sliding follower or valve having a central opening, and a screw-threaded sleeve having a head and adjustably connected with the central opening of the head of the plunger; the follower or valve being loosely mounted on the sleeve; substantially as described.

7. A combined door check and closer comprising a casing having a horizontal body providing a plunger-chamber, and a transverse projection providing a vertical spindle-chamber, a hollow plunger providing a spring-chamber and formed with a head having ports, and with a rack, and closely fitting in the plunger-chamber, the headed sleeve secured to the head of the plunger, the follower having a central port, and friction-ring and playing between the head of the plunger and the head of the sleeve, a spindle having teeth meshing with the rack, and a closing-spring; substantially as described.

8. A combined door check and closer comprising a casing having a horizontal body providing a plunger-chamber, and a transverse projection providing a vertical spindle-chamber, a hollow plunger providing a spring-chamber and formed with a head and with a rack, and closely fitting in the plunger-chamber, the tube having ports, and extending through the head of the plunger, the headed sleeve, the follower, the rotatable rod having a longitudinal recess, a spindle having teeth meshing with the rack, and a closing-spring; substantially as described.

9. A combined door check and closer comprising a casing having a horizontal body pro-

viding a plunger-chamber, and a transverse projection providing a vertical spindle-chamber, a hollow plunger providing a spring-chamber and formed with a head and with a rack and closely fitting in the plunger-chamber, the tube having a longitudinal groove and a port, and extending through the head of the plunger, the rotatable screw-threaded rod having a longitudinal recess, an adjustable screw-threaded flanged tube, mounted on the rod, a closing-spring, means for rotating the rod to adjust the tube and spring and a spindle having teeth meshing with the rack; substantially as described.

10. A combined door check and closer comprising a casing, a spindle, a curved main arm extending from the spindle above the casing to a point below the casing, a bracket and a connecting-arm providing a hinged connection between the main arm and the bracket; substantially as described.

11. A combined door check and closer comprising a casing constructed with a horizontal body providing a plunger-chamber and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a rack and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a spindle having teeth meshing with the rack, and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

12. A combined door check and closer, comprising a casing constructed with a horizontal body, providing a plunger-chamber and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a longitudinal recess on its outer circumference and with a rack located in the recess, and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a spindle having teeth meshing with the rack, and a closing-spring; substantially as described.

13. A combined door check and closer, comprising a casing constructed with a horizontal body, providing a plunger-chamber, and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a rack and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a spindle having teeth meshing with the rack, a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger, a rod supporting the spring and having a flange against which the end of the spring is adapted to bear, and

means whereby the rod is adjusted to control the tension of the spring; substantially as described.

14. A combined door check and closer, comprising a casing constructed with a horizontal body, providing a plunger-chamber, and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a rack and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a spindle having teeth meshing with the rack, a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger, a screw-threaded rod supporting one end of the spring, an adjustable screw-threaded tube provided with a flange against which the end of the spring is adapted to bear, and means whereby the rod is rotated and the flanged tube adjusted to control the tension of the spring; substantially as described.

15. A combined door check and closer, comprising a casing constructed with a horizontal body providing a plunger-chamber and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a head having ports and with a rack, and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a follower having a port, means whereby the follower is loosely connected with the head of the plunger, a spindle having teeth meshing with the rack, and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

16. A combined door check and closer comprising a casing constructed with a horizontal body, providing a plunger-chamber and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a head and having ports, and with a rack and providing a spring-chamber and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber, and the spindle-chamber, a follower having a port, a screw-threaded sleeve whereby the follower is adjustably and loosely connected with the head of the plunger, a spindle having teeth meshing with the rack, and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

17. A combined door check and closer, comprising a casing constructed with a horizontal body providing a plunger-chamber and with a transverse projection providing a vertical

spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a head having ports and with a rack, and providing a spring-chamber and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a follower having a port, and a spring-packing or friction-ring surrounding the follower, means whereby the follower is loosely connected with the head of the plunger, a spindle having teeth meshing with the rack and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

18. A combined door check and closer, comprising a casing constructed with a horizontal body, providing a plunger-chamber, and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the ends of the plunger-chamber, formed with a head having ports and with a rack and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a follower having a port, a sleeve whereby the follower is loosely connected with the head of the plunger, a tube having a gradually-deepening groove at one side and extending through the sleeve, a spindle having teeth meshing with the rack, and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

19. A combined door check and closer, comprising a casing constructed with a horizontal body providing a plunger-chamber, and with a transverse projection providing a vertical spindle-chamber, a hollow plunger closely fitting in the plunger-chamber, formed with a head having ports and with a rack and providing a spring-chamber, and extending across the spindle-chamber and cutting off communication between the ends of the plunger-chamber and the spindle-chamber, a follower having a port, a sleeve whereby the follower is loosely connected with the head of the plunger, a tube having ports on opposite sides of the plunger-head, and extending through the sleeve, a rod having a longitudinal recess and extending into the tube for controlling the passage of the liquid through the port of the latter communicating with the spring-chamber, a spindle having teeth meshing with the rack, and a closing-spring extending from one end of the plunger-chamber into the spring-chamber of the plunger; substantially as described.

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Witnesses:

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