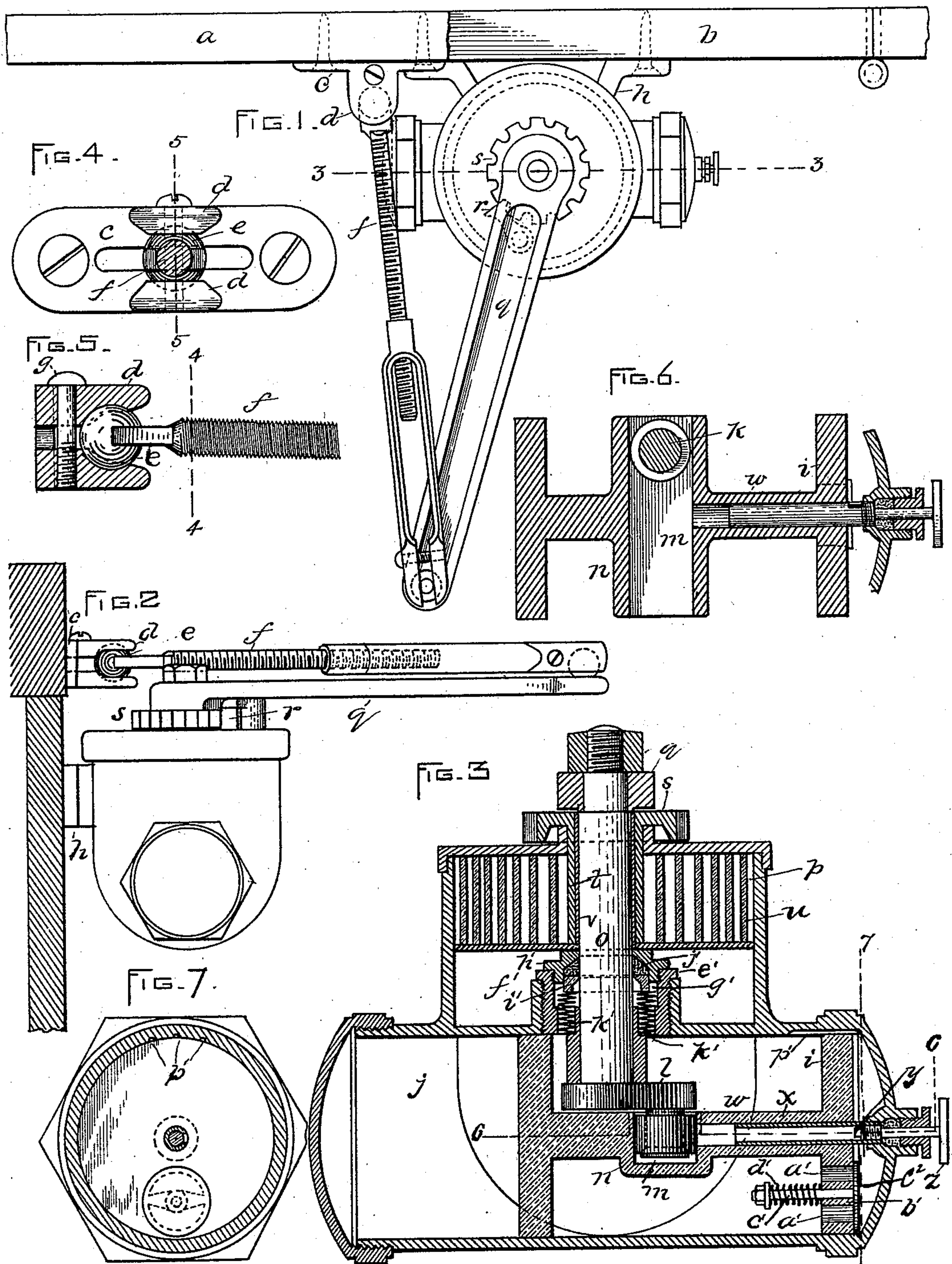


2 Sheets—Sheet 1.

No. 528,321.

Patented Oct. 30, 1894.



WITNESSES:
A. D. Harrison.
W. H. Long.

INVENTOR:
by E. J. Blount,
Might, Brown & Connelley
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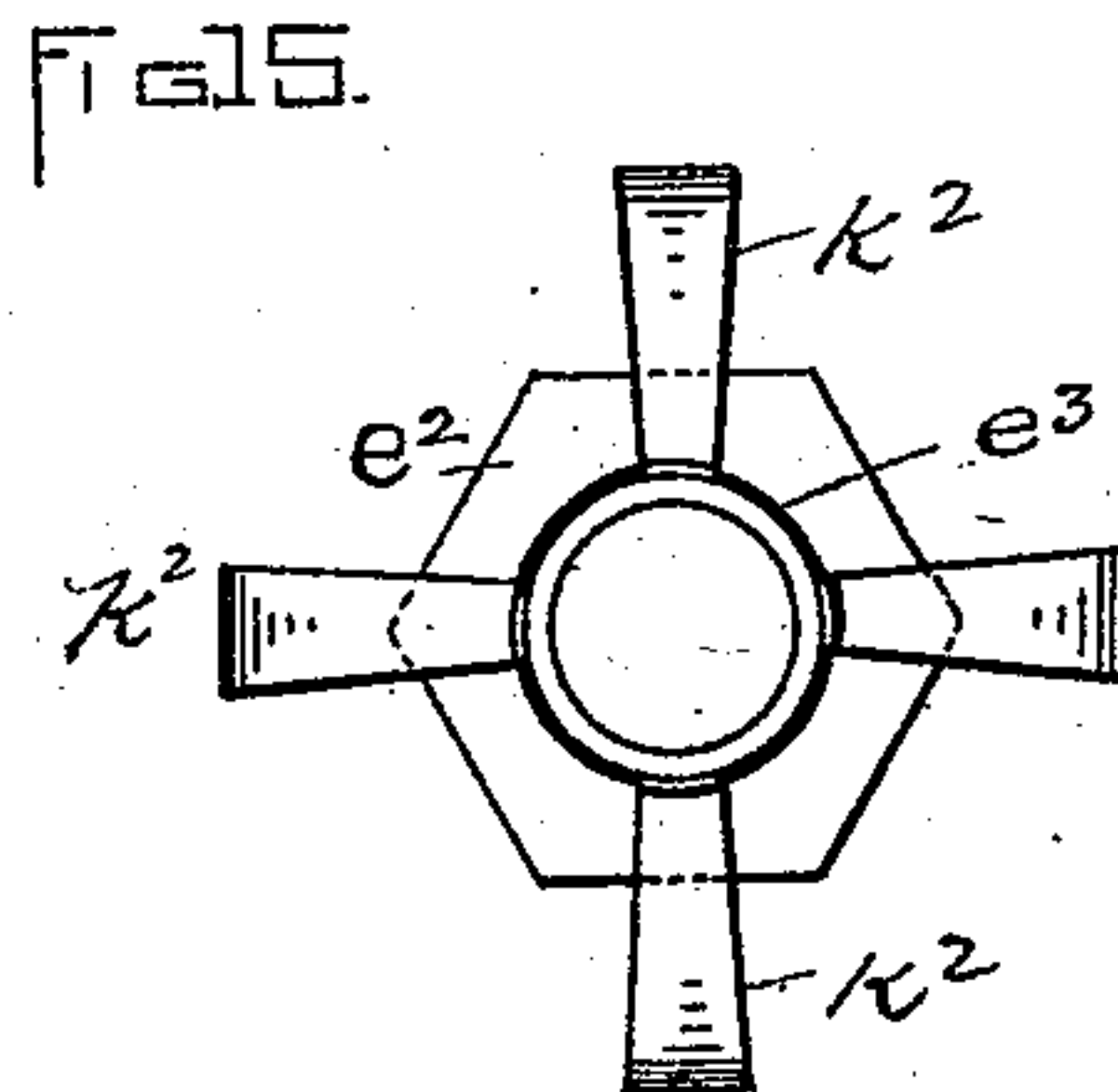
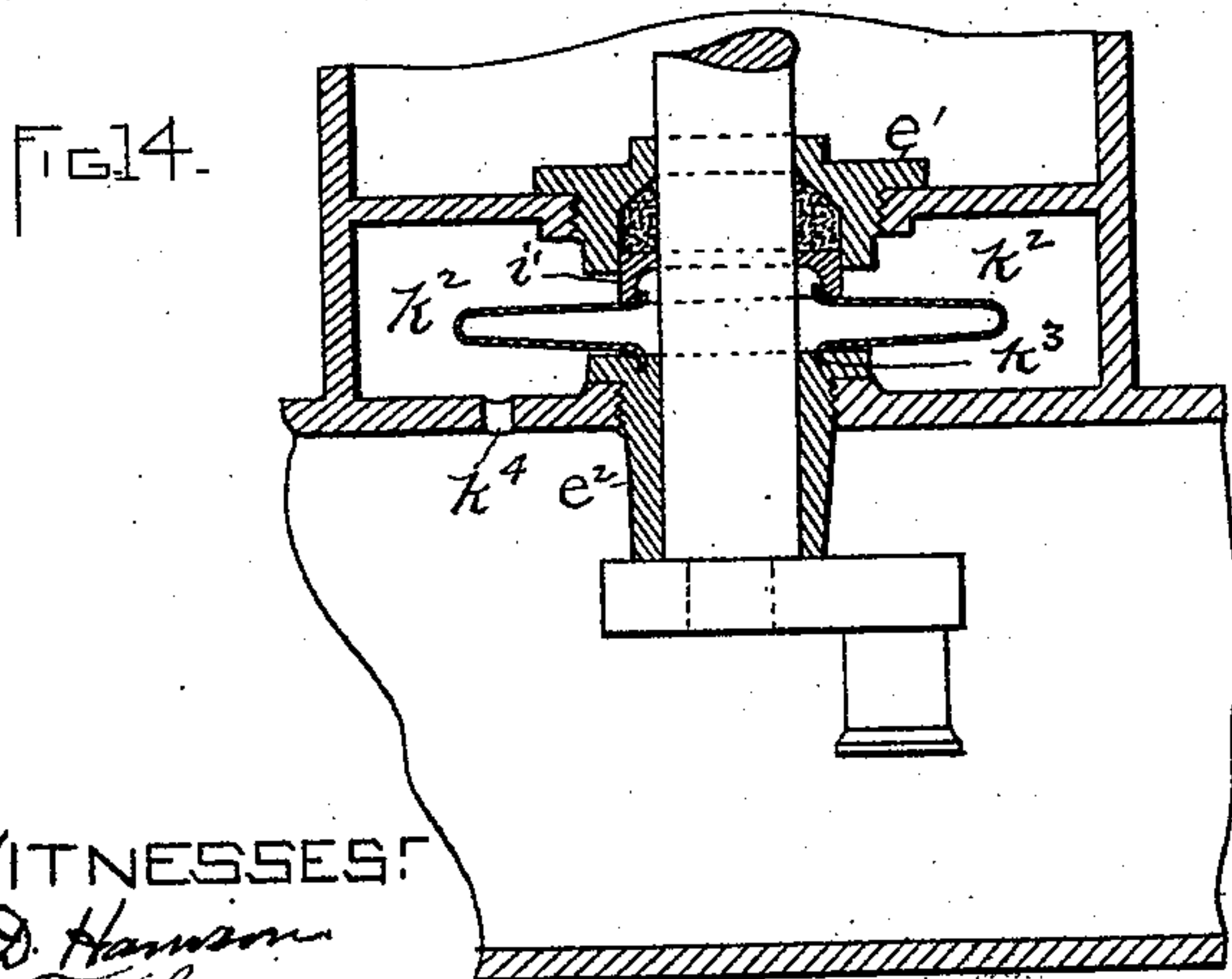
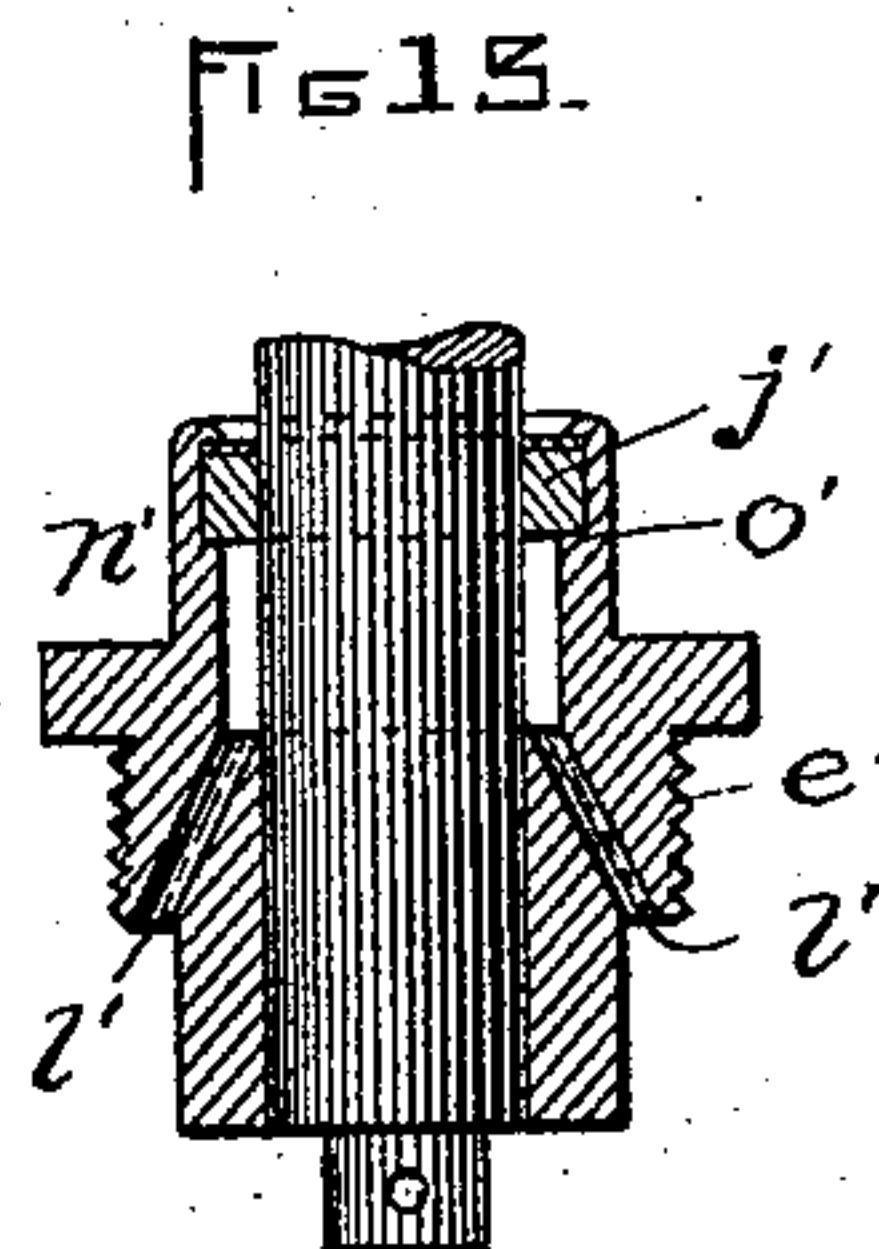
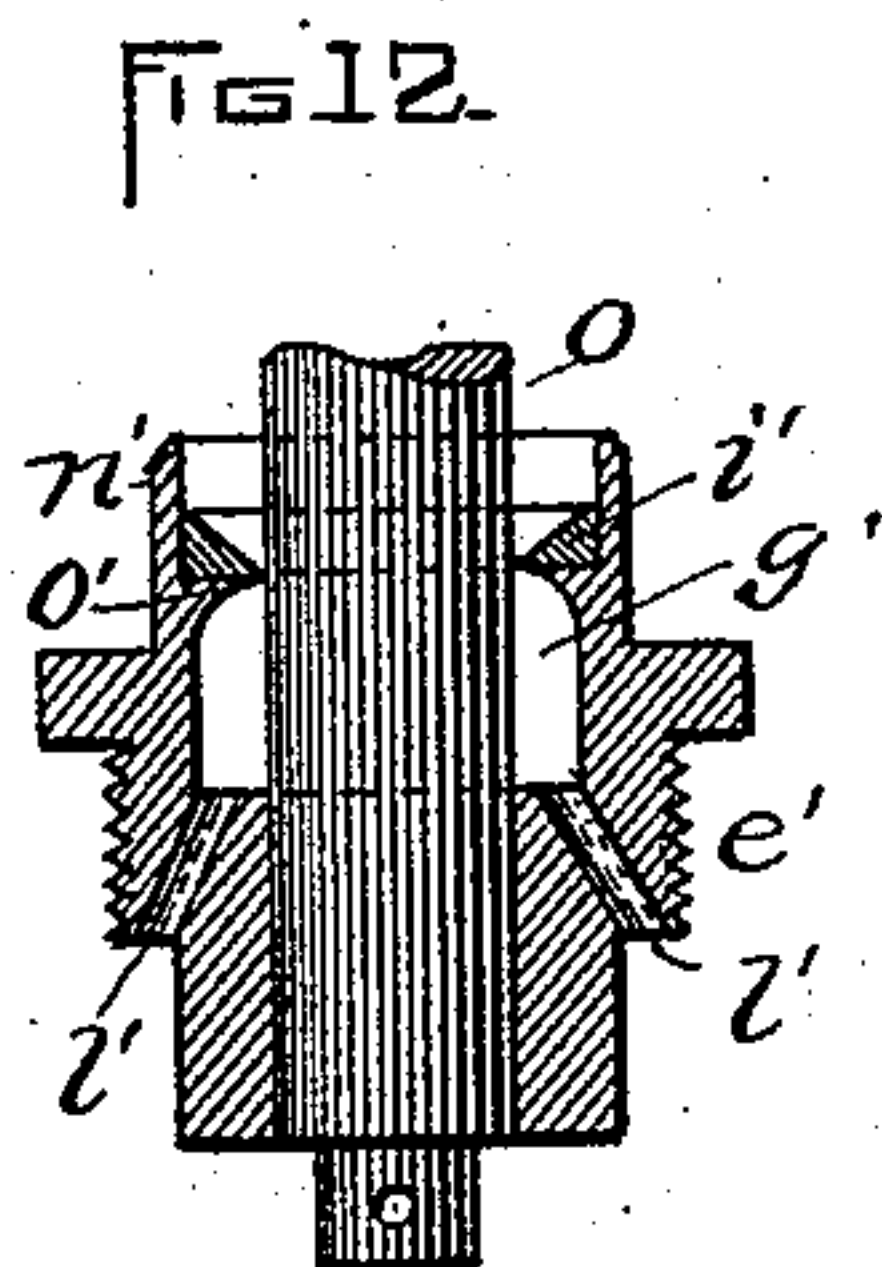
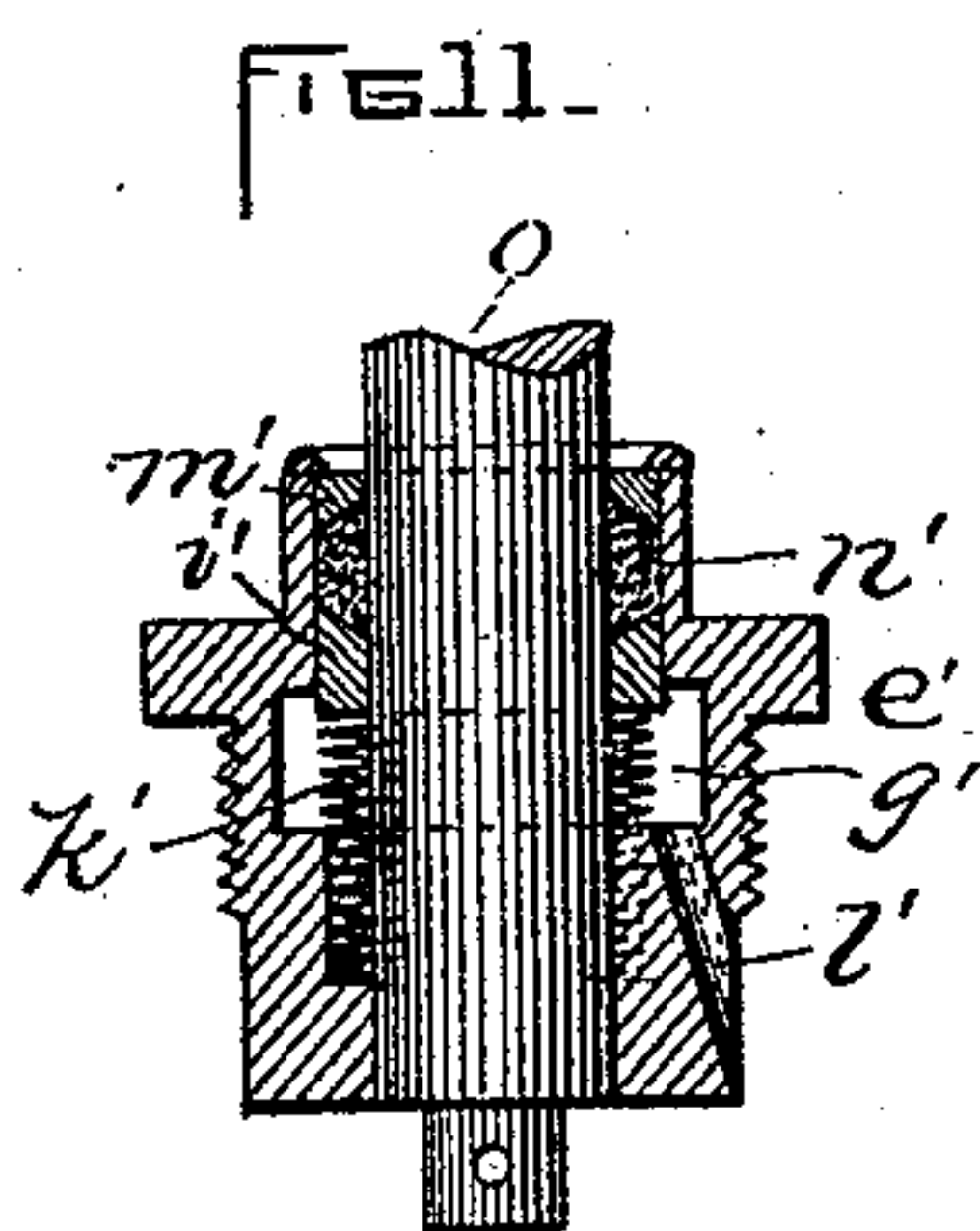
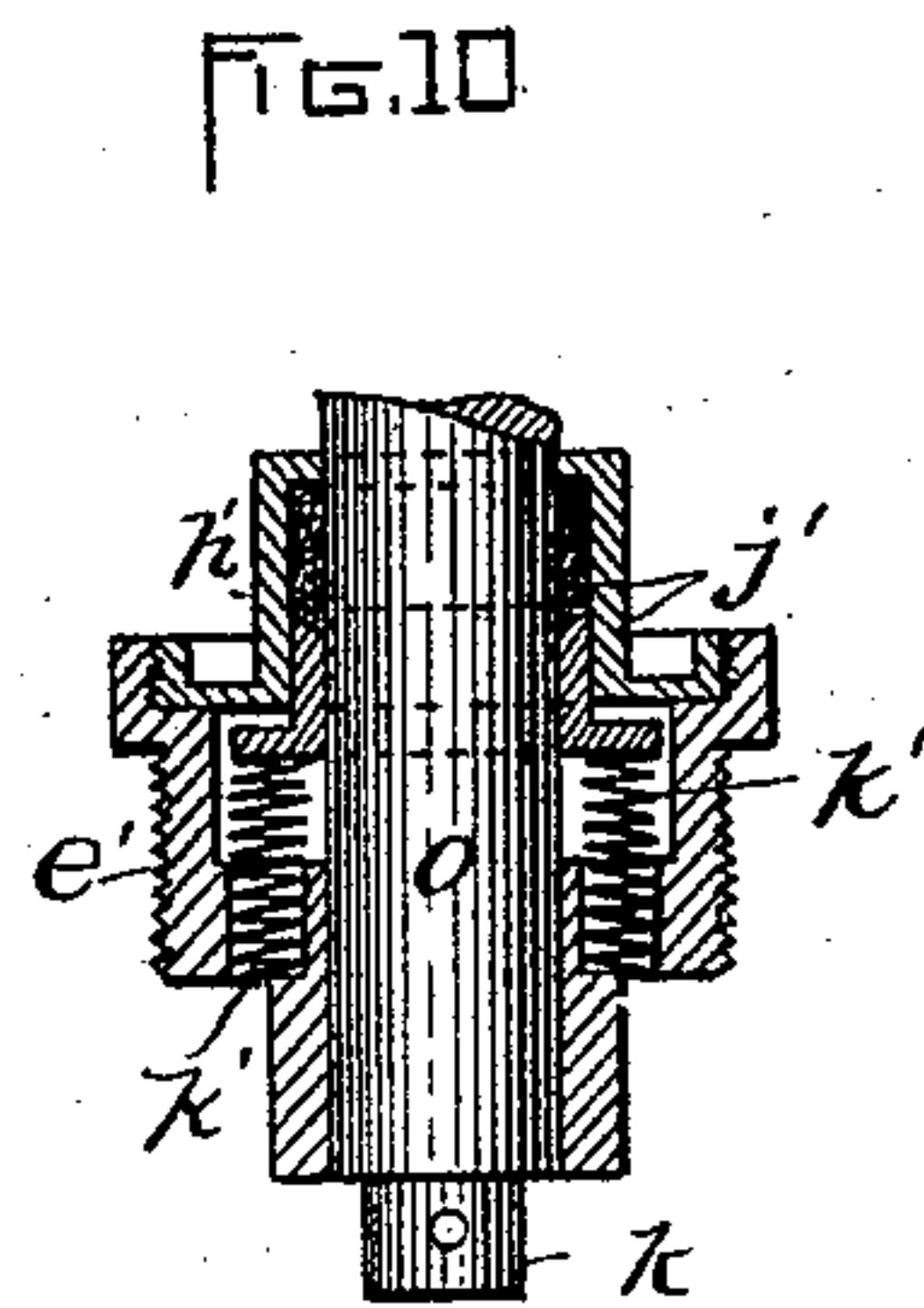
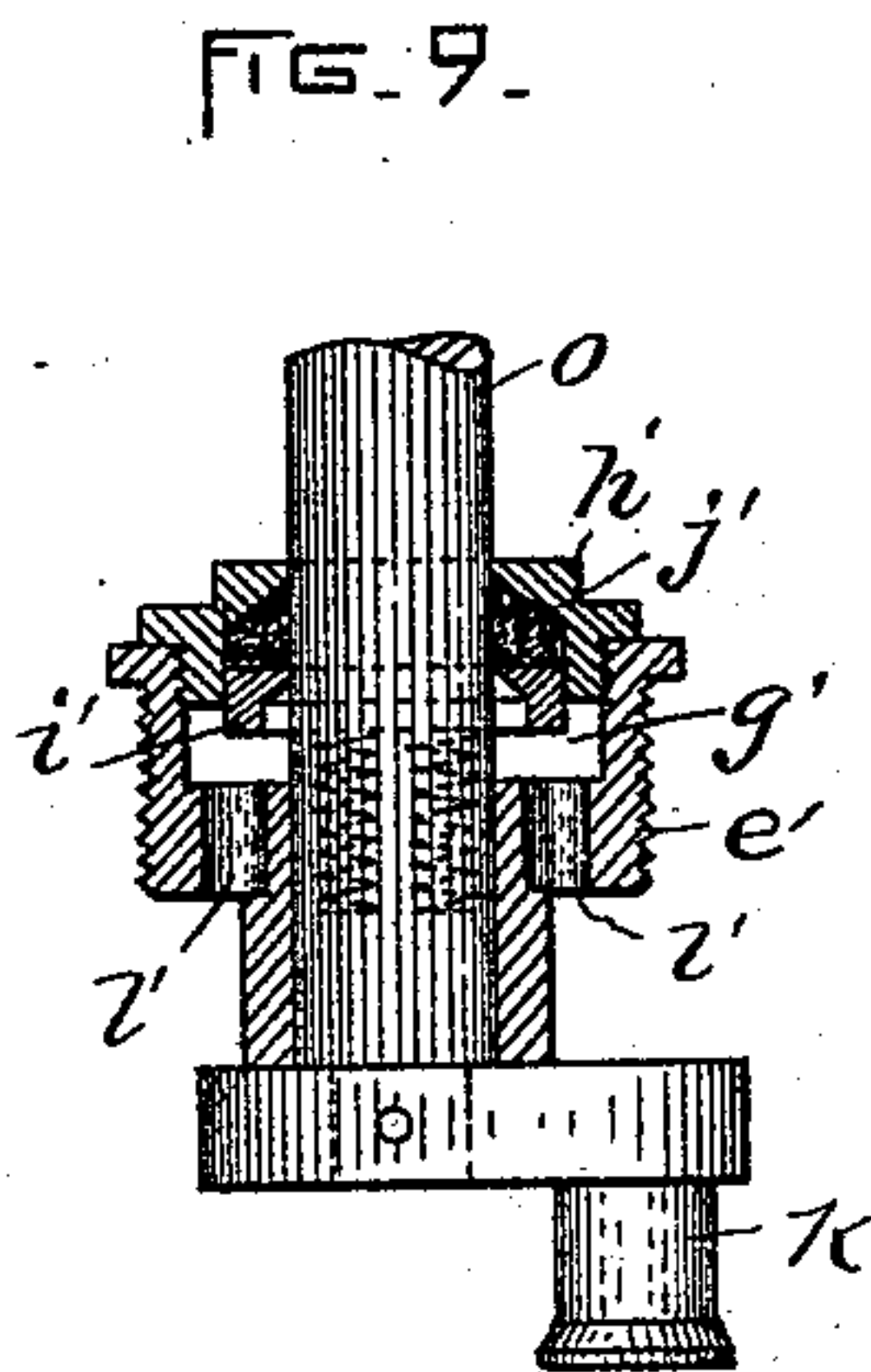
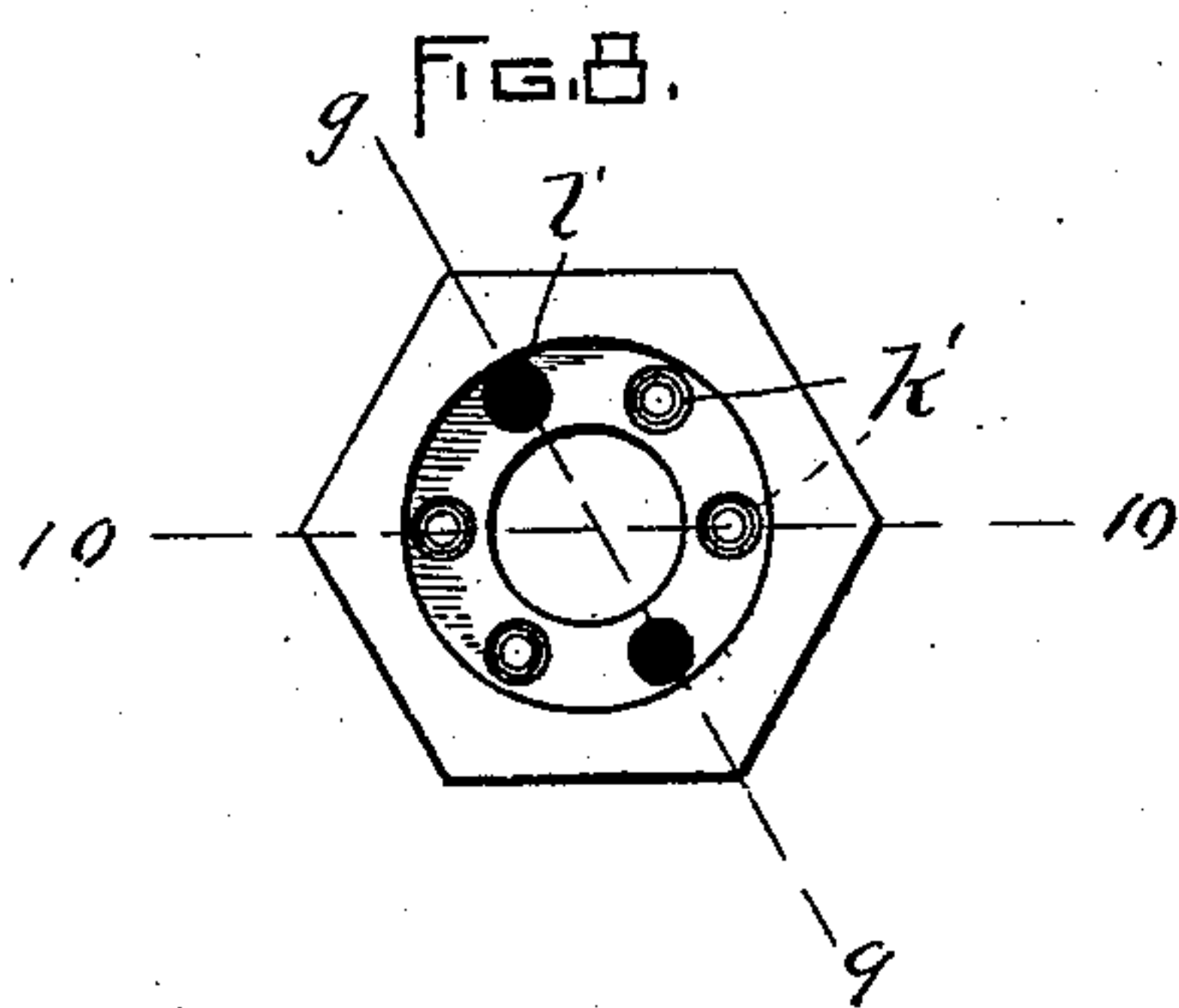
(No Model.)

2 Sheets—Sheet 2.

E. I. BLOUNT.
DOOR CHECK AND CLOSER.

No. 528,321.

Patented Oct. 30, 1894.



WITNESSES:
A. D. Hanson
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INVENTOR
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UNITED STATES PATENT OFFICE.

EUGENE I. BLOUNT, OF GARDNER, ASSIGNOR TO THE BLOUNT-MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 528,321, dated October 30, 1894.

Application filed May 2, 1892. Serial No. 431,513. (No model.)

To all whom it may concern:

Be it known that I, EUGENE I. BLOUNT, of Gardner, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Door Checks and Closers, of which the following is a specification.

My invention has relation to means for automatically closing doors, and checking the momentum of the same so as to prevent slamming.

It is the object of my invention to provide several improvements in door checks and closers which will render the same more efficient than heretofore and obviate objections which have been met with prior to my invention.

I will first proceed to describe my invention in connection with the drawings and letters of reference marked thereon, hereto annexed, forming a part of this specification, and then particularly point out the same in the claims.

Of the said drawings: Figure 1, is a top plan view of my improved door-check and closer, showing a portion of a door-casing and door to which the invention is connected. Fig. 2, is a side view of the same, the door-casing and door being represented in section. Fig. 3, is a vertical sectional view of the invention taken on the line 3—3 of Fig. 1. Fig. 4, is a sectional view of the means for connecting the arms or operating levers to the door-casing, taken on the line 4—4, of Fig. 5. Fig. 5, is a sectional view of the last described means taken on the line 5—5 of Fig. 4. Fig. 6, is a sectional detail view taken on the line 6—6, Fig. 3. Fig. 7, is likewise a sectional detail view taken on the line 7—7 of Fig. 3. Fig. 8, is a top plan view of one form of my improved packing for the piston operating spindle. Fig. 9, is a vertical sectional view of Fig. 8, taken on the line 9—9 of said figure. Fig. 10, is likewise a sectional view taken on the line 10—10 of Fig. 9. Figs. 11, 12 and 13, are sectional detail views of modified forms of packing. Figs. 14 and 15 designate a modified form, hereinafter described.

The same letters of reference designate the same parts or features, as the case may be, wherever they occur.

In the drawings: *a* designates a door-casing, and *b* a door. To the former is attached a bracket *c* having projecting lugs *d* provided

on their inner faces with socketed recesses or bearings for the reception of the ball-like nut *e* of the arm *f* as is clearly represented in Figs. 1, 2, 4 and 5.

The ball *e* of the arm *f* is arranged in the socketed or recessed bearings of the lugs *d* by spreading the latter, and after placing the ball in position, bending them back thereover and maintaining them in position by the screw-bolt *g* which passes through both lugs *d*, as is clearly shown in Fig. 5.

h designates the bracket which secures the combined liquid and spring and packing chambers to the door.

i is the piston which works horizontally in the liquid chamber *j*, below the spring and packing chambers, and is actuated by a pin and roller *k* on the end of a crank *l* which operate in a slot *m* of a cross-bar or yoke *n* integrally or otherwise connected with the piston *i*.

The crank *l* is connected with the spindle *o* which extends from above the spring chamber *p* down into the liquid chamber. At its upper end the spindle *o* is adapted to be passed through an eye or hole formed in the inner end of the arm *q*, which is pivotally connected at its outer end with the outer end of the arm *f*.

It will be seen that my improved manner of connecting the arm *f* with the bracket *c* is such as not to interfere with the proper operation of the arms *q f* if, by reason of the sagging of the door or door-casing or through other causes the brackets *c h* should be to a degree thrown out of their normal adjustment.

The arm *q* is provided with a pawl *r* which is adapted to engage the ratchet wheel *s* integrally, or otherwise connected with the sleeve *t*, to which the inner end of the spring *u* in the spring chamber is connected, so that by adjusting the pawl in the teeth of the ratchet wheel, the spring may be made to act with greater or less force in closing the door.

The sleeve *t* is provided with a hard, smooth finished bushing *v* closely fitted to the spindle *o*, so as to obviate undue wear and friction and afford a close bearing for the spindle, and also to facilitate repairs.

The piston rod or stem *w* is made hollow forward of the yoke *n* and is fitted to slide on a tube *x* connected with the forward end of

the casing of the liquid chamber. The tube x is provided in its outer portion with a port y which is adapted to be opened or closed to a greater or less extent by means of a regulating-screw, or thumb-screw valve z which extends through a stuffing box formed in the casing into the outer end of the tube x as is clearly shown in Figs. 3 and 6.

This construction and arrangement of parts is provided to regulate the flow of the liquid from the front to the rear of the piston in the operation of the invention.

The piston has a bearing at its rear end to guide its movements in the liquid cylinder. The head of the piston is provided with ports a' , the bar b' dividing the ports being provided with a hole to receive a valve-stem c' which is provided with a light spring d' around the stem to hold the valve c' in normal position.

e' designates a nut screwed into the flanged opening of the partition extending between the liquid chamber j and packing chamber f' . This nut is chambered, as at g' in its upper part and is adapted to receive a nut h' which is screwed therein and fits closely around the spindle o . The under surface of the nut h' is inclined inward, and between the said surface and a loose ring or follower i' there is interposed a packing j' of any suitable material.

k' designates springs seated in sockets formed in the nut e' , as shown, or otherwise suitably arranged to act against the follower i' so as to force the same against the packing and compress the same in order to maintain a perfectly close packing around the spindle.

l' designates ports formed in the nut e' , so as to afford communication between the chamber g' and the liquid chamber in the rear of the piston i . This provision is made in order to secure the return to the liquid chamber of any liquid which may, by the operation of the spindle o , be worked up therearound, and is an important feature of the invention.

Instead of providing the nut h' as a bearing for the upper face of the packing j' a ring n' may be arranged upon the packing in a neck n' formed on the nut e' , and the upper edge of said neck crimped over on the said ring, as shown in Fig. 11.

The chambered feature of the nut and the ports l' may be employed without the springs k' by seating the ring i' on an offset or shoulder o' formed in the neck n' , as shown in Fig. 12. Again the packing which may be metallic or of other material may be interposed between an offset in the neck n' and the crimped upper edge of the same, as is shown in Fig. 13.

By providing the check with the packing chamber f' I am enabled to employ an extended packing device around the spindle o and to employ the springs k' . It also insures protection of the spring u from contact with the liquid from the liquid chamber which may work up around the spindle.

p' designates grooves of the same length

formed in the inner surface of the liquid chamber j at the forward end thereof to permit of the quick and quite free escape of the liquid from the front to the rear of the piston when desired to insure the complete closing of a partially closed door, as in cases where the invention is applied to car doors and when the same are nearly closed the action of the wind against the doors in connection with the resistance offered by the liquid, will prevent the spring u from acting to fully close the door.

Instead of boring holes or forming sockets in the nut e' for the reception of helical springs as hereinbefore described, the nut e' may be made without a bottom, and a second nut e^2 secured in the partition between the packing and liquid chambers, and elliptical or other springs k^2 interposed between the nut e^2 , and the follower i' , as shown in Figs. 14 and 15. In this case the nut e^2 may be provided in its upper face with a circular groove e^3 for the reception of the angular ends k^3 of the springs k^2 and a port k^4 provided in the last-mentioned partition.

It is obvious that changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

Having thus described the nature of my invention and explained a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its employment, I declare that what I claim is—

1. A door-check and closer comprising in its construction a piston operating spindle, a liquid chamber, and a packing nut e' , provided with the chamber g' , and the back-flow ports l' , as set forth.

2. A door-check and closer comprising in its construction a piston operating spindle, a liquid chamber, a packing nut e' , packing arranged in said nut and surrounding the spindle, a ring or follower i' bearing against said packing, and a spring bearing against said follower, as set forth.

3. A door-check and closer, comprising in its construction a piston-operating spindle, a bearing for said spindle provided with an oil-collecting chamber having back-flow ports, as set forth.

4. A door-check, comprising in its construction a liquid chamber, a piston in the said chamber provided with the stem w having the slotted cross bar or yoke n , the spindle o , and crank l , provided with the pin k , arranged to operate in the slot of said bar or yoke, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of April, A. D. 1892.

EUGENE I. BLOUNT.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.