

(No Model.)

2 Sheets—Sheet 1.

J. ADAMS.
DOOR CHECK AND CLOSER.

No. 577,124.

Patented Feb. 16, 1897.

Fig. 1.

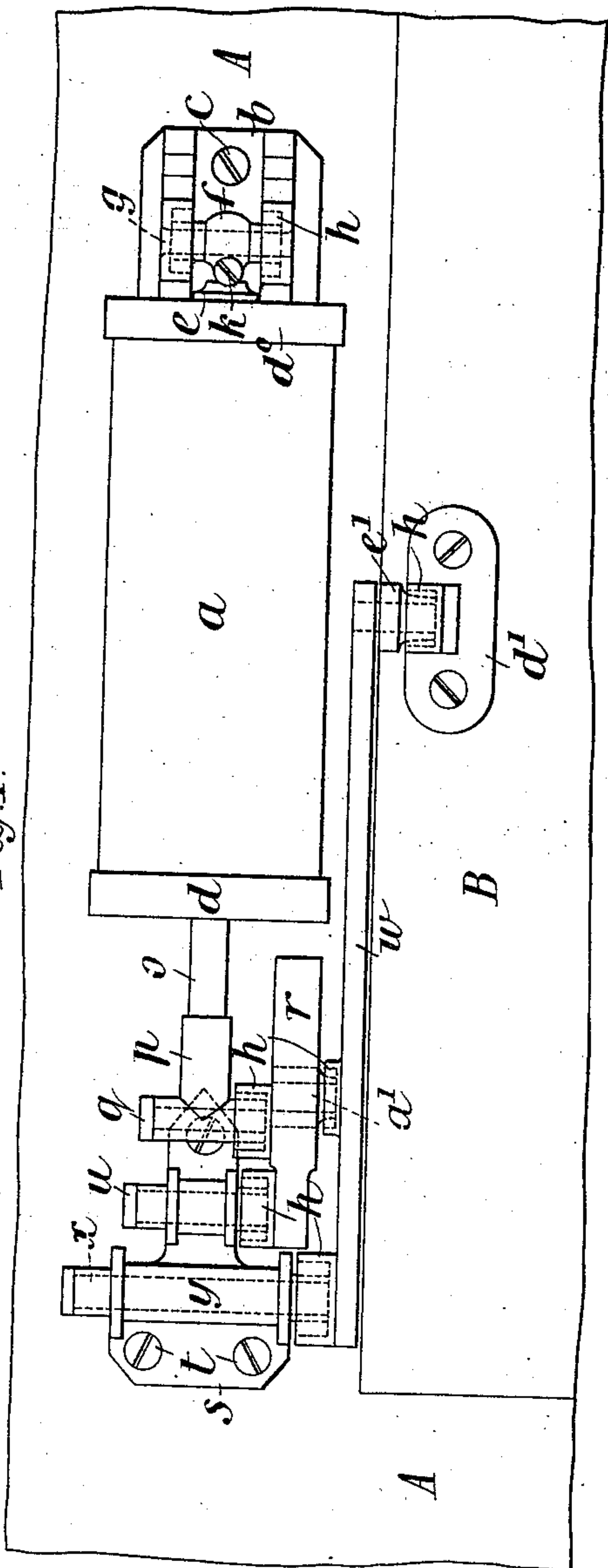
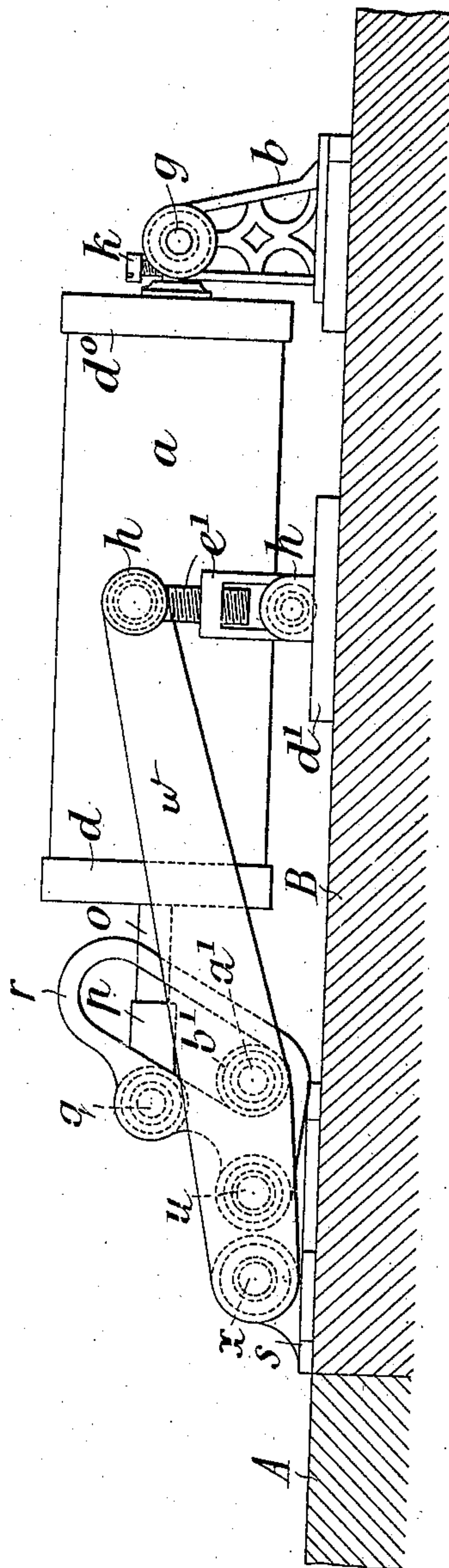


Fig. 2.



Witnesses

G. Redfern

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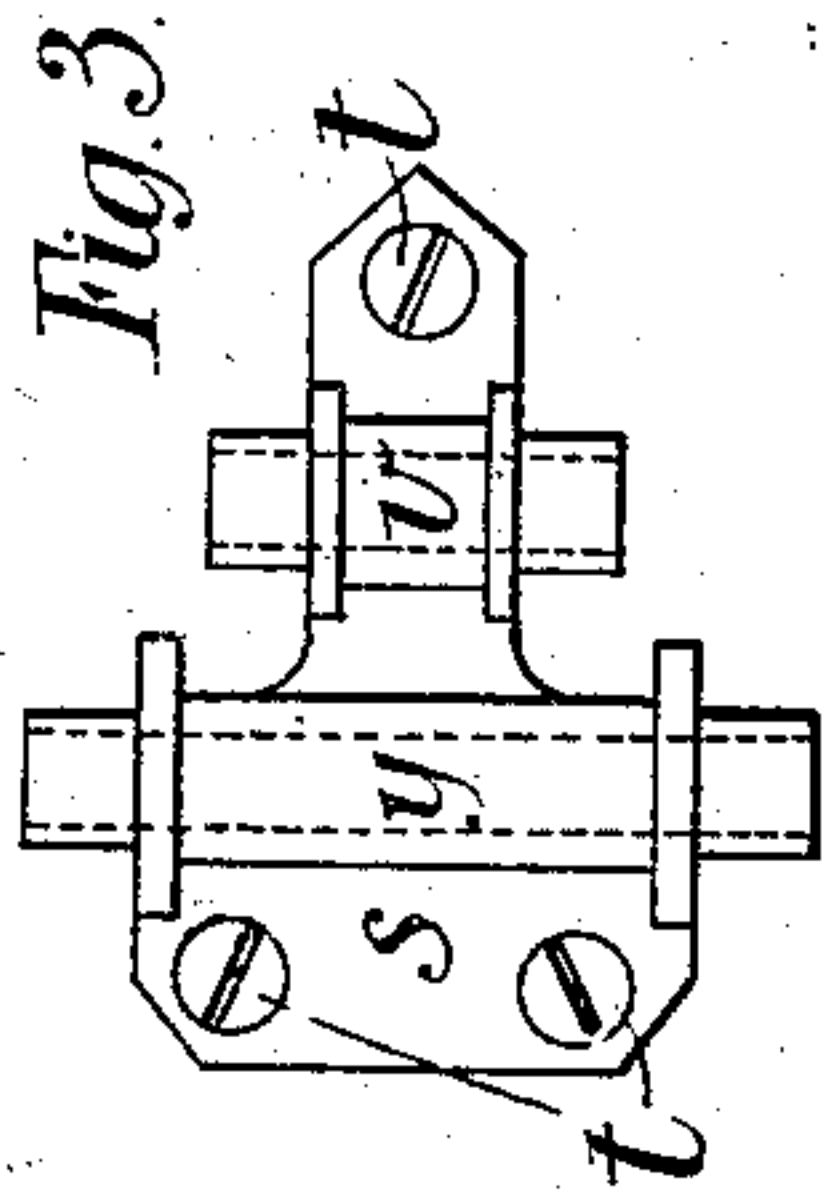
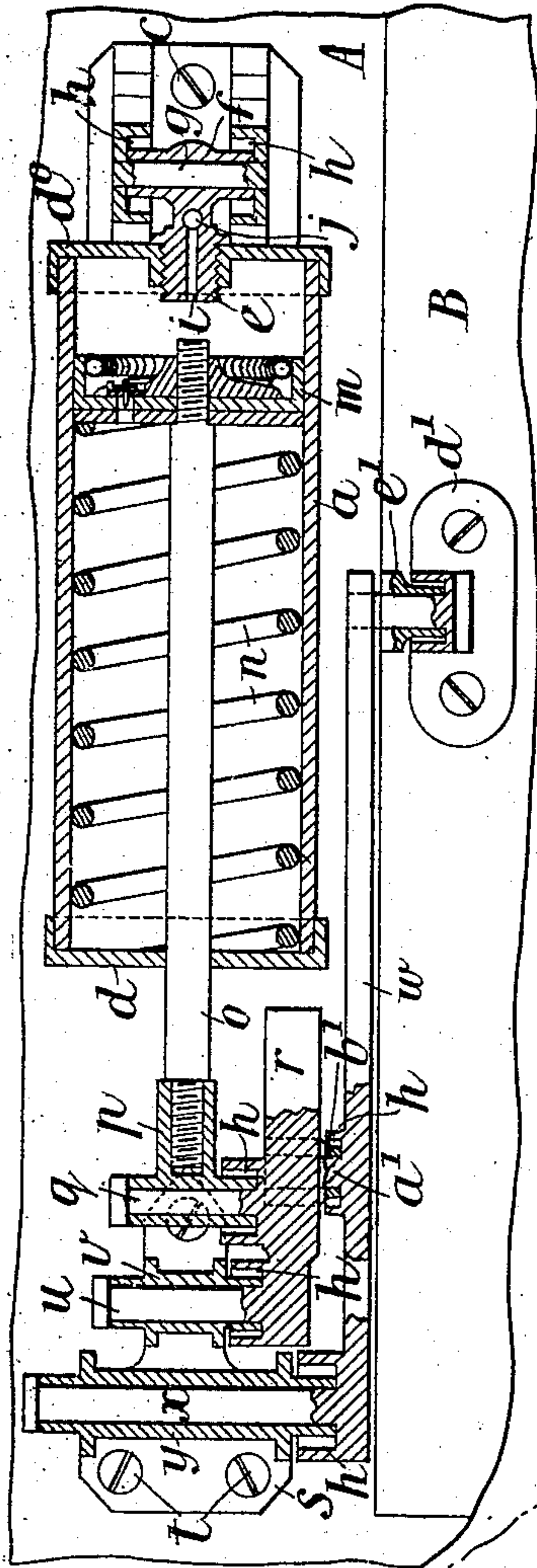


Fig. 5.

Fig. 3.

Fig. 6.

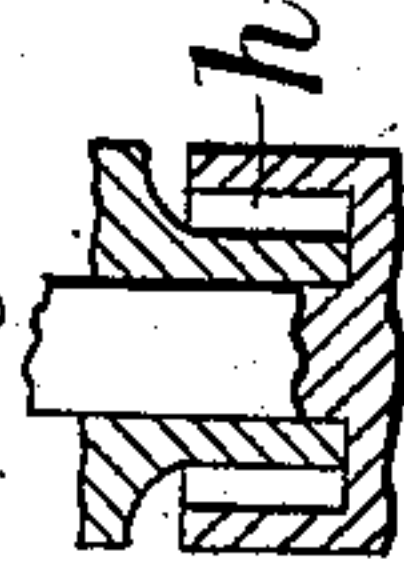


Fig. 7.

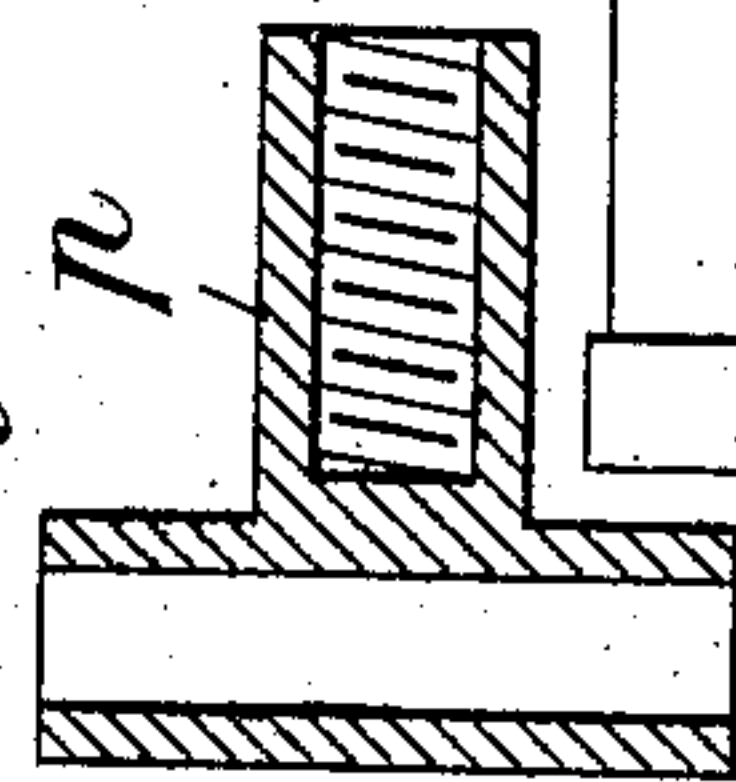


Fig. 4.

Fig. 9.

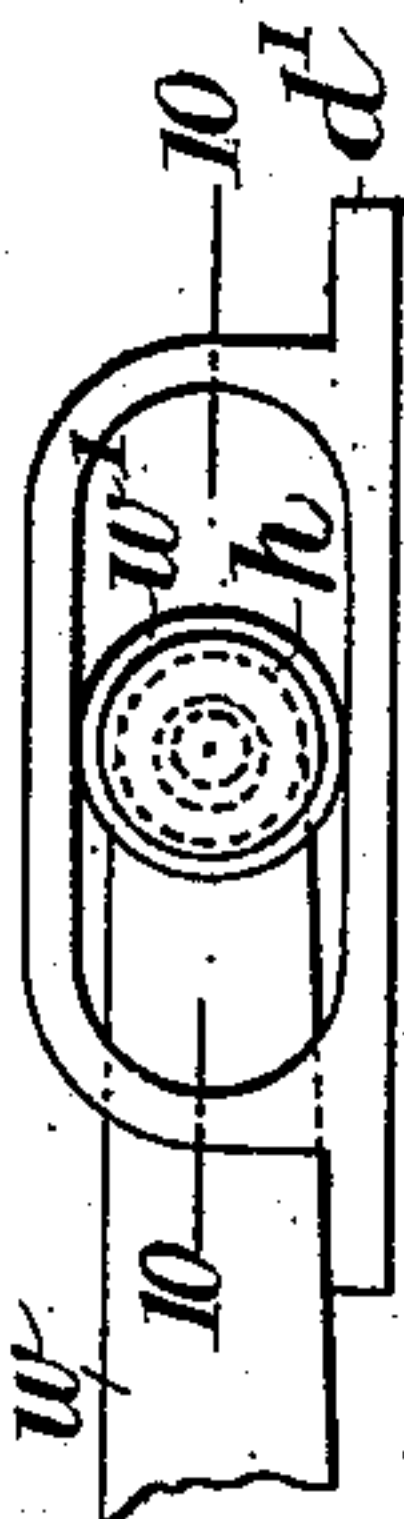


Fig. 10.

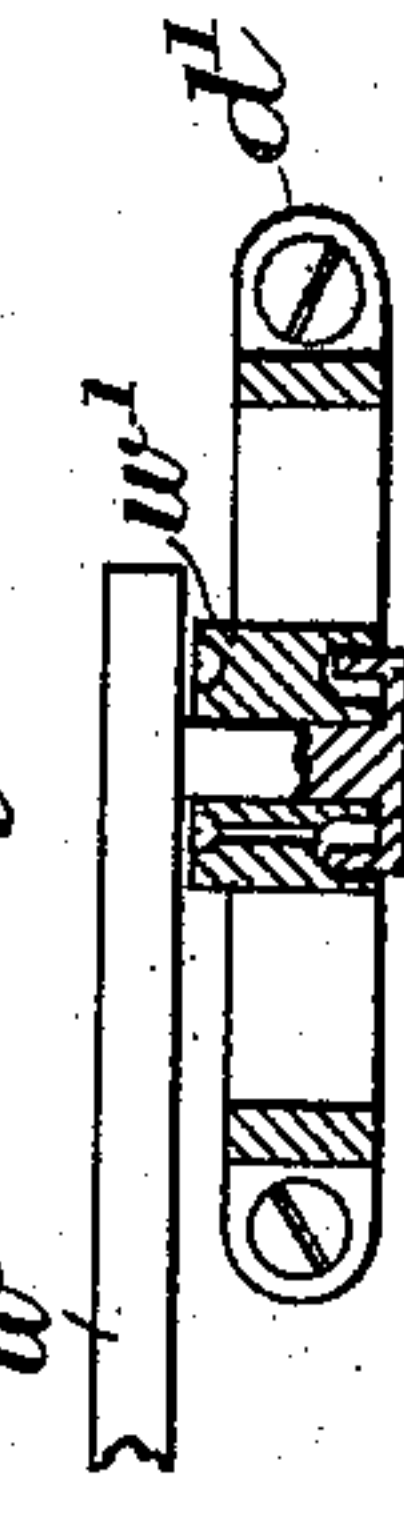
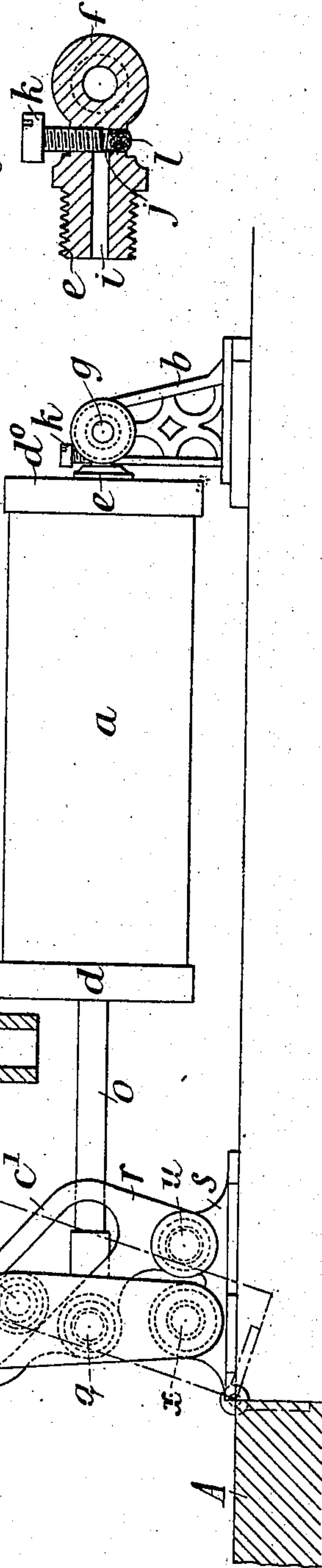


Fig. 8.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES ADAMS, OF LONDON, ENGLAND.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 577,124, dated February 16, 1897.

Application filed February 18, 1896. Serial No. 579,785. (No model.)

To all whom it may concern:

Be it known that I, JAMES ADAMS, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful
5 Improvements in Door-Closing Apparatus and Door-Checks, of which the following is a specification.

This invention relates to improvements in door-closing springs and checks to prevent
10 slamming.

In the accompanying drawings, Figure 1 is an elevation of my improved door-closing apparatus shown applied to a door. Fig. 2 is an inverted plan of the same. Fig. 3 is a longitudinal section through the cylinder of Fig. 1. Fig. 4 is a view similar to Fig. 2, but showing the door open. Figs. 5 to 10 are views of details.

The same letters of reference indicate corresponding parts in all the figures.

A represents a door-frame, and B a door.

a is the cylinder of the apparatus, and *b* is a bracket to which the cylinder is hinged, the said bracket being secured to the door-frame
25 A by means of screws *c*. In cases where the door opens in the opposite direction to that shown the bracket *b* is fixed to the door B.

d d' are the cylinder-covers, the rear cover *d'* having a T-shaped jointing-piece *e f* screwed
30 into it.

g is a pin passing through the cross-piece *f* and forming the pivot or hinge on which the cylinder can turn. The sides of the bracket *b*, carrying the pin *g*, are formed cup-shaped,
35 as shown at *h h*, so as to serve as oil-reservoirs for lubricating the joint. This oil-cup is shown in section in Fig. 6 and is applied to all the joints of my improved apparatus. The part *e* of the jointing-piece *e f* is perforated
40 by a passage *i*, (see Fig. 8, which is a section through the jointing-piece,) the said passage communicating at one end with the inside of the cylinder *a* and at the other end with a screwed hole *j*. One end of this hole *j*, which
45 passes transversely through the jointing-piece, is stopped by a screw *k*, which regulates the volume of air which can pass through the passage *i* into the hole *j*, and the other end is provided with a porous plug *l*, for preventing the escape of air causing a hissing
50 noise.

m is the piston, and *n* is a spiral spring fit-

ting the inside of the cylinder *a* and tending to force the piston toward the rear end of the cylinder.

o is a piston-rod passing through the cylinder-cover *d*, and *p* is the cross-head, into which the outer end of the piston-rod *o* is screwed. This cross-head is shown in section in Fig. 7 and works on the pin *q* as a pivot, the lower
60 end of the said cross-head dipping into an oil-cup *h* of the kind above described, as shown clearly in Fig. 3. The bottom end of this pin *q* is rigidly connected to a slotted lever *r*, pivoted to a bracket *s*, (see Fig. 5,) fixed to the
65 door-frame A by means of screws *t*, the pivot being formed by a pin *u*, which works in a bearing *v*, provided with another oil-cup *h*.

w is a lever pivoted by means of a pin *x* to a bearing *y* on the bracket *s*, the joint being provided with another oil-cup *h*, as shown. The lever *w* is provided with a pin *a'*, having an oil-cup *h*, the said pin serving as a pivot for a friction-roller *b'*, which is adapted to work in the slot *c'* of the lever *r*. It is there-
75 fore obvious that the movement of the lever *w* on its pivot will cause a corresponding movement of the lever *r* through the medium of the said friction-roller *b'*, and vice versa. It will also be obvious that with this arrange-
80 ment of levers the force exerted by the friction-roller *b'* on the lever *w* increases as the force exerted by the spring *n* decreases on account of the gradual diminution in the distance between the center of the friction-
85 roller and the pivot *u*.

The other end of the lever *w* is attached to a bracket *d'*, which is screwed to the door, as shown, by means of an adjustable link *e'*, as shown in Fig. 2, or by means of a friction-
90 roller *w'*, running in a groove or slot in the bracket *d'*, as shown in Figs. 9 and 10, the latter figure being a section on the line 10 10 of Fig. 9.

The action of the apparatus is as follows:
95 When the door is closed, the parts are in the position shown in Figs. 1, 2, and 3. When the door is opened, the lever *w* turns in its bearing *y* and causes the lever *r* to be swung outward on its pivot by means of the friction-roller *b'*, as shown in Fig. 4, thereby causing the cross-head *p* to move outward and the piston *m* to compress the spring *n*.
100 When the door is released, the spring *n* forces

the piston *m* backward, and the motion of the piston is communicated to the cross-head *p* and the slotted lever *r*, so as to cause the lever *w* to return to its normal position, through the medium of the friction-roller *b'*, and close the door.

The backward motion of the piston, under the action of the spring, is retarded by preventing the rapid escape of the air behind the piston through the passage *i* in the joint-piece *e f* at the rear end of the cylinder, the escape of the air being rendered noiseless by means of the porous plug, as above stated.

If the spring *n* be dispensed with, the apparatus serves simply as a door-check without automatically closing the door.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an apparatus for closing doors and for checking the closing of the same and wherein a cylinder and piston are used, the combination of the piston-rod, a bent lever having a slanting slot therein and to which said rod is pivoted, and a lever pivoted to the door-frame and to the door and carrying a pin and roller working in said slot, all substantially as and for the purposes set forth.

2. In apparatus for closing doors and for checking the closing of the same, the combination with the cylinder hinged at its rear end to a bracket on the door-frame, and with its piston-rod, of a lever *w*, bracketed ad-

justably at one end to the door and at its other end pivoted to a bracket on the door-frame, a lever having a slanting slot therein and pivoted to said bracket, and a cross-head on the piston-rod pivoted on said slotted lever, and a pin on lever *w*, working in said slanting slot, all substantially as set forth.

3. In a door-closing apparatus, the combination with the cylinder, its piston and piston-rod, of a T-shaped joint-piece in the rear cover of the cylinder having a passage *i* communicating at one end with a transverse hole made through the joint-piece for the escape of air, and a regulating-screw in said hole, all substantially as and for the purposes described.

4. In combination with the cylinder, its piston and rod, the T-shaped joint screwed into the rear end of the cylinder and having in it the passages *i, j*, the regulating-screw *k*, at one end of passage *j*, and a porous plug in the other end of said passage *j*, all substantially as set forth.

5. In combination with the cylinder and with the T-shaped piece, the bracket *b*, having both sides formed in cup shape and carrying a pin *g*, all as and for the purposes set forth.

JAMES ADAMS.

Witnesses:

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