

No. 730,417.

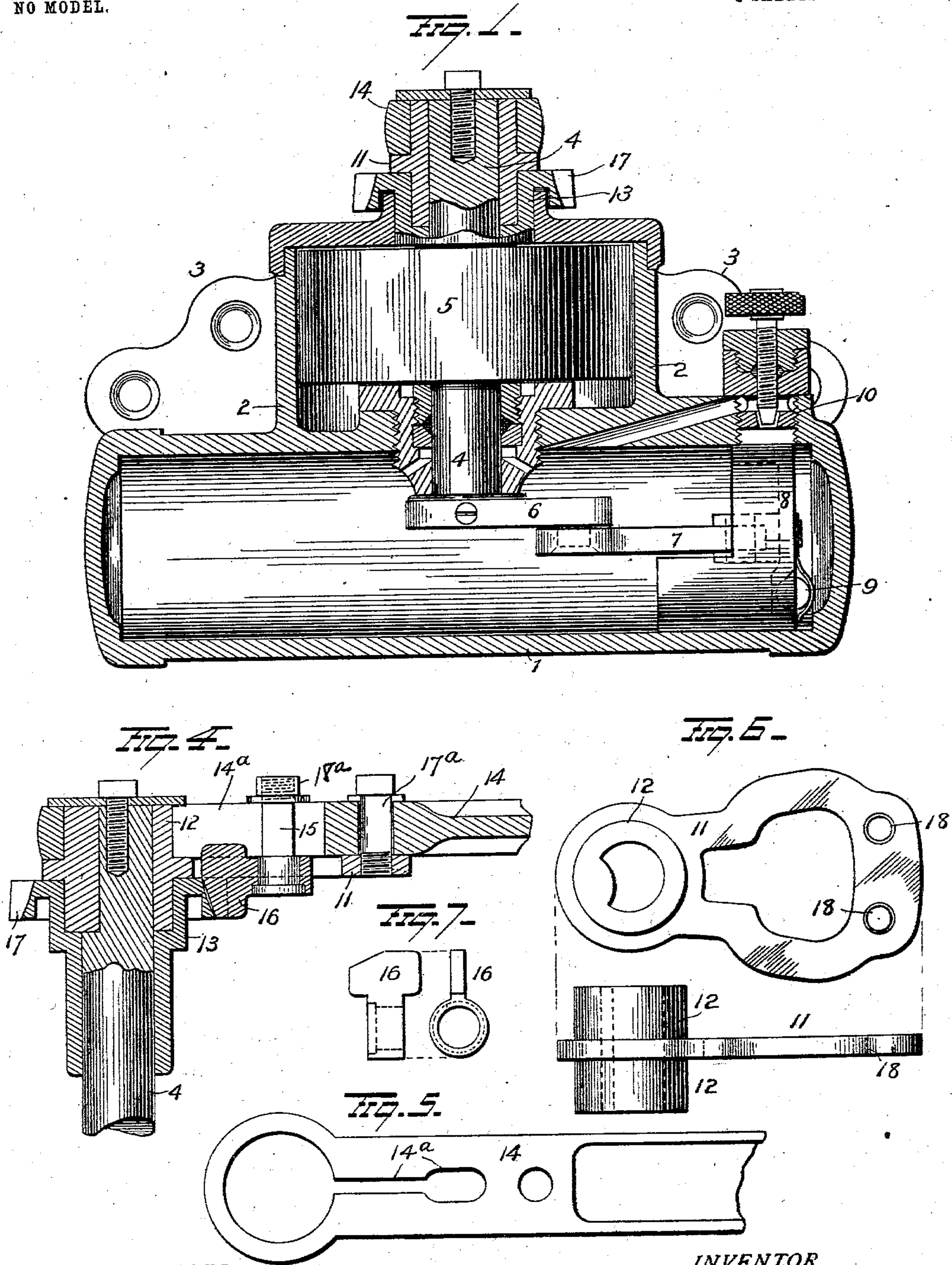
PATENTED JUNE 9, 1903.

W. H. TAYLOR.  
COMBINATION DOOR CHECK AND CLOSER.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES  
E. Nottingham  
G. F. Downing

INVENTOR  
H. N. Taylor  
By H. A. Seymour  
Attorney

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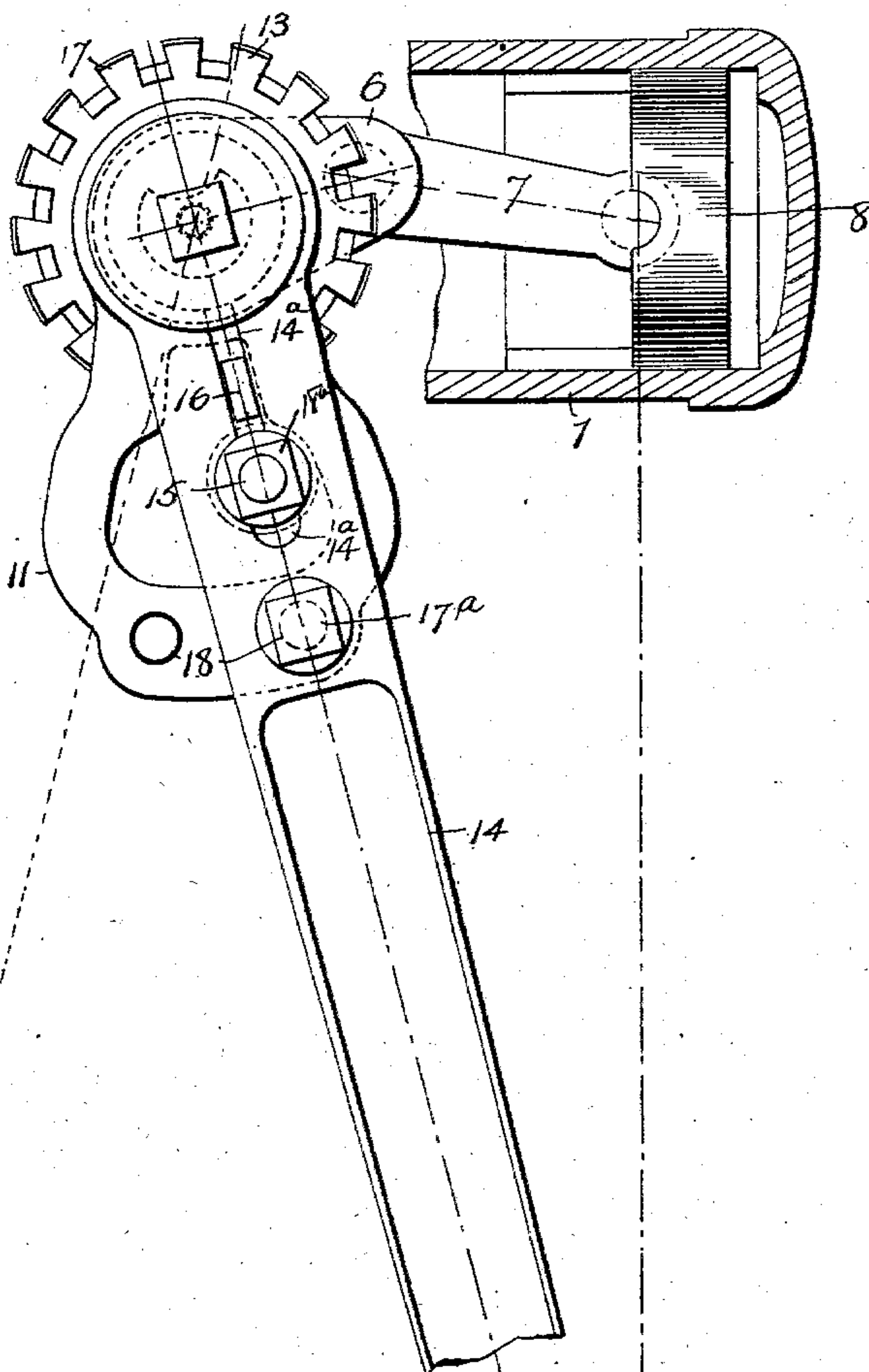


Fig. 2.

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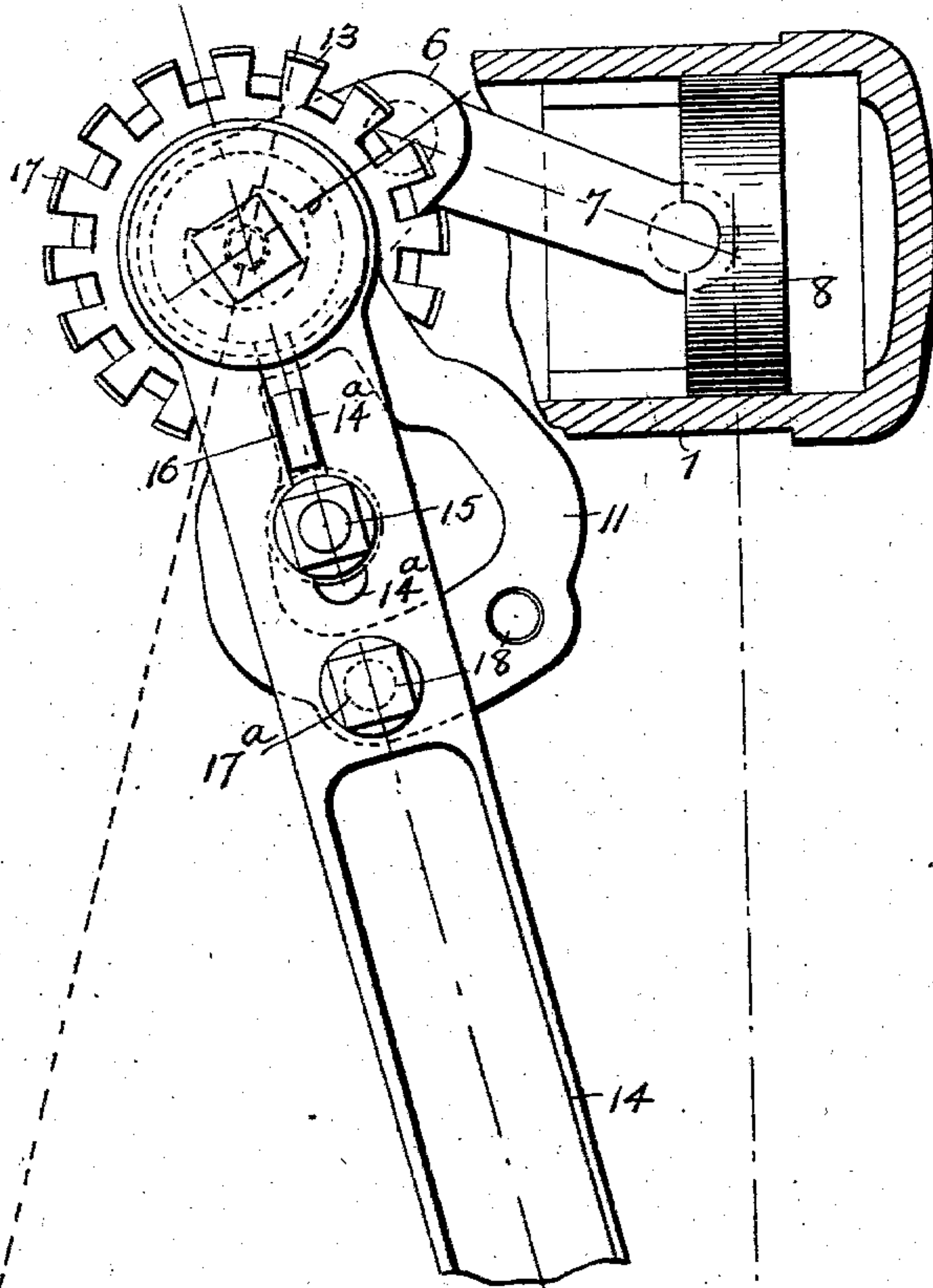


Fig. 3.

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# UNITED STATES PATENT OFFICE.

WARREN H. TAYLOR, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE  
YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CON-  
NECTICUT.

## COMBINATION DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 730,417, dated June 9, 1903.

Application filed March 2, 1903. Serial No. 145,775. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN H. TAYLOR, of Stamford, in the county of Fairfield 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  
10 appertains to make and use the same.

My invention relates to an improvement in combined door checks and closers, and is designed more particularly as an improvement on the construction disclosed in Patent No.  
15 658,518, granted September 25, 1900, to The Yale & Towne Manufacturing Company.

The object of the present invention is to so construct the parts that by one adjustment the door will close slowly and silently and in  
20 the other adjustment the closing movement will be sudden, short, and powerful.

In the patented device above referred to the change in the closing movement is effected by removing the arm from the spindle and  
25 turning it over, thus altering the relation of the arm to the spindle, whereas in the present device the change in adjustment is effected without removing any of the parts.

In the accompanying drawings, Figure 1 is  
30 a view in vertical section, showing a door-check with my improvement applied thereto. Fig. 2 is a view in horizontal section of a part of a door-check, showing my improvement applied for right-hand quick release. Fig. 3 is  
35 a similar view showing the parts adjusted for right-hand slow or silent closing. Fig. 4 is a view in section through the spindle-arm and adjusting-yoke. Fig. 5 is a view in plan of the hub end of the arm. Fig. 6 is a view  
40 in plan and side elevation of the adjusting-yoke, and Fig. 7 shows a similar view of the pawls.

1 represents a horizontal cylindrical casing, closed at its ends and provided on its top with  
45 a cylindrical chamber 2 and with lips 3, having screw-holes therein for the attachment of the device to a door. The shaft or spindle 4 and the spring 5 are located within chamber 2, the shaft extending out through the top of

said chamber and also through its bottom 50 into horizontal chamber 1, the bearing for the shaft between the two chambers being suitably packed to prevent the passage of oil or liquid up into the spring-chamber 2.

The crank 6 is secured to the lower end of  
55 shaft 4 and is connected by pitman 7 with the piston or other checking-surface 8, the latter preferably having one or more valved openings 9 therein, through which the liquid within chamber 1 may freely pass when the pis-  
60 ton 8 is moving toward the shaft 4 and which closes when the piston is moving away from the shaft, as in the act of closing the door.

The piston normally, or when the door to which the piston is attached is closed, rests  
65 beyond or in front of the by-pass valve 10, and until this position of the piston is reached the liquid in front of the piston has a more or less restricted avenue of escape through the by-pass valve. After the piston passes  
70 the by-pass the movement of the piston is retarded by the liquid confined in front of the piston and which can escape therefrom only by leakage around the piston.

I make no claim in this application to any  
75 particular construction of cylinder, piston, or other checking surface, spring, or by-pass and have simply illustrated and referred to these parts in order to disclose my improve-  
80 ments in connection with a complete device; but, on the contrary, I consider myself at liberty to use my improvements on a door check or combined check and closer of any construction whatsoever where the same would be ap-  
85 plicable.

The shaft 4 passes up through chamber 2 and is provided with a reduced upper end, which, as shown in Figs. 2 and 6, is made  
90 crescent shape, so as to prevent the yoke or adjusting-piece 11 from turning thereon or moving independently thereof. This shaft is indirectly connected to a spring 5 of any approved form, designed for turning the shaft in a direction for closing the door, while this  
95 closing movement is opposed by the liquid in front of piston 8.

The yoke or adjusting-piece 11 is provided with an elongated hub 12, having a bore or



opening therein, as shown in Fig. 6, corresponding in size and shape with upper end of shaft 4, so that when the yoke is mounted thereon there can be no rotary movement of either part independent of the other.

Located within the spring-chamber 2 and loosely surrounding the shaft 4 and lower end of the hub 12 of the yoke 11 is the ratchet-sleeve 13. This sleeve 13 is either directly or indirectly connected to the inner end of the spring 5 and operatively connects the latter to the shaft through the medium of the arm 14 on the end of the shaft and the connecting-pawl 16, so that when the shaft 4 is turned by the opening of the door the spring will be wound up or compressed, and when the door is released the spring will then unwind or expand and operate to close the door.

Loosely mounted on the upper end of the hub 12 of yoke 11 is the lever-arm 14. This lever-arm is made in two sections pivoted together, as in the ordinary manner, the free end of the outer section being secured to the door-frame, while the free end of the other section is mounted on the hub of the yoke 11, as above explained, and is provided with an elongated slot 14<sup>a</sup> for the passage of the square bolt 15 and for the reception of a flange on the pawl 16. This bolt 15 carries the pawl 16, which latter engages the teeth 17 of the ratchet-sleeve 13 and locks the sleeve and lever-arm together. These parts (the sleeve 13 and arm 14) are locked to the shaft 4 by the yoke 11. This yoke, as before stated, is secured on the upper end of shaft 4 against independent rotary movement and projects outwardly, as shown in Figs. 2 and 3, and is provided at its free end with two threaded bolt-holes 18 for the reception of the bolt 17<sup>a</sup>, carried by lever-arm 14. The central portion of this yoke 11 is cut away, as shown in Figs. 2 and 6, to permit the yoke to straddle or embrace bolt 15 and pawl 16 and have a limited lateral movement sufficient to bring either bolt-hole 18 under or in alinement with the bolt 17<sup>a</sup>. These bolt-holes 18 are so located with relation to the shaft 4 and crank 6 thereon that when the one to the right (see Fig. 2) is in engagement with the bolt 17<sup>a</sup> the crank 6 will make a longer throw, and thus carry the piston 8 beyond the by-pass, whereas when the one to the left is engaged by the bolt, as in Fig. 3, the throw of the crank will be considerably reduced.

In Fig. 3 the parts are adjusted for slowly closing a right-hand door, while Fig. 2 shows the adjustment for quickly closing the same door. For a left-hand door the lever-arm 14 would stand at precisely the same angle as shown in the figures, but to the other side of the center of the cylinder 2.

In the adjustment for slow closing the center line of the crank stops before reaching its dead-center, as shown in Fig. 3, while for quick closing it will approach nearer the

dead-center, as shown in Fig. 2. It is evident that the nearer a crank approaches its dead-center the greater circular motion it has with reference to the imparted motion of the piston—that is, supposing the crank to be on its center, it can be moved an appreciable distance either way without imparting any appreciable motion to the piston. Now the motion of the piston when the door is being closed means the forcing of a certain amount of liquid through the by-pass to the rear of the piston, and the less the liquid which must be forced through the less resistance there is to the spring. Accordingly when the crank is on its center there is no resistance to the action of the spring, and when it is slightly removed—say ten one-hundredths away—there is very much less resistance than when it is twenty one-hundredths away. Therefore when the lever-arm 14 is put on the shaft 4 in such a way that the center line of the crank only approaches to within, say, twenty one-hundredths of the center of the piston there is never a time when an appreciable amount of liquid does not have to be forced through the by-pass, so that the door will close always under the control of the liquid; but when the center line of the crank approaches to, say, within ten one-hundredths of said center line the motion of the piston is practically nothing at the end. Hence the force of the spring is practically unopposed, and the door will be closed with a short sudden impulse.

The pawl 16, before referred to, is carried by the bolt 15, mounted in oblong slot 14<sup>a</sup> in the lever-arm 14 and is locked in place by the nut 18<sup>a</sup>. This pawl has a tongue or lip which rests within the elongated slot in the arm, and hence is retained against the possibility of accidental displacement after having been once set.

With this improvement it is not necessary to remove any of the parts to change from right to left hand nor to change the character of the closing movement, and with the improved sliding pawl held in place, as described, the possibility of accidental separation of the pawl and the ratchet is entirely obviated.

It is evident that many slight changes might be resorted to in the relative arrangement of parts herein shown and described without departing 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 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, a lever-arm having an elongated slot, a sliding pawl having a portion engaging said slot, and a bolt for locking the pawl in place.

2. In a combined door check and closer, the combination with a casing, a shaft and spring,



the latter being operatively connected to the shaft, of a piston connected to the shaft, a lever-arm, and adjusting device rigidly secured to the shaft and adjustably secured to the lever-arm.

3. In a combined door check and closer the combination with a casing, crank-shaft and spring, of a piston connected to the crank, a lever-arm loosely mounted on the shaft, means connecting the lever-arm and spring, and a device for changing the relative position of the lever-arm to the crank without removing the lever-arm from the shaft.

4. In a combined door check and closer, the combination with a casing, crank-shaft and spring, the latter being operatively connected to the shaft, of a piston connected to the crank, a lever-arm on the shaft and means for changing the relative position of the lever-arm to the shaft and for locking it to the latter without removing the lever-arm.

5. The combination with a casing, shaft, spring operatively connected to the shaft, and a piston connected to the shaft, of a lever-arm carried by the shaft and means for changing the position of the arm on the shaft and for locking it thereto without removing it from the shaft.

6. The combination with a casing, shaft, spring operatively connected to the shaft and a piston connected to the shaft, of a lever-arm mounted on the shaft, a yoke secured to the shaft, and means for adjustably connecting the yoke and lever-arm.

7. The combination with a casing, shaft, spring operatively connected to the shaft, and a piston connected to the shaft, of a lever-arm mounted on the shaft, a yoke secured to

the shaft and having a plurality of bolt-holes at its free end and a device carried by the arm and passing through one of the bolt-holes in the yoke.

8. The combination with a casing, shaft, ratchet-sleeve, spring operatively connected with said sleeve and a piston connected to the shaft, of a lever-arm, a pawl connecting the lever-arm and ratchet-sleeve, a yoke secured to the shaft and means for adjustably connecting the free end of the yoke to the lever-arm.

9. In a door-closer, the combination with a casing, ratchet-sleeve, spring operatively connected to said sleeve, and a shaft, of a lever-arm on the shaft and provided with a slot, a longitudinally-movable pawl carried in the slot in the arm and engaging the ratchet-teeth of the sleeve, and means for locking the pawl in place.

10. In a door-closer, the combination with a casing, spring, shaft and ratchet-sleeve, of a lever-arm on the shaft and a pawl adapted to slide and engage the teeth on the ratchet-sleeve.

11. In a door-closer, a lever-arm having an elongated slot, a sliding pawl, having a portion engaging said slot, and a portion engaging with the spring ratchet-wheel, said pawl being adapted by sliding to connect and disconnect the lever-arm and ratchet-wheel.

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

WARREN H. TAYLOR.

Witnesses:

SCHUYLER MERRITT,  
PATRICK KEEFFE.