July 18, 1950 J. J. JONES 2,515,875

DOOR CHECK

Filed Feb. 13, 1947

Fig. 1

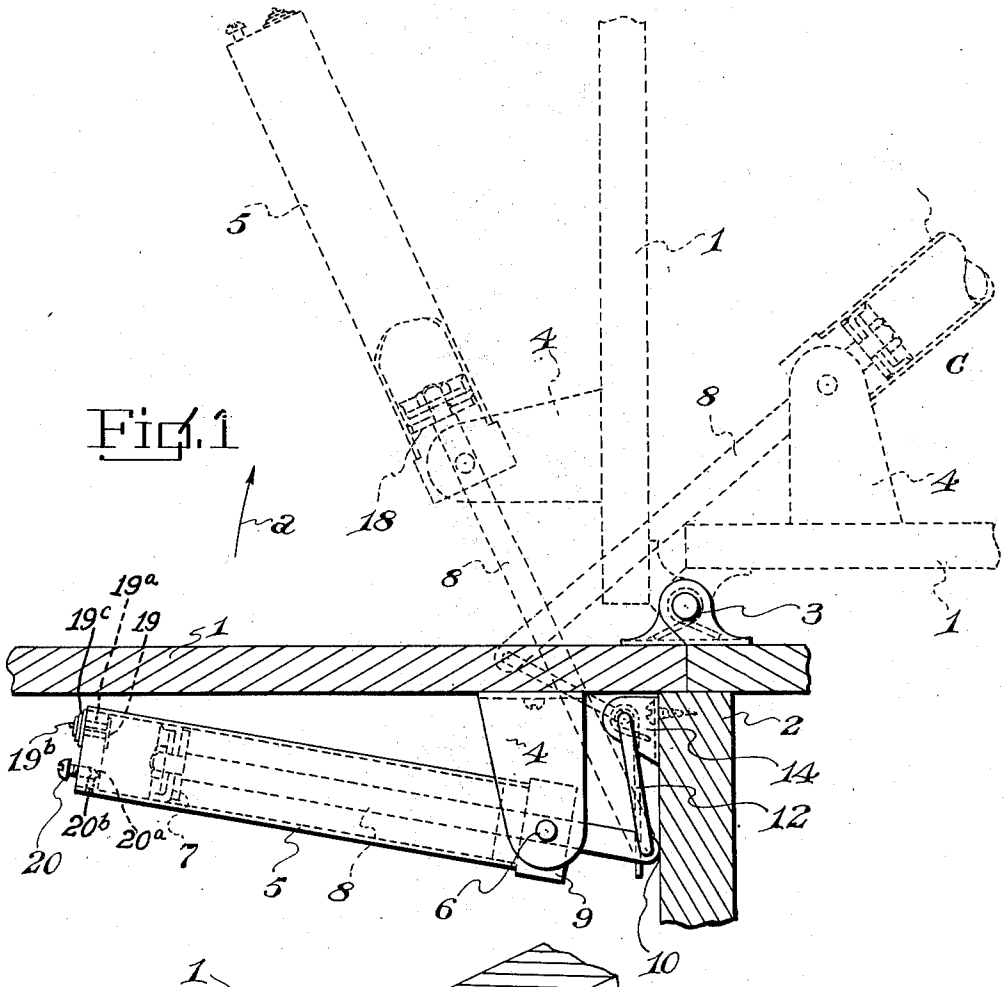
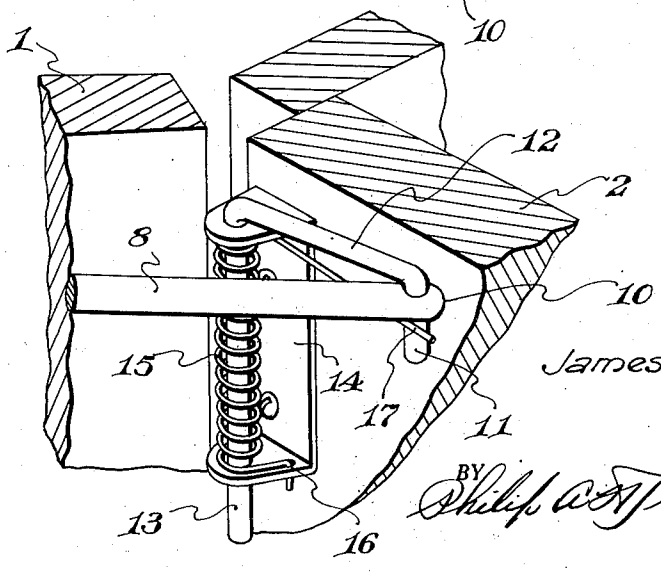


Fig. 2



James J. Jones
INVENTOR.

BY Philip A. Fennell
ATTORNEY.

Patented July 18, 1950 2,515,875

UNITED STATES PATENT OFFICE

2,515,875

DOOR CHECK

James J. Jones, Tulsa, Okla.

Application February 13, 1947, Serial No. 728,255

1 Claim. (Cl. 16—70)

1

The invention relates to door checks, and has for its object to provide a device of this kind of the cylinder and piston type, so mounted and constructed, that a wide range of opening of the door is accomplished with the minimum amount of movement of the piston within the cylinder.

A further object is to provide a door check comprising a hingedly mounted cylinder having a piston and piston rod therein, and carried by the hinged door, and spring means cooperating with the piston rod whereby, the piston and piston rod will be held against axial movement as the door is partially opened and moved with the cylinder without axial movement upon excessive movement of the door to open position.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a horizontal sectional view through a hinged door and part of the door frame, showing the door check applied thereto.

Figure 2 is a detail perspective view of the torsion spring mounting and the piston rod in engagement with the door frame.

Referring to the drawing, the numeral 1 designates the door which swings in the direction of the arrow *a* towards an open position. Door 1 is hingedly connected to the side 2 of the door frame by a conventional spring hinge 3.

Secured to the inner side of the door 1 is a U-shaped bracket 4, between the arms of which the door check cylinder 5 is pivoted at 6. During the opening and closing of the door, the cylinder 5, hingedly moves in a horizontal plane.

Reciprocally mounted within the cylinder 5 is a piston 7 carried by a piston rod 8. The piston rod 8 is slidably mounted in the end plug 9 of the cylinder, and extends outwardly beyond said plug into engagement with the door frame 2, at 10. The engagement, at 10, is normally maintained on the initial opening of the door by means of the arm 11 of the U-shaped member 12, the downwardly extending arm 13 of which is rockably mounted in the ears of a U-shaped bracket 14 carried by the door frame, clearly shown in Figure 2.

Surrounding the arm 13 is a torsion spring 15, the lower end of which is anchored at 16 to

2

the bracket 14, and the upper end of the torsion spring terminates in an inwardly extending arm 17, which arm engages the arm 11 and urges the outer end of the piston rod 8 towards the door frame. Upon initial movement of the door 1 from its closed position, shown in Figure 1, full line, to the dotted line position, shown in Figure 1, the door moves substantially ninety degrees, and during this movement the torsion spring 15 maintains the piston rod engagement, at 10, with the door frame. During this movement the piston has moved to a position where it will engage the inner end of the plug 9, as at 18; then as the door is further opened towards the one hundred and eighty degree position, shown at *c*, the piston rod will pull outwardly on the U-shaped member 12, against the action of the torsion spring. Therefore it will be seen there has been a minimum amount of movement of the piston 7 within the cylinder 5, and the torsion spring 15 will act as a door closer, assisting the spring hinge 3 on the closing operation.

The free end of the cylinder 5 is provided with an intake valve 19, and an exhaust valve 20 of conventional construction. The intake valve 19 is of the disc type and normally cooperates with an intake port 19*a*. Valve 19 is provided with a shaft or stem 19*b* with which a helical spring 19*c* cooperates for normally maintaining the valve 19 in closed position. The exhaust regulation is controlled by the screw 20 having a valve end 20*a* which cooperates with an exhaust port 20*b*.

As the door moves from the extreme open position to closed position, the piston 7 will remain in engagement with the end 18 of the plug 9 until the parts reach the ninety degree position, and following this, the outer end of the piston rod will be in engagement at 10 with the door frame, and as the piston moves into the cylinder 5, there will be a checking of the door. It will be noted, with this arrangement, that the amount of wear on the piston will be reduced to a minimum, thereby materially increasing the life of the piston and the usual piston cups.

From the above it will be seen that a door check is provided which is simple in construction, and constructed in a manner whereby the door can open one hundred and eighty degrees with a minimum amount of travel of the piston within the cylinder.

The invention having been set forth what is claimed as new and useful is:

A door check connection between a reciprocating piston rod carried by a door check cylinder

hingedly mounted on a door for horizontal oscillation on its hinged point, the outer end of said piston rod being limited in its outward movement by engagement with one side of the door frame, said connection comprising a bracket carried by the door frame, a link connection between said bracket and the frame engaging end of the piston rod, said link connection comprising an inverted L-shaped member, one arm of the L-shaped member being rotatably mounted in the door frame bracket, the other arm of said L-shaped member being hingedly connected to the outer end of the piston rod, and spring means carried by the bracket and cooperating with the arm of the L-shaped member connected to the piston

rod for normally forcing the piston rod and last named arm towards the door frame side.

JAMES J. JONES.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
759,621	Lackey	May 10, 1904
1,363,900	Mothmiller	Dec. 28, 1920

FOREIGN PATENTS

Number	Country	Date
298,890	Great Britain	Nov. 1, 1928