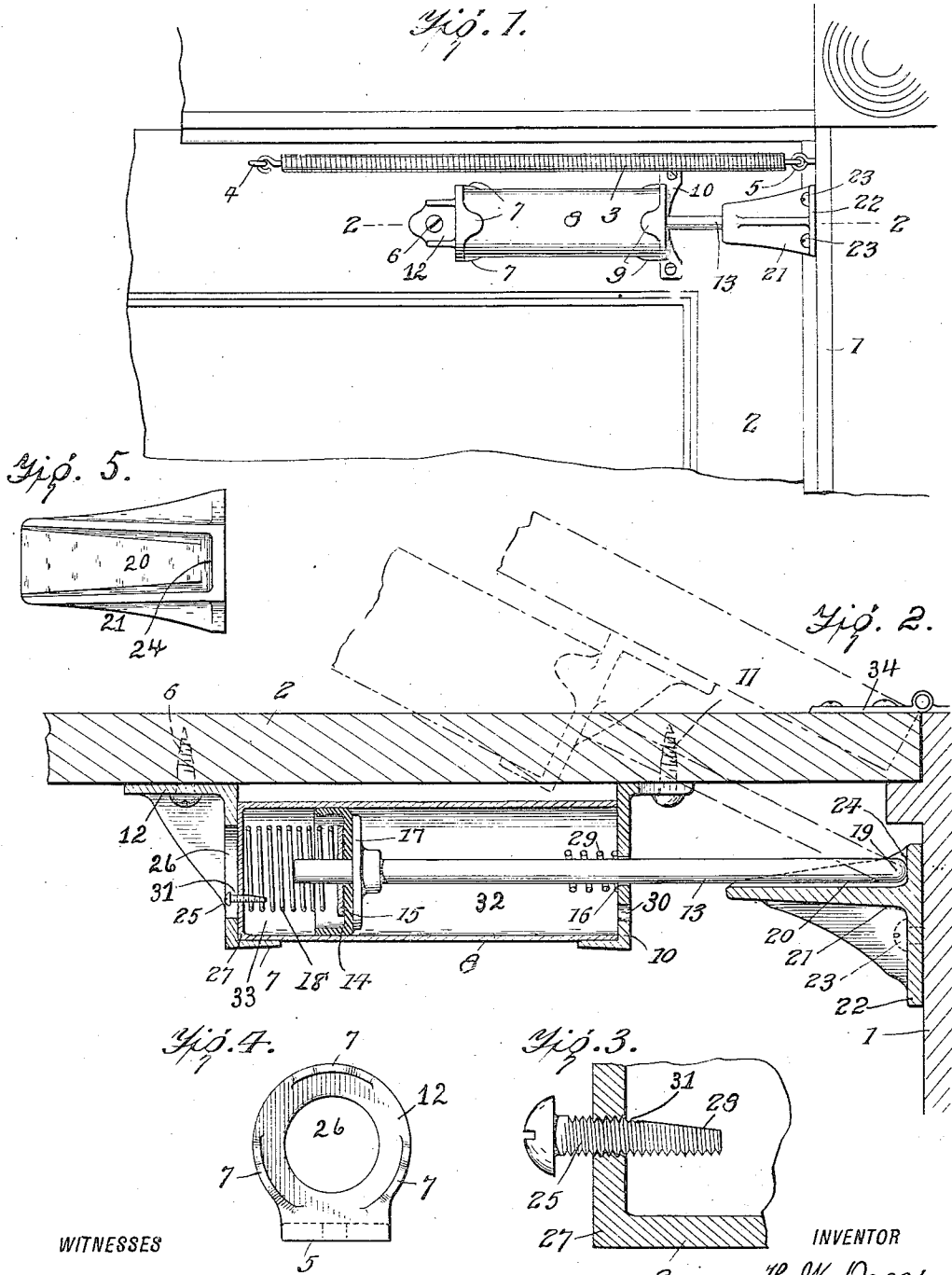


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DOOR CHECK.
APPLICATION FILED MAY 7, 1909.

953,378.

Patented Mar. 29, 1910.

2 SHEETS—SHEET 1.



WITNESSES
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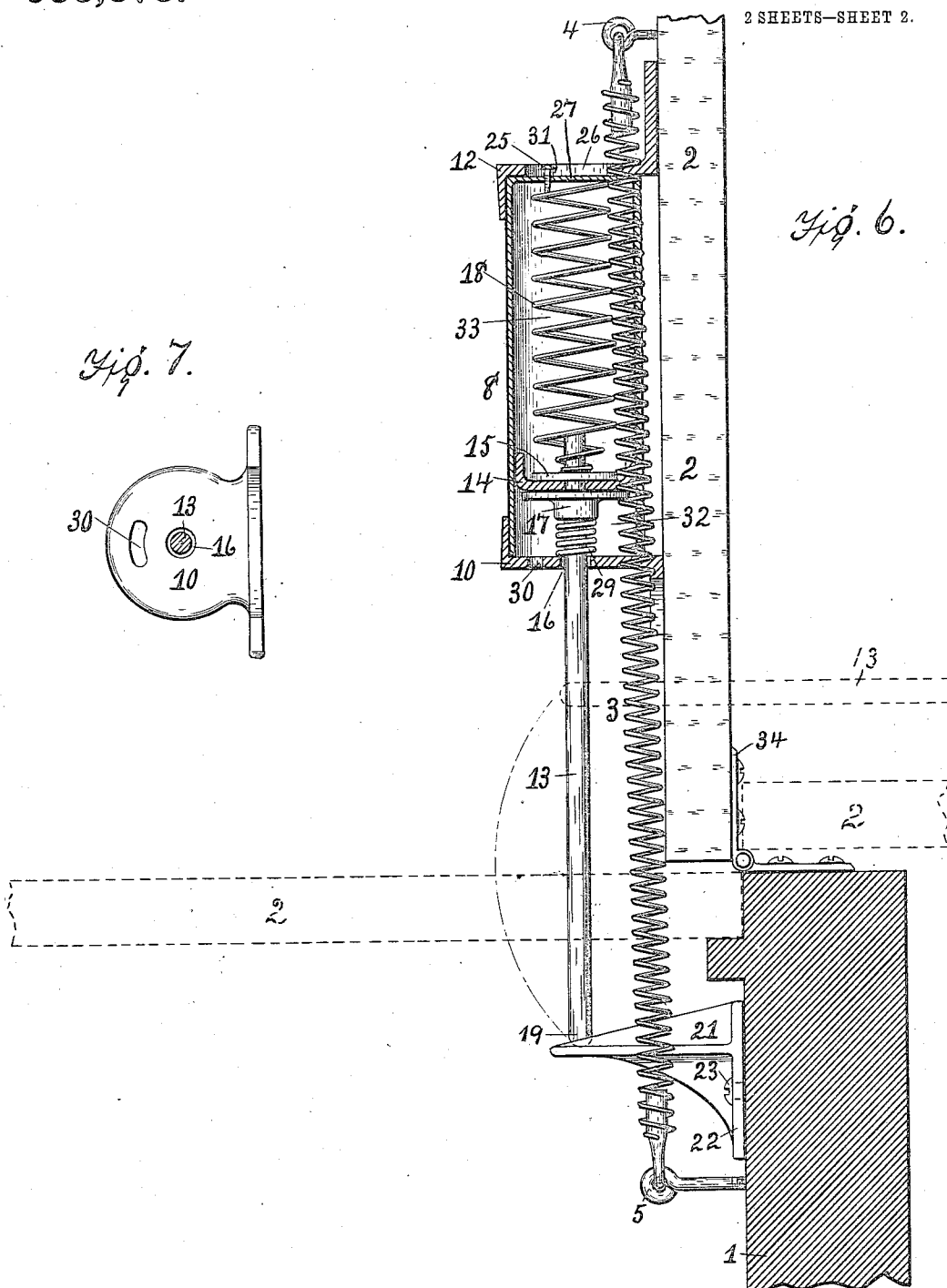
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UNITED STATES PATENT OFFICE.

HERBERT W. DAGGS, OF ROCHESTER, NEW YORK, ASSIGNOR TO DAGGS MANUFACTURING COMPANY, OF ROCHESTER, NEW YORK.

DOOR-CHECK.

953,378.

Specification of Letters Patent.

Patented Mar. 29, 1910.

Application filed May 7, 1909. Serial No. 494,686.

To all whom it may concern:

Be it known that I, HERBERT W. DAGGS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Door-Checks, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

This invention relates to certain new and useful improvements in door checks, of that class designed more particularly for use in connection with screen doors and in which a spring is employed for closing the door, and a check mechanism for preventing the spring from closing the door violently or with a slam.

The present invention has for its objects, among others, in addition to those usually sought in such devices, to provide a simplified and improved check of this general nature, in which provision is made for the acceleration or retardation of the action of the check upon the door as circumstances may require.

The invention has also, for another object, to provide an improved rest or holder for the outer end of the piston-rod, formed with a longitudinal depression or channel for receiving the end of the rod, the latter bearing against said holder at all times except when swung far back.

I aim, further, at improvements in the details of construction, facilitating the assembly of the parts and separation thereof, when necessary.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is an elevation of parts at the upper end of a door, and its frame, showing my improved check applied. Fig. 2 is a horizontal section through the line 2—2 of Fig. 1, parts being shown in two positions by full and by dotted lines. Fig. 3 is an enlarged detail in section, the section being taken through the end of the cylinder showing the adjusting screw in elevation. Fig. 4 is an end elevation of one of the brackets or holders for the cylinder, removed. Fig. 5 is an elevation of the rest for the piston-

rod, detached, showing more fully the longitudinal groove or channel therein. Fig. 6 is a view looking down upon the door when open, and associated parts, the cylinder with some connected parts being in horizontal section through the axis of the cylinder. Fig. 7 is an elevation of the holding bracket pierced by the piston-rod, detached, further showing the form of the bracket.

Like numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 designates the door frame and 2 the door or the wooden frame of a screen door or other movable object to which the invention is applied.

3, Figs. 2 and 6, is a closing spring for the door, of usual construction in this class of devices, connected at one end, as at 4, with the door and at the other end, as at 5, with the frame 1, in any suitable manner, preferably by hook-and-eye connections as shown, whereby the spring may be readily connected or disconnected, when desired.

Secured to the door, near the upper edge thereof, is a metal bracket 12, Figs. 1, 2, 4 and 6, held to place by a screw or the like 6, so that it may be readily removed, when desired, the bracket being formed with a series of lugs 7, as seen in the different views, which extend at right angles from the body portion of the bracket, as shown, and which are adapted to embrace and frictionally hold one end of a metal cylinder 8. The end of the cylinder held by this bracket is closed by a head portion 27, the opposite end being open, as plainly appears in Figs. 2 and 6, which open end is held within lugs 9 of a bracket 10 secured to the door 2 by simple fasteners as screws or the like 11.

13 is a piston-rod for the cylinder 8 extending outward through a central opening 16 in the bracket 10, and larger in diameter than the rod, as seen in Figs. 2, 6 and 7, the rod being provided within the cylinder with a cup-shaped piston 14 of soft material, as leather, opening toward the head 27. This piston is held between an annular disk or washer 15 and a metal collar 17; preferably rigid on the piston rod, a concentric coiled spring 18, large in diameter, being confined between the washer 15 within the piston 14, and the head 27 of the cylinder, the coils at the end of the spring next the washer being reduced to closely encircle the piston-rod to hold to place thereon, as shown in

Fig. 6. When the door 2 is in its closed position, as in Fig. 2, the spring 18 is closely compressed against the head 27 of the cylinder but it expands, as the door is opened, serving to push the piston 14 toward the opposite end of the cylinder and to keep the outer end of the piston-rod continuously against and in contact with the rest 21, until the door passes a position at right-angles with its closed position. A small buffing spring 29, Figs. 2 and 6, free on the piston-rod, within the cylinder, serves to prevent the collar 17 being driven violently against the holder 10 when urged by the spring 18, as stated, when the door is opened.

A screw 25, Figs. 2, 3 and 6, within the large central opening 26 in the holding bracket 12, is threaded longitudinally into a hole or air passage 31 in the end portion 27 of the cylinder 8, for the purpose of controlling the amount of air passing into and out of the cylinder through said opening as the piston 14 is moved within the cylinder by the swinging of the door, as stated. This screw is flattened on one side, as seen at 28 in Fig. 3, on a taper or slant so as to close the hole 31 more or less perfectly as the screw is turned in or out. By moving this screw in or out to vary the opening through the cylinder head the door 2 may be caught more or less quickly when returned by the spring 3, and thus caused to close gently and without noise or jar.

When the door 2 is swung open at any time and the piston 14 moves toward the bracket 10, as stated, the air in the part 32 of the cylinder 8, Figs. 2 and 6, must have means of escape. For this purpose I commonly fit the piston-rod 13 loosely in the bracket 10, at 16 as stated, and, besides, form an opening 30 through the bracket, as shown in Figs. 2, 6 and 7. This permits the easy escape of the air from the cylinder while the door is swinging open, and the ready inflow of air into that end of the cylinder while the door is swinging shut and the piston moving toward the head 27. This opening 30 also serves through which to inject a lubricant, as oil, to lubricate the piston 14.

The rest 21 for holding and controlling the outer end of the piston-rod is formed with a longitudinal groove or channel 20, Figs. 2 and 5, in which to receive the rounded end 19 of the rod; the spring 18 serving to hold said end of the rod normally against the inner or rear end wall 24 of the rest. When, however, the door is swung out to a position about at right angles with its closed position, as shown in Fig. 6, the piston-rod will assume a position substantially at right angles with the rest 21, with its rounded end bearing against the bottom of the channel 20, the latter part of its motion for a short distance being substantially a lateral or sidewise slide outwardly along

said channel to a point near the extreme end of the rest, the piston-rod being now pushed to its extreme outward position by the spring 18. As the door continues to swing outward the end of the rod will part from or leave the rest 21, the rod eventually occupying the position shown by horizontal dotted lines, the door 2 occupying a position in a plane practically parallel with its position when closed. As the door thus swings back to its extreme open position the bearing or rounded end of the piston-rod will follow the curved dot-and-dash line concentric with the axis of the hinge 34, this line being again followed in reverse direction by the end of the rod when the door is returned to its closed position said end of the rod meeting and sliding backward along the rest 21 to its normal position as in Fig. 2. The rest 21 is formed with a flange 22, Figs. 1, 2 and 6, pierced by simple fasteners as screws 23, for securing the said rest to the frame 1 of the door.

The operation of the device will be readily understood and, briefly stated, is as follows: When the door is swung open against the action of the spring 3, the cylinder 8 is carried thereby gradually away from the fixed rest 21, the inclosed spring 18, in the meantime, pressing against the piston 14, serves to push the latter toward the open end of the cylinder and keep the outer end of the rod 13 continually in contact with the rest 21 until the door passes a position about at right angles with its closed position. As the piston is thus moved toward the open end of the cylinder air flows into the opposite end of the cylinder through the opening 31 in the head 27, to fill the space 33 therein and to be in readiness to form a buffer or cushion for the piston 14, as it is moved back again on account of the return motion of the door, to prevent the violent closing or slamming of the door by the closing spring 3. The confined spring 18 acts also, with the air confined in the space 33, to buff the returning door and momentarily substantially stop its motion just before it reaches its closed position, but the power of the closing spring 3 is sufficient to quickly overcome the united action of the confined air and the spring to resist the closing of the door, and so completely close the door without jar or noise against this opposition.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What is claimed as new is:—

1. In a door check, the combination with a frame and a swinging door, of means for checking the door comprising a cylinder on the door, a piston within the cylinder, a spring between the piston and the adjacent end of the cylinder, a buffer spring in the cylinder between the piston and the other

end of said cylinder, a piston-rod and a seat for the outer end thereof having a longitudinal straight-lined depression with which said outer end has normal contact.

5 2. A door check comprising a rod having a rounded outer end, a cylinder through one end of which the rod extends, a piston on the rod within the cylinder, a spring acting on the piston within the cylinder, 10 and an abutment for the outer end of the rod, said abutment having a longitudinal straight-lined depression with flanges for retaining the rod in contact with the bottom wall of the depression.

15 3. In a door check, a cylinder, brackets for holding the same having flanges frictionally embracing the ends of the cylinder, a piston within the cylinder, a piston-rod movable through one of the brackets, an abut-

ment for the outer end of the said rod, said 20 abutment being elongated and the end of the rod having sliding engagement therewith as the door moves on its hinges, and a spring within the cylinder between the piston and the adjacent end of the cylinder.

25 4. In a door check of the class described, a seat for the outer end of the piston-rod of the check, said seat having a securing flange and a longitudinal straight-lined depression with which said rod has a sliding contact. 30

In witness whereof, I have hereunto set my hand this 23d day of April, 1909, in the presence of two subscribing witnesses.

HERBERT W. DAGGS.

Witnesses:

E. B. WHITMORE,
A. M. WHITMORE.