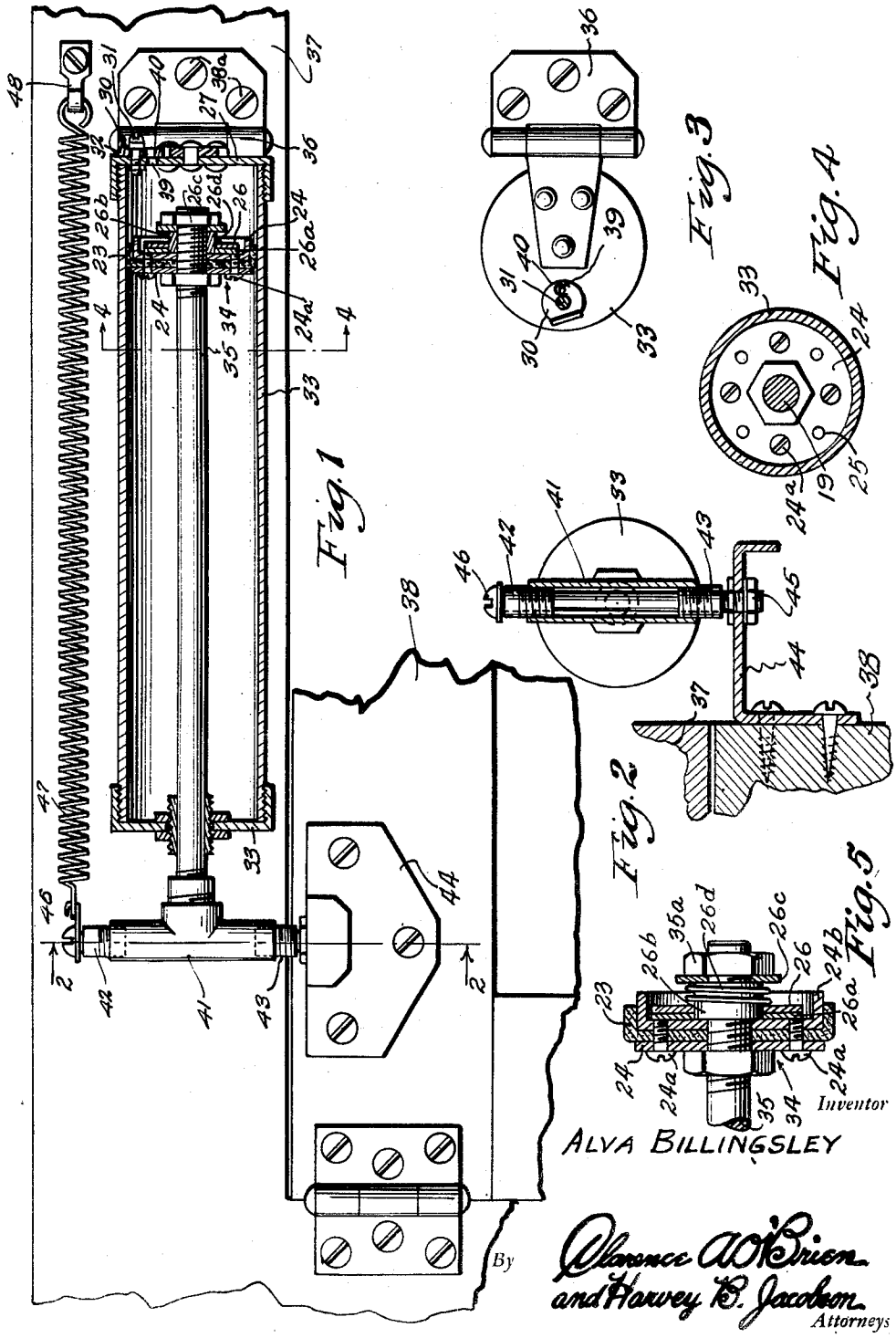
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DOOR CHECK AND CLOSING DEVICE

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DOOR CHECK AND CLOSING DEVICE

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2 Claims. (Cl. 16—66)

1

The present invention relates to new and useful improvements in door checks adapted for use upon screen and other doors to permit the door to close easily and without slamming and more particularly to a pneumatic door check of this character.

An important object of the invention is to provide novel valve control means to regulate the speed of closing movement of the door.

A further object of the invention is to provide a pneumatic cylinder with a piston working therein to provide compression in the cylinder for controlling the closing movement of the door together with novel means for pivotally mounting the cylinder and piston rod on the door frame and door respectively.

A still further object is to provide a device of this character of simple and practical construction, which is strong and durable, efficient and reliable in operation, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of a preferred form of my invention with the cylinder shown in section,

Figure 2 is a sectional view taken on a line 2—2 of Figure 1,

Figure 3 is an end elevational view of the pivoted end of the cylinder,

Figure 4 is a view in transverse section taken on the line 4—4 of Figure 1, and

Figure 5 is a view illustrating the piston partly in transverse section and partly in elevation and drawn to a larger scale.

The form of the invention illustrated comprises a cylinder designated 33 having the piston 34 working therein and from which a piston rod 35 projects to the rear end of the cylinder. A hinge at the front end of the cylinder and designated 36 is secured to the door frame 37 above the door 38 by screws 38*a*. A discharge port 39 at the front end of the cylinder is controlled by a pivoted valve as presently described.

The piston 34 includes a flexible cup washer 23 secured between rigid plates or washers 24, 24*b*, respectively, by screws 24*a*, said washer and plates having one or more aligned openings 25 therein. The plate 24*b* is cup-shaped to fit in washer 23. To the front side of the piston 34 is secured a

2

rigid washer 26 and a flexible washer 26*a* of reduced diameter which form a flap valve for the openings 25 to open when the piston 34 is moved rearwardly in the cylinder 33 and prevent creation of pressure in the rear end of said cylinder, and to close when said piston 34 is moved forwardly to compress air in the front end of said cylinder. The washers 26, 26*a* are slidably fitted on a tube 26*b* secured on piston rod 35 by a nut 35*a* and washer 26*c*. A coil spring 26*d* surrounds the tube 26 to yieldingly close the flap valve.

The front end of the cylinder 33 is closed by a threaded cap 27 having the discharge port 39 therein registering with an opening 40 in a washer, or annular plate 30, secured for rotary movement against the outer side of the cap 27 by a screw 31. One edge of the washer 30 is bent outwardly, as at 32, to provide a finger grip, the washer 30 thus constituting a valve for regulating the discharge of air from the front end of the cylinder 33 through the discharge port 39 and opening 40, by turning the washer 30 on its pivot to thus control the speed of movement of the piston 34 during closing of the door 38.

To the rear end of the piston rod 35 is attached a T-fitting 41, the fitting providing a crosshead at the rear end of the piston rod.

Short tubes 42 and 43 are threaded in the end of the fitting 41, the fitting being positioned vertically with the tube 42 projecting upwardly therefrom and the tube 43 extending downwardly therefrom.

An angular bracket 44 is secured to the door 38 adjacent its upper inner edge and to which the tube 43 is attached by means which will be presently described.

A pin or bolt 46 is inserted downwardly through the tube 42, T-fitting 41 and tube 43 and is secured to the angular bracket 44 by means of nuts 45. A coil spring 47 is attached at one end to the bolt 46, the other end of the coil spring being connected to the door frame 37 by means of a hook 48.

The device functions in a manner which will be readily understood, the piston 34 being moved rearwardly in the cylinder 33 during the opening movement of the door 38, said piston 34 being constructed to permit the free rearward movement thereof during the opening of the door and to compress air in the front end of the cylinder during closing movement thereof.

The fitting 41 forming the crosshead at the rear end of the piston rod 35 provides a pivotal

mounting for the piston rod and cylinder on the bracket 44 of the door.

In view of the foregoing description taken in conjunction with the accompanying drawings it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and the scope of the appended claims.

What is claimed is:

1. A door check comprising a pneumatic cylinder having a piston working therein and a piston rod projecting from the rear end of the cylinder, means pivotally connecting the front end of the cylinder to a stationary structure, a bracket adapted for attaching to a swinging closure adjacent the rear end of the cylinder, a T-fitting secured in an upright position to the rear end of the piston rod, upper and lower end tubes threaded into said fitting, an upright rod extending through said tubes and fitting and fixed at its lower end to the bracket for rotary movement of the fitting and tubes on the rod, and a coil spring extending between the upper end of the rod and the stationary structure above the cylinder to urge the door into a closed position for compressing air in the cylinder during such closing movement.

2. A valved piston including a piston rod, a pair of rigid washers secured to the rod, a flexible washer secured between the rigid washers, aligned openings in the washers, a tube on the rod at the front end of the piston, a pair of flexible and rigid disks slidable on the tube, said disks being of a diameter less than that of the washers and forming a valve adapted to close said openings, and a coil spring surrounding the tube and urging the valve into closed position.

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