Sept. 1, 1936. R. C. SEYFORTH 2,052,727

DASH POT

Filed Nov. 5, 1934

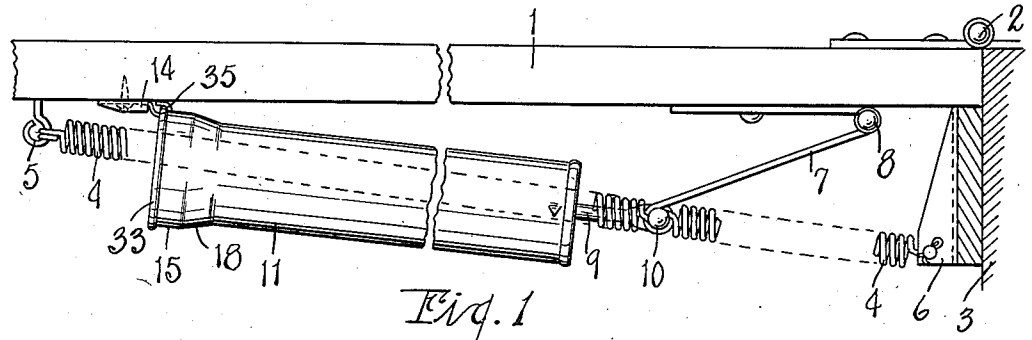


Fig. 1

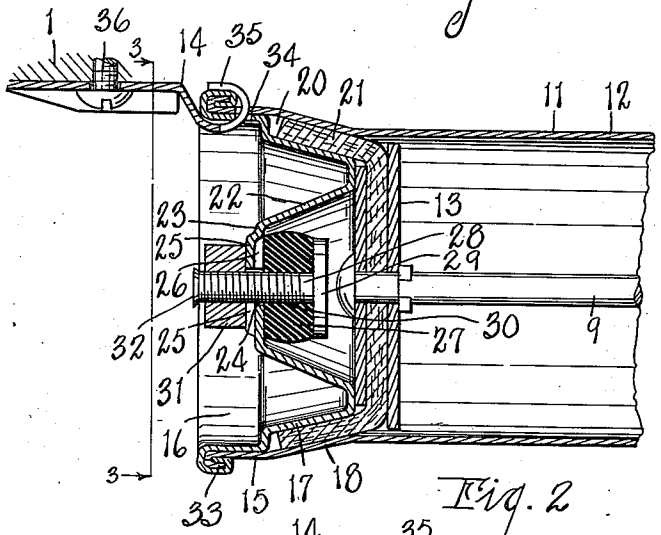


Fig. 2

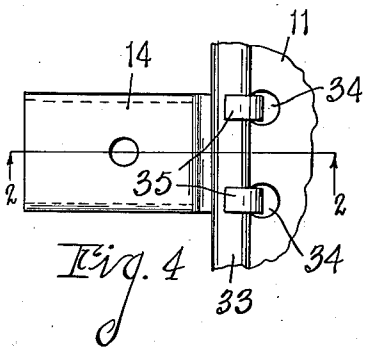


Fig. 4

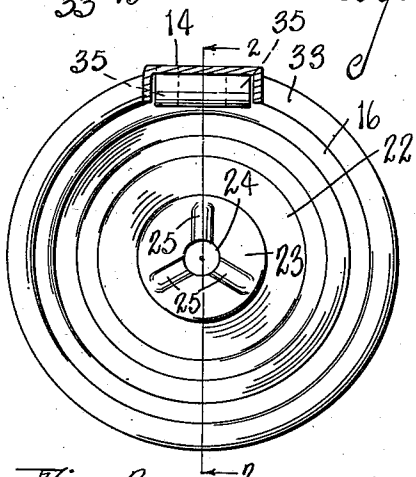


Fig. 3

INVENTOR.
Rome C. Seyforth
BY
Chappell & Earl
ATTORNEYS

Patented Sept. 1, 1936 2,052,727

UNITED STATES PATENT OFFICE

2,052,727

DASH POT

Rome C. Seyforth, Lowell, Mich.

Application November 5, 1934, Serial No. 751,521

13 Claims. (Cl. 188—94)

The main objects of this invention are:

First, to provide an improved dashpot which is well adapted for use as a door check and the like.

Second, to provide improved means in a device of the foregoing character for adjusting the cushioning or damping action thereof.

Third, to provide an improved jointed connection between the dashpot and the door or the like.

Objects relating to details and economies of my invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary top plan view of a device embodying features of my invention, a portion of the door frame being shown in section.

Fig. 2 is an enlarged fragmentary longitudinal section taken on a line corresponding to line 2—2 of Figs. 3 and 4.

Fig. 3 is a view partly in end elevation and partly in transverse section on line 3—3 of Fig. 2.

Fig. 4 is a fragmentary view in front elevation of the jointed connection.

Referring to the drawing, 1 is a door hinged at 2 to the frame 3. The door is resiliently urged to closed position by tension springs 4 connected to the door at 5 and to the frame at 6. A link 7 hinged to the inner side of the door at 8 is connected to the outer end of the piston rod 9 at 10 and acts to hold the springs 4 away from the frame 3, especially when the door is opened wide.

The movement of the door 1 is cushioned to avoid shock in closing by the dashpot 11 consisting of an air cylinder 12 and a piston 13 moving therein, the outer end of the dashpot being pivotally connected to the door by means of the bracket 14.

The outer end of the cylinder 12 is flared at 15 and is provided with an end member 16 telescoped therein, the end member having a wall portion 17 concentrically spaced from the flared wall portion 18 of the cylinder to provide a flared chamber 20 for receiving and expanding the flanged or cup packing 21 of the piston 13. This keeps the packing in proper working condition for coaction with the cylinder 12.

The end member 16 has an inwardly facing central conical cup-like portion 22, the end wall 23 of the cup-like portion being provided with a central air discharge opening 24 and radial corrugations 25 forming air venting flues connected thereto, the latter being shown at 26. Within the cup-like portion 22 and on the inner side of the end wall 23 thereof I dispose a valve member 27 preferably comprising a resilient compressible mass such as rubber. The valve member is adapted for coaction with the air venting flutes 26 to control the air passing through the opening 24 in response to the action of the piston 13.

For manually adjusting the valve member 27 I provide a stud or stem 28 extending through the valve member and the opening 24, the stem having a flat head 29 engaging and supporting the valve member. For the passage of the stem 28 the valve member is preferably provided with a central bore 30 in line with the opening 24. A knurled nut 31 is threaded to the outer end of the stem for coaction with the outer side of the end wall 23 to adjust the clamping of the valve member between the head 29 and the end wall. The nut is preferably externally knurled for facilitating its manipulation with the fingers. To limit the outward movement of the nut and prevent its loss and the loss of the valve member and stem within the cylinder, the stem preferably terminates at its outer end in a flange or upset 32.

The outer edges of the cylinder and end member are overlapped and turned outwardly, rearwardly, and inwardly to provide a reinforced connection or double-seam 33 between the parts, there being a pair of holes 34 at the rear of the connection. The bracket 14 has a pair of hooks 35 looped around the connection 33 and extending through the holes 34, as shown, the bracket being secured to the door 1 by means of the screw 36. Thus, a jointed connection is established between the outer end of the dashpot 11 and the door 1. This jointed connection permits a certain amount of swinging movement of the dashpot relative to the door 1 in the normal movement of the latter.

From the foregoing description of my invention it will be apparent to those skilled in the art that the cushioning or damping action of the dashpot can be readily adjusted by simply turning the nut 31.

The inherent resiliency of the rubber valve member 27 holds the parts in adjusted position and restricts the flow of air through the radial air venting flutes 26. The resiliency of the rubber valve member is also favorable to the desired operation of the dashpot, in that during the movement of the plunger toward the outer end of the cylinder, when the door is closing, the

compressed air between the piston and outer end of the cylinder backs up around the valve member and further restricts the discharge of the air through the flutes 26.

Further, during the movement of the plunger away from the outer end of the cylinder, when the door is opening, the air rushing through the passage acts on the resilient valve member to open to a certain extent, permitting the door to be more easily opened than closed. This is a very desirable feature. The operation of the device is further improved by the action of the expanding chamber 20 for the flanged plunger 21.

I have illustrated and described my improvements in an embodiment which I have found very practical. I have not attempted to illustrate or describe other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

Although I have shown and described a certain specific embodiment of my invention, I am fully aware that many modifications thereof are possible. My invention is therefore not to be restricted except in so far as is necessitated by the prior art and by the spirit of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A dashpot comprising a cylinder having a flared end, a piston in said cylinder having a flanged packing, an end member telescoped in the flared end of said cylinder and having a wall portion concentrically spaced within the flared wall portion of said cylinder to provide a flared chamber for receiving and expanding said packing, the end member having a centrally inwardly facing conical cup-like portion, the end wall of said cup-like portion having a central air discharge opening and radial corrugations providing air venting flutes connected thereto, a valve member of resilient material seated on said end wall for coaction with said air venting flutes to control the air discharged from the cylinder, and means for adjusting the action of said valve member, comprising a stem extending through the valve member and said opening and having a head engaging said valve member, and means at the outer end of said stem for coaction with the outer side of said end wall to adjust the clamping of said valve member between said head and said end wall.

2. A dashpot comprising a cylinder having a flared end, a piston in said cylinder having a flanged packing, an end member telescoped in the flared end of said cylinder and having a wall portion concentrically spaced within the flared wall portion of said cylinder to provide a flared chamber for receiving and expanding said packing, the end member having a central conical cup-like portion facing said piston, the end wall of said cup-like portion having a central air discharge opening and radial corrugations providing air venting flutes connected thereto, a valve member of resilient material seated on said end wall for coaction with said air venting flutes to control the air discharged from the cylinder, and means for adjusting the action of said valve member, comprising a bolt extending through the valve member and said opening and having a head engaging said valve member, and a nut for coaction with the outer side of said end wall to adjust the clamping of said valve member between said head and said end wall.

3. A dashpot comprising a cylinder having a flared end, a piston in said cylinder having a flanged packing, an end member telescoped in the flared end of said cylinder and having a wall portion concentrically spaced within the flared wall portion of said cylinder to provide a flared chamber for receiving and expanding said packing, the end member having a central conical cup-like portion facing said piston, the end wall of said cup-like portion having a central air discharge opening and radial corrugations providing air venting flutes connected thereto, a valve member of resilient material seated on said end wall for coaction with said air venting flutes to control the air discharged from the cylinder, and means for adjusting the action of said valve member.

4. A dashpot comprising a cylinder having a flared end, a piston in said cylinder having a cup packing, an end member telescoped in the flared end of said cylinder and having a wall portion concentrically spaced within the flared wall portion of said cylinder to provide a flared chamber for receiving and expanding said packing, the end member having a central conical cup-like portion facing said piston, the end wall of said cup-like portion having a central air discharge opening and radial corrugations providing air venting flutes connected thereto, and a valve member of resilient material seated on said end wall for coaction with said air venting flutes to control the air discharged from the cylinder.

5. A dashpot comprising a cylinder having a flared end, a piston in said cylinder having a cup-packing, an end member telescoped in the flared end of said cylinder and having a wall portion concentrically spaced within the flared wall portion of said cylinder to provide a flared chamber for receiving and expanding said packing, the end member having a cup-like portion facing said piston, the end wall of said cup-like portion having an air discharge opening and air venting flutes connected thereto, and a valve member of resilient material seated on said end wall for coaction with said air venting flutes to control the air discharged from the cylinder.

6. In a dashpot, the combination with an air cylinder having a flared inner end, of an end wall joined to the flared end of said cylinder and having a flared portion disposed in spaced concentric relation to the flared end of said cylinder to provide an annular recess adapted to receive the flange portions of a cup-packing, said end wall having a cup-like inwardly facing central portion, a piston in said cylinder provided with a cup-packing, the flange of which is adapted when the piston is at the inner end of its stroke to enter the said annular packing recess, there being a vent opening in the said central cup portion of said end wall, a resilient valve disposed within said cup portion of said end wall to coact with said vent opening, the valve being provided with a threaded stem projecting through the end wall, and a nut on said stem whereby the escape of air through the vent opening may be adjusted from the manipulation of said nut.

7. In a dashpot, the combination with an air cylinder having a flared inner end, of an end wall joined to the flared end of said cylinder and having a flared portion disposed in spaced concentric relation to the flared end of said cylinder to provide an annular recess adapted to receive the flange portions of a cup-packing, said end wall having a cup-like inwardly facing central portion, a piston in said cylinder provided with a cup pack-

ing, the flange of which is adapted when the piston is at the inner end of its stroke to enter the said annular packing recess, there being a vent opening in the said central cup portion of said end wall, a valve disposed within said cup portion of said end wall to coact with said vent opening, and means at the outside of said cylinder for adjusting said valve.

8. In a dashpot, the combination with an air cylinder having an end wall with a cup-like inwardly facing central portion, there being radial venting flutes and a vent opening in the said central cup portion of said end wall, a resilient valve extending inwardly from said end wall and disposed within said cup portion of said end wall to coact with said vent opening, the valve being provided with a threaded stem projecting through the end wall, and a nut on said stem whereby the escape of air through the flutes and the vent opening may be adjusted from the manipulation of said nut.

9. In a dashpot, the combination with an air cylinder having an end wall with a cup-like inwardly facing central portion, there being radial venting flutes and a vent opening in the said central cup portion of said end wall, a valve extending inwardly from said end wall and disposed within said cup portion of said end wall to coact with said vent opening, and means at the outside of said cylinder for adjusting said valve.

10. In a dashpot, the combination with a cylinder and a piston, the cylinder having an end wall provided with a central air discharge opening and radial air venting corrugations extending thereto, of a rubber valve member disposed on the inner side of said end wall and having a central bore, a stem arranged through said bore and said opening and having a head engaging said valve member, and a nut threaded to said stem at the outer side of said end wall for coaction therewith to control the action of said valve member relative to said corrugations in limiting the discharge of air therethrough.

11. In a dashpot, the combination with a cylinder and a piston, the cylinder having an end wall provided with a central air discharge opening and radial air venting corrugations extending thereto, of a valve member disposed on the inner side of said end wall and having a central bore, a stem arranged through said bore and said opening and having a head engaging said valve member, and means threaded to said stem at the outer side of said end wall for coaction therewith to control the action of said valve member relative to said corrugations in limiting the discharge of air therethrough.

12. In a dashpot, the combination with a cylinder and a piston, the cylinder having an end wall provided with a central fluid discharge vent and radial venting flutes, of a yieldable valve member disposed on the inner side of said end wall and a stem arranged through said vent to control the action of said valve member relative to said fluid vent in limiting the discharge of fluid therethrough, said valve member abutting said end wall and regulably governing the discharge capacity of said venting flutes.

13. In a dashpot, the combination with a cylinder and a piston, the cylinder having a fluid discharge vent, of a yieldable valve member venting flutes communicating with said vent, and a stem arranged through said vent to control the action of said valve member relative to said fluid vent in regulating the discharge of fluid therethrough, said valve member acting to control the discharge capacity of said flutes.

ROME C. SEYFORTH.