Nov. 1, 1932. G. BROWN 1,886,158

PUMP FOR PRESSURE TANKS

Filed July 19, 1930

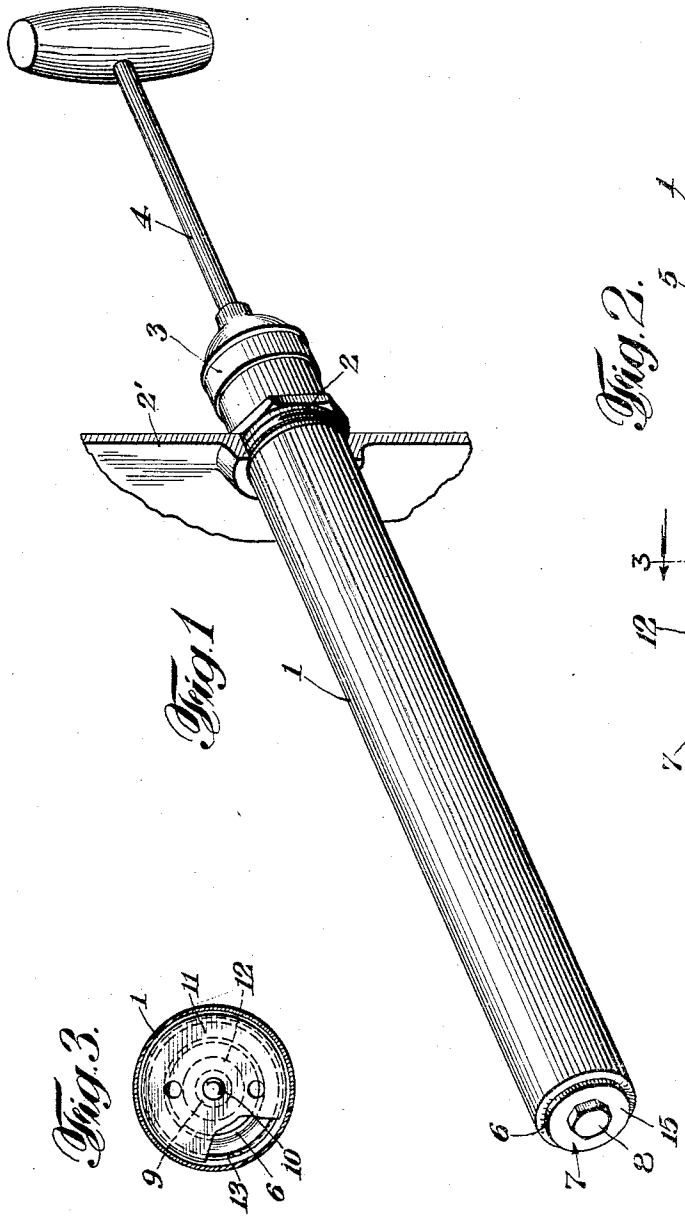


Fig. 1

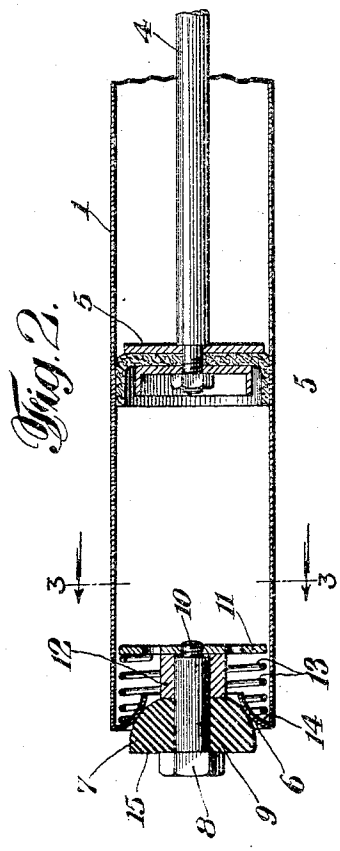


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE

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PUMP FOR PRESSURE TANKS

Application filed July 19, 1930. Serial No. 469,063.

This invention relates to improvements in pumps designed particularly for creating pressure in a fuel tank or the like. Of course, the pump has other uses. Pumps of this character have been in use to build up pressure in a closed tank so as to provide for the feed of the fuel therefrom. These pumps have been inefficient in that the air or fluid pressure would leak out or drop, and also in that they require considerable work and effort to build up the pressure within the tank.

The principal purpose of this invention is the provision of such a pump having a check valve construction provided with a wide or large seat and a check valve of greater width. This valve is preferably formed of brass or other similar material, and is securely held on its seat by the pressure within the tank and, of course, it is forced from its seat when the pump is operated to build up pressure within the tank.

To the accomplishment of the foregoing and such other objects as may hereinafter appear, this invention consists in the construction, combination and arrangement of parts hereinafter described and then sought to be defined in the appended claims, reference being had to the accompanying drawing forming a part hereof and which shows, merely for the purpose of illustrative disclosure, a preferred embodiment of my invention, it being expressly understood, however, that various changes may be made in practice within the scope of the claims without digressing from my inventive idea.

In the drawing—

Figure 1 represents a perspective view showing the pump applied to a tank wall, only a portion of the wall being shown.

Figure 2 represents a longitudinal cross sectional view of the pump.

Figure 3 represents a transverse sectional view taken on line 3—3 of Figure 2.

Referring now to the drawing the numeral 1 designates the pump cylinder which is provided with a screw threaded flange or shoulder 2 whereby it may be attached to a suitable tank or container 2'. One end of this cylinder is provided with the cap 3 through which is slidably mounted the pump handle or rod 4 on the lower end of which is provided the plunger or piston 5. All of these parts are of more or less standard construction.

The lower or open end of the cylinder is provided with the inturned, curved, annular flange 6, the inner portion of this flange extending inwardly and upwardly at an angle. This flange is narrow compared with the diameter of the cylinder and affords an inclined seat adapted to receive the check valve 7. This check valve is preferably in the form of a rounded or bevelled rubber plug mounted upon the assembling member 8 having an enlarged shoulder portion 9, and the reduced threaded end 10 adapted to receive the disc or abutment member 11. Collar or sleeve 12 is mounted upon the enlarged shoulder portion and spring 13 is positioned between the plate or disc 11 and the inner side of the inturned annular flange 6. As this flange is turned and curved inwardly it forms a seat 14 for the lower end of the spring.

The operation of this pump is obvious. Reciprocation of the plunger or piston forces air through the valve 6 and causes it to move from its seat. Pressure against the wide outer face 15 of that valve plus the action of spring 13 forces the valve 7 tightly on its seat thereby preventing the escape of air. By making the valve seat larger the periphery of the seat is increased in direct proportion to the increase in the diameter and the areas of the openings vary as the square of the diameter. Due to this fact a very strong spring can be used, and a much greater intensity of pressure per unit of valve seat length obtained. At the same time a pump is produced which works very easily and readily.

What I claim is:—

1. A pump including in combination a cylinder, a plunger or piston reciprocable therein, the discharge end of a cylinder being provided with an inturned annular flange narrow in width with respect to the diameter of the cylinder so as to afford a valve seat and discharge opening of substantial width, a check valve of substantial width adapted to engage said seat and resilient

means for normally holding said check valve on its seat.

2. A pump including in combination a cylinder, a plunger or piston reciprocable therein, the discharge end of the cylinder being provided with an inturned annular flange narrow in width with respect to the diameter of the cylinder so as to afford a valve seat and discharge opening of substantial width, a check valve of substantial width adapted to engage said seat and resilient means for normally holding said check valve on its seat, said check valve comprising an enlarged rubber plug having a flat outer face and a bevelled or rounded side surface to fit said valve seat.

3. A pump including in combination a cylinder, a plunger or piston reciprocable therein, the discharge end of the cylinder being provided with an inturned annular flange narrow in width with respect to the diameter of the cylinder so as to afford a valve seat and discharge opening of substantial width, a check valve construction including an assembly member having a check valve positioned on one end thereof and a disc or abutment member on the other end thereof, a spring interposed between said disc or abutment member and the inner face of said annular flange so as to normally hold said check valve on its seat.

4. A pump including, in combination, a cylinder, a plunger or piston reciprocably mounted therein, the end of the cylinder having an enlarged discharge opening and valve seat provided by a curved inwardly extending annular flange portion, a check valve construction comprising an assembly member, an enlarged valve mounted thereon and provided with a flat outer surface and a rounded portion to fit said curved annular flange, a disc or abutment member provided on said assembly member and a spring interposed between said disc or abutment member and the inner face of the inturned annular flange.

5. A device of the character described, including, in combination, a pump cylinder, the discharge end of the cylinder being provided with an inturned annular flange to form a valve seat and a discharge opening of substantial width, a check valve mechanism adapted to engage said seat and including resilient means abutting the inner face of said annular flange for normally holding said check valve mechanism on its seat.

6. A device of the character described, including, in combination, a pump cylinder, the end of the cylinder having an enlarged discharge opening and valve seat provided by a curved and inwardly extending annular flange portion, a check valve construction comprising an assembly member, an enlarged valve mounted thereon and having a rounded portion to fit said curved annular flange portion, a disk or abutment member in said cylinder and removably mounted on said assembly member, and spring means interposed between said disk or abutment member and the inner face of the inturned annular flange.

7. A device of the character described, including, in combination, a pump cylinder, the end of the cylinder having an enlarged discharge opening and valve seat provided by a curved and inwardly extending annular flange portion, a check valve construction comprising an assembly member, an enlarged valve mounted thereon and having a rounded portion to fit said curved annular flange portion, a disk or abutment member in said cylinder and removably mounted on said assembly member, and spring means interposed between said disk or abutment member and the inner face of the inturned annular flange, the disk or abutment member being larger in diameter than said discharge opening in said cylinder.

In testimony that I claim the foregoing, I have hereunto set my hand this 14th day of July, 1930.

GREGORY BROWN.