

No. 828,824.

PATENTED AUG. 14, 1906.

J. MARCHANT.
CHECK VALVE.

APPLICATION FILED MAR. 30, 1905.

Fig. 1.

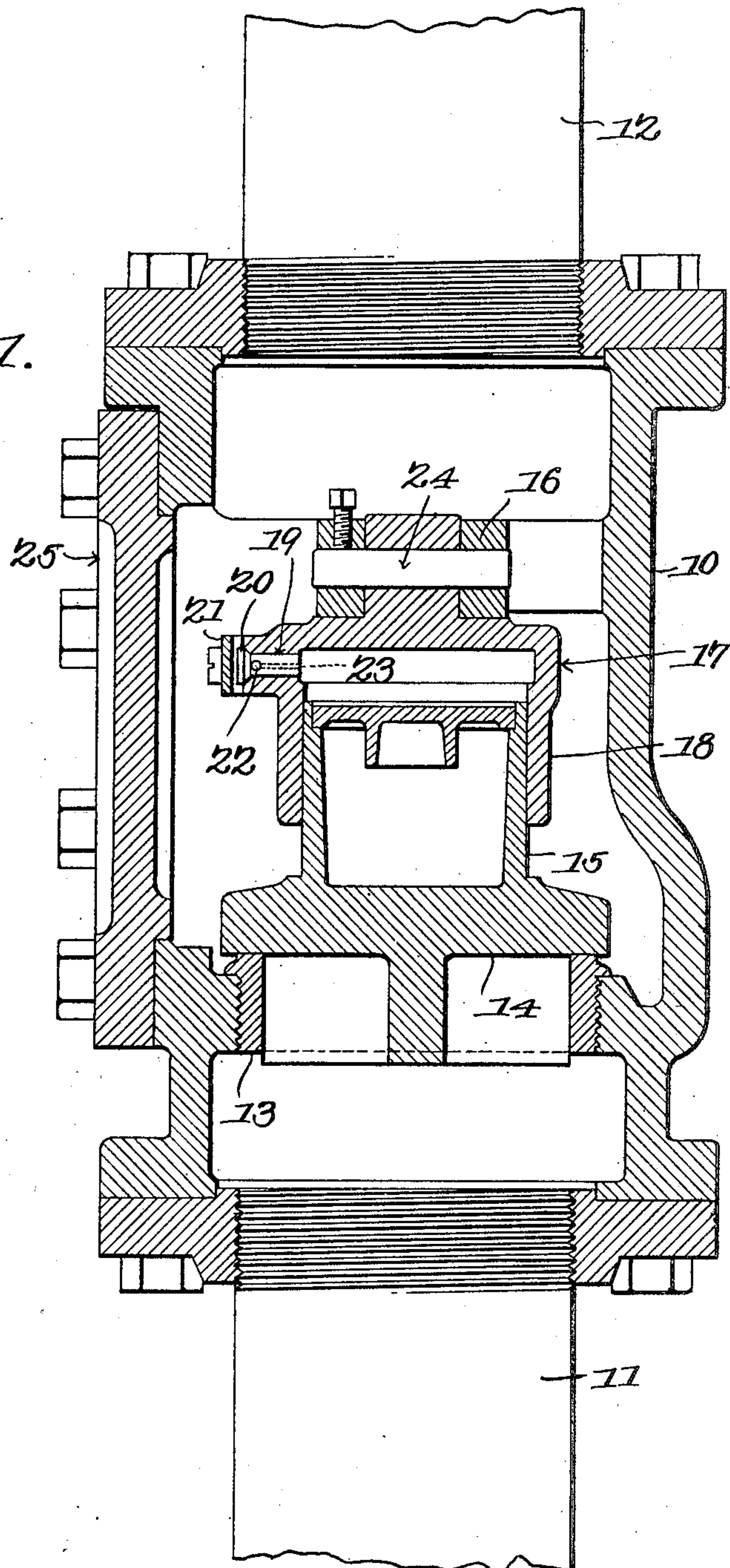
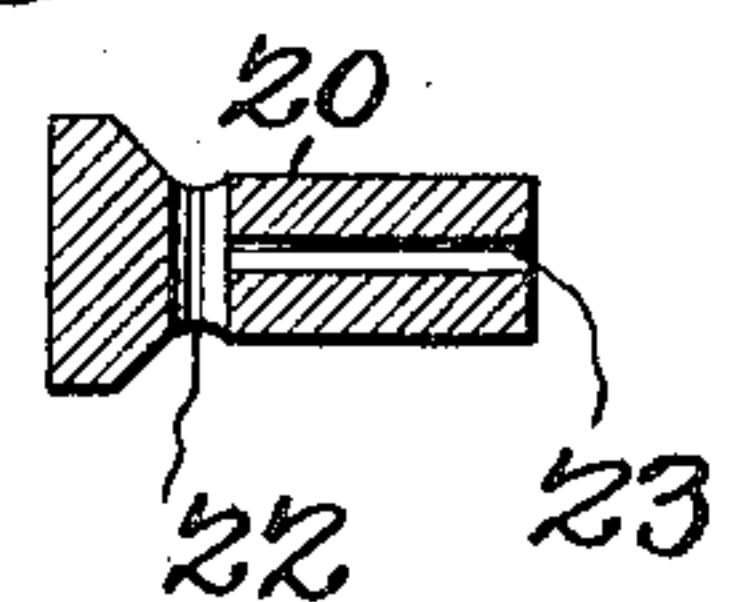


Fig. 2.



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JOHN MARCHANT, OF REDDING, CALIFORNIA.

CHECK-VALVE.

No. 828,824.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed March 30, 1905. Serial No. 252,907.

To all whom it may concern:

Be it known that I, JOHN MARCHANT, a subject of the King of England, residing at Redding, in the county of Shasta and State of California, have invented a new and useful Check-Valve, of which the following is a specification.

This invention relates to check-valves, more particularly to devices of this class employed in conduits through which substances or compounds in gaseous or liquefied form are caused to pass under high pressure.

The device is more particularly designed for use in connection with compressed-air apparatus, but is not necessarily limited thereto, and may be employed in connection with any form of apparatus for which it is adapted.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages.

In the drawings, Figure 1 is a sectional elevation of a conduit and check-valve with the improvements embodied therein. Fig. 2 is an enlarged sectional view of the relief-valve detached.

The improved device comprises a casing 10, having an intake-pipe 11 leading therein at one side and an outflow-pipe 12 leading therefrom at the other side, the three parts forming a conduit for the material, as will be obvious.

The casing portion of the conduit is provided with a bushing 13, forming a seat for a check-valve 14 of any approved form, the check-valve having a plunger 15, preferably in cylindrical form, extending from the outflow side.

Supported, as by a "spider-frame" 16, within the casing portion 10, above the outflow side of the check-valve, is a compression-chamber 17, having at one side a cylindrical extension 18, in which the plunger 15 operates, as shown.

The walls of the compression-chamber are provided with a lateral extension, and formed in said extension and communicating with the compression-chamber is an aperture 19, in which a relief-valve 20 is seated, the latter opening outwardly and limited in its movement by a stop 21.

The relief-valve is provided with a transverse aperture 22 and an intersecting longitudinal aperture 23, as shown in Fig. 2, to provide means for the escape of the air or liquid when the valve is open.

The plunger 15 is preferably hollow to lessen the weight, and the chamber 17 18 is connected to the frame 16 by a transverse pin 24 to facilitate its insertion and removal, and one side of the casing 10 is provided with a detachable closure 25, through which the valves and chamber may be inserted and removed.

The whole device is simple in construction, compact, strong, and durable and may be manufactured at a very slight increase of expense over an ordinary check-valve of this class, while possessing very material advantages over the same.

In operating the device when the check-valve "lifts" the plunger 15 compresses the air in the chamber 17 and a portion is forced outward through the relief-valve 20 and causes a partial vacuum in the compression-chamber, and when the pressure is reduced by the return stroke of the compressing mechanism and the check-valve thereby re-seated the partial vacuum retards the movement and counteracts the tendency of the check-valve to instantly reseat. This produces a silent valve and likewise materially reduces the wear on the seat, while at the same time not deleteriously affecting the valve action.

The partial vacuum above referred to is maintained in the compression-chamber after the valve is resealed and serves at the next stroke to lessen the force necessary to operate the valve, thereby making the latter more sensitive and easier to operate.

Having thus described the invention, what is claimed is—

1. A conduit provided with a compression-chamber, a relief-valve provided with a longitudinal opening communicating with the compression-chamber, and a check-valve

serving to close said conduit and provided with a plunger operating in said compression-chamber.

2. A conduit provided with a compression-chamber the side walls of which are extended to form a depending cylinder and provided with a transverse opening, a relief-valve seated in said opening, and a check-valve serving to close said conduit and having a plunger operating in the depending cylinder of the compression-chamber.

3. A conduit provided with a compression-chamber the side walls of which are formed with a lateral extension provided with a longitudinal opening communicating with said chamber, a relief-valve seated in said opening, and a check-valve serving to close said conduit and provided with a plunger operating in the compression-chamber.

4. A conduit provided with a compression-chamber the side walls of which are pierced by a transverse opening, a relief-valve seated in the opening and formed with intersecting longitudinal and transverse recesses, and a check-valve operating to close the conduit and provided with a plunger operating in the compression-chamber.

5. A conduit provided with a compression-chamber the side walls of which are pierced by a transverse opening and provided with a depending cylindrical extension, a hollow relief-valve seated in said opening, a stop extending across the opening to limit the lon-

gitudinal movement of the valve and a check-valve operating to close the conduit and provided with a plunger operating in the compression-chamber.

6. A conduit including a casing provided with a detachable closure, a compression-chamber arranged within the casing and having its side walls pierced by a transverse opening, a hollow relief-valve seated in said opening, and a check-valve serving to close the casing and provided with a plunger operating in the compression-chamber.

7. A conduit including a casing provided with a detachable closure and a reinforcing-spider having a central recess formed therein. a compression-chamber arranged within the casing and provided with a reduced extension engaging the recess in the spider and having its side walls pierced by a transverse opening, a hollow relief-valve seated in said opening, a check-valve serving to close the casing and provided with a plunger operating in the compression-chamber, and a transverse pin engaging the extension of the compression-chamber and the wall of the recess.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN MARCHANT.

Witnesses.

C. L. MANCHESTER,
JOHN J. DAILEY.