H. S. SMITH AND A. F. WESTLUND.

FLASH CHECK FOR GAS TANKS.

APPLICATION FILED DEC. 23, 1916.

1,303,123. Patented May 6, 1919.

Fig. 1.

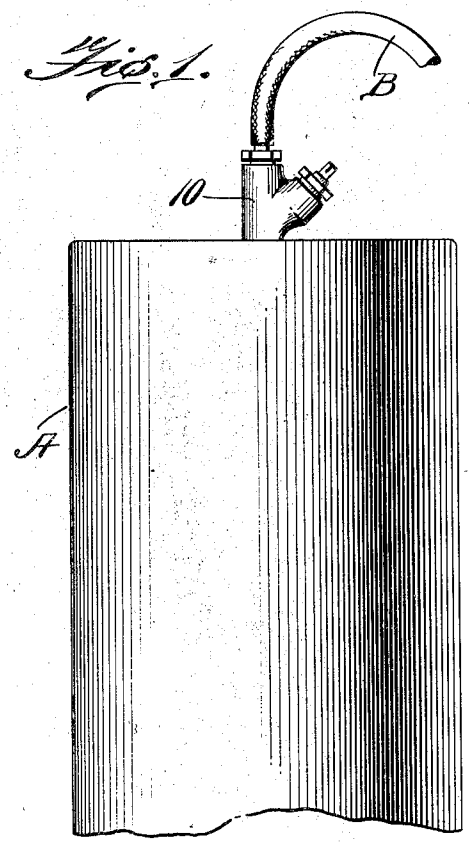
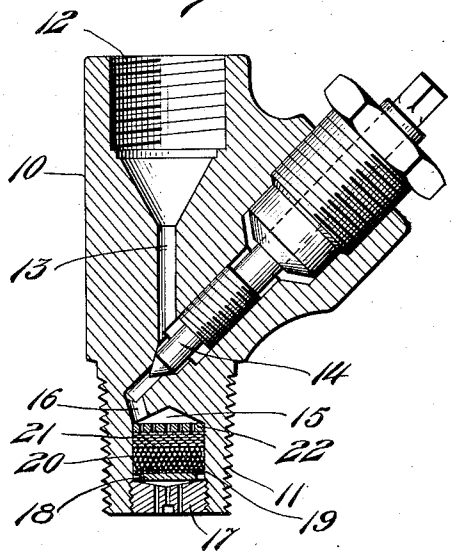


Fig. 2.



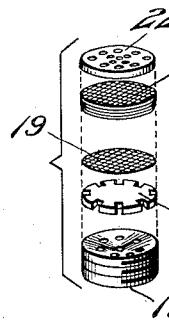


Fig. 3.

Fig. 5.

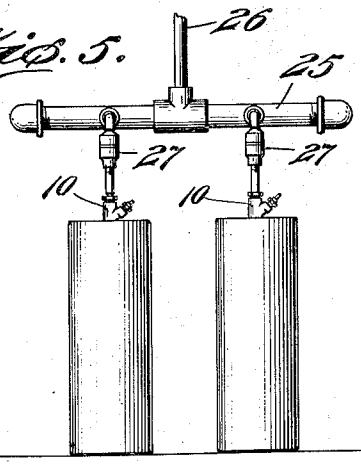
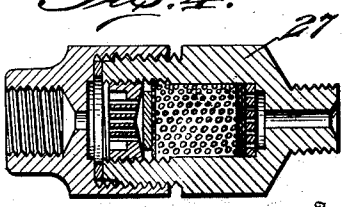


Fig. 4.



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UNITED STATES PATENT OFFICE.

HENRY SIDNEY SMITH AND ALBERT FRANK WESTLUND, OF INDIANAPOLIS, INDIANA, ASSIGNORS TO THE PREST-O-LITE COMPANY, INC., OF INDIANAPOLIS, INDIANA, A CORPORATION OF NEW YORK.

FLASH-CHECK FOR GAS-TANKS.

1,303,123. Specification of Letters Patent. Patented May 6, 1919.

Application filed December 23, 1916. Serial No. 138,659.

To all whom it may concern:

Be it known that we, HENRY SIDNEY SMITH, a citizen of Great Britain, residing at Indianapolis, Marion county, and State of Indiana, and ALBERT FRANK WESTLUND, a citizen of the United States, residing at Indianapolis, Marion county, and State of Indiana, have invented and discovered certain new and useful Improvements in Flash-Checks for Gas-Tanks, of which the following is a specification.

In the use of acetylene gas when employed as the fuel gas in welding and cutting tools and torches, etc., it is customary to connect a hose to the valve of the tank containing dissolved acetylene direct, or through some regulating device, the valve being so constructed as to permit control of the flow of gas. In such uses, it occasionally occurs, that because of overheating of the torch employed, or for some other reason a back flash or back fire occurs, this back fire may travel through the length of hose and through the said regulator, and then through the valve, to the interior of the tank. The violence of the back fire or back flash may result in a local breaking down of the porous filling employed in dissolved aceytlene cylinders or tanks thus forming a pocket which, being filled with compressed acetylene gas, may result in an explosion. In actual practice the pressure in the feed hose may reach fifteen pounds with safety, provided the hose contains only pure acetylene, but if the pressure exceeds fifteen pounds, or through some reason oxygen or air has become mixed with the acetylene in the hose there is danger of explosion, or decomposition of the gas in the hose, and the said decomposition may travel back through the regulator (if employed) and the valve to the interior of the tank with the danger of an explosion in the tank if the violence of the back fire breaks down the porous filling or the porous filling is defective.

The object of our said invention is to provide a flash check in the outlet fitting, or valve which will automatically close communication from the hose to the tank immediately on any such "back flash" or "back fire" occurring, and thus prevent any of the decomposed gases or fire from entering the tank and therefore guard against the danger above described, all as will be hereinafter more fully described and claimed.

Referring to the accompanying drawings which are made a part hereof, and on which similar reference characters indicate similar parts,

Figure 1 is a view in elevation of an acetylene gas tank of a common type, provided with an outlet fitting or valve and showing a tube or hose connected therewith, such as is commonly employed to supply tools in the uses of acetylene gas such as above referred to,

Fig. 2 a central section through the fitting, or valve,

Fig. 3 a view illustrating the parts composing the flash check in disassembled relation,

Fig. 4 a view of a modified form, and

Fig. 5 a view illustrating an arrangement of apparatus wherein a battery of tanks are employed.

In said drawings, the portions marked A represent the acetylene tank, and B the tube or hose for making the connection with the cutting, welding, or other tool.

Said tank A is provided with the fitting or valve 10, of a construction best illustrated in Fig. 2. It is formed with a screw-threaded shank 11 adapted to screw into a screw-threaded perforation in a lug formed on the top of the tank, and has a screw-threaded socket 12 in its top for connection with the tube fitting. It is formed with a central aperture 13, which is controlled by a needle 14 mounted in a perforation intersecting said perforation 13 at an angle, as shown. The lower end of the fitting 10 is bored out to form a pocket or chamber 15 which communicates at the top with perforation 13 by a similar perforation 16, forming a continuation thereof. A screw plug 17, of brass or other appropriate material, is mounted in the lower end of socket 15 and is formed with a number of perforations extending therethrough and establishing communication from the tank to the chamber 15. The upper face of said screw plug 17 is concave, as shown, and a disk or plate 18, preferably made of lead, or other soft material, is mounted therein. Said disk 18 is formed with a series of radial notches spaced around its edge and cutting back an appropriate

distance toward its center, through which the gas may pass when flowing from the tank into the chamber 15. On the top of said disk 18 is mounted a strainer disk 19, of cloth or fine wire mesh material. On the top of said strainer disk is placed a quantity of lead balls 20, such as ordinary shot. On the top of said balls is placed a series of strainer disks 21 of appropriate material, and on the top of these, another metal disk 22, preferably formed of brass. The screw plug 17 is also preferably formed of brass. In assembling, of course, the fitting is turned upside down and the parts put in place in the reverse order of that just stated. The perforated plate 22 and the mesh strainer cloths 21 and 19, and the notched lead plate 18, form a type of filter through which the gas passes and is broken up and its force or pressure somewhat retarded in its passage from the tank to the tube B, but not sufficiently to interfere with the practical and efficient feed of the gas to the work. In the event of a back flash, the pressure upon the washer 15 and strainer cloths, transmitted by the shot against the center of the lead disk 18, causes said disk to buckle down onto the concave top face of the screw plug 17 and close the perforations therein; and at the same time, may cause said lead shot, and possibly the lead disk, to melt or fuse somewhat and form an effectual check at this point to any back flow of the gases or fire into the tank, thus safeguarding the contents of the tank and avoiding the danger of an explosion.

The construction in Fig. 4 will be readily understood from the foregoing description, it being merely a different type of fitting adapted to be inserted at any desired point in the supply line, instead of being formed in the body of the valve itself.

In Fig. 5 we show a battery of gas tanks, and any number may be used instead of the two shown, each tank connected to a header 25, from which the supply tube 26 leads to the tool. A flash check of our improved construction may be provided in the outlet fitting or valve of each tank, and, if desired, fittings of the form shown in Fig. 4 may be provided at points 27, where the cylinders connect into the manifold, or at any other points in the supply line at which it is desired to arrest a flash or fire back.

Having thus fully described our said invention, what we claim as new and desire to secure by Letters Patent, is:

1. A flash check for acetylene gas supply line comprising a casing, a chamber in said casing, apertures leading to and from said chamber, a soft plate mounted in spaced relation from the bottom of said chamber and a fusible material mounted on said plate and adapted to transmit the pressure caused by back fire to the plate and thereby cause the same to close the apertures, substantially as set forth.

2. A fitting for acetylene gas supply line comprising a member having an aperture therethrough, a valve for controlling said aperture, said aperture having an enlarged chamber with perforations leading thereinto from the tank and therefrom to the discharge, the floor of said chamber being formed concave and having a plate of comparatively soft material mounted therein, and means mounted on said plate for transmitting the pressure caused by back fire to force said plate to close the apertures and prevent communication with the tank, substantially as set forth.

3. The combination with an acetylene gas tank, of an outlet fitting having an aperture through which the gas may pass from the tank to the point of use, said aperture having an enlarged chamber, and means mounted in said chamber through which the gas may pass under normal conditions but which under sudden extraordinary pressure or temperature will compact over and close the outlet aperture from the tank, substantially as set forth.

4. The combination with an acetylene gas tank, a supply line leading therefrom, having a fitting formed with an outlet aperture having an enlarged chamber extending beyond the edges of the normal aperture, and a filling in said chamber through which the gas may pass under normal conditions but which will compact and fuse under extraordinary pressure or temperature to close said aperture, substantially as set forth.

5. A fitting for the supply lines of gas tanks having an aperture formed with an enlarged chamber of larger diameter than the normal aperture and with a concave floor, a disk of soft material mounted above said floor with apertures around its edges and an imperforate center, other filling material above said disk through which the gas may percolate under normal conditions but which under pressure is adapted to transmit said pressure to the soft washer and compress the same to close the outlet apertures of the fitting, subsantially as set forth.

6. A fitting for the supply lines of gas tanks formed with an aperture having an enlarged chamber containing a soft disk covering the aperture and having openings to one side of said aperture through which the gas may pass, and means above said disk for transmitting pressure caused by back fire, to compress said disk and close the aperture, substantially as set forth.

7. A fitting for the supply lines of gas tanks having an aperture formed with an enlarged chamber, a soft disk in said chamber covering said aperture and formed to permit the passage of the gas to the side of said aperture, and material adapted to flow

under high pressure and fuse under high temperature mounted above said disk to receive any back pressure caused by back fire from the point of use, substantially as set forth.

8. The combination with an acetylene gas tank, of an outlet fitting having an aperture through which the gas may pass from the tank to the point of use, said aperture having an enlarged chamber, and means mounted in said chamber through which gas may pass under normal conditions but which under a fusion temperature will fuse over and close the outlet aperture from the tank, substantially at set forth.

9. An explosion arrester for gasburning apparatus comprising a gas conduit, means for supporting within said conduit a quantity of material which is fusible at the temperature of a gas flame, means for retarding the movement of a flame through said conduit in the neighborhood of and in good thermal relation to said material, and means located in the gas conduit for receiving said material when fused to seal said conduit.

10. The method of arresting the progress of an explosion through a gas conduit which consists in arranging in thermal relation to a flame in said gas a quantity of material which is fusible at the temperature of said flame, retarding the progress of said flame adjacent said material, thereby melting the same, and trapping said material when melted and sealing said conduit therewith.

In witness whereof, we have hereunto set our hands and seals at Indianapolis, Indiana, this 6th day of December A. D., nineteen hundred and sixteen.

HENRY SIDNEY SMITH. [L. S.]
ALBERT FRANK WESTLUND. [L. S.]

Witnesses:
JOHN H. ALTER,
H. L. GOULD.