

H. ROMANOFF.
 VALVE.
 APPLICATION FILED FEB. 9, 1918.

Patented June 10, 1919.
 2 SHEETS—SHEET 1.

1,306,391.

Fig. 1,

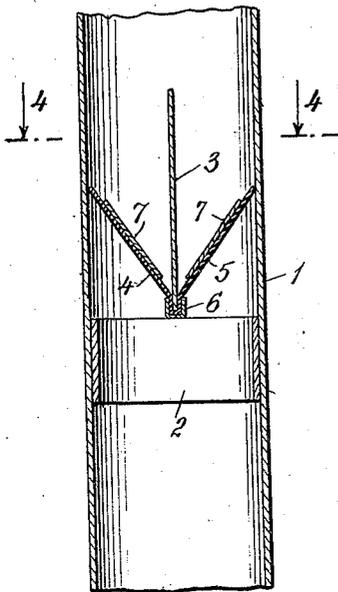


Fig. 2,

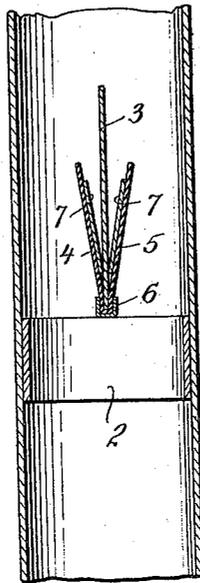


Fig. 3,

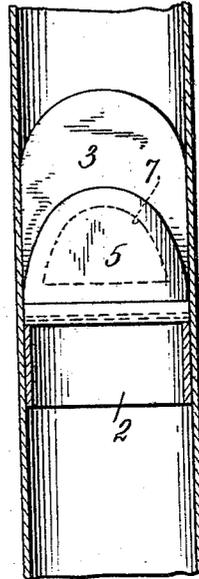


Fig. 4,

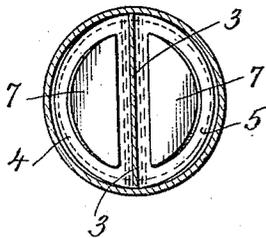
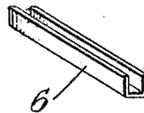
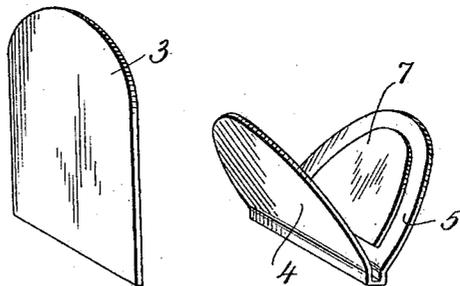


Fig. 5,



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Fig. 6,

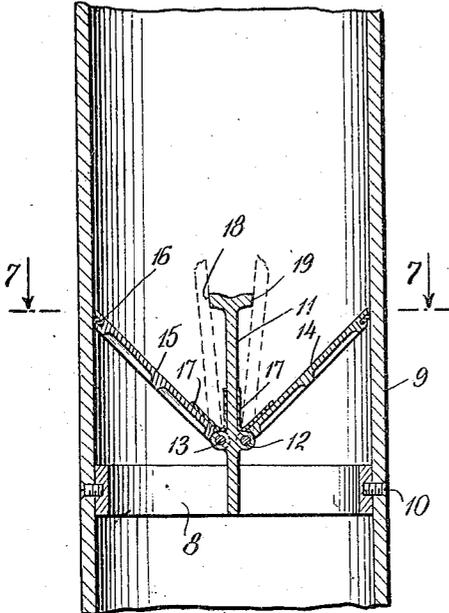


Fig. 7,

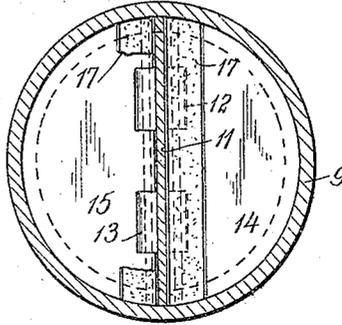


Fig. 9,

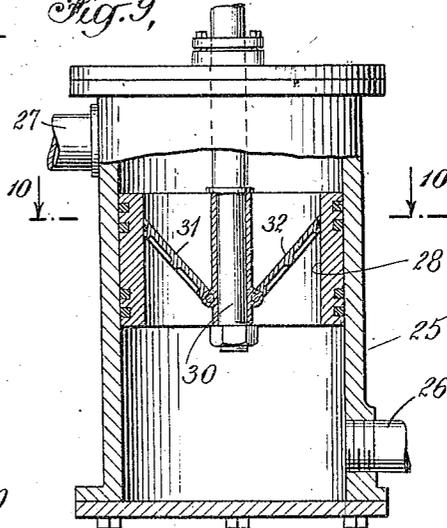


Fig. 8,

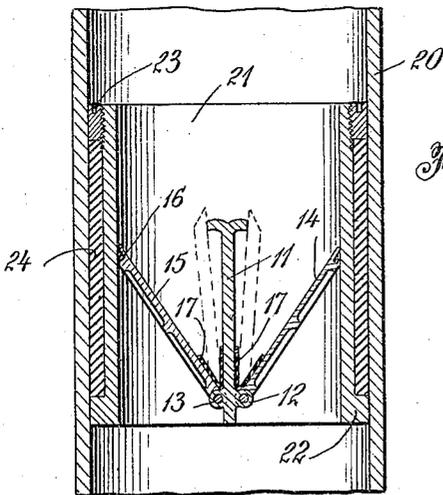
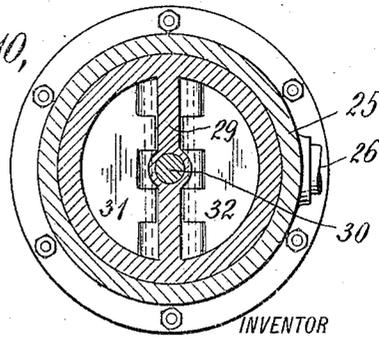


Fig. 10,



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UNITED STATES PATENT OFFICE.

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VALVE.

1,306,391.

Specification of Letters Patent. Patented June 10, 1919.

Application filed February 9, 1918. Serial No. 216,397.

To all whom it may concern:

Be it known that I, HIPPOLYTE ROMANOFF, a citizen of Russia, residing at 200 West 59th street, in New York, State of New York, have invented certain new and useful Improvements in Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to valves of the wing type and adapted more particularly for use as check valves to control the flow of fluids.

In one embodiment the invention is of light weight and of simple construction and well adapted for serving as a check valve in conduits carrying air, as for instance, in conduits forming a part of anti-gas respirators.

In another embodiment the invention is of more rugged construction and can be used as part of pumping apparatus and the like where the fluid either liquid or gaseous may be under a considerable pressure.

Other objects and advantages of the invention will be made clear by the following detailed description which is to be taken in conjunction with the accompanying drawings wherein Figure 1 is a sectional elevation showing the valve wings in their spread position closing the conduit; Fig. 2 is a similar view with the valve wings in folded position; Fig. 3 is a longitudinal elevation at right angles to the plane of Fig. 2; Fig. 4 is a cross-section on the line 4—4 of Fig. 1; Fig. 5 is a view showing the component parts of the valve separated from one another; Fig. 6 is a sectional elevation of a more rugged modification; Fig. 7 is a transverse section on the line 7—7 of Fig. 6; Fig. 8 is a sectional elevation of a further modification; Fig. 9 shows the invention as applied to a pump; and Fig. 10 is a transverse section on the line 10—10 of Fig. 9.

In the embodiment illustrated in Figs. 1 to 5 inclusive, 1 is a conduit which may be of cylindrical shape and of metal. Mounted within this with a tight fit, or soldered thereto if desired, is a reinforcement 2 in the form of a metal ring. Positioned above the ring is a member 3 which may be in the form of a flat plate as illustrated in Fig. 5,—wings are mounted to swing from the lower portion of this plate. In the embodiment illustrated the two wings 4 and 5 are formed

from a single sheet of soft rubber and are bent around the lower edge of plate 3 where they are securely fastened by suitable binding means as by a metal channel 6, the said plate 3 and the channel 6 thus forming the support for the wings. Each of these wings comprises a stiff body portion 7 which may be of bristol board or the like and serves to give rigidity to the structure. As thus constituted, each wing has a stiff body portion with a sealing edge of rubber, and the wing can swing toward or from the support 3 to permit or to check the flow of air or other fluid through conduit 1. Channel 6 may if desired be soldered to ring 2, or if the channel or the plate 3 fits snugly enough within conduit 1, the ring 2 may be omitted entirely. Under some circumstances as when this valve is used in conjunction with gas masks, I omit ring 2 and I rely on the snug fit of the other parts to hold them in place within the conduit 1. With this arrangement it is possible for the user to reach into the conduit and extract the valve in an instant if the need for such action should arise.

In the embodiment illustrated in Fig. 6 the reinforcement 8 for conduit 9 is held in place by screws 10, and the supporting plate 11 has a hinged connection at pivot pins 12 and 13 with the stiff body portions 14 and 15 of the wings. These body portions may be of metal and preferably at their edges are recessed to receive a rubber packing strip or edge 16 to more tightly seal the joint when the valve is closed. Strips 17 of rubber or leather may be placed over the hinges to prevent leakage therethrough and the upper end of support 11 may be enlarged to form stops 18 and 19 against which the wings abut when in folded position. These stops hold the wings apart and thus keep them in the path of the fluid which, on the commencement of a return flow, swings the wings forcibly into their spread position as shown in Fig. 6.

In the embodiment illustrated in Fig. 8 the conduit 20 is equipped with a sleeve 21, with a flanged lower edge 22 and threaded upper edge to receive a ring nut 23. Between the sleeve and the conduit is a rubber packing 24 which under compression of the ring nut forms a tight joint between the sleeve and the conduit and positively anchors the sleeve in position within the conduit. The details of the valve wings and

of their support are substantially the same as that above described in connection with Fig. 6.

In Figs. 9 and 10 the conduit 25 is in the form of a pump having an inlet 26 and an outlet 27 and having a piston 28 with suitable packing rings. The piston has two segmental openings therethrough separated by a plate-like web 29 to which the actuating rod 30 is bolted. This central web serves as the support from which the wings 31 and 32 may swing to permit or to check the flow of fluid past the piston as occasion may require. In detail these wings may be as shown in Figs. 6 to 8 inclusive.

I am aware that various changes in details may be made and that my invention can be utilized in other embodiments.

I claim:

1. The combination, with a vertically arranged hollow, cylindrical element for the passage of fluid therethrough; of a diametrical plate-like member disposed vertically within said element; and a valve comprising a pair of semi-elliptical wings located at opposite sides of said member and connected with the same along their bases; said wings having a length greater than the radius of said cylindrical element, whereby they are normally maintained in oppositely-inclined, upwardly-projecting position, with their curved edges resting directly against the inner surface of said element throughout their entire extent.

2. The combination, with a vertically-ar-

ranged hollow, cylindrical element for the passage of fluid therethrough; of a diametrical, plate-like member disposed vertically within said element; and a valve comprising a pair of semi-elliptical wings located at opposite sides of said member and connected with the same along their bases; said wings having a length greater than the radius of said cylindrical element, whereby they are normally maintained in oppositely-inclined, spread position, with their curved edges resting directly against the inner surface of said element throughout their entire extent, each wing having a stiff body portion and a rubber edge.

3. The combination, with a conduit, of a diametrical plate within said conduit; an elliptical sheet of rubber passing across the lower edge of said plate and diametrically engaged thereby, so as to form a pair of semi-elliptical wings located at opposite sides of said plate, each wing being provided with stiffening means; and a channel in which the said lower edge of said plate and the bases of said wings are fitted to secure the latter to the former; said wings having a length greater than the radius of said conduit, whereby they are normally maintained in oppositely-inclined upwardly-projecting position, with their curved edges resting directly against the inner surface of said conduit throughout their entire extent.

In testimony whereof I affix my signature.

HIPPOLYTE ROMANOFF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."