

H. F. LAUBACH.
 COMBINED UNION AND VALVE.
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1,093,706.

Patented Apr. 21, 1914.

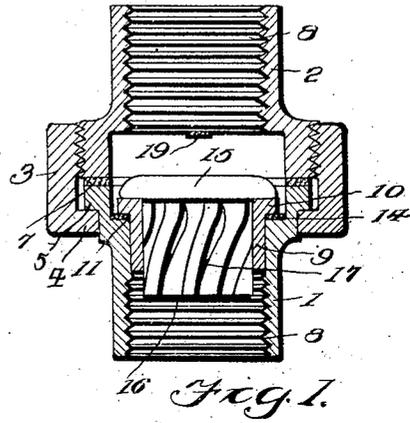
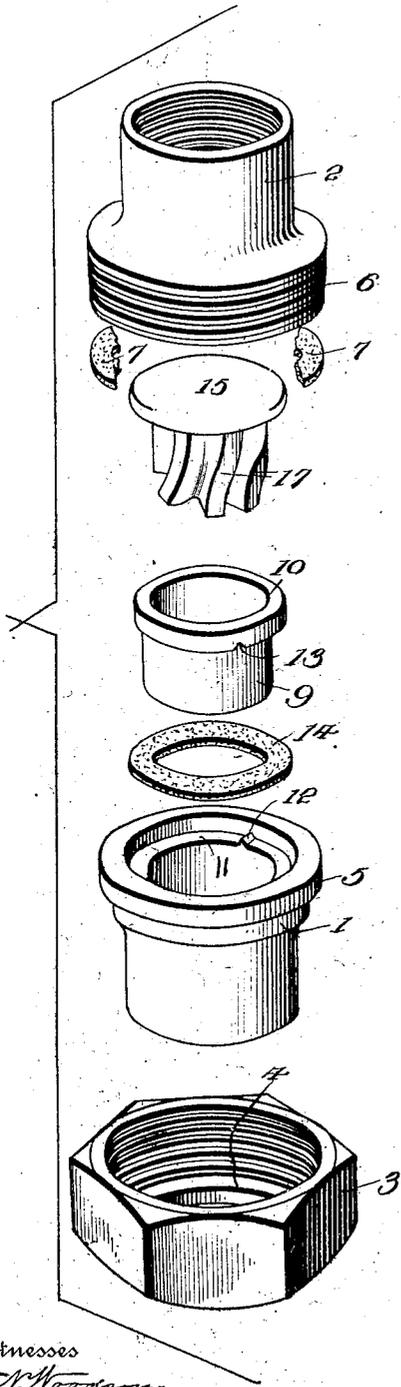


Fig. 1.

Witnesses
 W. N. Woodman

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Fig. 2.

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COMBINED UNION AND VALVE.

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To all whom it may concern:

Be it known that I, HIRAM F. LAUBACH, citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Combined Union and Valve, of which the following is a specification.

This invention relates to valves and more particularly to check-valves.

It is one aim of the invention to provide a valve having a removable and interchangeable valve-seat.

Valves, as ordinarily constructed, have integral or non-removable seats and when the valve or its seat becomes worn the entire valve is unfit for further use and must be discarded. By providing a valve body with a removable seat, however, when the seat or the valve cooperating therewith becomes worn, a new seat or a new valve, or both, may be readily substituted at little expense and without the provision of a new body.

While the present invention relates particularly to check-valves, it contemplates the provision, in the body of a valve of any type, of a removable and interchangeable seat.

The invention also aims to provide a combined union and valve thereby obviating the necessity of interposing in a length of pipe, at a point adjacent the valve, a separate and distinct union, such as is ordinarily the practice.

Furthermore the invention contemplates that the valve and its seat can be so located in one section of the union that when the sections are disconnected, the valve may be readily removed as may also its seat. In this connection, the invention further aims to so position the valve and its seat within one of the sections of the union that water will not be liable to collect around the valve and seat and become frozen.

Another aim of the invention is to provide a check-valve which may be readily and quickly arranged for use in a vertically or horizontally disposed pipe.

The invention further contemplates the provision, in a check-valve, of a valve proper having a stem formed with spiral grooves

or blades against which the liquid passing through the valve is designed to act, for the purpose of rotating the valve each time it is opened, thereby causing it to seat in a different position upon its seat, each time it is closed. In connection with this feature of the invention, it is contemplated that the seat for the valve shall be removable from the body of the valve and that it shall be held against rotation with the valve.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a vertical sectional view through the valve embodying the present invention, the valve being arranged for use in a vertical pipe. Fig. 2 is a perspective group view illustrating the parts of the valve about to be assembled.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawing by the same reference characters.

While, as before stated, the feature of providing a valve with a removable seat may find embodiment in a valve of practically any type, there is shown in the drawings, a combined union and check-valve. In the drawings, the sections of the union constitute the casing for the valve and one of the sections is indicated by the numeral 1 and the other section by the numeral 2. The sections 1 and 2 are connected by means of a collar 3 having a flange 4 upon which rests an annular shoulder 5 at one end of the section 1. The collar 3 is interiorly threaded as clearly shown in the drawings, and the body of the section 2 is exteriorly threaded as at 6 and is fitted into the collar and bears against a gasket 7 disposed between it and the shouldered end 5 of the section 1. Both the section 1 and the section 2 are interiorly threaded as at 8 to receive the ends of the pipe sections to be connected. For a portion of its length the bore of the section 1 is smooth, and removably fitted in this bore is the barrel 9 of the valve seat, this barrel being formed with a circumscribing flange 10, at one end, which rests upon a shoulder 11 formed in the body of the said

section 1. The shoulder 11 is formed with a lug 12 and the flange 10 is formed with a recess or notch 13 designed to receive the lug 12, the valve seat being in this manner held against rotation in the bore of said section 1. A packing gasket 14 is preferably interposed between the flange 10 and shoulder 11.

The valve proper is illustrated, in the drawings, as including a head 15 and a stem 16 formed with spirally extending grooves resulting in spiral blades 17. The stem 16 is cylindrical and fits revolvably in the bore and valve seat 9 with the head 15 resting by gravity upon the flanged end of this seat, the under side of the head and the said end of the seat being ground to a water tight fit. The section 2 is provided interiorly with a guard 19 for the valve 15, serving to prevent this valve lifting to such degree as to disengage its stem from the seat 9. At this point it will be readily understood that as the valve opens, the water flowing through the grooves between the spiral blades 17 in the valve stem 16, will cause the valve to rotate and, consequently seat in different positions. This prevents uneven wear of the valve and its seat as will be readily understood. It will also be understood from the foregoing that should the valve become worn, it may be readily removed, and a new one inserted, and also, should the seat become worn, it may be replaced without the necessity of discarding the entire valve.

From the foregoing description of the invention it will be readily understood that the valve may be readily and quickly adapted for use in connection with a horizontally or vertically extending pipe. Also it will be understood that the valve proper or its seat, or both, may be readily replaced when they become worn, without the necessity of throwing away the valve casing.

Having thus described the invention what is claimed as new is:—

1. In a valve structure, a casing including mating sections one of which is provided interiorly with a shoulder formed with an upstanding sharp-edged rib extending the entire width thereof and radially with respect to the axis of the bore, a relatively thin, pliable packing gasket disposed upon the shoulder and overlying the said rib, a valve seat comprising a barrel fitted in said casing section and having a circum-scribing flange resting upon the packing gasket, the said flange having its contacting side formed with a notch of the same contour as the rib and arranged to receive the portion of the gasket flexed by the rib upon the shoulder, and a fluid actuated valve slidably and rotatably fitted in the barrel and having the peripheral portion of its

head resting against that end of the valve seat at which the flange is formed, the mating sections of the casing being free to rotate to permit separation of said casing sections without disturbing the barrel.

2. A valve structure comprising a casing section having a bore, the inner end of which is cylindrical and smooth, the said section being formed interiorly with a flat shoulder entirely surrounding the bore, the said casing section being interiorly enlarged surrounding the shoulder, a second casing section having a bore interiorly enlarged at its inner end to conform to and forming a continuation of the enlarged interior of the first mentioned casing section, a collar surrounding and connecting the said inner ends of the casing sections, a guard carried by the inner end of the second mentioned casing section, a valve-seat comprising a cylindrical barrel removably fitted into the cylindrical inner end of the bore of the first mentioned casing section and provided at its inner end exteriorly with a circumscribing flange designed to rest upon the said shoulder within the said first mentioned casing section, and a fluid actuated valve having a cylindrical stem of greater length than the barrel of the valve seat and formed with a circumferential series of spiral grooves extending to the end of said stem, and a head flat upon its under side, the stem being removably and rotatably fitted in the barrel, the valve-seat and the said flat under side of the head resting flat upon the flanged-end of the seat, the said head when resting upon its seat being spaced from the guard a distance less than the length of the valve-stem.

3. A valve structure comprising a casing including mating sections one of which is provided with exterior threads and the other with a smooth interior bore extending for a portion of the length thereof and an exterior shoulder, the last-mentioned casing section being provided with an interior shoulder entirely surrounding the bore, a gasket interposed between the adjacent ends of the casing sections, a coupling collar having one end thereof provided with a flange engaging the exterior shoulder on one section and having its other end formed with interior threads engaging the exterior threads on the mating section for clamping said sections in engagement with the gasket, a barrel engaging the walls of the bore and provided at one end with a laterally extending flange, a gasket interposed between the flange on the barrel and the interior shoulder of the adjacent casing section, a valve slidably and rotatably mounted within the barrel and provided with a head normally resting on the flange of the barrel, said valve

including a stem of greater length than the barrel having a circumferential series of spirally disposed ribs formed thereon extending the entire length of the stem and defining intermediate grooves opening into the adjacent casing section below the end of the barrel, and a guard carried by one of the casing sections and adapted to engage

the upper surface of the head of the valve for limiting the opening movement thereof. 10

In testimony whereof, I affix my signature in presence of two witnesses.

HIRAM F. LAUBACH. [L.S.]

Witnesses:

J. E. CALDWELL,

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