

(No Model.)

W. DUCHEMIN.
SAFETY VALVE.

No. 259,109.

Patented June 6, 1882.

Fig. 1.

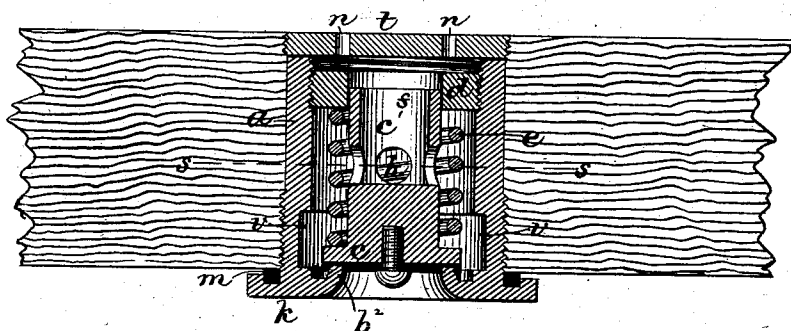
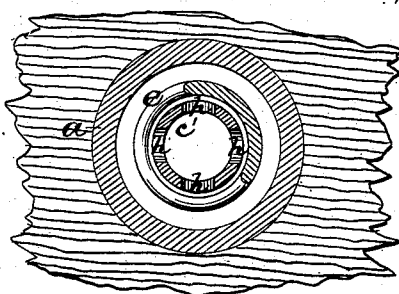


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM DUCHEMIN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO JAMES W. DONIHUE, OF SAME PLACE.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 259,109, dated June 6, 1882.

Application filed May 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DUCHEMIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Safety-Valves, of which the following is a specification.

This invention relates to automatic relief or safety valves for barrels or casks containing light ales or beer, which remains effervescent until it is entirely drawn from the barrel or cask, the effervescence of the liquid being depended upon to force it from the cask and give it the required briskness or life while it is being consumed. This class of ale or beer contains a percentage of a substance known as "yeast," which is in a constant state of fermentation, and gives the liquid the briskness or life before mentioned. This yeast is of a viscid or glutinous nature, and in fermentation the gas arising from it in globules or bubbles is inclosed in viscid globular envelopes composed of the yeast, and these inclosed globules, accumulating on the surface of the liquid, constitute a tough ropy substance or froth, from which the gas cannot escape independently by reason of the toughness of the yeasty matter, so that the gas can only escape in the form in which it accumulates in the cask or barrel—*i. e.*, inclosed in the globular envelopes of yeast.

In all automatic valves for permitting the escape of gas from beer casks or barrels heretofore used the construction has been such as to provide no adequate means for the passage of the froth or inclosed gas-globules above mentioned, the passages provided for the escape of gas in such valves being so narrow and contracted that they become clogged or choked, and consequently inoperative, by the tough pasty matter.

My invention has for its object to effect certain improvements in the construction of automatic outwardly-opening valves for beer barrels or casks, whereby the inclosed gas-globules can readily escape without clogging or choking the passages in the valve, and without involving escape or waste of the liquid; and to these ends it consists in the details of construction, which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of a valve embodying my improvements. Fig. 2 represents a section on line *s s*, Fig. 1.

Similar letters of reference refer to like parts in both figures.

In the drawings, *a* represents the valve-casing, which is tubular, and is provided at its inner end with an outwardly-projecting flange, *k*. The outer surface of the casing *a* is threaded at its lower end above the flange *k*, and said flange is grooved to receive a packing-ring, *m*. The casing is applied to the head of a barrel by screwing it from the inside into a hole made in the head until the flange *k* bears against the inner side of the head, the packing-ring *m* being compressed by this operation and making a tight joint. The length of the casing is less than the thickness of the barrel-head, so that room is afforded for the insertion of a threaded cap or cover, *t*, into the outer end of the hole in the head, said cap being flush with the outer surface of the head and provided with two or more apertures, *n n*, extending through it. The casing is provided at its interior, near the lower end, with an annular valve-seat, *b²*, which is elevated above the level of the upper surface of the flange *k*.

c represents the valve, which is a disk of metal arranged to rest upon the seat *b²*, and provided, preferably on its lower surface, with a rubber facing or washer. The valve is provided with an upwardly-projecting stem, *c'*, which passes through and slides freely in an orifice in a guide or nut, *d*, which is screwed into the upper end of the casing *a*. The stem *c'* is hollow or tubular, having a cavity, *f*, extending from its upper end to a point below the guide *d*, where it is provided with several orifices, *h*, which connect the interior or hollow portion of the stem with the interior of the casing *a*.

The lower portion of the interior of the casing *a*, above the valve-seat *b²*, is provided with recesses *v*, arranged around the valve and constituting passage-ways around the periphery of the valve when the latter is lifted.

e represents the spiral spring which holds the valve down. This spring surrounds the

stem *c'*, and bears at one end against the valve and at its other end against the guide or nut *d*.

When the valve is lifted by pressure from within the barrel a passage is created through the valve and casing, said passage being composed of the space between the valve and its seat, the recesses *v*, the annular space between the casing and the stem *c'*, the orifices *h*, and the cavity *f* of the stem. These parts or elements are all proportioned so that the area or passage-way afforded by either of them will be about equal to the area of the opening bounded by the valve-seat *b²*. Hence the viscid accumulation or froth described is enabled to pass through the valve, until it escapes at the upper end of the stem *c'*, without clogging or obstructing the valve.

The provision of the flange *k* and the arrangement of the valve-seat *b²* above the level of the upper side of said flange insure the elevation of the valve and valve-seat above the under side of the head of the cask or barrel, and therefore above the liquid contained therein, so that none of the liquid will be forced out by the pressure of the gas or frothy matter, as would be the case if the seat projected below the head of the cask when the latter is full.

The cap or cover *t*, screwed into the outer end of the hole in the head of the barrel, prevents the entrance of dirt into the cavity *f*.

The orifices *n n* in said cap permit the escape of gas, and also receive the prongs of a wrench whereby the cap is screwed in and out.

I claim—

1. In an automatic safety-valve, the combi-

nation of the tubular casing *a*, having the flange *k*, valve-seat *b²*, elevated above the upper side of said flange, internal recesses *v*, located above the valve-seat, and guide or nut *d*, located at the upper end of the casing, with the valve *c*, having the stem *c'*, which passes through the guide or nut *d*, and provided with the cavity *f* and perforations *h*, and held down by a spring *e*, all arranged and operating as and for the purpose specified.

2. The valve *c*, having the hollow perforated stem *c'*, combined with the tubular casing *a*, having the valve-seat *b²*, recesses *v*, and guide or nut *d*, and the spring *e*, arranged between the nut *d* and valve *c*, all as set forth.

3. In a safety-valve for beer-barrels having a spring-valve, *c*, the tubular casing *a*, having the flange *k* and the valve-seat *b²* elevated above the upper side of said flange, whereby the valve and valve-seat are prevented from projecting downwardly into the barrel, as set forth.

4. The combination, with a barrel or cask head, of the casing *a*, screwed into a hole in the head, and provided with the spring-valve having the hollow perforated stem, and the cap or cover *t*, screwed into the outer end of said hole, and provided with orifices *n n* for the escape of gas and for the application of a wrench, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 26th day of April, 1882.

WILL M. DUCHEMIN.

Witnesses:

C. F. BROWN,

A. L. WHITE.