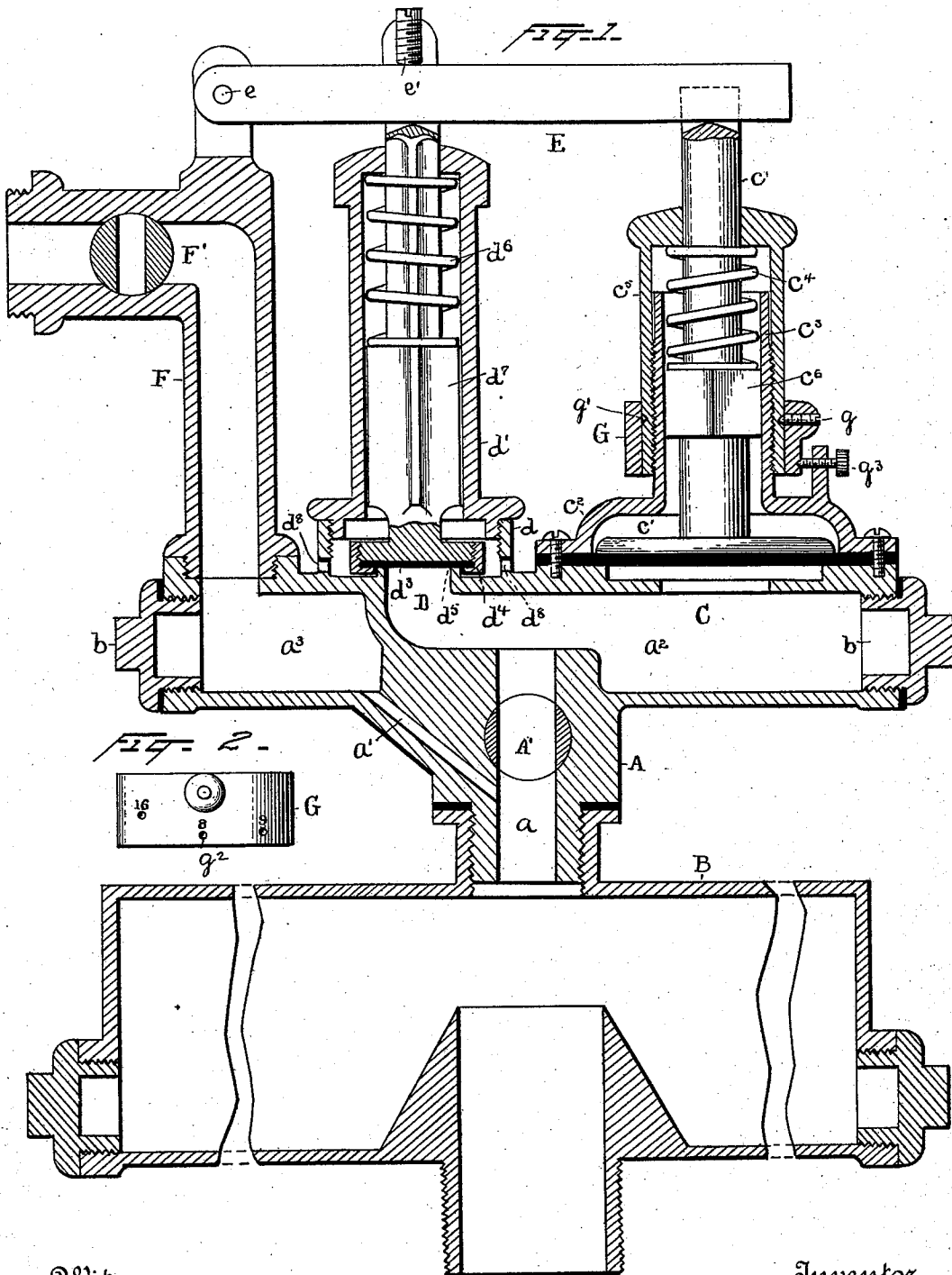


(No Model.)

J. C. SCHAEFER.
SAFETY VALVE FOR BEER CASKS.

No. 576,162.

Patented Feb. 2, 1897.



Witnesses
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SAFETY-VALVE FOR BEER-CASKS.

SPECIFICATION forming part of Letters Patent No. 576,162, dated February 2, 1897.

Application filed November 16, 1895. Serial No. 569,144. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SCHAEFER, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Safety-Valves for Beer-Casks, of which the following is a specification.

The object of my invention is to provide a safety-valve for shavings or finishing-casks employed in the process of brewing beer; and my object is especially to provide a dry valve, as distinguished from the valves heretofore in use, in which water or other fluid was employed to prevent the valve-seats becoming clogged.

Another feature of my invention consists in providing a barm-chamber in combination with the safety-valve, whereby casks may be filled to the bung-hole instead of only partly filled, as heretofore, whereby the barm is prevented from interfering with the action of the valve.

My invention further consists in the novel devices and combinations of devices herein-after more fully described, and pointed out in the claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of the entire apparatus, and Fig. 2 is an elevation of a detail of part of the pressure-regulating device.

Referring to Fig. 1 of the drawings, A is a stem having a screw-threaded portion adapted to be screwed into the barm-chamber B or directly into the beer-cask, as desired. This stem is provided with two passages a a' , connecting, respectively, with the two chambers a^2 a^3 . The passage a is preferably provided with a stop-cock A', the object of which will be hereinafter explained. The chambers a^2 a^3 are provided with screw-plugs b to give access to the chambers and permit of their being cleaned. At one end of the chamber a^2 is an opening c , over which is placed a diaphragm C, which operates a plunger c' . The plunger c' is contained within a cap c^2 , which is secured to the body of the valve by screws, as shown, with the diaphragm clamped between the body of the valve and the cap c^2 .

This cap has a tubular extension c^3 , within which the stem of the plunger works, and this stem is surrounded by a spiral spring c^4 . A cylindrical cap c^5 , provided with a circular opening at the top, through which the stem of the plunger passes, is screwed over the tubular extension c^3 . The spring c^4 is seated between the shoulders c^6 of the plunger and the cap c^5 . The shoulders c^6 are preferably formed by making the lower part of the stem of the plunger square in cross-section, which also reduces the friction within the tubular extension c^3 . The diaphragm-plunger with its operating parts, just described, controls the action of the relief-valve located at the other end of the chamber a^3 .

The relief-valve consists of a spring-pressed valve D, working within a chamber formed by the circular extension d . The valve D is carried by a stem which has a bearing within a cylindrical cap d' , screwed into a circular extension d . The valve D is preferably provided with a rubber disk d^3 , screwed to the valve by a screw-ring d^4 . The valve D is held to its seat d^5 by a spiral spring d^6 , which is seated between the cap d' and the shoulders formed by the ribs d^7 of the valve-stem. The valve-stem is preferably provided with ribs d^7 to reduce the surface of the stem, and hence reduce friction between it and the cap d' . The upper end of the valve-stem, which works through the opening in the cap d' , is also provided with ribs similar to the ribs d^7 to reduce friction at that point. When the relief-valve is opened by the action of the diaphragm C, the gases escape through openings d^8 , formed in the circular extension d . The upper end of the valve-stem is slotted, as shown, and through this slot passes a lever E, which is pivoted at e on the upright tubular extension F, leading from the chamber a^3 . An adjusting-screw e' is screwed into the upper end of the valve-stem to avoid lost motion of the lever E. This adjusting-screw is necessary, since the position of the lever E will vary slightly, according to the normal pressure for which the valve is set. The lever E rests upon the upper end of the plunger c' , so that when the plunger is raised by the pressure of the gas the valve D is raised

against the pressure of its spring, and when the pressure is reduced to the desired point by the escape of gas through openings d^8 the valve D and diaphragm C will return to their normal positions by the action of their springs.

The tubular extension F is preferably L-shaped, and the short arm of the L is provided with a stop-cock F'. The object of this extension and its connection with the main stem of the apparatus is to permit the forcing of compressed air through the passage a' into the cask after the beer has reached the proper stage in the finishing process. The stop-cock A' in the main stem is provided in order that the chamber a^2 may be cut off from the apparatus while the air is being forced into the cask.

As before stated, the relief-valve is controlled by the diaphragm C, and to adjust the diaphragm for various pressures I employ a ring G, which is carried by the tubular cap c^5 . This ring is provided with a set-screw g , which enters a circular groove g' in the cap c^5 , and ring G is provided with a series of holes or notches g^2 , over which notches are placed numerals representing the pressures for which the valve may be adjusted. When the apparatus is set for a certain pressure, say, for instance, eight pounds, and screwing G is moved around until the figure "8" is opposite the thumb-screw g^3 and the thumb-screw is then screwed inward to engage the ring and prevent its further rotation, the set-screw g is then screwed inward to firmly clamp the ring to the cap c^5 . This is the initial adjustment of the apparatus, and should it be desired to adjust the apparatus for a different pressure it is only necessary to disengage the thumb-screw g^3 and rotate the cap c^5 to the desired point and then lock the same again by the thumb-screw g^3 .

The barm-chamber may be of any desired shape, it being illustrated in the drawings as square in cross-section and provided with a screw-threaded extension adapted to be screwed into a cask. Surrounding the inlet is a preferably cone-shaped wall, which prevents the barm flowing back into the cask. This chamber is also provided with screw-plugs to permit the cleaning of the chamber.

The operation of the apparatus is as follows: When the safety-valve is placed in position upon a cask or upon the barm-chamber, the initial adjustment is first obtained by adjusting cap c^5 upon the extension c^3 , so that the usual pressure-gage registers, for instance, eight pounds. The ring G is then rotated on the cap c^5 until the figure "8" is opposite the thumb-screw g^3 . The thumb-screw is then brought into engagement with the ring to lock the same, and the set-screw g is then screwed up tightly to lock the ring G to the cap c^5 . If now it is desired to adjust the

apparatus for any other pressure, say ten pounds, the ring G is released by withdrawing the thumb-screw g^3 and cap c^5 is rotated until the notch g^2 with the number "10" is opposite the thumb-screw g^3 , whereupon the thumb-screw is again brought into engagement with the ring G. The apparatus being now set for a ten-pound pressure, the relief-valve will remain closed until the pressure rises above ten pounds, whereupon the diaphragm will be raised and through it and the lever E the relief-valve will be raised, allowing the gas to blow off until the pressure falls to ten pounds again, whereupon the springs will return the diaphragm and relief-valve to the normal positions.

What I claim is—

1. In safety-valves for beer-casks, the combination with a relief-valve, of a diaphragm and plunger operated by the pressure of the gas within the cask for opening said valve, and means for adjusting said diaphragm and plunger for various pressures, said means consisting of a spring seated between the plunger and a cap, a graduated loose ring carried by said cap and adapted to be clamped thereto, and a set-screw for locking said ring and cap in position, substantially as set forth.

2. In a safety-valve for beer-casks, the combination with a relief-valve, of a lever operatively connected with the stem of said valve, a diaphragm and coöperating rod engaging with said lever and actuated by the pressure within the cask to open the relief-valve, a spring tending to hold the relief-valve to its seat, a spring for the diaphragm-rod, which spring is seated between a shoulder on said rod and an adjustable cap through which said rod projects, said cap being provided with graduation-marks indicating the different pressures for which the valve may be set, and means for locking said cap in its adjusted position, substantially as set forth.

3. In a safety-valve for beer-casks, the combination with a relief-valve, of a lever operatively connected with the stem of said valve, a diaphragm and coöperating rod engaging with said lever and actuated by the pressure within the cask to open the relief-valve, a spring tending to hold the relief-valve to its seat, a spring for the diaphragm-rod, which spring is seated between a shoulder on said rod and an adjustable cap through which said rod projects, an adjustable ring on said cap provided with graduation-marks, and means for locking said ring and said cap in their adjusted positions, substantially as set forth.

This specification signed and witnessed this 7th day of November, 1895.

JOHN C. SCHAEFER.

Witnesses:

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