

J. P. GRUBER.
Automatic Air-Vent.

No. 215,915.

Patented May 27, 1879.

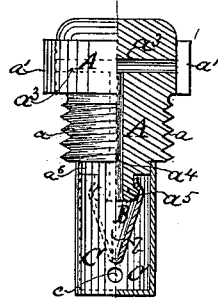


Fig. 1.



Fig. 3.



Fig. 4.

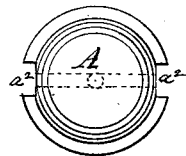


Fig. 2.

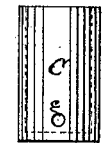


Fig. 5.



Fig. 6.

Attest:

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UNITED STATES PATENT OFFICE.

JOHN P. GRUBER, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN AUTOMATIC AIR-VENTS.

Specification forming part of Letters Patent No. **215,915**, dated May 27, 1879; application filed November 8, 1878.

To all whom it may concern:

Be it known that I, JOHN P. GRUBER, of Jersey City, in the county of Hudson and State of New Jersey, have made a certain new and useful Improvement in an Automatic Air-Vent, of which the following is a full and clear description.

This invention relates to an automatic vent for admitting atmospheric air to the interior of any closed vessel from which the contents are to be withdrawn and the cavity refilled with air.

The invention is particularly applicable to barrels or similar packages usually employed for holding fluids which deteriorate by contact with the open air, some of which develop a gas-pressure which it is desirable to retain; but the device is readily adaptable to various other uses.

The invention consists of a plug, which is to be secured in the side or shell of the vessel to be operated upon, with a vent-hole passing through this plug from the exterior to the interior of the cask or vessel, and an india-rubber or other suitable valve-piece provided for covering the interior end of the vent-aperture, the valve-piece to be constructed so as to open automatically for the admission of atmospheric air to the interior whenever any portion of the contents of said vessel are withdrawn, and immediately thereafter closing automatically as soon as an equilibrium of atmospheric pressure is restored between the interior and exterior of the vessel, and thereby preventing the escape of gas or the loss of any of the contents of the vessel through the vent-aperture in case the vessel should be turned over so as to present the inner end of the said vent-aperture to contact with the contents. A shield or guard-piece is provided and arranged so as to cover and protect from injury the valve-piece.

The invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of the complete plug, valve-piece, and shield assembled together in their proper places for use. Fig. 2 is a plan of the same. Figs. 3 and 4 are, respectively, an elevation and a plan of the valve-piece detached from the other parts.

Figs. 5 and 6 are, respectively, an elevation and a plan of the guard or shield-piece detached from the other parts.

The plug A may be secured in the side of the vessel in which it is to be used by any suitable means, but preferably by means of screw-threads *a* cut into its periphery below the head *a'*, the shoulders below the said head being used to press down upon a suitable packing-piece, if required. The notches *a''* in the sides of the head are intended for the engagement of a wrench for turning in this plug. In this shape the plug A will readily fill the office of a bung for a cask or barrel, and the cask or barrel in which it is used will not be liable to injury by having the interior coating of rosin or other substance with which it is lined broken or injured, as is frequently done by hammering on the exterior with a bung-starter for the purpose of giving vent.

The vent-aperture consists, preferably, of a transverse hole, *a³*, bored across the head part, between the notches *a''*, where the ends of the hole will be least liable to injury, and a longitudinal hole, *a⁴*, leading from the hole *a³* to the extreme inner end of the plug-piece. Through these holes *a³* and *a⁴* the air will pass from the exterior to the interior of the vessel, as may be required. Of course, the vent *a⁴* might, if preferred, extend straight through the piece A from end to end.

The valve-piece B may be formed of leather or other suitable material; but I prefer to make it of india-rubber, as best adapted to the purpose, and to make it conical, as being the best form to use, though semi-spherical or various other shapes may be used, if preferred, the important point being to construct the piece with a slit or opening, *b*, so arranged as to open automatically upon the slightest pressure of air upon its side next the aperture *a⁴*, and thereby permitting the air so pressing upon it to pass through the opening, and as soon as an equilibrium of atmospheric pressure is re-established between the exterior and interior of the cask the opening *b* will assume its normal position of being closed, and it will be closed in such a position that pressure upon it from the inside of the vessel will only close it more tightly. To secure this end the said piece B will be made concave on the side next

the aperture a^4 and convex on the opposite side, and, therefore, pressure upon it from the interior of the cask will act like pressure upon the exterior of an arch, and so serve to keep it closed, while pressure from the outside will have a contrary effect.

If this piece B is constructed of india-rubber, the top or large end of it may be slipped over the end of the nib a^5 , the periphery of which, near its extreme end, has a projecting ridge, over which the piece B will lap and hold tightly.

If other material than india-rubber were used for the piece B it would necessarily have to be fastened by some appliance to the piece A; but if it be of india-rubber, the elasticity and contraction of this substance about the ridge of a^5 will be sufficient of itself to hold the parts together.

A shield-piece, C, is used to cover the valve B and keep it from being injured from any cause within the vessel. This shield-piece may be simply a cylindrical metallic piece, with one of its ends closed and the other arranged to slip tightly over or on the collar a^6

of the plug A, friction alone being sufficient to hold these parts together. One or more vent-holes, e , will be made through the shell of C, to permit the air to pass through from the valve B b , as may be required.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The plug A, provided with screw-threads a , cut in its periphery below the head or packing-flange a^1 , notches a^2 , transverse vent-aperture a^3 between said notches, and a vertical vent-aperture, a^4 , leading from the vent a^3 to the inner end of the plug, substantially as and for the purpose set forth.

2. The combination, with the screw-plug A, having vent-apertures a^3 a^4 , projecting nib a^5 , cylindrical collar a^6 , and projecting flange at its inner end, of the valve-piece B and shield-piece C, as and for the purpose set forth.

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Witnesses:

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