M. WARREN.

VALVE.

APPLICATION FILED AUG. 5, 1907.

960,605. Patented June 7, 1910.

Fig. 1.

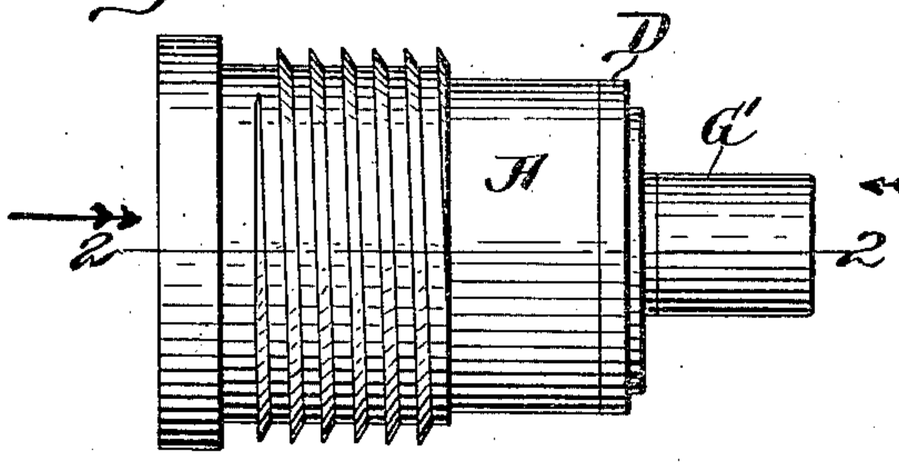


Fig. 8.

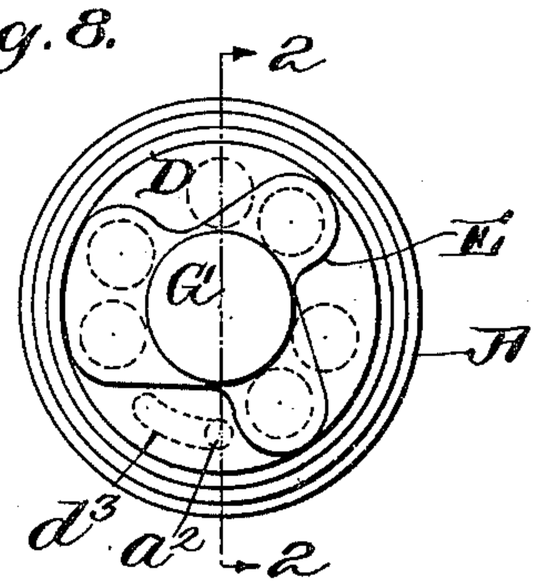


Fig. 2.

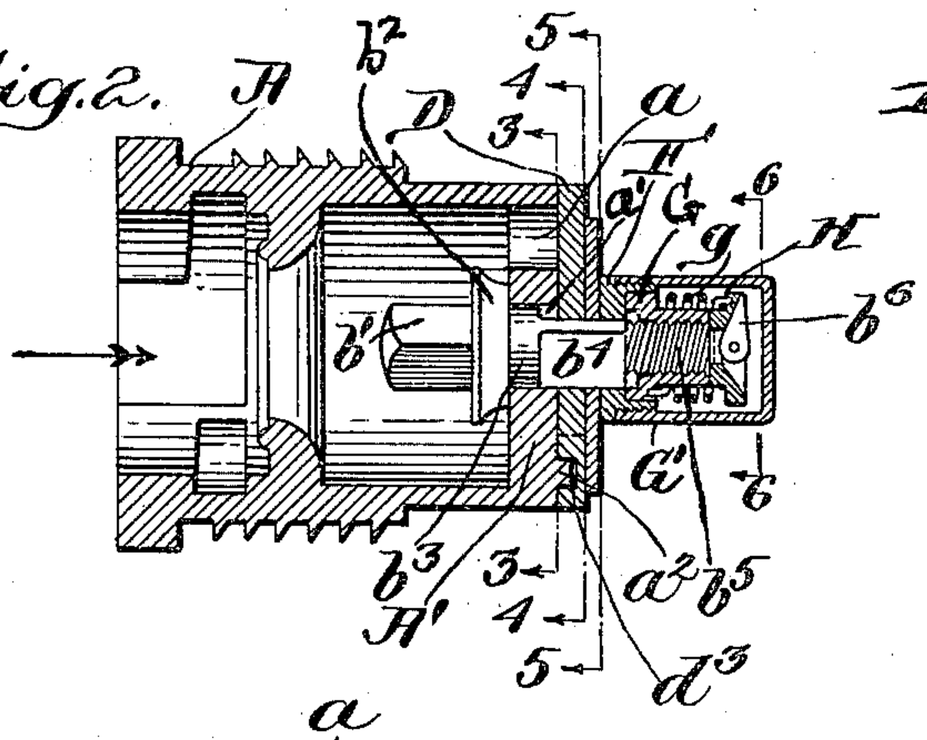


Fig. 7.

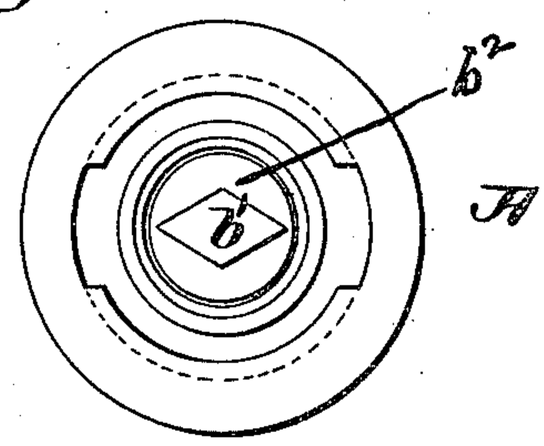


Fig. 5.

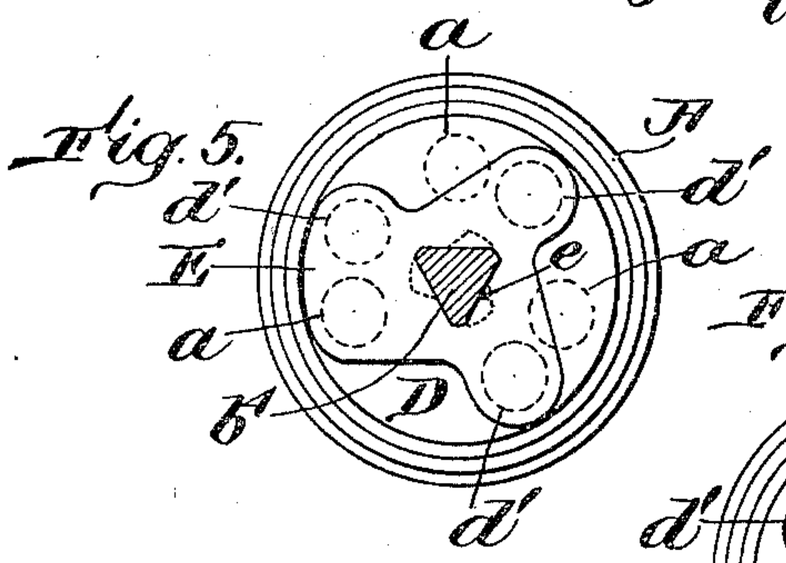


Fig. 4.

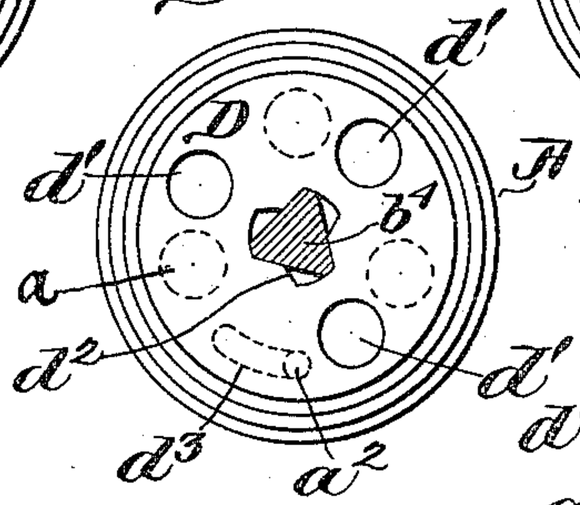


Fig. 6.

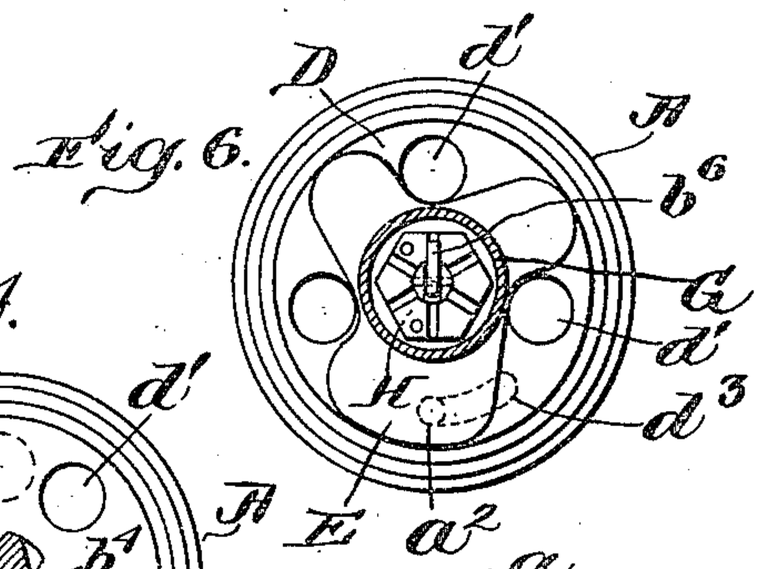


Fig. 9.

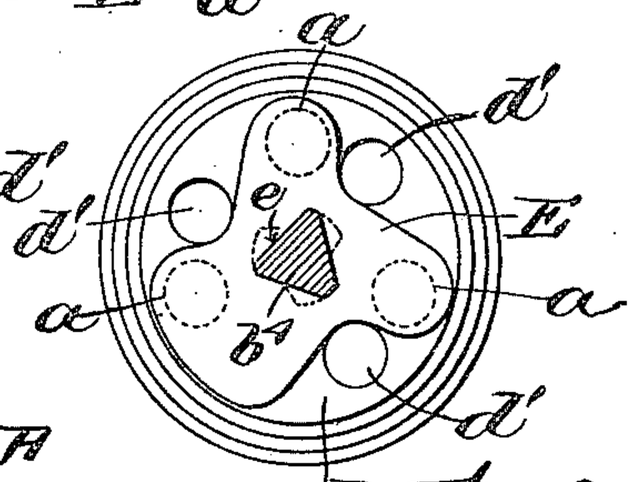
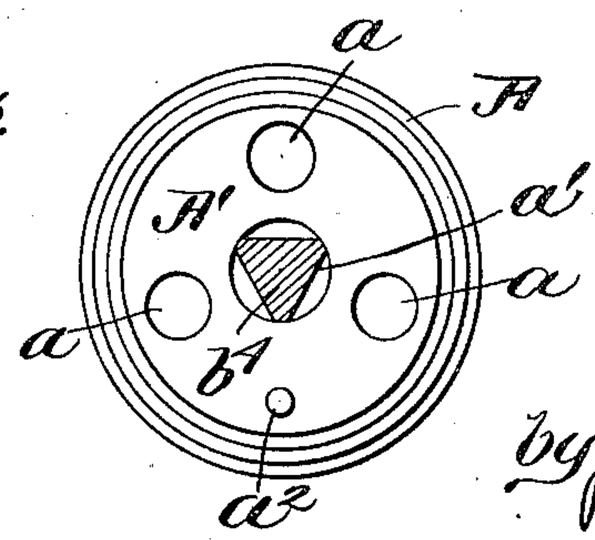


Fig. 3.



Witnesses:

Josephine H. Ryan

Charles D. Woodbury

Inventor:

Marion Warren

by Roberts & Mitchell,

Attorneys.

UNITED STATES PATENT OFFICE.

MARION WARREN, OF ROCHESTER, NEW YORK.

VALVE.

960,605. Specification of Letters Patent. Patented June 7, 1910.

Application filed August 5, 1907. Serial No. 387,183.

To all whom it may concern:

Be it known that I, MARION WARREN, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Valves, of which the following is a specification.

As is well known, kegs, casks, and the like, such as are used by brewers of ale or beer, are made with a tap hole in the head and side, through which the package may be filled by the brewer and through which its contents are drawn off by the consumer. It has been customary to fix a valve in the tap hole, which could be used by the brewer in filling the package and by the consumer to control the discharge of the contents of the package. This valve has been made up of a body, threaded upon its exterior, in which were mounted all the moving parts, so that the entire contrivance was self contained and might be removed by removing the body in which the parts were mounted.

It is the object of my invention to produce an improved valve for the purposes above described.

Beer casks as is well known are commonly pitched upon their interiors from time to time, melted pitch being placed within the cask or barrel and the barrel rapidly revolved to deposit the pitch in an even layer over the entire interior of the barrel. In this operation the valve which is used to close the tap hole becomes covered with the liquid pitch which hardens and frequently cements the parts of the valve together so that considerable force is required to cause them to open, and in the operation, not infrequently the valve is broken. Furthermore, when the valve is opened small particles of hardened pitch occasionally find their way between the working surfaces of the valve and in the further operation of the valve these small particles pit and score the surfaces of the valve to such an extent that the valve finally ceases to be gas tight and permits the escape of the gas with which the beer, ale or other liquid is charged, necessitating the substitution of a new valve or a regrinding operation. It is obviously desirable that this result should be prevented as far as possible and it is one of the objects of my invention to provide a valve which has a double seat and in which the operating faces of the valve are so protected that the fine particles of pitch cannot find their way between the opposed valve surfaces.

In the accompanying drawings: Figure 1 shows my valve completely assembled, Fig. 2 shows a longitudinal section on line 2—2 of Figs. 1 and 8; Fig. 3 shows a section on line 3—3 of Fig. 2, Fig. 4 shows a section on line 4—4 of Fig. 2, Fig. 5 shows a section on line 5—5 of Fig. 2, Fig. 6 shows a section on line 6—6 of Fig. 2 the valve being shown in its open position, Fig. 7 shows an interior view of the casing looking in the direction of the double arrows in Figs. 1 and 2, Fig. 8 shows an end view of Fig. 1 looking in the direction of the tripple arrow in Fig. 1 and shows the parts in their closed position, and Fig. 9 is the same as Fig. 5, save that the plate E has been moved.

In the drawings A is the main shell or casing, which is screw threaded upon its exterior in order that it may be screwed into the tap hole and firmly seated in position. In the inner end A′ of this casing are three apertures *a* which form, in use, the passage-ways for the passage of the liquid into or out of the barrel or cask. The inner wall of the casing has also a central aperture *a′* through which passes the stem B this stem at its outer end has an angular portion *b′* with which a socket wrench may engage. Above the section *b′* is a shoulder b^2 which stops the inward movement of the stem B. Above the shoulder b^2 is a cylindrical section b^3 which fills and fits within the aperture *a′*. Above the cylindrical portion is a portion having three faces cut away forming a triangular portion b^4 and above this triangular portion is a screw threaded portion b^5, the screw thread as shown being a left hand thread. This screw threaded portion is preferably of such diameter that the face of the thread does not project beyond the face of the flat portion of the triangular section of the stem. The object of this is to permit of the easy assembling of the various parts of the valve by passing them down over the screw threaded portion to fit upon the angular portion b^4. The extreme inner end of the stem carries a pivoted dog b^6 for an object hereinafter to be described.

Mounted upon the triangular portion of the stem B is a valve plate D having three apertures *d′* spaced about its periphery and a central angular aperture d^2 which fits about the triangular portion of the stem B. The central angular aperture being of such

a shape and design as to permit a movement of rotation of the stem B equal to about one eighth of a revolution before the stem engages the valve plate D and positively moves it about. The surface of the valve plate D which is opposed to the wall A′ of the shell or casing A has a segmental slot d^3 and the opposed wall of the shell or casing has a pin or stop a^2 projecting into this segmental slot, the length of the slot determining the possibility of movement of the valve plate D. Mounted next upon the stem is a plate E having a central aperture *e* which closely fits the triangular portion of the stem B so that the plate E turns with the stem B in either direction there being no play or lost motion, as is the case with the valve plate D. Mounted on the plate E is a washer F, screw threaded upon its exterior surface and above the washer is a nut G engaging the left hand screw thread upon the stem B. At the extreme end of stem B is loosely mounted another washer H. A spiral spring *g* surrounds the nut G, one end being secured in a recess in nut G and the other end in a recess in washer H.

The parts are assembled as shown in Fig. 2 in cross section, the stem B passing through the aperture in the end wall A′ of the casing A, the valve plate D is then secured upon the triangular portion b^4 of the stem, the aperture in valve plate D permitting a certain amount of lost motion upon any revolution of the stem B. The plate E is then fitted upon the stem B the aperture *e* in the plate engaging the triangular portion b^4 of the stem B so that any rotation of the stem B carries with it the plate E. The washer F is then fitted upon the triangular portion b^4 of the stem B and the nut G is screwed upon the screw threaded portion of the stem B until it comes into contact with the washer F and presses all the parts of the valve into close contact. The spring *g* being slipped into place and the washer H placed in position the ends of the spring *g* are engaged with the apertures in the nut G and washer H respectively, as shown in Fig. 2, and the washer H is then turned, carrying one end of the spring *g* with it and putting a tension upon the spring which at its other end relieves itself by turning nut G down upon the stem B. When the proper tension is thus obtained the dog b^6 is turned down into one of the notches of the nut H thus locking nut H in position and holding the spring *g* under tension constantly and tending to press or turn the nut G to bind the various members of the valve closely together. When the assembling is completed as above outlined the cap G′ is screwed in position to protect the various parts.

The mode of operation is as follows: As shown in Figs. 4 and 5 the valve is closed when the stem B is turned contra clockwise, the first movement of rotation of the stem B will in about one eighth of a revolution, uncover the apertures *d′* in valve plate D, thus bringing the wing plate E to the position shown in Fig. 9 and the stem B and valve plate D into the relation shown in Fig. 4. Continued rotation of the stem B contra clockwise will now move the plate D until the apertures *d′* register with the apertures *a* in the wall A′ at which time the stop a^2 will engage the other end of the slot d^3 and the rotation will be determined (see Fig. 6). Upon the closing act the steps will have the same sequence. Rotation of the stem clockwise will first cause the wing plate to cover the apertures *d′* and continued rotation of the stem will then move the apertures *d′* out of register with the apertures *a*.

This construction provides two sets of valve surfaces between which the contained fluid must make its way in order to escape, while owing to the multiplication of valve members, or plates no particles of pitch can ever reach the valve surface between valve plate D and wall A′ since the ports must be open before particles can be carried in and when the ports are open the particles will be carried out with the escaping liquid.

It will be obvious that since the valve plates are moved successively and not simultaneously, the amount of force necessary to be employed in order to overcome the friction or the cementing of the valve parts will never exceed what is necessary to move one of the parts.

What I claim is:

1. A valve comprising a body made with a port therethrough, a stem mounted in said body; a valve plate mounted upon and engaging said stem with provision for partial relative rotation of said stem and valve plate and having a port therethrough; another valve plate mounted upon the stem and secured thereto and means to hold the valve plates in operative position, all organized and operating substantially as described.

2. A valve comprising a body made with a port therethrough; a stem mounted in a cylindrical perforation in said body and having a cylindrical section to fill said perforation and an angular section extending outside the body; a valve plate loosely mounted upon the angular section of the stem and loosely connected to the body by a pin and slot connection; another plate secured to rotate with the stem; and means to hold the valve plates in operative position, all organized and operating substantially as described.

3. A valve comprising a body made with a port therethrough; a stem mounted in a cylindrical perforation in said body and having a cylindrical section to fill said perforation, an angular section extending outside said body and a screw threaded section

above the angular section; a valve plate mounted loosely upon the angular section of the stem and loosely connected to the body by a pin and slot connection; another valve plate secured upon the angular portion of the stem to rotate with the stem; a nut upon the screw threaded portion of the stem, a spring surrounding the stem and one end engaging with the nut; a washer above the spring engaging the other end of the spring and means to lock the washer to the stem after it has been rotated to put tension upon the spring all organized and operating substantially as described.

Signed by me at Rochester, New York, this 29th day of July, 1907.

MARION WARREN.

Witnesses:

H. STANLEY FALKNER,

WM. F. STRANG.