(No Model.)

A. O. FITZ-GERALD.

CAN VALVE.

No. 346,033. Patented July 20, 1886.

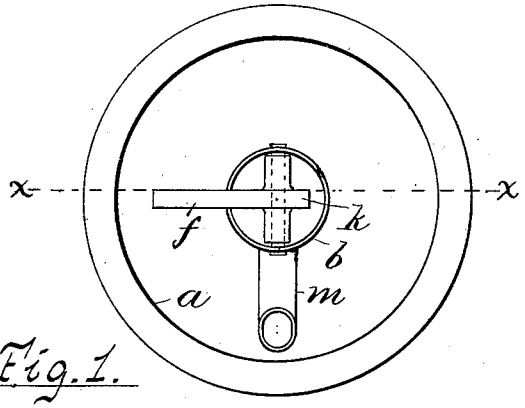


Fig. 1.

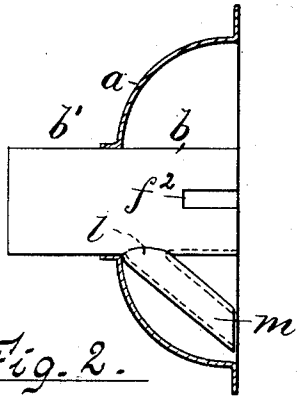


Fig. 2.

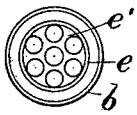


Fig. 4.

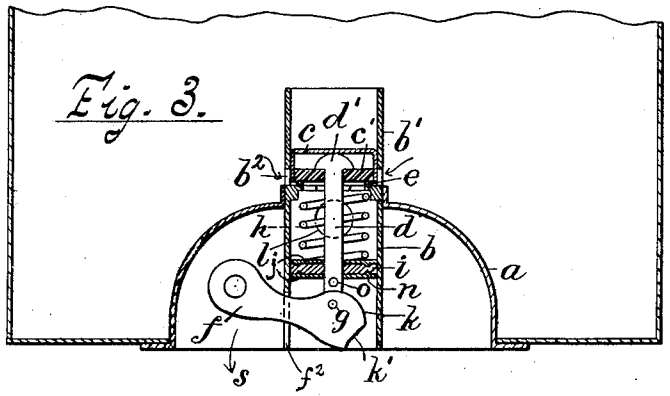


Fig. 3.

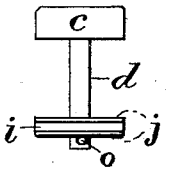


Fig. 5.

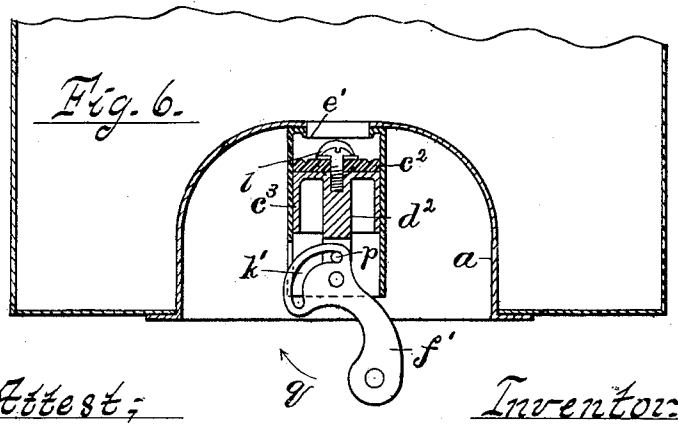


Fig. 6.

Attest;

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UNITED STATES PATENT OFFICE.

A. OGDEN FITZ GERALD, OF NEWARK, NEW JERSEY.

CAN-VALVE.

SPECIFICATION forming part of Letters Patent No. 346,033, dated July 20, 1886.

Application filed October 15, 1885. Serial No. 179,929. (No model.)

To all whom it may concern:

Be it known that I, A. OGDEN FITZ GERALD, a citizen of the United States, residing in Newark, Essex county, New Jersey, have invented certain new and useful Improvements in Can-Valves, fully described and represented in the following specification, and the accompanying drawings, forming a part of the same.

My improvements relate to that class of can-valves which is inserted in a cup within the side of the can, so as not to present any projection therefrom when the valve is closed; and they consist, first, in the means for moving the valve-stem longitudinally to or from the valve-seat; secondly, in the means for preventing leakage at the outer end of the valve-chamber; and, thirdly, in an improved construction for the valve seat and casing.

In the drawings, Figure 1 represents a front view of the valve and its supporting-cup detached from the can A. Fig. 2 is a side view of the same with the cup in section. Fig. 3 is a plan view of the same, on line *x x* in Fig. 1, including a part of the can A. Fig. 4 is a rear view of the chamber and valve-seat shown in Fig. 3. Fig. 5 is a side view of the valve-stem, valve, and packing detached from the chamber; and Fig. 6 is a section similar to Fig. 3, showing an alternative construction for the actuating-lever.

Referring to Figs. 1 to 5, inclusive, which show a single construction, *a* is the cup; *b*, the valve-chamber; *c*, the valve-box; *c'*, the valve proper; *d*, the valve-stem; *d'*, its button-head; *e*, the annular valve-seat; *e'*, the openings therein; *f*, the valve-lever; *g*, its pivot; *h*, the valve-spring; *i*, the stem-packing, and *j* the washers clamping the same. The annular valve-seat projects inward, so that the fluid-pressure in the can operates to hold the valve upon its seat; and the valve is also pressed upon its seat by the spring inserted within the chamber at the front of the valve-seat, and pressing upon the inner side of the washers *j*, through which the pressure is transmitted to the valve-stem by a pin, *o*, inserted in the latter in front of the washers. The spring and fluid pressure thus operate effectually to hold the valve to its seat; and the means for opening the valve consists in a cam, *k*, formed upon the inner end of the lever *f* and pressing against the outer end of the valve-spindle, a notch, f^2, being formed in one side of the chamber at its outer end to admit the lever *f* when pushed in. The valve is shown resting upon the seat *e* with the actuating-lever pushed within the cup, and the cam-face being formed eccentrically to the pin *g*, it is obvious that the turning of the lever upon the pin may serve to thrust the valve-stem inward and push the valve from its seat. An extension of the valve-chamber is formed in the rear of the valve stem at *b'*, and holes b^2 are formed in the same near the edge of the valve, thus serving to strain the fluid and preventing its access to the valve-seat, except through such holes. The valve-seat also operates as a strainer, being similarly perforated, as at *e'* in Fig. 4. An aperture, *l*, is formed in the bottom side of the chamber in front of the valve-seat to discharge the fluid into the nozzle *m*, and to prevent the fluid when admitted into the chamber from escaping at the front end thereof a packing-disk, *i*, of leather or other material, is fitted tightly around the valve-stem to the walls of the chamber, and clamped between washers *j*, having annular ridges *n* arranged in contact with the leather to indent and expand the latter, and thus prevent the passage of fluid between any of the surfaces. The packing disk and washers are firmly clamped between the pin *o* and the front end of the spring *h*, and are thus fixed to the stem, and are therefore moved inward with the valve-stem when the valve is opened by turning the lever *f* in the direction indicated by the arrow *s*. To hold the valve open automatically, the highest part of the cam-face is flattened off to form a cam-seat, *k'*, and when such cam-seat is turned in contact with the end of the stem, the spring-pressure has no tendency to turn the cam or hand-lever around. The valve *c'* is preferably formed of lead, and to enable it to seat perfectly upon the annular ridge *e*, I attach the valve-stem to it with a swivel-joint, by inserting the stem through a loose hole in the center of the valve and expanding the stem beyond the valve into a head or button, *d'*. To prevent the entrance of fluid around such loosely-fitted valve-stem, the button is covered by a valve box or shell, *c*, stamped to fit over the entire rear of the valve and soldered around its rim, thus preventing access of fluid to any part of the valve

outside the annular seat. In the construction just described the spring holds the valve normally upon the seat, and the cam-face upon the lever serves to compress the spring and push the valve inward; but in Fig. 6 I have shown a construction in which no spring is used, but the cam serves not only to actuate the valve in both directions but to press it firmly upon its seat when closed. In this construction the annular ridge upon the valve-seat e' faces outward, and the valve is formed by clamping a leather or lead disk, c^2, against a plunger, c^3, which is formed upon the inner end of the valve-stem d^2. The outer end of the stem is slotted or forked to admit the cam, and is provided with a transverse pin, p, and the inner end of the lever f' is formed with a cam-slot, k', fitted to the pin p, and adapted to move the pin and the attached valve-stem in opposite directions as the lever is turned within the cup or pulled outward, as shown in the drawings. When thus pulled outward, the rim of the cam-slot acts to lift the valve from its seat, and to permit the discharge of fluid through the aperture l into the nozzle m.

The cam-slot is formed to jam or lock the valve upon its seat when the lever is pushed within the cup in the direction indicated by the arrow q. The radius of the cam-lever being considerably greater than that of the cam, the operator is able to move the lever and actuate the valve-stem with much less exertion than if his force were applied directly to the valve-stem, and from the above description it will be seen that the invention consists, essentially, in pivoting the cam-lever transversely at the outer end of the valve-chamber, so that it may be accessible from the outside of the cam and be pushed or turned within the cup when the valve is closed.

Although the seat is shown in Fig. 3 turned toward the inside of the can and the valve pressed thereon by the fluid, I do not claim such construction herein, as I have already done so in my previous application, No. 157,325; but I am not aware that any can-valve has been formed of lead or swiveled upon the end of the stem, as shown in my present application, or actuated by the cam-lever pivoted at the front end of the valve-chamber in the manner shown herein.

Although the slotted cam (adapted to press the valve upon its seat without the use of any spring) is only shown herein in connection with a valve-seat that is turned outwardly, I do not limit myself exclusively to such an arrangement, as it is obvious that the cam-slot would operate just as effectively to pull the valve against an inwardly-turned seat like that shown in Fig. 3. It will therefore be understood that the cam may be constructed to either push or pull the valve-stem to open the valve, and that the valve may be arranged either inside or outside of the seat, and that the cam may be used to hold the valve to such seat, either with or without the assistance of a spring.

What I claim herein is, therefore—

1. In a can-valve, the combination, with a valve-chamber secured within a cup or recess and a valve having a valve-stem longitudinally movable therein, of a cam pivoted across the front of the chamber in contact with the end of the stem, and provided with a hand-lever adapted to turn within the cup when the valve is closed, substantially as and for the purpose set forth.

2. In a can-valve, the combination, with the cup a and the chamber b, secured therein, of a valve-seat upon the inner end of the chamber, a valve seated thereon with its stem projecting toward the front end of the chamber, a packing-disk affixed to the stem near its front end, a spring inserted between the valve-seat and the said disk, a cam pivoted across the front of the chamber in contact with the valve-stem, and a hand-lever for turning the cam to press the stem inward when the lever is pulled outward, substantially as herein set forth.

3. In a can-valve, the combination, with the cup a and the chamber b, secured therein, of a valve-seat upon the inner end of the chamber, a valve seated thereon with its stem projecting toward the front end of the chamber, a packing-disk affixed to the stem near its front end, a spring inserted between the valve-seat and the said disk, a cam pivoted across the front of the chamber in contact with the valve stem, a hand-lever for turning the cam to press the stem inward, a notch in the side of the chamber to admit the lever within the cup, and a cam-seat adapted to lock the valve open, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

A. OGDEN FITZ GERALD.

Witnesses:

THOS. S. CRANE,

L. LEE.