J. H. DERBY.

TELLTALE.

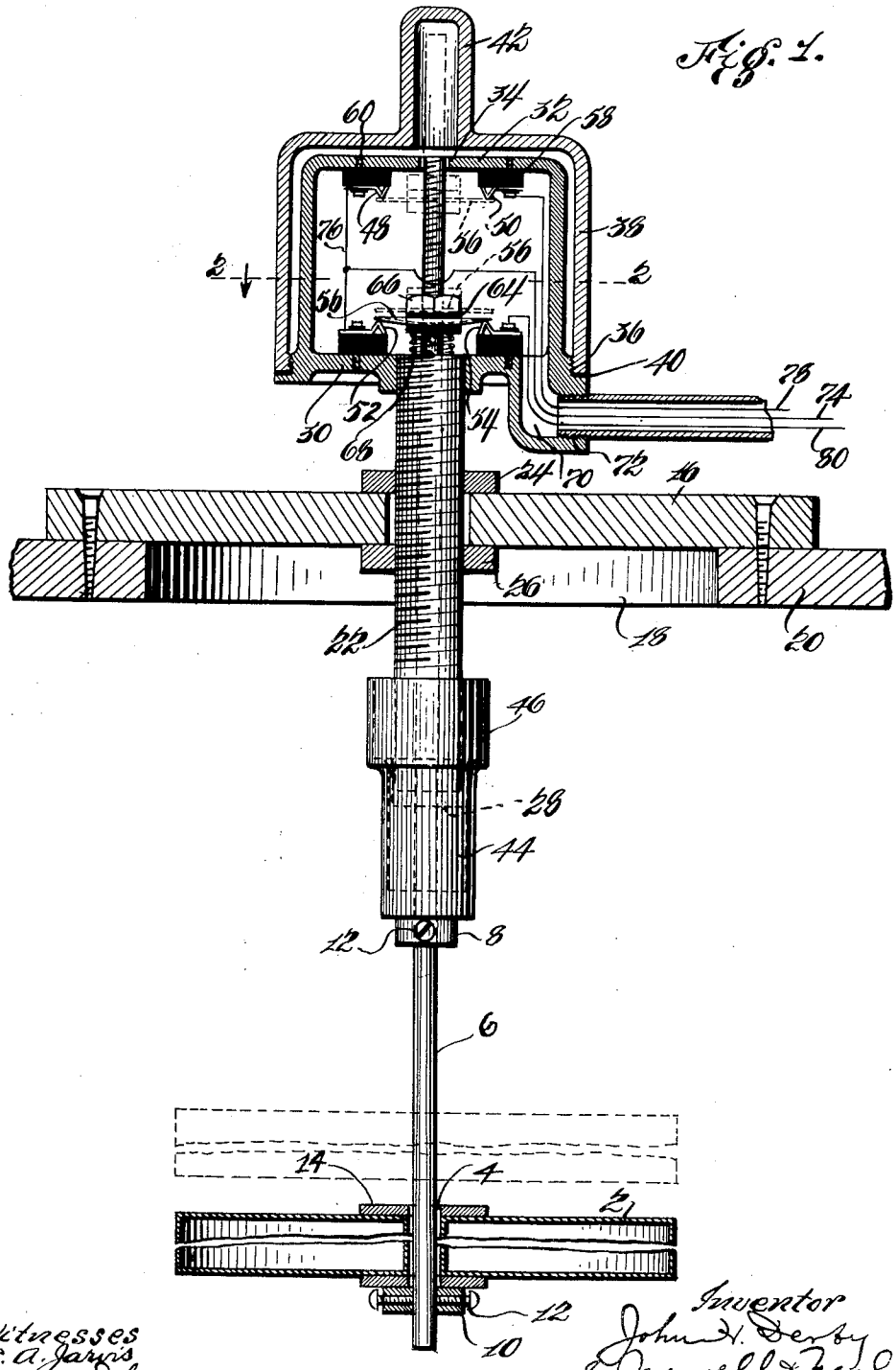
APPLICATION FILED DEC. 7, 1915.

1,244,962.

Patented Oct. 30, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
E. A. Jarvis
A. Dorey Spencer

Inventor
John H. Derby
by Newell & Reid
attorneys

J. H. DERBY.

TELLTALE.

APPLICATION FILED DEC. 7, 1915.

1,244,962.

Patented Oct. 30, 1917.

2 SHEETS—SHEET 2.

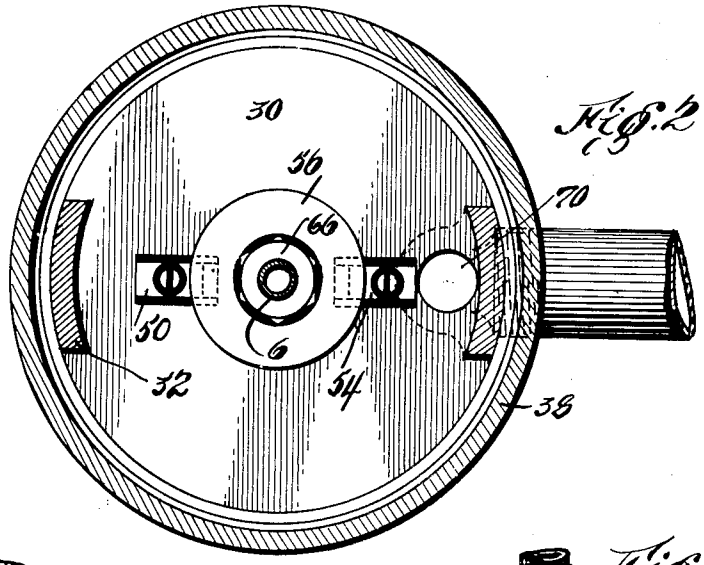


Fig. 2.

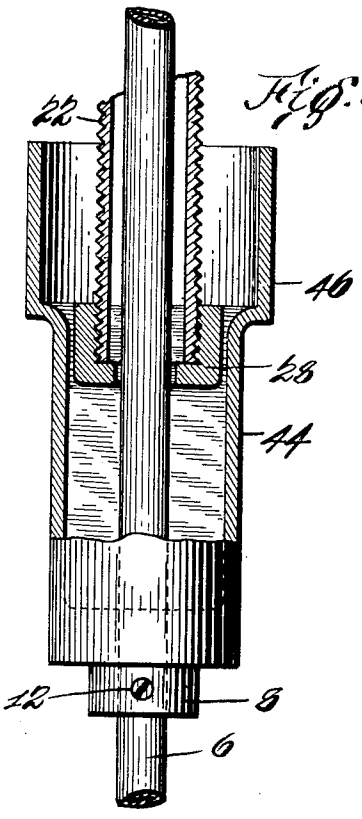


Fig. 3.

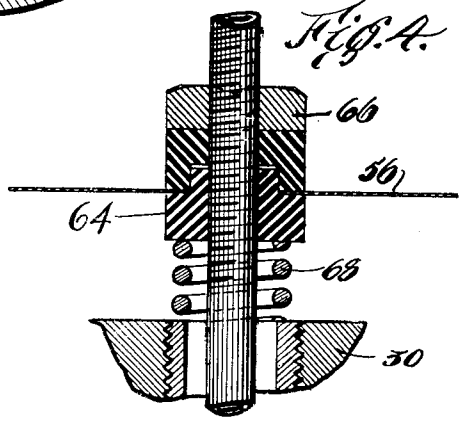


Fig. 4.

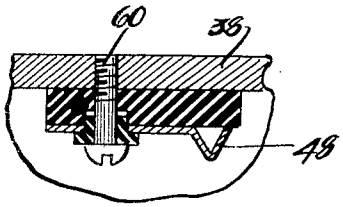


Fig. 5.

Witnesses
E. A. Jarvis
W. Dorey Spencer

Inventor
John H. Derby
by Newell & Neal
attorneys.

UNITED STATES PATENT OFFICE.

JOHN H. DERBY, OF NEW YORK, N. Y.

TELLTALE.

1,244,962. Specification of Letters Patent. Patented Oct. 30, 1917.

Application filed December 7, 1915. Serial No. 65,445.

To all whom it may concern:

Be it known that I, JOHN H. DERBY, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Telltales, of which the following is a clear, full, and exact description.

This invention relates particularly to devices for indicating or controlling the height of a liquid in a reservoir, tank or other receptacle or storage means, and is herein shown as embodied in a telltale for tanks. It will be apparent, however, that some of the novel features of the invention are of general applicability, and it will therefore be understood that the invention is not restricted to its illustrated embodiment or uses.

In tank telltales, as heretofore constructed, little provision has been made for protecting the mechanism at the tank from the vapors and gases rising from the tank or even from the corroding elements outside the tank. One object of the present invention is to provide for the proper protection of the mechanism of a telltale, and particularly to protect the telltale mechanism without interfering with the sensitiveness or general efficiency of the telltale.

Another object of the invention is to provide an improved telltale of the type which can be utilized to convey the indication to, or to effect the control at, a distance from the tank.

Important features of the invention are the novel means embodied in the telltale for bridging the terminals of an open electric circuit by which the indicating or controlling impulse is transmitted to the distant point, the novel means for insuring an effective closing of the circuit at the proper time, and the novel organization by which compactness is obtained without limitation of the range of indication or control.

Other objects and important features of the invention will appear from the following description when considered in connection with the accompanying drawings, in which—

Figure 1 is a vertical section of a telltale embodying the present invention;

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1;

Fig. 3 is a sectional detail of the means for sealing the lower end of the tubular guide;

Fig. 4 is a detail section of the connection between the telltale rod and the contact bridge; and

Fig. 5 is a detail of one of the contacts.

The illustrated telltale comprises a float 2 which, as shown, is a hollow, annular metallic body having a central opening 4 in which the float-operated rod 6 is received, the float fitting loosely upon said rod and being adapted to move freely between upper and lower collars 8 and 10, respectively, adjustably confined upon the rod 6 by set screws 12 or other suitable means. Washers 14 may be provided upon the upper and lower sides of the float 2 to prevent injury to the float as it is moved into engagement with the collars 8 and 10. The collars 8 and 10 are preferably located upon the rod 6 near the upper and lower desired level limits of the liquid, the float moving freely over the rod between the collars, and the rod being adapted to move with the float a slight distance beyond the limits of the relative movement of the float and rod.

Extending through a cover plate 16, which covers an opening 18 in the tank cover 20, or through any other suitable support bridging the walls or the sides of an opening in the tank or reservoir, is a tubular guide 22 for the rod 6, this guide being threaded upon its exterior and having lock nuts 24 and 26 adapted to clamp the guide in different adjusted positions in the cover plate 16. Threaded upon the lower end of the guide 22 is a rod centering cap 28, the guide 22 having an inside diameter considerably greater than that of the rod 6. It will be noted that the rod centering cap 28 allows limited lateral movement of the rod 6 to prevent binding which might interfere with the proper indicating action of the guide. Threaded upon the upper end of the rod is a support 30 for electrical contacts or circuit terminals, this support having an arched portion 32 having a rod centering guide opening 34. The base portion of the support 30 has an annular shouldered portion 36 threaded to receive a covering and sealing cap 38, a gasket of oiled felt or other suitable material being confined between the lower edge of the cap 38 and the shoulder. The illustrated cap has an extension 42 provided with a socket into which the upper end of the rod 6 projects when the rod moves toward its upper limit of movement.

The cap 30 serves to seal the upper end of the tubular guide 22 and to protect the indicating mechanism from corrosion or other injury, and in order to prevent the passage of vapors or gases from the tank up through the tube 22 into the interior of the cap 38, means is provided for also sealing the lower end of the tubular guide 22. The illustrated means comprises a receptacle 44 of an internal diameter such that it may receive the capped lower end of the guide, this receptacle surrounding and being carried by the rod 6. Within the receptacle 44 is oil or other suitable sealing liquid, the level of the oil in the position of the parts shown in Fig. 1 being preferably substantially at the top of the reduced portion of the receptacle 44. Above this reduced portion the receptacle is enlarged, as shown at 46, to provide for the displacement of the oil by the tube as the rod moves toward its upper limit of movement. The receptacle 44 is preferably adjustable along the rod 6 with the collar 8.

The illustrated means for transmitting indicating or controlling impulses to a distance from the telltale proper comprises upper terminals 48 and 50 of one electrical circuit, and lower terminals 52 and 54 of another electrical circuit, each of these terminals being preferably made, in the form shown, of resilient material such, for example, as spring bronze, whereby they may yield when engaged by the circuit completing bridge 56. It will be noted that these contacts are spaced from their insulating supports 58 at their inner free ends to permit the yielding action above referred to. Screws 60 passing through openings in the contacts and in the insulating blocks 58, and threaded into the support 30, confine the contacts and blocks in position on the support. The circuit completing bridge 56 is also preferably formed of some flexible resilient material such as spring bronze, so that it may effect a wiping engagement with the circuit terminals, the bridge member being made in the form of a circular disk having a central opening supported upon the shouldered portion of a cylindrical piece of insulating material 62, threaded upon the rod 6 and clamped between the piece 62 and a correspondingly recessed piece 64. A lock nut 66 serves to confine the insulating blocks 62 and 64 in adjusted position upon the rod 6.

A helical spring 68 is so located upon the upper end of the tubular guide 22, that the insulating block 62 rests upon this spring when the rod is in its lowermost position, the spring 68 being of such strength that it will support the rod 6 and attached parts at such an elevation that the bridge member 56 will be out of engagement with the contacts 52 and 54 when the float 2 is not resting upon the collar 10. The spring is not strong enough, however, to support the float in addition to the rod and its attached parts, and therefore when the liquid level is so low that the float rests upon the collar 10, the added weight of the float will compress the spring 68 sufficiently to bring the contact engaging bridge 56 into engagement with the contacts 52 and 54, thus completing the circuit of which these contacts are terminals. When the liquid level rises sufficiently to raise the float 2 out of engagement with the collar 10, the spring 68 will break the circuit through 52, 56, 54, and when the liquid level has risen until the float has been brought into engagement with the upper collar 8, and the rod 6 has been raised to bring the bridge 56 into engagement with the contacts 48 and 50, then the circuit will be completed of which the contacts 48 and 50 are terminals.

To provide for leading in the wires to form the upper and lower circuits, the support 30 is preferably provided with a conduit 70 threaded at 72 to receive the end of an ordinary metal conduit pipe. In the event that a conduit pipe is not used, the space surrounding the leading in wires will preferably be packed with some material to prevent the entrance of moisture or corroding gases into the interior of the cap. In the illustrated circuit the battery wire 74 runs to the contact 52, and is connected to the upper contact 48 by a wire 76. The leading in wire 78 of the upper circuit runs to the contact 50, and the leading in wire 80 of the lower circuit runs to the contact 54.

By providing resilient contacts of the illustrated shape and mounted in the illustrated manner, and by providing a flexible resilient disk unconfined at its peripheral edge to serve as the bridge piece for completing the circuits through the upper and lower pairs of contacts, effective completion of the circuits is insured, the disk being mounted so that it may dish in either direction whereby the engagement with the contacts is a wiping engagement and clean, bright, engaging surfaces are maintained. In order further to insure good contact, the contacts and disk are preferably silver-plated. The rod 6 is free to turn about its longitudinal axis, and the disk 56 is of such diameter that it will serve to bridge the contacts in any angular position to which the rod may be turned about its axis.

What I claim as new is:—

1. In a telltale, a float, a float-operated rod, a tubular guide for said rod in which it is freely movable lengthwise, and a liquid seal for said guide.

2. In a telltale, a float, a float-operated rod, a tubular guide for said rod in which it is freely movable lengthwise, and a liquid seal for said guide carried by said rod.

3. In a telltale, a float, a float-operated rod, a tubular guide in which said rod is freely movable lengthwise, and means for sealing the two ends of said tubular guide.

4. In a telltale, a float, a float-operated rod, a tubular guide in which said rod is freely movable lengthwise, and means for sealing the two ends of said tubular guide, one of said means being carried by said rod and the other by said guide.

5. In a device of the class described, a float, a float-operated rod, a tubular guide for said rod of a diameter somewhat greater than that of said rod, a centering guide for said rod upon each end of said tubular guide, and a seal for each end of said tubular guide.

6. In a device of the class described, a float, a float-operated rod, a tubular guide for said rod of a diameter somewhat greater than that of said rod, a centering guide for said rod upon each end of said tubular guide, and a seal for the corresponding end of the tubular guide arranged to cover each centering guide.

7. In a device of the class described, a float, a float-operated rod, a tubular guide for said rod in which it is freely movable lengthwise, and a liquid seal for the lower end of said guide carried by said rod and movable over the outside of said guide.

8. In a device of the class described, a float, a float-operated rod, a tubular guide in which said rod is freely movable lengthwise and has provision for limited free lateral movement, and a seal for the lower end of said tubular guide carried by said rod and movable relatively to said guide both longitudinally and laterally.

9. In a device of the class described, a float, a float-operated rod, a flexible resilient metal disk surrounding and carried by said rod, and a pair of electrical contacts projecting into the path of movement of said disk.

10. In a device of the class described, a float, a float-operated rod, upper and lower pairs of electrical contacts, a bridge carried by said rod for engaging and completing the circuits through said respective pairs of contacts, said bridge comprising a flexible metal disk surrounding said rod and the contacts of each pair being spaced to permit said disk to dish as said rod moves said disk into contact-engaging position.

11. In a telltale for tanks, the combination with the tank cover, of a float, a float-operated rod, a tubular guide for said rod adapted to project both above and below the tank cover, and means adjustable along said guide for engaging opposite sides of said cover and locking said guide rigidly in adjusted position thereon.

Signed at New York city, N. Y., this 2" day of December, 1915.

JOHN H. DERBY.

Witnesses:
BEATRICE MIRVIS,
CHAS. CLARK.