

F. C. GILFILLAN.
Low Water Indicator and Alarm.

No. 201,772.

Patented March 26, 1878.

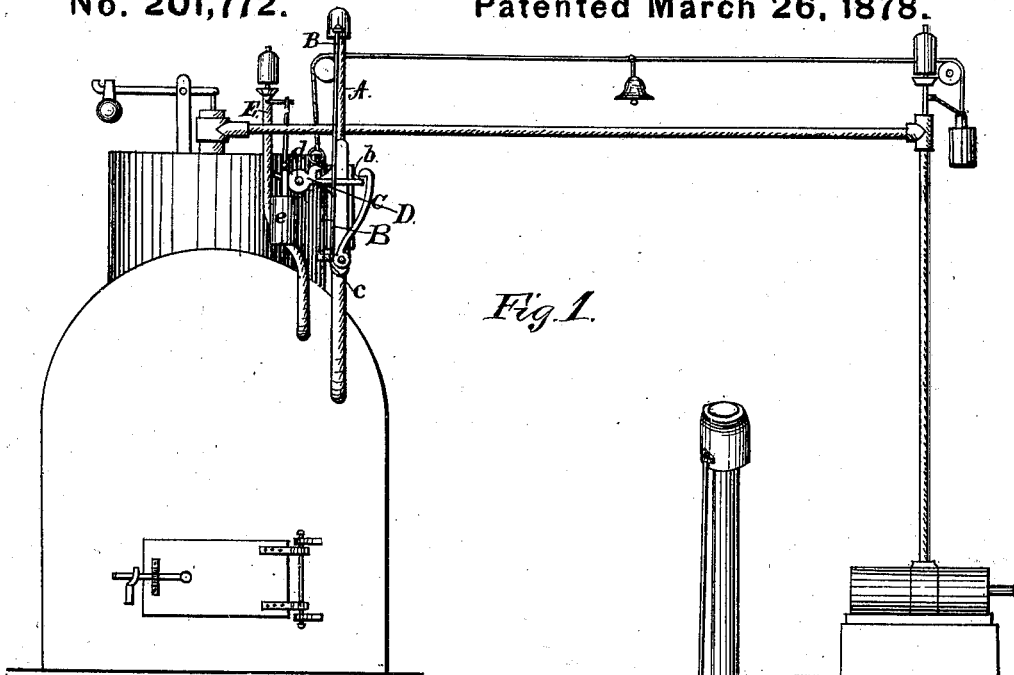


Fig. 1.

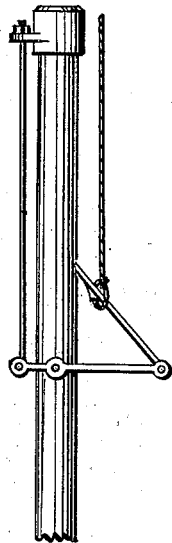


Fig. 3.

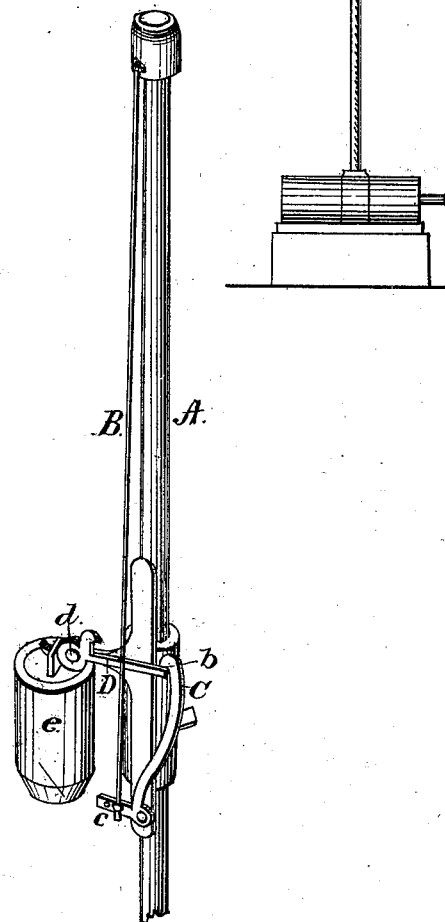


Fig. 2.

Attest:
L. W. Mills
N. P. Low

Inventor:
Frederick C. Gilfillan

UNITED STATES PATENT OFFICE.

FREDERIC C. GILFILLAN, OF ST. PETERSBURG, PENNSYLVANIA.

IMPROVEMENT IN LOW-WATER INDICATOR AND ALARM.

Specification forming part of Letters Patent No. **201,772**, dated March 26, 1878; application filed March 20, 1878.

To all whom it may concern:

Be it known that I, FREDERIC C. GILFILLAN, of St. Petersburg, in the county of Clarion and State of Pennsylvania, have invented certain new and useful Improvements in Low-Water Indicator and Alarm; and I do hereby declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of inventions known as "low-water indicators and alarms," and has for its object the indication of low water in the boiler at any desired or fixed water-line that may be determined upon. The alarm may be sounded or low water indicated at the location of the boiler, or any reasonable distance from it—as, for instance, at oil-wells, where the engineer is required at times to be some distance from the boiler, attending to his engine, which is generally a considerable distance off, and, as will be readily seen, it is applicable where the boiler may be off from a building, and the engineer in any story or room thereof, or may be so arranged as to alarm or indicate near the engine, or to close the throttle-valve of the engine, sound a bell or other analogous devices, which will readily suggest themselves.

My invention consists in the arrangement of expansion-pipes, rods, and levers with their weights and attachments, as will hereinafter more fully appear.

Figure 1 in the drawings represents a front elevation, in perspective, of a boiler and its steam-dome, the cylinder of an engine, with their connecting-pipes, and with my improved apparatus attached thereto. Fig. 2 shows a vertical section, more particularly illustrating the adjustable sleeve and arm, to which the horizontal hooked lever is journaled. Fig. 3 represents a modification of my improved indicating apparatus, on which the horizontal lever is connected to a rod, the end of which is fastened in a notch in the expansion-tube. As will be readily seen, when the tube expands, the rod is released and the alarm is sounded.

A in the drawings shows an expansion-tube,

closed at its upper end in any approved manner; B, a rod, attached at its lower end to a short lever, *c*. This lever may be arranged to give more or less throw to the rod, as the expansion of the tube may require.

C is a larger lever, arranged at nearly right angles to lever *c*; both of which may be made in one piece, or one rigidly attached to the other. This lever C is provided at its upper end with a notch or catch, which clutches the end of a horizontal lever D, the fulcrum of which is arranged on an arm, *d*, projecting from and cast to an adjustable sleeve surrounding and supported by the expansion-tube A. This sleeve is capable of being raised and lowered on said tube, as may be desired.

Upon the other end of the horizontal lever C are fixed two or more hooks or fastenings, by which a weight, *e*, is hung, for the purpose of more suddenly opening the alarm-valves, ringing bells, or giving any other alarm to which it may be attached.

It is preferable to give the chain wire, &c., to which the weight is attached a little slack, so that when the weight drops, it will create a sudden jar, and thus simultaneously pull the connections to which the various alarm devices are attached.

E represents a steam-pipe, the lower end of which communicates with the steam-space of the boiler, and at its upper end to a whistle. The operating-valve lever of this whistle is attached to a cord, to which is hung a weight, *e*. Said weight is also hung on one of the hooks before described, so that when the tube expands, detaching the tripping device, the weight falls, producing the result before alluded to.

The same operation or movement is given to the cord running over the anti-friction grooved wheels, said cord being connected to a whistle or alarm near the engine, or may be attached to the throttle-valve with good results.

Operation: When the boiler is properly filled with water, water also fills the tube A, and no alarm will be given while the water is at the required level; but when the water falls below that point the water in the expansion-tube will fall out, when steam will rush in, and immediately expand the tube, causing rod B to act on lever *c*, releasing lever D. The weight then

falls, when it operates all the alarm devices attached to it, thus indicating the dangerous condition of the water in the boiler.

It will be observed that while all the parts of this apparatus proper are operated by the action of steam, no valves or parts which are liable to corrode are exposed to the steam, such as stuffing-boxes and other frictional parts so common in other devices; and while I show my apparatus attached to whistles, it is just as applicable to any other alarm or indicating devices in which no valves at all are used.

The adjustable sleeve, with its attachments, levers, weights, &c., is capable of being turned on the expansion-tube, so that it may be made to face any position. The arms on the sleeve may be cast upon the right or left, as may be required; or two or more arms may be cast on said sleeve.

I am aware that alarm devices are well known, and that the principle of expansion or

contraction is not new, and do not therefore claim such; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a low-water indicator, the combination of the expansion-tube A, rod B, double lever C *c*, and hooked horizontal lever D and weight *e*, constructed and operating as described.

2. The expansible tube A, adjustable sleeve and arm *d*, double lever C *c*, hooked horizontal lever D, rod B, and weight *e*, and alarm attachments, combined and arranged to operate in the manner and for the purpose set forth and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FREDERIC C. GILFILLAN.

Witnesses:

C. E. WEIBB,
JAMES E. WAUGH.