

(No Model.)

A. V. HARTWELL.

PRESSURE GAGE.

No. 324,251.

Patented Aug. 11, 1885.

Fig. 1.

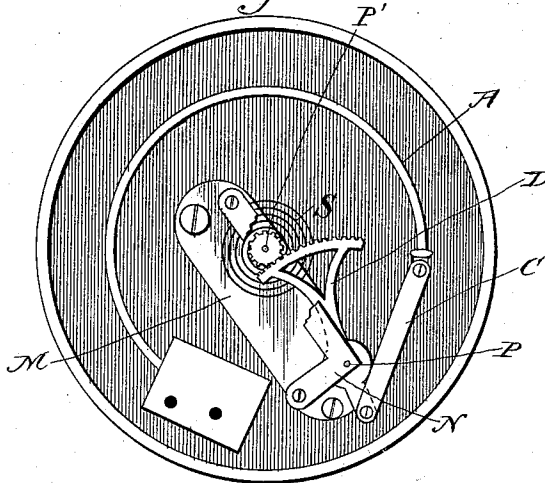
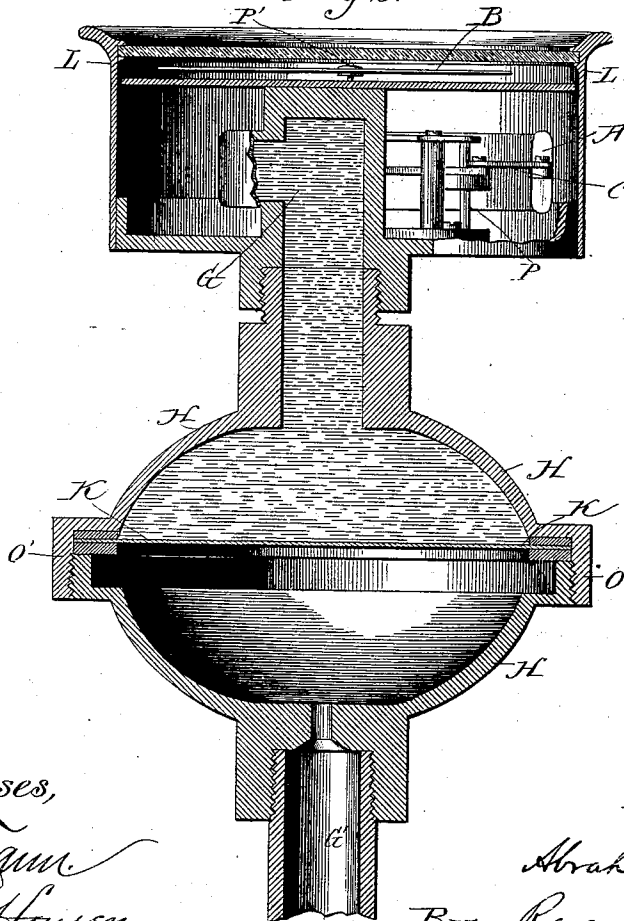


Fig. 2.



Witnesses,

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PRESSURE-GAGE.

SPECIFICATION forming part of Letters Patent No. 324,251, dated August 11, 1885.

Application filed February 7, 1885. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM V. HARTWELL, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Gages, which improvement is fully set forth in the following specification and accompanying drawings.

My improvement can be used upon either a steam or water gage, but is more particularly adapted to a water-gage. It consists in applying mercury, wine, glycerine, or any similar sensitive matter or fluid not easily frozen, between the operating mechanism of the gage and the pressure of the steam or water, in providing a suitable chamber or receptacle for holding such matter or fluid, and in providing a bent metal tube with suitable intermediate connections between it and the index or pointer on the dial-plate.

It is well known that in many of the gages in common use wherein the steam or water is forced into direct contact with the delicate mechanism of the gage a deposit will accumulate in the tubes or other receptacles. Especially is this the case when the water contains much salt or alkali, and in time, if not carefully watched, the gage will become useless, and by reason of not properly indicating the variations of the pressure an explosion may take place. In such gages, by reason of this deposit, they frequently get out of order. I propose to obviate these objections by my improvement and to construct a gage simple in its construction and mechanism, and that will automatically work for an indefinite time.

I do not claim to be the first to construct a gage having mercury or quicksilver placed between the steam or water and the interior of the gage. Such devices are shown in the Patents No. 102,464, of April 26, 1870, to M. E. Campfield, and No. 170,706, of December 5, 1875, to James Burden; but I claim to have invented a new and improved device by which the pressure of the steam or water can be indicated in a less complicated manner and by a more perfect mechanism than is shown in any prior patent.

My invention is designed for use in connection with the well-known Bourdon pressure-gage.

In the accompanying drawings, Figure 1

represents a plan view of the operating mechanism of my invention with the dial-plate of the gage removed. Fig. 2 is a vertical sectional view of the same, and also of the remaining parts of my invention.

H is a cup or chamber made into two parts, securely fastened together at O O.

K is a diaphragm of any suitable material, securely fastened between the two parts of the chamber H.

G is a pipe extending from the chamber H, or it may be an extension thereof.

A is a bent tube firmly secured at its open end to the pipe G, so that there shall be a connection and opening from the chamber H into the bent tube A. This tube hangs suspended above and parallel to the plate or bottom of the casing L, inclosing the operating mechanism of the gage, and its closed end is free to vibrate or oscillate when the mercury or fluid in it is operated upon by the steam or water. This tube A and its attendant mechanism can be placed in any position convenient or desired. I have described it thus as the most convenient way to use it.

C is a connecting-link between the loose or free end of the tube A and the loose end of a segment, D. This segment is pivoted at P, and works into the cog-wheel E on the pivot P'. On this pivot P', I place a spring, S. The index-finger B is also on this pivot P'. The spring S serves, when properly set, to hold the index-finger B at zero or at any other desired point, and, by means of its tension and the tendency of the bent tube to regain its normal position after release of the pressure of the steam or water, keeps the index-finger or pointer at such desired point when the pressure of the steam or water is removed. These several parts C, D, P, P', and S are kept in proper position between the bars M N, the former being securely fastened to the plate or bottom of the casing L. A part of the top bar, N, is broken away to expose the mechanism.

The chamber H may be of any desired shape.

The fluid desired to be used, whether mercury, wine, glycerine, or any similar substance, is first put into that part of the chamber next the gage until it, with the pipe G and tube A, is filled to its utmost, and then confined there-

in by the diaphragm K or a tight valve, or any other mode that will allow the variation of the pressure of the fluid of the water or steam to be communicated through the fluid in the chamber to the operating mechanism of the gage.

I do not wish to be confined to the peculiar shape of the chamber as shown, nor to the diaphragm as shown.

10 It is obvious that the cup or chamber should be made of strong metal.

The pressure of the steam or water is applied through the pipe G' into the empty part of the cup or chamber H upon the diaphragm.

15 On account of the sensitiveness of the fluid in the cup H and tube A it is obvious after the pressure is applied the tube A will be affected and the tendency will be to straighten it out.

In its efforts to straighten, it will act through the intermediate mechanism on the index-finger according to the variations of the pressure of the steam or water, and by means of the proper marks on the dial-plate the pressure may be known.

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

The combination of the large chamber H, having the diaphragm K, and filled, as described, with mercury or a similar substance, with a Bourdon pressure-gage, to prevent incrustation in the latter, substantially as shown and described.

ABRAHAM V. HARTWELL.

Witnesses:

P. H. T. MASON,
G. F. CLOUGH.