No. 813,096. PATENTED FEB. 20, 1906.

H. A. HOUSE.

LIQUID INDICATOR.

APPLICATION FILED MAY 23, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

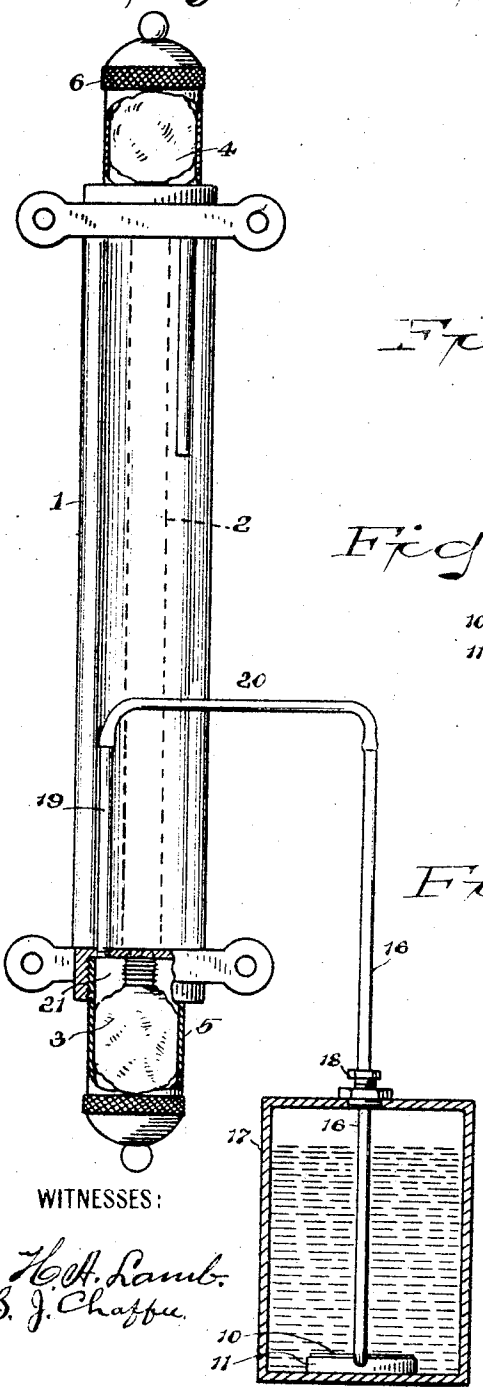


Fig. 2.

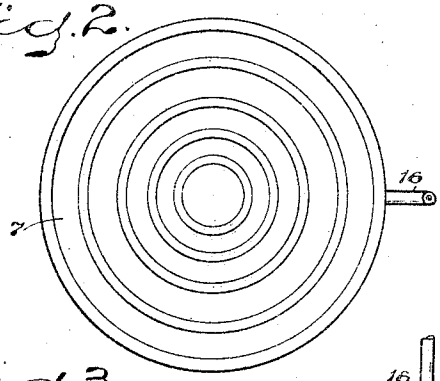


Fig. 3.

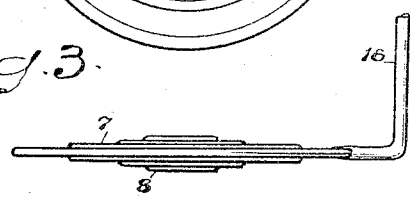


Fig. 4.

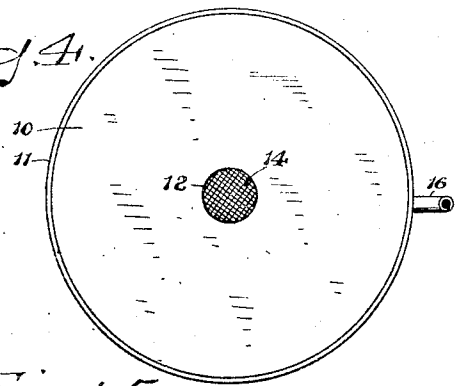
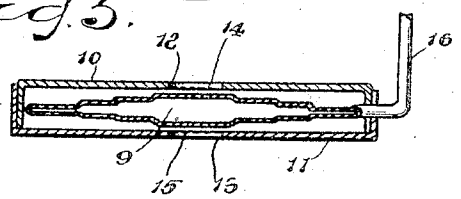


Fig. 5.



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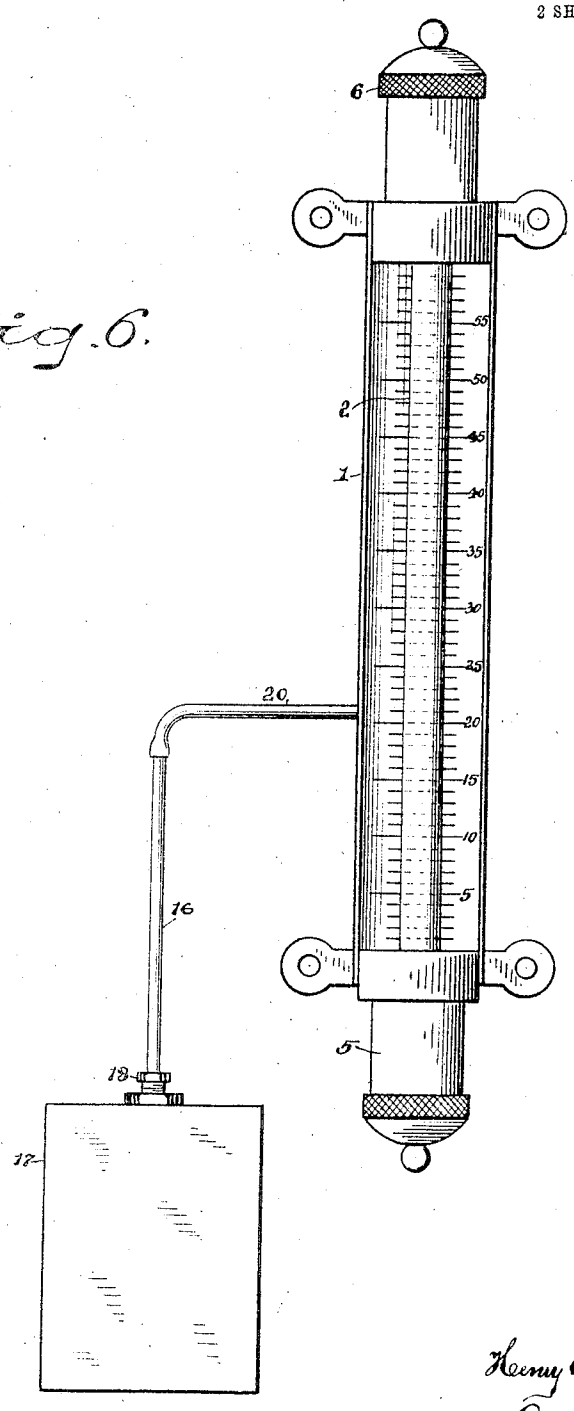
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2 SHEETS—SHEET 2.

Fig. 6.



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HENRY A. HOUSE, OF BRIDGEPORT, CONNECTICUT.

LIQUID-INDICATOR.

No. 813,096. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed May 23, 1905. Serial No. 261,872.

To all whom it may concern:

Be it known that I, HENRY A. HOUSE, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Liquid-Indicators, of which the following is a specification.

My invention relates to liquid-indicators adapted to show the depth of liquid in storage-tanks; and it consists of an air-compressor located at the bottom of a storage-tank and having one or both of its sides flexible and adapted thereby to be acted upon by the weight or gravity of the fluid in the tank to compress said side or sides of the compressor and force the air therein up into an indicating-gage to show a reading or indication of the exact depth of the fluid in the tank.

To enable others to understand my invention, reference is had to the accompanying drawings, in which—

Figure 1 represents a rear elevation of an indicating-gage, broken sectional view of the air-chambers located at the top and bottom of the indicating-glass, sectional view of a liquid-storage tank with the air-compressor inclosed in a protective case located at the bottom of the tank. Fig. 2 is a detail upper plan view of the air-compressor. Fig. 3 is a side elevation of the air-compressor and broken view of the air-tube leading therefrom. Fig. 4 is a plan view of the protective covers inclosing the air-compressor. Fig. 5 is a central sectional view of the air-compressor and its covers or case. Fig. 6 is a front elevation of an indicating-gage and view of a liquid-storage tank connected therewith.

Its construction and operation are as follows:

1 represents an indicating-gage fully shown and described in my former application, filed May 2, 1905, Serial No. 258,476. A brief description of this gage is all that will be necessary to explain its connection with the air-compressor presently to be described.

2 is the indicating-glass, located in the front of the gage and shown in dotted lines.

3 is a flexible bag-like liquid-holding reservoir made of rubber or other like material, whose interior communicates with the interior of the glass tube 2, and 4 is a similar reservoir connected to the upper end of the glass tube and adapted to hold the air forced from the said tube when the liquid rises therein. 5 and 6 are caps inclosing said liquid and air reservoirs.

The air-compressor has, as shown, the two metal sides 7 and 8 to form the air-chamber 9, as shown at Fig. 5. These sides are made more or less flexible to suit the depth that the compressor is immersed in the fluid. The degree of flexibility may, if desired, be regulated by corrugations, as shown, or in any other suitable manner. As these flexible sides are liable to be damaged in transportation, I inclose the compressor in the box-like structure comprising the two covers 10 and 11, having the central openings 12 and 13 to admit the fluid, and cover these openings with the wire-netting 14 and 15 to prevent anything coming in contact with these sides that would be liable to injure them. 16 is a small tube opening into the chamber 9 for the purpose presently to be described.

The compressor is placed at the bottom of the fluid-holding tank 17, having the stuffing-box 18, through which the tube 16 extends. The upper end of this tube is connected to the stand-pipe 19 of the indicating-gage by means of the flexible tube 20. The pipe 19 opens into the chamber 21, in which chamber the flexible recording liquid-holding reservoir 3 is also situated.

The pressure exerted by the liquid in the tank on the flexible sides of the compressor will compress the same and force the air from the compressor-chamber 9 up into the chamber 21 of the gage and compress the reservoir 3 and force the liquid therein up into the indicating glass tube 2 to give a reading of the depth of liquid in the tank, so that the slightest variation in the depth of the liquid will either increase or decrease the pressure on the compressor and give a corresponding indication of such depth on the gage.

As before mentioned, the flexibility of the compressor is made to suit the depth of the tank. In other words, the compressor must be sensitive enough to not only show a reading on the gage when the tank is full, but must instantly react or expand as fast as the liquid falls, so as to give an exact reading on the gage from the highest to the lowest point of the liquid.

While I show both sides of the compressor flexible, I may, if desirable, make only one side flexible; but in either case it must be able

to transfer to the indicating-gage not only the extreme depths of the liquid in the tank, but all the intermediate depths of the liquid.

While I show a certain form of indicating-gage in connection with my improved compressor, I hold myself at liberty to use it with any other form.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a liquid-storage tank and an indicating-gage, of a flexible air-compressor having an air-chamber, said compressor located at the bottom of the tank, a tube connecting said chamber with the gage so that, the pressure of the fluid on the compressor will force the air therefrom to the gage and give a reading thereon of the depth of liquid in the tank, for the purpose set forth.

2. The combination, with a liquid-storage tank, and an indicating-gage having an indicating glass tube, a flexible recording-liquid-holding reservoir communicating with the interior of said glass tube at the bottom, and a flexible air-reservoir at the top of said glass, said reservoirs inclosed by air-chambers, of a flexible air-compressor located at the bottom of said tank, said compressor having an air-chamber, a tube connecting said air-chamber with the air-chamber inclosing the liquid-holding reservoir of the indicator, for the purpose set forth.

3. The combination, with a liquid-storage tank, and an indicating-gage, of a flexible air-compressor having an air-chamber, said compressor located at the bottom of said tank, protective covers for said compressor, a tube connecting the air-chamber of said compressor with the indicating-gage so that, the pressure of liquid on the compressor will force the air from its chamber to said gage and cause the depth of fluid in the tank to be noted thereon, for the purpose set forth.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 5th day of May, A. D. 1905.

HENRY A. HOUSE.

Witnesses:

G. DROUVÉ,

G. W. FINN.