PATENT SPECIFICATION

Application Date: March 3, 1922. No. 6312/22. **198,093**

Complete Left: Dec. 4, 1922.

(Patent of Addition to No. 185,840 : June 11, 1921.)

Complete Accepted: May 31, 1923.

PROVISIONAL SPECIFICATION.

Improvements in Liquid Level Indicators.

I, GEORGE CONSTANTINESCO, of "Carmen Sylva", Beechwood Avenue, Oatlands Park, Weybridge, in the County of Surrey, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention to be as follows:—

The present invention relates to liquid level indicators of the type described in Patent Specification No. 185,840 and is an improvement on addition to the invention therein described.

In liquid level indicators as described and claimed in the said Letters Patent a gauge tube combined with an air chamber is arranged so that the column of liquid in the gauge is held up by the air pressure in the chamber which is in communication with a tank or with a vessel in which the liquid stands at the same level by way of a pipe opening near or below the general level of the bottom of the tank, the air pressure required to force the air from the chamber to the bottom of the pipe in the tank being obtained by pressing a flexible diaphragm or the like which forms part of the wall of the air chamber.

The object of the present invention is to enable such apparatus to be constructed in such a manner that a shorter scale is required and to obviate the necessity for using a large quantity of mercury where such is used as the indicating liquid and also to arrange the gauge so that loss of the indicating liquid is minimised and to obviate the deleterious action of the indicating liquid on the metal parts of the apparatus.

The invention consists in providing at the base of the gauge tube a small cup of ebonite fibre or the like to which the air pressure in the air chamber is communicated and which contains the well of mercury or other liquid on the surface of which the indicating air pressure acts.

The invention further consists in the improved liquid level indicator hereinafter described.

In carrying the invention into effect according to one example the air chamber, air compressor and metallic parts of the gauge may be constructed as described in the Specifications No. 185,840 and No. 189,234. The gauge tube is formed in two parts, the lower part being of smaller internal diameter than the upper and both these parts are fitted into a rubber or like stopper between which and the upwardly projecting socket of the air chamber the lower end of the protecting tube of the gauge is held; the upper end of the gauge tube is held in a washer gripped between the protecting tube and a suitable cap. Over the lower end of the lower part of the gauge tube there is fitted an ebonite or fibre cup which is closed in at the top by two washers, one fitting tight against the tube with horizontal radial air passages between it and the lower washer which has vertical passages between it and the tube so that air can pass freely into the cup while owing to the tortuous passage the escape of mercury of other liquid is impeded. The cup and the lower end of the gauge tube contains mercury on which rests the lighter indicating liquid and if desired above the indicating liquid the gauge tube may contain paraffin or other not easily evaporated liquid. An enlarged pocket is formed in the cup at the top of the gauge tube so that the level of the top of the liquid only varies slightly for all gauge readings.

[*Price* 1/-]

It will be seen that with given liquids in the tank and gauge the relation between a given length of the scale and the depth of liquid in the tank depends on the relation between the cross sectional area occupied by liquid between the cup and lower end of the gauge tube and the cross sectional areas within the two parts of the gauge tube. It is possible therefore by properly choosing these parts to construct a gauge with a uniform or other scale to suit a tank of any depth or contour. This adjustment may conveniently be made by a suitable selection of the dimensions of the lower part of the gauge tube or of the cup.

Dated the 3rd day of March, 1922.

W. GRYLLS ADAMS,
87, Victoria Street, London, S.W. 1,
Chartered Patent Agent.

COMPLETE SPECIFICATION.

Improvements in Liquid Level Indicators.

I, GEORGE CONSTANTINESCO, of "Carmen Sylva", Beechwood Avenue, Oatlands Park, Weybridge, in the County of Surrey, a subject of the King of Great Britain and Ireland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to liquid level indicators of the type described in Patent Specification No. 185,840 and is an improvement or modification of the invention therein described.

In liquid level indicators as described and claimed in the said Letters Patent a gauge tube combined with an air chamber is arranged so that the column of liquid in the gauge is held up by the air pressure in the chamber which is in communication with a tank or with a vessel in which the liquid stands at the same level by way of a pipe opening near or below the general level of the bottom of the tank, the air pressure required to force the air from the chamber to the bottom of the pipe in the tank being obtained by pressing a flexible diaphragm or the like which forms part of the wall of the air chamber.

The object of the present invention is to enable such apparatus to be constructed in such a manner that a shorter scale is required and to obviate the necessity for using a large quantity of mercury where such is used as the indicating liquid and also to arrange the gauge so that loss of the indicating liquid is minimised and to obviate the deleterious action of the indicating liquid on the metal parts of the apparatus.

The invention consists in providing at the base of the gauge tube a small cup of ebonite fibre or the like to which the air pressure in the air chamber is communicated and which contains the well of mercury or other liquid on the surface of which the indicating air pressure acts.

The invention further consists in the improved liquid level indicator hereinafter described.

Referring to the accompanying drawings:—

Figure 1 is a vertical section, and

Figure 2 a sectional elevation of a liquid level indicator constructed according to the invention.

Figure 3 is a detailed section of the cup holding the indicating liquid.

Figure 4 is a plan view of the cup.

In the form of the invention illustrated the air chamber, air compressor and metallic parts of the gauge may be constructed as described in the Specifications No. 185,840 and No. 189,234. The gauge tube *b* is formed in two parts, the lower part *u* being of greater internal diameter than the upper part *b* and both these parts are fitted into a rubber or like stopper between which and the upwardly projecting socket of the air chamber the lower end of the protecting tube *d* of the gauge is held; the upper end of the gauge tube is held in a washer *c* gripped between the protecting tube *d* and a suitable cap *e*. Over the lower end of the lower part of the gauge tube is fitted an ebonite or fibre cup *r* which is closed in at the top by two washers *s t*, the washer *s* fits tight against the tube *u* with horizontal radial air passages *y* between it and the lower washer which has vertical passages *v* between it and the tube *u* so that air can pass freely into the cup while owing to the tortuous passage the escape of mercury or other liquid is impeded. The cup *r* and the lower end of the gauge tube *u* contain mercury on which rests the lighter indicating liquid and if desired above the indicating liquid the gauge tube may contain paraffin or other not easily evaporated liquid. An enlarged pocket is formed in the cup at

the top of the gauge tube so that the level of the top of the liquid only varies slightly for all gauge readings.

It will be seen that with given liquids in the tank and gauge the relation between a given length of the scale and the depth of liquid in the tank depends on the relation between the cross sectional area occupied by liquid between the cup and lower end of the gauge tube and the cross sectional areas within the two parts of the gauge tube. It is possible therefore by properly choosing these parts to construct a gauge with a uniform or other scale to suit a tank of any depth or contour. This adjustment may conveniently be made by a suitable selection of the dimensions of the lower part of the gauge tube or of the cup.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. In a liquid level indicator according to the prior patent referred to a small cup of ebonite fibre or the like to which the air pressure in the air chamber is communicated and which contains mercury or other liquid on which the indicating air pressure acts, substantially as described.

2. The improved liquid level indicator hereinbefore described and illustrated in the accompanying drawings.

Dated the 4th day of December, 1922.

W. GRYLLS ADAMS,
87, Victoria Street, London, S.W. 1,
Chartered Patent Agent.

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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

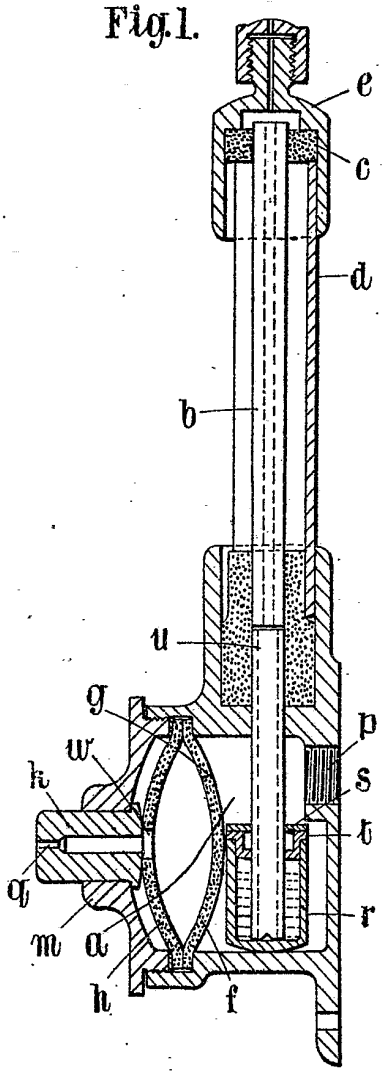


Fig. 2.

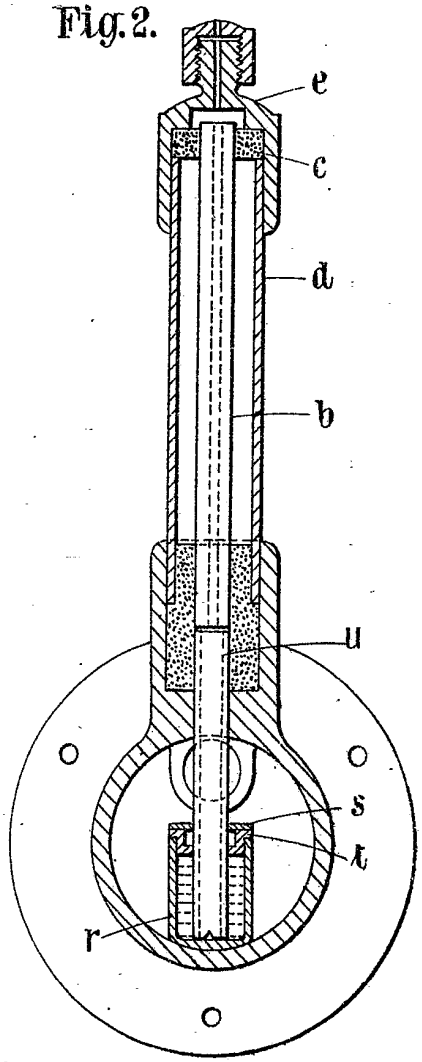


Fig. 3.

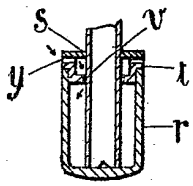
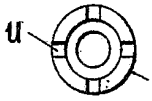


Fig. 4.



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