Dec. 15, 1953 J. G. DWYER 2,662,409

MANOMETER

Filed July 6, 1951

Fig-1

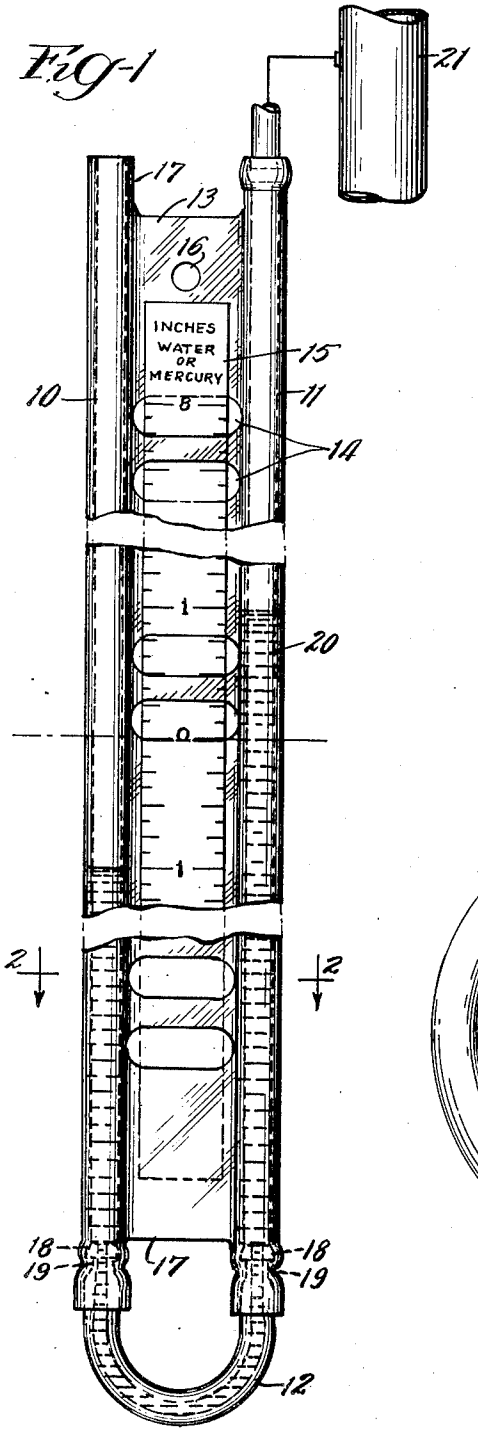


Fig-2

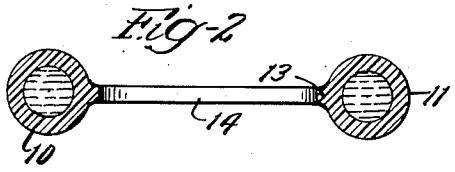


Fig-3

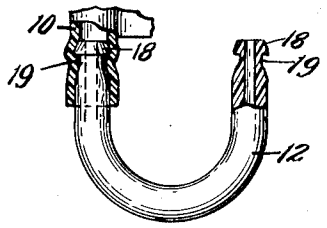
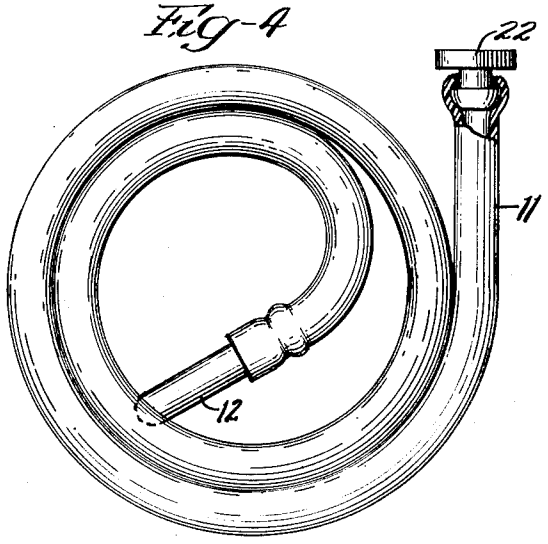


Fig-4



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MANOMETER

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4 Claims. (Cl. 73—401)

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The present invention relates to U-tube manometers, and more particularly to those that are used by engineers and servicemen in testing various kinds of equipment. Obviously, however, the manometer is not limited to any particular use.

The principal object of the invention is to provide a U-tube manometer that can be made inexpensively and is conveniently portable both to facilitate use and shipment. It is also desirable that the manometer be unbreakable, and the manometer of this invention is of that type.

Further and other objects and advantages will become apparent as the disclosure proceeds and the description is read in conjunction with the accompanying drawings, in which

Fig. 1 is a front elevational view of a manometer made in accordance with this invention;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary view, partly in section, showing particularly the U-tube connection at the bottom of the manometer arms; and

Fig. 4 is a side elevational view showing how stoppers may be used to close the upper ends of the manometer, whereupon the manometer may be rolled into compact form.

It should be understood that the choice of a preferred form of the invention for illustration and description is for the purpose of complying with Section 4888 of the Revised Statutes and should not be construed as limiting the scope of the appended claims except as may be required by the prior art.

There are many instances where U-tube manometers are used for determining pressures and pressure differentials, and the use of manometers for relating unknown pressures to atmospheric pressures is well-known. The present invention, therefore, is directed more particularly to the construction of a manometer and to the materials of which it is made.

Most manometers are made of glass, which not only presents a problem of breakability, but also requires large shipping or carrying cases to protect them from breakage in being carried about. The manometer of this invention is not only unbreakable, but may be rolled into compact form for convenient portability and may be shipped in small containers with resultant saving in cost of shipment.

Referring now to Fig. 1, it will be seen that the manometer comprises arms 10 and 11 connected at the bottom by a U-tube or cross tube 12 and held in proper spaced relation by a web 13 die-cut to provide openings 14 adapted to receive a flexible scale 15.

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The body of the manometer, which includes the arms 10 and 11 and the web 13, is a flexible transparent material, preferably a vinyl resin, and may be extruded in long lengths. In other words, it is preferred according to this invention to form the arms and web of the manometer from a single extruded member having a cross-sectional shape shown in Fig. 2, whereby it is only necessary to cut the extruded material to the desired length and die cut the openings 14, hanging aperture 16, and end recesses 17 in order to provide the completely fabricated manometer, i. e., complete except for the cross tube 12 and scale 15.

The U-tube or cross tube 12 is preferably of relatively rigid, transparent plastic material such as a cellulose acetate butyrate, although of course it could be of glass or other like material if desired. The upper ends of the U-tube are preferably beveled at 18 to facilitate the insertion into the lower ends of the arms or tubes 10 and 11, and annular notches 19 aid in sealing the flexible arms 10 and 11 to the cross tube 12. The outer diameter of the cross tube 12 is preferably slightly larger than the internal diameter of the arms 10 and 11 to insure a good seal.

The scale 15 is preferably made of flexibly plastic material such as celluloid or the like, is threaded through openings 14 and has printed upon it the usual graduation marks so that differences in level of water or other liquid 20 in the manometer may be read and recorded. If water is used, it preferably contains a dye to facilitate reading. The scale 15 may be adjusted up and down through the openings 14 to adjust the zero mark to any desired position.

It will be understood that in use one arm of the manometer will be suitably connected to the pipe 21 or other area the pressure of which (either subatmospheric or superatmospheric) is desired to be read. Assuming that this pressure is to be related to atmospheric pressure, the upper end of the tube 10 is left open to atmosphere.

Obviously, if differential pressures are to be read on the manometer, the upper end of the arm or tube 10 is connected to one of the pressure areas, whereupon the differential pressures may be read on the manometer scale 15.

Where larger pressures are involved, mercury or some other heavier liquid may be substituted for water to give the manometer greater range of reading.

When the manometer is not in use, the upper ends of the tubes 10 and 11 may be closed by stoppers such as shown at 22 (Fig. 4) and the manometer may then be rolled into compact form for convenient carrying.

Throughout this specification, the term "pressure" has been used in the sense of absolute pressure rather than in relation to atmospheric pressure.

Those skilled in the art will readily recognize the opportunity to modify the construction of the manometer within the scope of the appended claims.

I claim:

1. A flexible, portable manometer comprising parallel tubular arms of transparent flexible material connected intermediate their ends by a web also of flexible material, and a cross tube connecting the bottom of the arms.

2. A flexible, portable manometer comprising parallel tubular arms of transparent flexible material connected intermediate their ends by a web also of flexible material, said arms and web being integrally formed, and a cross tube connecting the bottom of the arms.

3. A flexible, portable manometer comprising parallel tubular arms of transparent flexible material connected intermediate their ends by a web also of flexible material, a cross tube connecting the bottom of the arms, said arms and web being integrally formed, a plurality of openings along the web, and a flexible scale threaded through said openings.

4. A flexible, portable manometer having a body portion of flexible transparent material comprising two parallel tubular arms connected by a web, and a cross tube connecting the lower ends of said arms, said body portion material being a vinyl resin.

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No references cited.