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ADJUSTABLE MOLD FOR FORMING LEATHER DIAPHRAGMS

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Fig. 1.

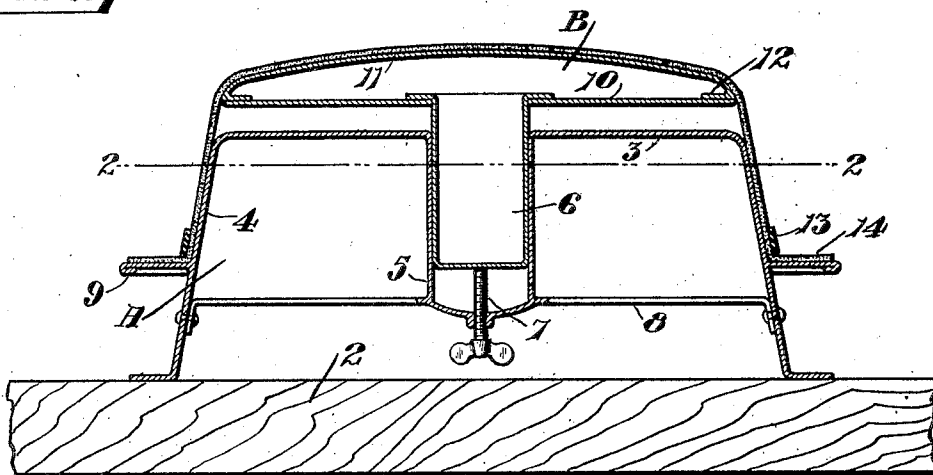
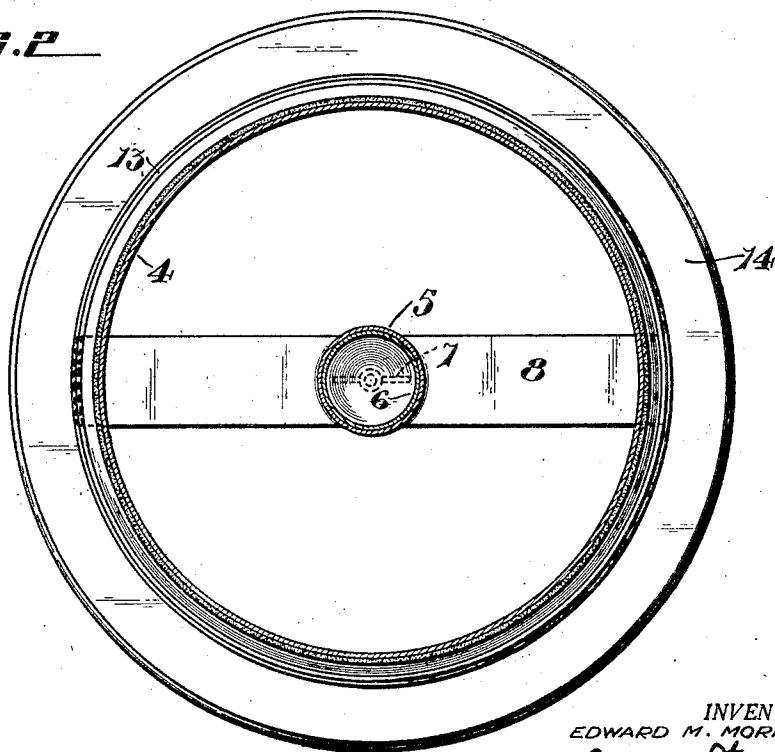


Fig. 2.



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ADJUSTABLE MOLD FOR FORMING LEATHER DIAPHRAGMS.

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To all whom it may concern:

Be it known that I, EDWARD M. MORAN, a citizen of the United States, residing at the city and county of San Francisco, and State of California, have invented new and useful Improvements in an Adjustable Mold for Forming Leather Diaphragms, of which the following is a specification.

This invention relates to a mold and especially to an adjustable mold for forming or shaping one-piece leather diaphragms, such as employed in gas meters and like devices.

Practically all gas meters in use today employ leather diaphragms, having an action similar to a bellows. The diaphragms, or rather the chambers closed by the same and having a known capacity, are alternately filled with gas and emptied, imparting pulsations to the diaphragms, which are counted. The diaphragms employed are usually dish or cup shaped and have a uniform diameter and movement; therefore if it is desired to increase or decrease the capacity of the meter, it is generally accomplished by changing the size of the meter, etc. I have discovered that the capacity of the meter may be varied by increasing or decreasing the pulsating movement or depth of the diaphragms, and I have therefore provided a mold, forming the subject matter of this application, over which mold meter diaphragms are shaped and which mold may be readily adjustable to produce diaphragms of a desired capacity.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which—

Fig. 1 is a central, vertical cross section of the mold.

Fig. 2 is a plan section taken on line 2—2, Fig. 1.

Referring to the drawings in detail, and particularly to Fig. 1, A indicates the base section of the mold, and B a vertically adjustable head member. The base and the head supported thereby are circular in formation and may be supported in any suitable manner, for instance on a bench such as indicated at 2. The base consists of an upper circular plate 3, and a downwardly extending flaring annular flange 4, by which the plate 3 is supported. Formed integral with the plate 3 or otherwise secured thereto is a downwardly extending

cylindrical member 5, and slidably mounted therein is a plunger 6 by which the head B is supported. The cylindrical section 5 forms a guide for the plunger 6 and retains this, together with the head B, in a central position with relation to the upper plate 3 and the annular flaring base section 4. The member 5 also serves as a support for an adjusting screw 7, by which vertical movement may be imparted to the plunger and the head. The mold as a whole is otherwise provided with a cross brace 8, by which the guide section 5 is reinforced when secured, and it is further provided with an annular exterior flange 9, the function of which will hereinafter be described.

The head proper consists of a lower circular plate 10 and an upper rounded plate section 11, which may be formed integral with the plate 10 or secured thereto as indicated at 12.

In actual operation when it is desired to mold or shape a meter diaphragm, it is first necessary to blank out the leather. The leather employed is usually sheep skin and the blank formed is circular in shape. The blank is first dipped in water and moistened and it is then stretched over the head member B and the annular flaring side section 4 of the base.

An elastic band is then placed around the leather to secure it in place upon the mold as indicated at 13, and vertical movement is then imparted to the head member B by means of the screw 7 to tightly stretch and shape the leather and to regulate the depth and capacity of the same. The leather when being placed in position is smoothed out as much as possible so that it will conform to the shape of the mold, and it is only stretched or tightened in place when the rubber band is applied and vertical movement is imparted to the head member B.

The type of diaphragm formed or shaped by this mold is known as a one-piece diaphragm as it is shaped from a single circular sheet of leather. Diaphragms of this character require an annular flange, such as indicated at 14, and this is formed by engagement with the annular flange 9. The diaphragm when snugly fitted and positioned is permitted to remain until the leather is thoroughly dry. It is then removed by withdrawing the head B and releasing the rubber band 13. The shape produced will be retained, but it will be found

that the leather is too stiff for the purpose desired and it is therefore necessary to rub or knead the leather between the hands to soften the same, and finally to dip the leather in mineral oil, for instance ordinary lubricating oil to close the pores in order to render it impervious to gas. The diaphragm thus prepared is now ready for reception in the meter and may be secured in any suitable manner; the flange 14 of the diaphragm being perforated at suitable intervals to receive the securing bolts or other means employed.

From the foregoing description it can be seen that the pulsating movement imparted to the diaphragm when in position in the meter, is entirely dependent upon the depth of the diaphragm, and it is further understood that the pulsating movement increases or decreases the capacity of the meter.

With the form of mold here shown, it is possible to produce a diaphragm of practically any depth desired, and the capacity of a given meter may therefore be readily increased or decreased.

The operation of applying the leather to the mold is simple and readily accomplished, and similarly the removal of the same, as it is only necessary to withdraw or lower the head and release the rubber band when removing the diaphragm. The mold is exceedingly simple and easy to adjust and no time is therefore lost in adjusting it for diaphragms of varying depths.

While certain features of the present invention are more or less specifically illustrated, I wish it understood that various changes in form and proportion may be resorted to within the scope of the appended claims, similarly that the materials and finish of the several parts employed may be such as the experience and judgment of the manufacturer may dictate or various uses may demand.

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

1. An adjustable form comprising a cone shaped base section, a rounded head member centrally guided and supported by the base,

means permitting vertical adjustment of the head member with relation to the base, and a horizontally disposed annular forming flange carried by the base.

2. An adjustable form comprising a cylindrical shaped base section, vertically disposed and tapering slightly from end to end, said base member having its smallest diameter at the upper end, a horizontally disposed annular forming flange secured exterior of the base, intermediate the top and bottom thereof, a cylindrical shaped guide member centrally disposed in the base, a plunger vertically movable in the cylindrical guide member, an adjusting screw secured in the lower end of the cylindrical guide member and engageable with the plunger to vertically adjust the position thereof, and a circular shaped head member secured to the plunger and movable in unison therewith.

3. An adjustable form comprising a cylindrical shaped base section, vertically disposed and tapering slightly from end to end, said base member having its smallest diameter at the upper end, a horizontally disposed annular forming flange secured exterior of the base, intermediate the top and bottom thereof, a cylindrical shaped guide member centrally disposed in the base, a plunger vertically movable in the cylindrical guide member, an adjusting screw secured in the lower end of the cylindrical guide member and engageable with the plunger to vertically adjust the position thereof, a circular disk having a diameter equal to the upper end of the base section secured to the plunger, and a dish shaped circular head member secured to said plate.

4. An adjustable form comprising a cone shaped base section, a rounded head member centrally guided and supported by the base, a horizontally disposed annular forming flange carried by the base, means permitting vertical adjustment of the head member with relation to the forming flange and the base, and an elastic retaining ring adapted to surround the base and cooperating with the forming flange.

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