May 10, 1927. 1,628,348

H. V. ATWELL

SEAL

Filed Oct. 16, 1925

Fig. 1.

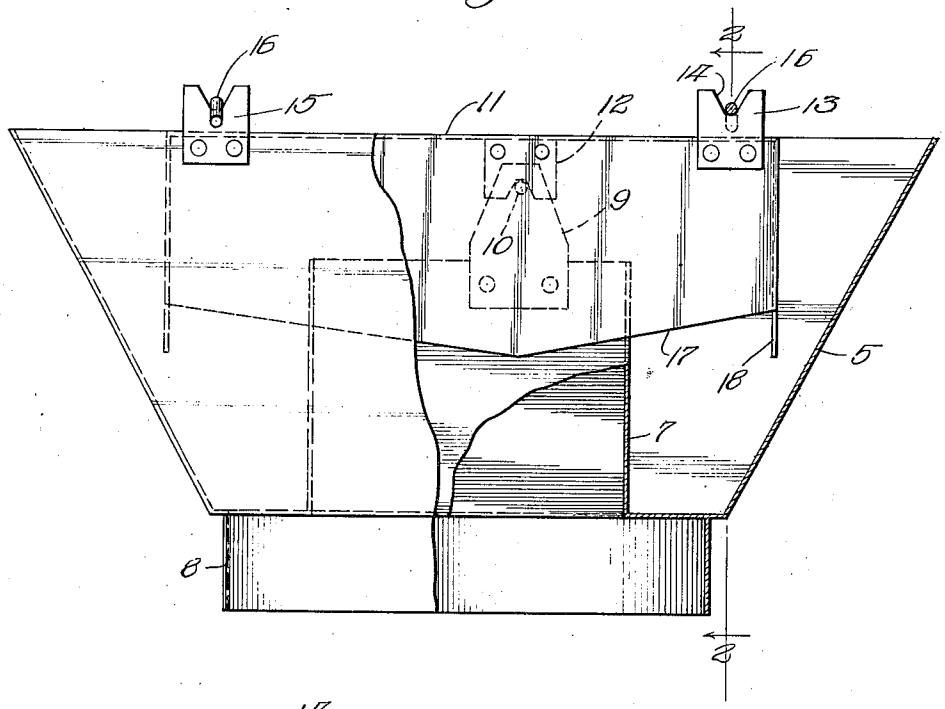
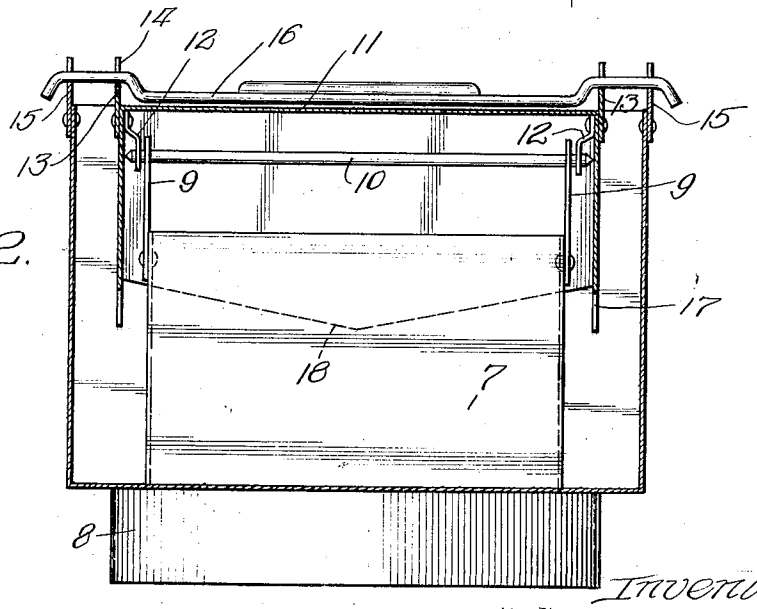


Fig. 2.



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UNITED STATES PATENT OFFICE.

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SEAL.

Application filed October 16, 1925. Serial No. 62,788.

The present invention relates to improvements in liquid seals, more particularly of the type disclosed in my prior Patent No. 1,529,682, granted March 17, 1925. The present invention will be fully understood from the following description, illustrated by the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section, of a seal embodying the present invention; and

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1.

Referring more particularly to the drawings, the numeral 5 indicates a pan, from the bottom of which an open pipe section 7 extends upwardly for a portion of the height of the pan 5. To the bottom of the pan 5 there is secured a downwardly projecting pipe section 8, by which connection may be made to the open end of a pipe (not shown) leading to the device, for example, a gasoline storage tank, containing a vapor space in which the pressure is to be controlled.

On the opposite sides of the upwardly projecting internal wall 7 there are provided upstanding lugs 9, which support a transversely extending pivot rod 10. An inverted cup 11 is supported on this pivot rod, for example, by attaching inside of the cup, on opposite walls, the bent notched plates 12, which rest on the projecting ends of pivot rod 10. These plates are so placed on the inside of the cup 11 that the point of support of the cup is at one side of its center of area, so that the cup will be tilted by differences of pressure in either direction between the external atmosphere and the vapor space of the device to which the still is connected.

Near each end of the cup 11, on opposite sides thereof, there are provided the vertical plates 13, the upper edges of which are notched as at 14. In alignment with each pair of these plates 13 on the cup 11 there are provided on opposite sides of the pan 5 similar supporting plates 15, also notched at their upper edges. Rods 16 of predetermined weight rest in the notches in the aligned supports 13 and 15, these rods being supported either by the cup or by the side walls of the pan 5, according to the relative position of the cup in the pan.

As shown in the drawings, the lower edges of the sides of the inverted cup 11 are cut away at the sides, as at 17, and at the ends, as at 18, as more fully set forth in U. S. Patent Nos. 1,553,844 and 1,553,848 granted September 15, 1925.

In the operation of the device, the pan 5 is filled with a liquid to a point below the opening of the inner projecting wall section 7, so that the lower edges of the inverted cup 11, when the latter is in its closed, horizontal position, are immersed. The center of pressure of the cup 11 being offset from its support, on difference in pressure between the device with which the pipe section 7 communicates and the external atmosphere, the inverted cup 11 is caused to tilt in one direction or the other, as fully set forth in my prior patent above referred to. As either end of the cup 11 rises in tilting, the supporting plates 13 at that end of the cup lift the corresponding rod 16 from the supporting plates 15 on the side walls of the pan 5, the relative height of the plates 13 and 15 being so adjusted that the weight of the rod is taken by the rising end of the cup substantially immediately upon the beginning of its rise. The weights of the rods 16 therefore control the relative pressures required to tilt the seal and thereby open the interior of the pipe section 7 to the atmosphere. The weights of the rods 16 may be independently controlled, so that the same or different pressures may be required to open the seal when there is an excess of pressure in the device with which the pipe section 7 communicates and when there is suction within the pipe section 7. The position of the pivots for the cup 11 are preferably so determined that the center of gravity of the cup is slightly below the supporting point.

By the construction hereinbefore described, it has been found that the operation of the seal is very greatly steadied, and bobbing or rocking, apart from its proper tilting movement, substantially prevented. Furthermore, its construction is materially simplified and inspection facilitated.

The weights 16 which loosely rest in detachable edge relation to the pan and cup permit of the interchanging of weights of greater or less weight with great ease and accuracy, as such changes may be desired with relation to pressure conditions.

Although the present invention has been described in connection with the specific de-

tails of apparatus for carrying it into effect, it is not intended that these details shall be regarded as limitations upon the scope of the invention, except in so far as included in the accompanying claims.

I claim:

1. A seal comprising an open conduit member communicating with a vapor space, a pan surrounding said conduit member and adapted to contain a liquid, an inverted cup over said conduit member and having its sides immersed in the liquid in the pan, said cup being pivotally supported at one side of its center of pressure, and interchangeable members of varying predetermined weights adapted to loosely rest in removable contact with said pan and cup and supported by the walls of the cup or the pan according to the relative changes in position of the cup in the pan.

2. A seal comprising an open conduit member communicating with a vapor space, a pan surrounding said conduit member and adapted to contain a liquid, an inverted cup over said conduit member and having its sides immersed in the liquid in the pan, said cup being pivotally supported at one side of its center of pressure, and interchangeable members of varying predetermined weights adapted to loosely rest in removable contact with said pan and cup and supported by the walls of the cup or the pan according to the relative changes in position of the cup in the pan, and seats carried by the pan and cup in which said weight members rest.

3. A seal comprising an open conduit member communicating with a vapor space, a pan surrounding said conduit member and adapted to contain a liquid, an inverted cup over said conduit member and having its sides immersed in the liquid in the pan, said cup being pivotally supported at one side of its center of pressure, and interchangeable members of varying predetermined weights adapted to loosely rest in removable contact with said pan and cup and supported by the walls of the cup or the pan according to the relative changes in position of the cup in the pan, and aligned seats carried by the pan and cup in which said weight members rest.

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