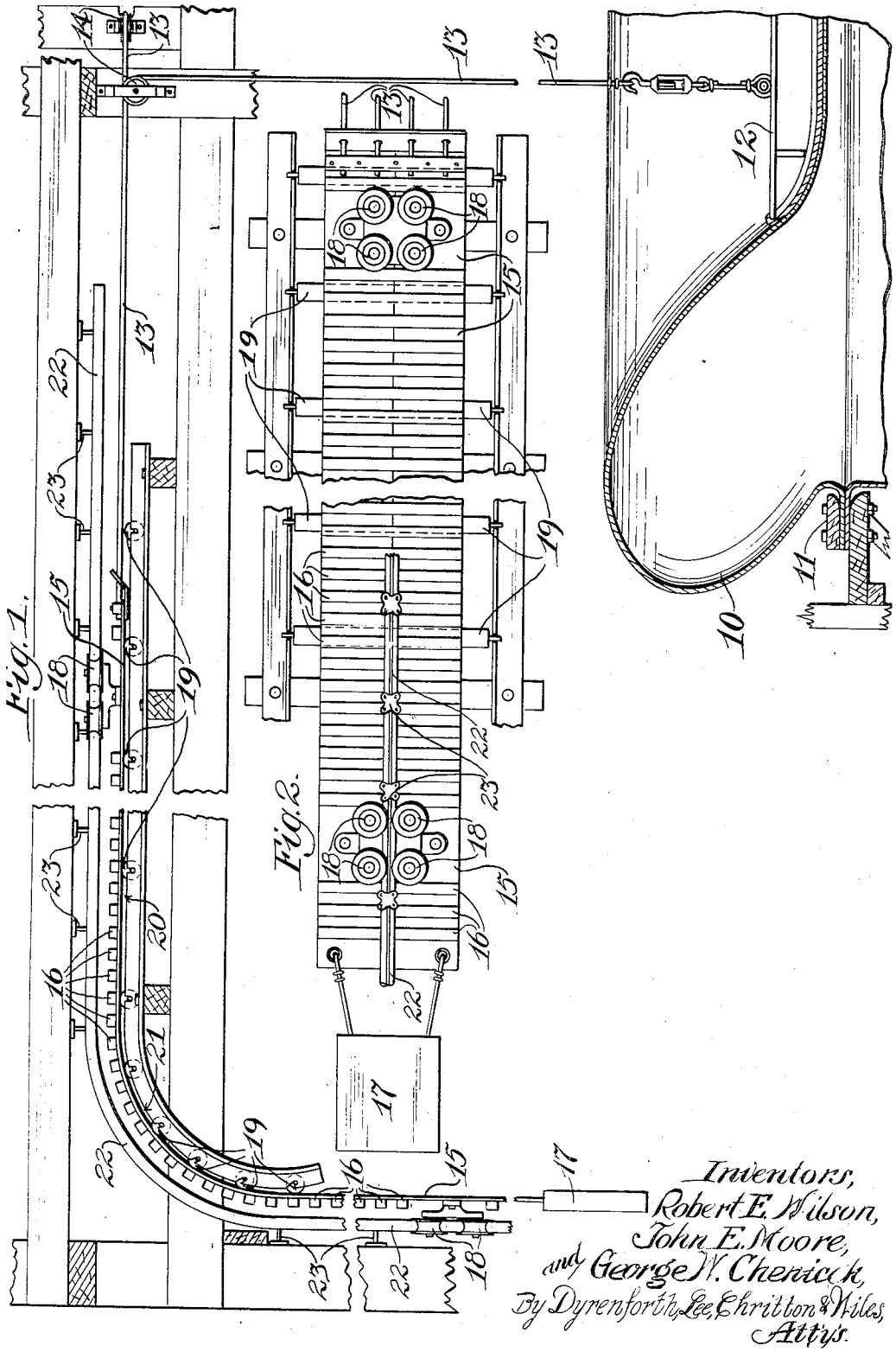
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BREATHER BAG

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UNITED STATES PATENT OFFICE.

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BREATHER BAG.

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The present invention relates to improvements in breather bags intended for use in connection with vented storage tanks for volatile liquids, such as gasoline, and will be fully understood from the following description, illustrated by the accompanying drawings, in which:

Figure 1 is a fragmentary vertical sectional view through a breather bag and associated weighting device embodying the present invention; and

Fig. 2 is a developed plan of the counterpoise member and associated parts, some of which are broken away.

In the prior application of one of us, Serial No. 702,029, filed March 26, 1924, is described a breather bag supported about its equator and provided with a rider or weight which exerts a variable force upon the bag, such weight being counterpoised by a weight and chain in such a manner that the chain exerts a variable counterpoising force depending upon its position with respect to supporting pulleys. The present invention relates more specifically to an improved counterpoising weight and means for supporting and guiding the same.

A breather bag 10 is supported about its equator at 11 and provided with a superimposed weight 12 which may suitably be formed of metal tubing. The weight 12 is partially supported by a plurality of cords or ropes (of which one is shown in full), preferably four in number and attached symmetrically to the weight 12. The cords 13 pass over suitable pulleys 14 so arranged that the cords are brought alongside each other. The ends of the cords 13 are attached to the counterpoise member 15.

The counterpoise member 15 comprises an elongated strip or belt of leather, webbing or similar flexible material and has affixed thereto along its length weights 16 which are preferably of lead suitably formed as bars arranged transversely of the strip 15 at spaced intervals. At the free end of the strip is attached a weight 17. On the upper side of the strip are mounted pulleys 18. The belt 15 is adapted to be supported by a plurality of rollers 19 carried by suitable frame and arranged to define a horizontal path 20, terminating in an arcuate path 21, remote from the pulleys 14. The arrangement is such that, when the breather bag is fully inflated practically all the lead weights 16 are off the supporting rollers 19 so that a maximum counterpoising effect is exerted on the weight 12.

Above the belt 15 is arranged a guide 22 which is adapted to cooperate with the pulleys 18 so as to maintain the belt 15 in approximately the center of the supporting rollers 19. The guide 22 may suitably be a pipe provided with a longitudinal slit, by means of which supporting members 23 may be connected thereto, said supporting members being suitably mounted upon the housing for the breather bag.

As explained in the prior application above referred to, the weight 12 exerts a force upon the breather bag so as to maintain the pressure in the vapor spaces of the storage tanks or the like at substantially atmospheric pressure. As the bag deflates, it is found that the effective pressure of the weight 12 should be progressively increased, and this is effected by the movement of the lead weights 16 from their depending position into the horizontal path 20 where they exert no counterpoising effect on the weight 12.

It may be pointed out that the increase of pressure which should be exerted by the weight 12 is not strictly proportional to the fall of this weight and in order to maintain the pressure in the storage tanks more approximately at atmospheric pressure, the weights 16 may be adjusted either by spacing them irregularly or by varying the mass of successive weights. The degree of variation necessary obviously differs considerably with each installation and it is not therefore possible to give accurate instructions which would hold for every particular case.

While the invention has been described with reference to a particular specific example, it must be understood that it is not limited thereto except by the terms of the appended claims.

We claim:

1. In combination, a breather bag, a weight applied thereto, an elongated counterpoise member for said weight comprising a flexible strip with weights attached thereto, and means for supporting an increasing number of said weights as the breather bag deflates and vice versa.

2. In combination, a breather bag, a weight adapted to ride thereon, a varying counterpoise for said weight, said counterpoise comprising a weighted flexible member, and means for supporting a varying amount of said weighted flexible member in a substantially horizontal path in such a manner that they exert no counterpoising force on said weight.

3. A breather bag, a weight adapted to ride thereon, a counterpoise for said weight constituted by a flexible belt with weights attached thereto, horizontal rollers adapted to support a varying amount of said belt in a substantially horizontal position, guide means on said belt and fixed guide means adapted to cooperate with first of said guide means for positioning said belt on said rollers.

4. In combination, a breather bag, a weight adapted to ride thereon, a counterpoise for said weight, a plurality of flexible means connecting said counterpoise to a plurality of points of said weight, a plurality of rollers adapted to support a variable portion of said counterpoise in a horizontal position, guide rolls carried by said counterpoise, and fixed guide means adapted to cooperate with said guide rolls.

5. In combination, a breather bag, a weight adapted to ride thereon, a counterpoise for said weight constituted by a flexible belt with weights attached thereto, means for connecting said belt to a plurality of points on said weight, pulleys for said flexible means so arranged that a vertical pull is exerted on said weight, a plurality of rolls arranged in a horizontal plane so as to carry a variable portion of said counterpoise member, a plurality of pulleys mounted on said counterpoise member, a fixed guide rail adapted to cooperate with said pulleys to maintain said counterpoise in the center of said rollers, and a weight at the end of said counterpoise.

6. In combination, a breather bag, a weight adapted to ride thereon, a counterpoise for said weight, said counterpoise comprising a flexible belt with a series of weights mounted along its length, and means for supporting a variable number of said weights, said weights being of such mass and so located that the pressure within the bag is maintained constant.

7. In combination, a breather bag mounted about its equator, a weight on the upper surface thereof, an elongated counterpoise member for said weight comprising a flexible strip with weights attached thereto, and means for supporting an increasing number of said weights as the breather bag deflects and vice versa.

8. In combination, a breather bag mounted about its equator, a weight adapted to ride on its upper side, a varying counterpoise for said weight, said counterpoise comprising a weighted flexible member, and means for supporting a varying amount of said weighted flexible member in a substantially horizontal path in such a manner that it exerts no counterpoising force on said weight.

9. In combination, a breather bag mounted about its equator, a weight adapted to ride thereon, a counterpoise for said weight, said counterpoise comprising a flexible belt with a series of weights mounted along its length, and means for supporting an increasing number of said weights as the bag deflates, said weights being of such mass and so located that the pressure within the bag is maintained constant.

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