

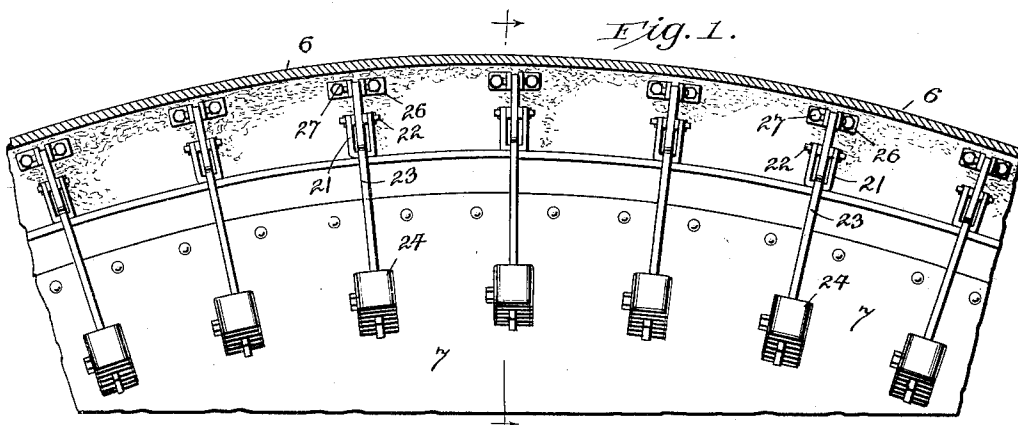
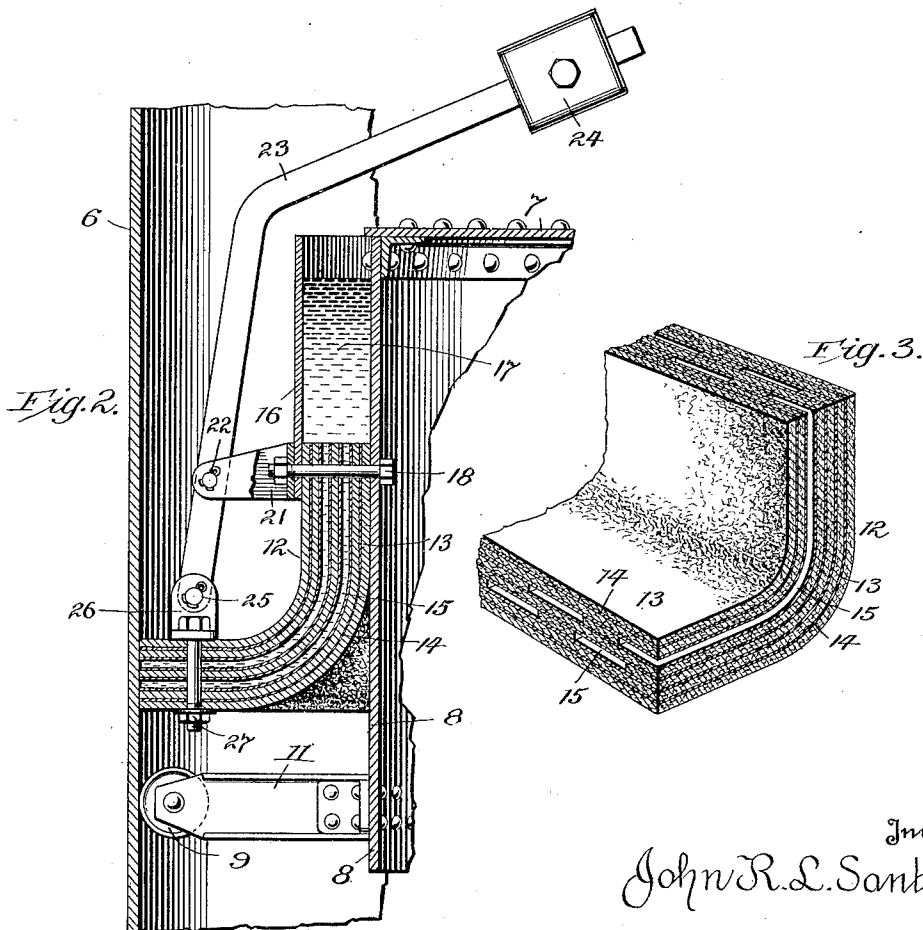
May 24, 1932.

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1,859,718

GAS HOLDER

Filed Aug. 29, 1928



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GAS HOLDER

Application filed August 29, 1928. Serial No. 302,781.

This invention relates to gas holders and particularly to gas holders of the waterless type.

A waterless gas holder comprises a shell of cylindrical or prismatic form and a piston movable vertically therein to vary the effective volume in the shell beneath the piston, the piston rising and falling with variations in the quantity of gas stored in the holder. The most difficult problem in the design of holders of this type is the provision of a seal between the piston and the walls of the shell, for this seal must not only be gas tight, but it must also offer the minimum resistance to the motion of the piston.

The present invention is directed to the provision of such a seal.

The preferred embodiment is illustrated in the accompanying drawings in which:

Fig. 1 is a plan view partly in section;

Fig. 2 is a vertical fragmentary section on an enlarged scale; and

Fig. 3 is a perspective view of the packing ring.

A portion of the shell, here indicated as cylindrical, is shown at 6. The piston comprises a horizontal head 7 with a peripheral depending skirt or flange 8. The piston as a whole is guided by a plurality of rollers 9 which are supported on brackets 11, of which only one is shown, carried by the skirt 8. The rollers 9 engage the shell 6 and are spaced at frequent intervals around the piston. The interval between the depending flange 8 and the shell 6 is considerable and the packing structure is mounted within this interval. This structure is an annulus generally L-shaped in cross section. As a whole it is indicated in the drawings by the reference numeral 12. As preferably constructed it is made up of alternating layers of felt 13 and canvas 14. It is impracticable to make these layers continuous around a holder of usual size. The joints between the strips making up the respective layers are staggered relatively to each other so that leakage through the packing structure as a whole is precluded. It is also desirable to interrupt certain of the felt layers 13 to provide lubricating ports 15.

The packing is mounted with one flange seated against the depending flange or skirt 8 and the other extending horizontally into edge contact with the shell 6. So far as the broad aspects of the invention are concerned the packing element 12 may be mounted either side up, but in the present application I illustrate and claim specifically an arrangement in which the vertical flange extends upward above the horizontal flange of the packing element 12 and the lubricant is fed by gravity. To effect this result the packing element 12 is mounted by clamping it between the flange 8 and an annulus 16 which is spaced from the flange 8 to receive the upper margin of the packing structure 12 and which above this packing structure forms a reservoir 17 for lubricant such for instance as oil, tar, or other suitable fluent or mobile material. The parts are held together by bolts 18 (only one of which is shown) passing through the flange 8, the annulus 16 and the intervening packing structure. Thus lubricant feeds by gravity through passages 15 to the surfaces of contact between the packing 12 and the shell 6. The bolts 18 also serve to hold in position a plurality of brackets 21. Pivoted at 22 on these brackets are levers 23 which carry loading weights 24 at their upper ends.

The lower ends of the levers 23 are pinned at 25 to clips 26. Bolts 27 serve not only to connect the packing structure 12 to the clips 26, but they also hold the laminae forming the packing structure together. The lever 23 is so formed or offset that the weights 24 urge the packing outward into contact with the shell 6. In this way a flexible packing structure with gravity lubricant feed is secured.

Various modifications are possible and are contemplated.

What is claimed is:

1. In a waterless gas holder, the combination of a shell; a piston movable in said shell to vary the effective volume thereof; a seal for said piston comprising a laminated fabric structure carried by the piston, surrounding the same and having an outwardly curved flange portion the margin whereof enters into

edgewise contact with the shell; yielding means for urging said structure into sealing engagement with the shell; and means for feeding lubricant through said laminated fabric structure to the area of contact with the shell.

2. In a waterless gas holder, the combination of a shell; a piston movable in said shell to vary the effective volume thereof; a seal for said piston comprising a laminated fabric structure carried by the piston and surrounding the same, said fabric structure extending downward from its upper edge and then curving outward into edgewise contact with the shell and being formed with lubricant passages leading from the upper edge to said outer edge; a lubricant reservoir overlying the upper edge of said fabric structure; and yielding means for urging said structure into sealing engagement with the shell.

3. In a waterless gas holder, the combination of a shell; a piston movable in the shell to vary the effective volume thereof; a laminated annular seal of substantially L-shape in cross section one margin whereof is in edgewise contact with the shell; and means for feeding lubricant through said seal in the general direction of the laminae.

4. In a waterless gas holder, the combination of a shell; a piston movable in the shell to vary the effective volume thereof; a laminated annular seal of substantially L-shape in cross section one margin whereof is in edgewise contact with the shell; and gravity means for feeding lubricant through said seal in the general direction of the laminae.

In testimony whereof I have signed my name to this specification.

JOHN R. L. SANTOS.