Aug. 26, 1930. W. C. ATHON 1,773,930

OIL STORAGE TANK

Filed Dec. 23, 1927 2 Sheets-Sheet 1

Fig. 1.

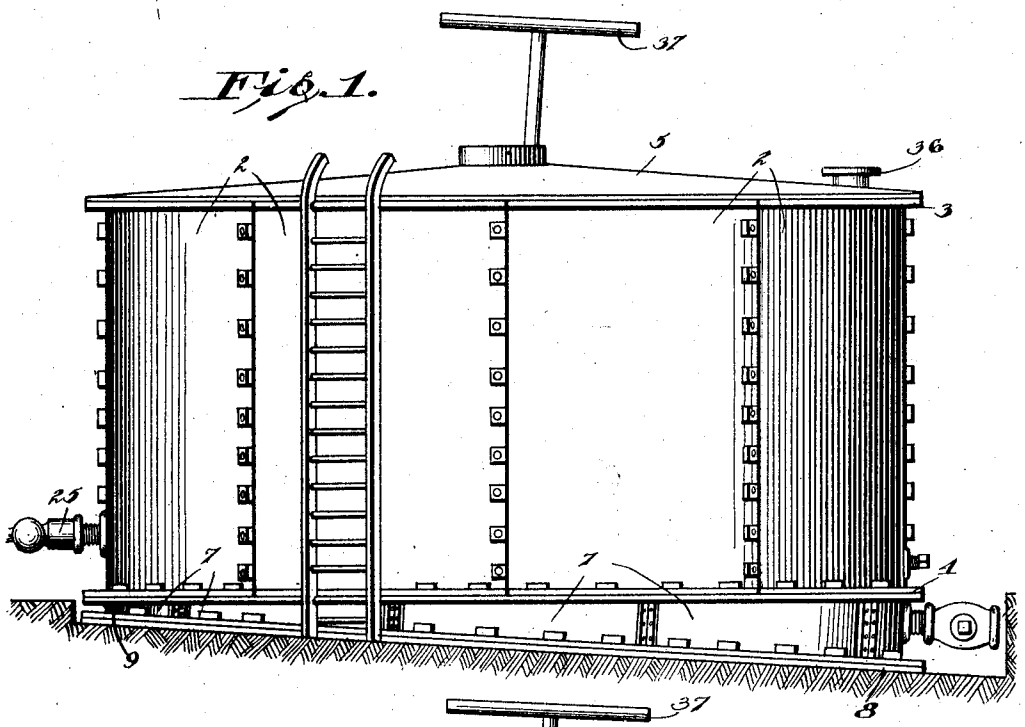
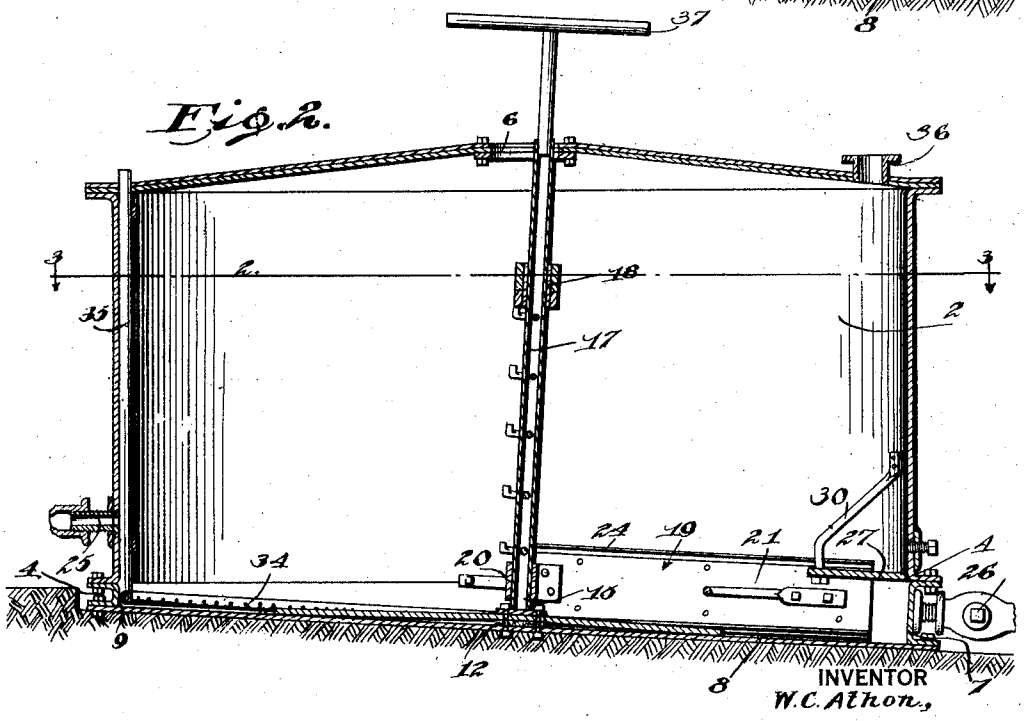


Fig. 2.



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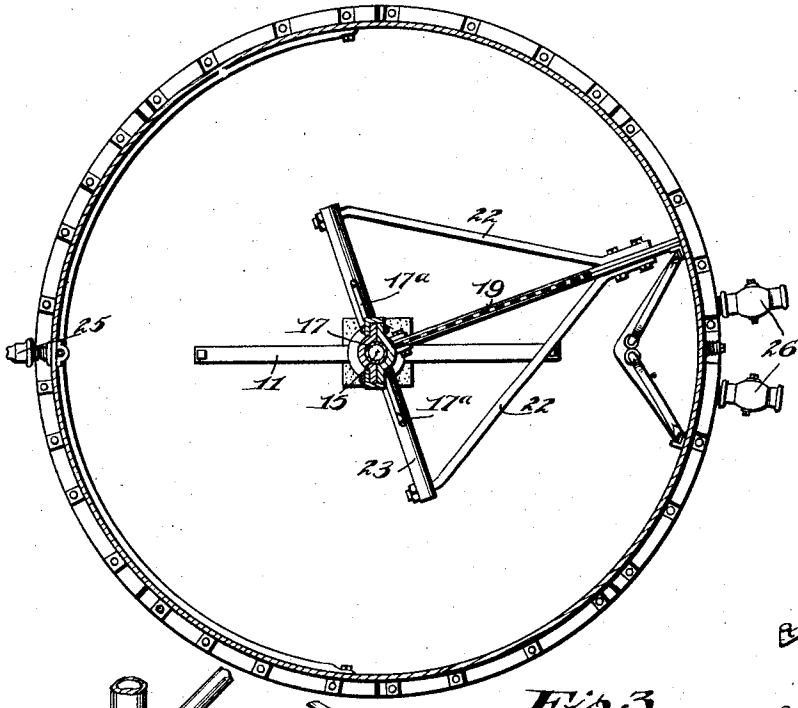


Fig. 3.

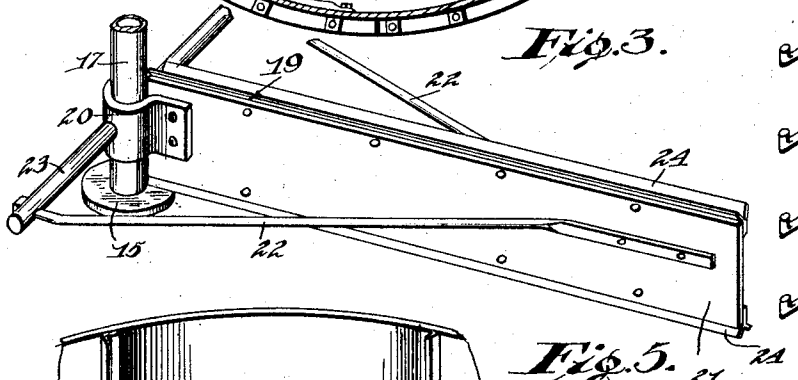


Fig. 5.

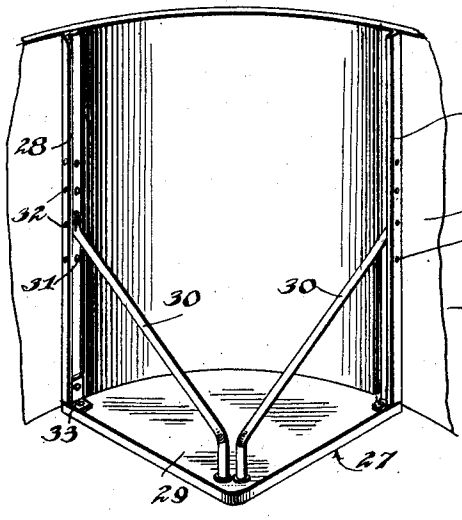


Fig. 6.

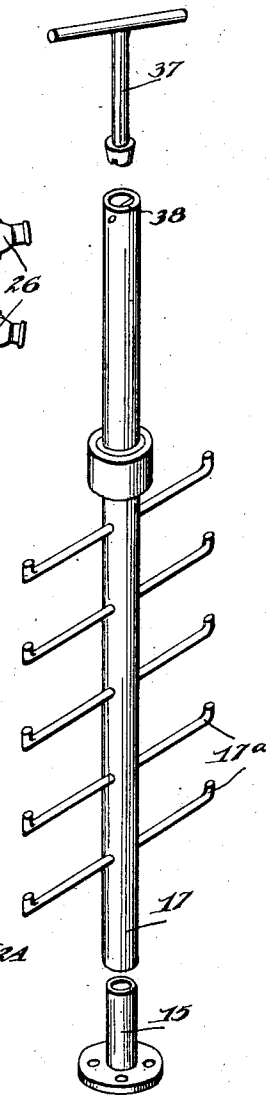


Fig. 4.

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UNITED STATES PATENT OFFICE

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OIL-STORAGE TANK

Application filed December 23, 1927. Serial No. 242,256.

This invention relates to oil storage tanks, and particularly to means whereby the sediment, water or other foreign matter which collects at the bottom of a tank may be drawn off.

Considerable difficulty has been encountered by producers in maintaining storage tanks free of basic sediment as required by pipe line companies. Ordinarily the sediment is withdrawn through a bleed pipe located in the lower portion of the tank, but very frequently this sediment becomes so thick as to prevent efficient removal of the accumulation.

In accordance with the rules of pipe line companies, the basic sediment in tank bottoms must be six inches below the oil drain pipe, but often under rush conditions and inefficient cleaning means for the tanks, the accumulation of basic sediment is so great as to extend above the six inches, as allowed. Under such circumstances, the pipe line companies refuse to run the oil.

Therefore, it is an object of the invention to provide a tank of such construction as to cause the basic sediment to accumulate at a relatively low point as compared to the level of the oil drain line, this being accomplished by the provision of a sloping bottom.

A further object of the invention is the provision of an efficient scraping means, whereby the basic sediment may be manually scraped from a high point and deposited at a low point, thus permitting ready flow of clean oil through the oil drain line.

A still further object is to provide a construction of sloping bottom and scraping means which may be readily applied to oil tanks already in use.

It is also an object to provide means permitting ready "bleeding out" of the basic sediment and thus allowing a gauge of the oil produced.

Other objects, advantages, and features of invention will be apparent from the following description and accompanying drawings, wherein,

Figure 1 is a side elevation of a tank equipped with my invention.

Figure 2 is a vertical section thereof,

Figure 3 is a cross section on the line 3—3 of Figure 2,

Figure 4 is a detail perspective of the scraper support,

Figure 5 is a detail perspective of the scraper and support,

Figure 6 is a perspective view of a combined scraper stop and gauge support.

There is illustrated a tank 1 comprising bolted sections 2, these being provided with flanges 3 and 4 respectively at top and bottom. Upon the flanges 3 is suitably bolted a covering or top 5, this top being provided with an opening 6, for a purpose which will be presently described. The structure thus far recited is that of a well known construction of oil storage tank.

In order that the tank may be provided with a sloping bottom, a plurality of flanged tapering sections 7 are bolted to the flange 4 of the tank 1. These sections 7 are of such shape and size as to readily align with the contour of the flange 4 of the tank. A bottom 8 is bolted to the lower face of the sections 7, and from an inspection of Figure 1, it will be clearly seen that a tank is provided having a bottom sloping from a high point 9 to a low point 10.

The degree of taper of the sections 7 may vary, this depending on the size of tank, but as an illustration it has been found that a tank of 250 barrel capacity should have a fall of 12 inches from the high point 9 to the low point 10.

The bottom 8 is reinforced by plates 11 and 12 upon the inner and outer sides thereof. A pintle bearing 15 is positioned centrally of the tank 1, and upon the plate 11. The plate 12 is disposed directly beneath the plate on the outside of the bottom 8. The bearing 15, plate 11, bottom 8, and plate 12 are suitably apertured to receive bolts 16, as clearly shown in Figure 2. Thus the bearing 15 is rigidly secured to the bottom 8.

Revoluble upon the pintle of the bearing 15 there is a tubular shaft 17 extending vertically and through the opening 6 of the tank 1. The shaft 17 is braced intermediate its ends as at 18. A scraper 19 is secured at one end to the shaft 17 by means of a clamp 20. Ex-

tended transversely through the shaft 17 there are a plurality of rods 17ª which may be employed as a ladder, should it become desirable to descend into the tank.

The scraper, in the present instance, comprises a rectangular blade 21 of a length to extend from its point of attachment to the shaft 17 into close contact with the interior wall of the tank, and into close relation with the bottom 3. The blade is braced by rods 22 and 23. A strap of iron 24 V-shaped in cross section is secured along the longitudinal edges of the blade 21, these straps affording additional rigidity as well as increasing the efficiency of the scraper.

An oil drain line connection is provided at the high point 9 of the tank as at 25, and at a point diametrically opposite, sediment bleed connections 26 are made. It will thus be seen that the sediment bleed connections are made at the lowest possible point of the tank bottom.

Upon the interior of the tank 1 and slightly above the openings for the bleeder connections 26, there is adjustably mounted a gauging platform 27, which as here shown, comprises two angle bars 28, a platform 29 and brace rods 30. The platform and brace rods are assembled in the relation as shown in Figure 6, and this unit is then secured to the side of the tank by bolts 31.

It may, at times, be found desirable to vary the height of the platform 29, and this may be accomplished by adjusting the rods 30 into registration with a desired aperture 32 of the angle irons 28. The platform 29 is also supported at its inner ends by braces 33.

The platform in addition to serving as a support for the gauge rod, also prevents clean oil from mixing with the sediment being ejected by the scraper, as well as acting as a stop for the scraper.

As is sometimes found necessary, the sediment must be heated, before its removal can be accomplished, and therefore provision of a perforated steam heating coil 34 is made. The coil includes a feeder pipe 35 extending downwardly from the top of the tank where it may be connected to a source of supply. The coil 34 is arranged to lie in a plane parallel with that of the bottom 8 of the tank, and this being the case, any water which may condense, will readily drain out of the pipe thus avoiding the possibility of the freezing of the coil, in cold weather.

The coil 34 may also be employed as a means for blowing or forcing the sediment from the high point to the low point of the tank. In this use, a natural gas under pressure could be introduced into the pipe 35, the gas emerging through the perforations of the coil 34. It will thus be seen that any sediment encountered by the gas will be caused to move down the sloping bottom 8 of the tank, to the low point in close proximity to the bleeder connections.

In the use of the tank as here described, a gauge rod is inserted through the opening 36 in the top of the tank, until it rests upon the platform 29. Should the gauge rod reading indicate an excessive amount of sediment the bleed cocks are opened. Next an operating handle 37 is inserted into the handle-receiving head 38 of the shaft 17. The shaft is now rotated by the handle, this in turn imparting a rotating movement to the scraper 19, with a consequent movement of sediment to its point of discharge, namely, the bleeder connections.

It should be noted that the scraper does not make a complete revolution of the tank, as it encounters the gauge platform at either side of its movement. This is important, as the tendency to pack the sediment tightly against the bleeder connections is obviated.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the appended claims.

I claim:—

1. As an improved manufacture, a converter structure for simple cylindrical tanks, comprising a cylindrical wall having an upper edge in a plane at right angles to the axis of the cylinder and a bottom in a plane intersecting the first plane near and outwardly of the wall, and a bleeder conduit opening through the wall adjacent the lowest part of the bottom.

2. In a device of the character described, a converter structure for simple cylindrical tanks, comprising a cylindrical wall having an upper edge in a plane at right angles to the axis of the cylinder and a bottom in a plane intersecting the first plane near and outwardly of the wall, and a bleeder conduit opening through the wall adjacent the lowest part of the bottom, the upper edge of the wall being provided with a substantial flange, whereby the converter may serve as a base upon which to erect a simple tank and convert the latter into a sloped bottom tank.

3. A tank having a sloping bottom comprising a wall, said wall having a flange extended at right angles, a plurality of tapering sections, the taper of each of said sections decreasing progressively from a low point to a high point in said bottom, said tapering sections being provided with flanges adapted to abut the adjacent section and said wall flange, and means to secure said tapered sections to said wall flange.

4. A tank having a sloping bottom, comprising a wall, a plurality of tapering sections, the taper of each of said sections decreasing progressively from a low point to a high point in said bottom, said tapering sec-

tions being adapted to abut one another and said wall, and means to secure said tapered sections to said wall.

Signed at Casper, in the county of Natrona and State of Wyoming, this 15th day of December, 1927, A. D.

WALTER C. ATHON.