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PATENTED JAN. 2, 1906.

E. RAHM & I. C. MAY.

TANK INDICATOR.

APPLICATION FILED JUNE 19, 1905.

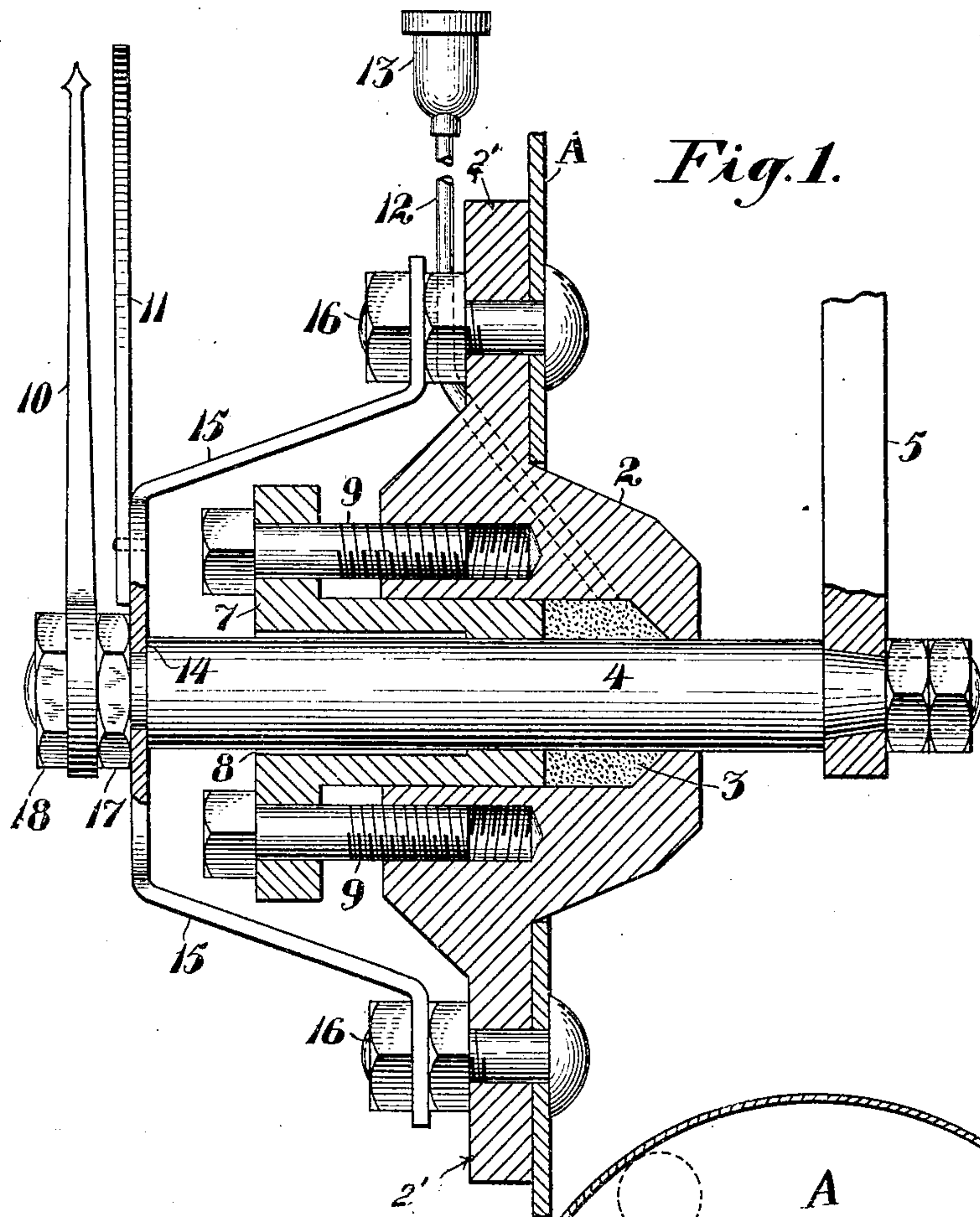
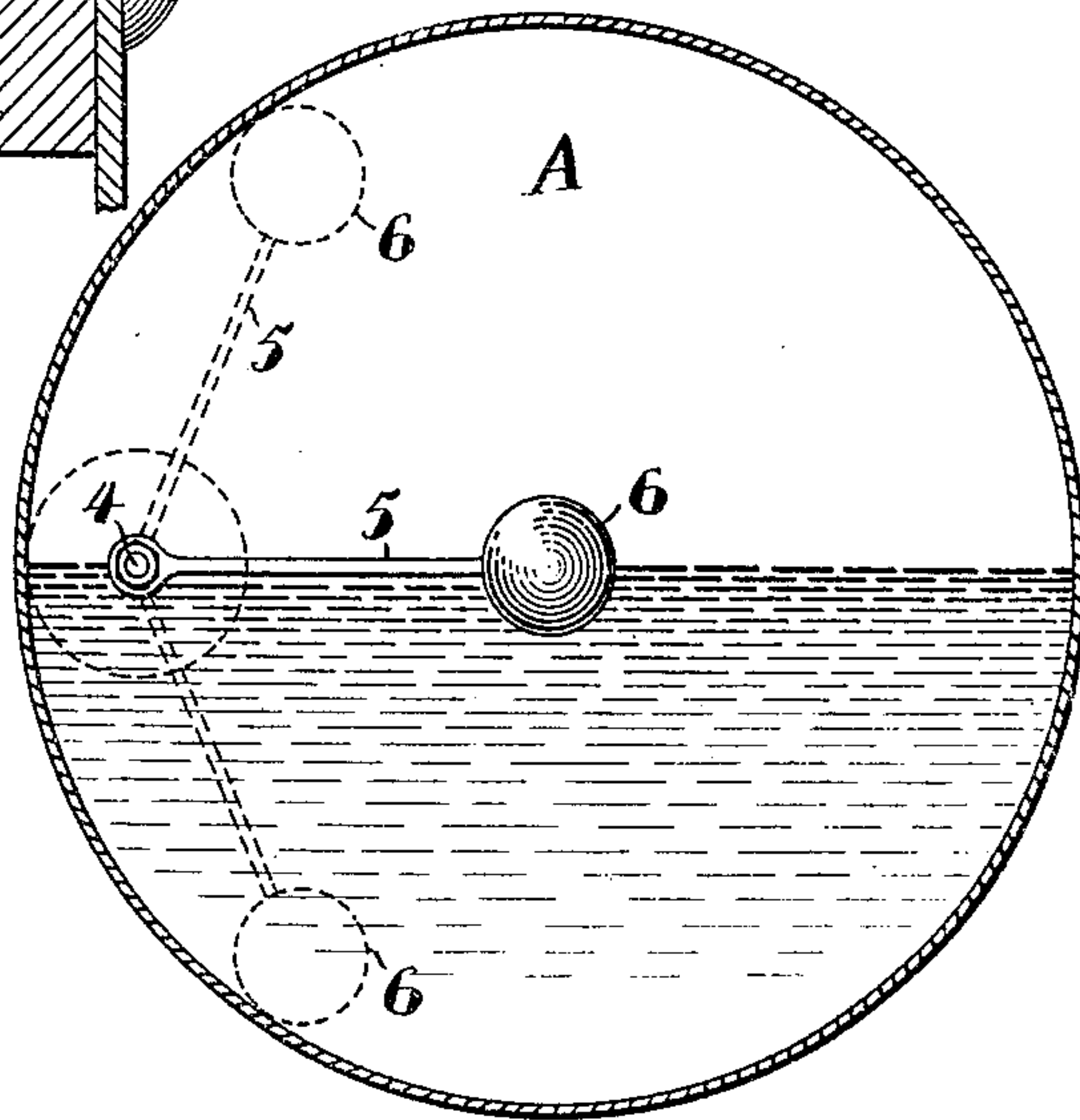


Fig. 1.

Fig. 2.



Witnesses:-

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UNITED STATES PATENT OFFICE.

ELMER RAHM AND IRA C. MAY, OF SACRAMENTO, CALIFORNIA,
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TANK-INDICATOR.

No. 808,871.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed June 19, 1905. Serial No. 265,927.

To all whom it may concern:

Be it known that we, ELMER RAHM and IRA C. MAY, citizens of the United States, residing at Sacramento, in the county of Sacramento and State of California, have invented new and useful Improvements in Tank-Indicators, of which the following is a specification.

Our invention relates to an indicating device for containing-tanks, and is especially designed for use in connection with car and the like tanks in which crude oil is transported.

It consists in the combination of devices and in details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a central sectional view of our device. Fig. 2 is a sectional view of a tank, showing position of our device.

For the purpose of indicating the depth of liquids in containing-tanks floats within the tanks having indicating attachments exterior thereto have been used.

It is the object of our invention to provide an improved structure of this class which is especially applicable for use in tanks containing heavy, gummy, crude oil and like substances which are liable to prevent the free working of the indicator.

A represents the end of a cylindrical tank such as is employed for transporting crude oil upon railways. An opening is made through the end and near one side of the tank, and within this opening is fitted the thickened central portion of a casting 2, provided with lugs or an equivalent rim portion 2', secured by bolts. This casting has a cylindrical opening formed in its outer face extending inwardly very close to the inner end of the casting 2. This opening is shown at 3 and has a substantially horizontal axis. This opening serves to receive any suitable fibrous packing in the lower part of the chamber 3. This packing surrounds shaft 4, and this shaft carries on its inner end a lever-arm 5, upon the outer end of which is fixed a float 6. This float is of sufficient diameter and buoyancy and the lever is of sufficient length so that the rise and fall of the oil within the tank will raise or depress the float.

Around the shaft and fitting the stuffing-box 3 is a gland or follower 7. This follower is counterbored from the outer end to a point

near the inner end, as shown at 8, so that it has no contact with the shaft 4 for this distance. The follower is secured in place by bolts, as at 9. The outer end of the shaft 4 carries a pointer or indicator 10, and this pointer corresponds in position with the interior lever-arm 5 and is movable over a dial or segment, as at 11, so that the amount of oil within the tank can always be ascertained by inspection. The distance between the bottom of the stuffing-box opening 3 and the inner end of the casting 2 is made as small as possible to reduce the amount of friction and adhesion caused by the gummy character of the oil, and for the purpose of further counteracting this difficulty we have shown a pipe 12, connecting through a passage bored in the casting 2 to the inner portion of the stuffing-box, and this pipe 12 may have upon its upper end an oil-cup, as at 13, either with force or other feed contrivance. Within this cup may be placed a thin limpid oil or coal-oil with which the packing can be saturated, so as to prevent it being made gummy and adhesive by the entrance of the crude oil from the tank. By making the pipe 12 of sufficient length the weight of the exterior thin oil will also act to prevent the entrance of the heavier oil from the tank. Thus the rotation of the shaft will not be impeded. In order to properly support the outer end of this shaft 4 and to prevent the interior pressure from forcing it out, the outer end of the shaft is turned down, forming a shoulder, as at 14, and braces 15 are bolted to the main casting, having a hole at the center which fits against the shoulder 14. These braces may be made divergent from the center and bent inwardly, so that the part through which the shaft passes is sufficiently distant from the stuffing-box to fit the shoulder 14. The ends of the arms are secured to the casting by nuts and bolts, as shown at 16, thus steadying the outer end of the shaft and preventing irregular movement by reason of the counterbore 8 and the small amount of interior bearing. These bolts and nuts are also employed to secure the rim of the casting 2 to the tank. In addition to the main object of preventing outward thrusts upon the shaft these braces or brackets also serve for the attachment of the dial 11, which is riveted thereto and in close proximity with the pointer 10.

The pointer is held in place between two nuts 17 18. The inner nut is screwed down sufficiently close to the bracket or brace plate through which the shaft passes to leave freedom between the nut and the shoulder 14 sufficient for the shaft to turn freely in the hole in the plate. The outer nut 18 is screwed down hard upon the indicator-pointer and serves as a lock-nut to hold the parts together.

The hole in which the casting 2 is fixed in the end of the tank is sufficiently near to one side so that the highest and lowest points to which the float may rise or fall when the tank is full or empty will be limited by contact of the float with the interior periphery of the tank, thus preventing the float from ever rising to such a position that the arm 5 will be vertical, and thus insure the movement of the float in unison with any change of level within the tank.

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

1. An oil-tank indicator comprising a casting having a central portion fitting an opening in the tank and bolts by which the perimeter of the casting is secured to the tank, said central portion of the casting having a chamber with packing and a gland operable in the chamber, a shaft passing through the chamber of the casting and the gland said gland being counterbored from the outer end to a point proximate to the inner end whereby a

limited surface of contact is provided between the gland and shaft, a yoke having a central opening for the shaft said yoke having its ends bent inward and fitted to the same bolts which secure the casting to the tank, nuts engaging the bolts, and a float and indicator means at opposite ends of the shaft.

2. The combination with a tank having an opening, of a casting having a central portion fitting said opening, a shaft passing through the casting and a gland and packing in the casting and through which said shaft also passes, a float carried by one end of the shaft, indicator means at the opposite end of said shaft, a pipe passing through the casting to the packing thereof and adapted to deliver a thin oil under pressure to said packing, and means for resisting end thrust of the shaft said means including a shoulder on the shaft and a yoke against which the shoulder abuts said yoke having inwardly-bent ends, bolts passing through the ends of the yoke and also the edge portion of the casting whereby single bolts secure both parts, and nuts engaging the bolts.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ELMER RAHM.
IRA C. MAY.

Witnesses:

WM. S. HOWE,
JAMES B. DEVINE.