

Dec. 4, 1928.

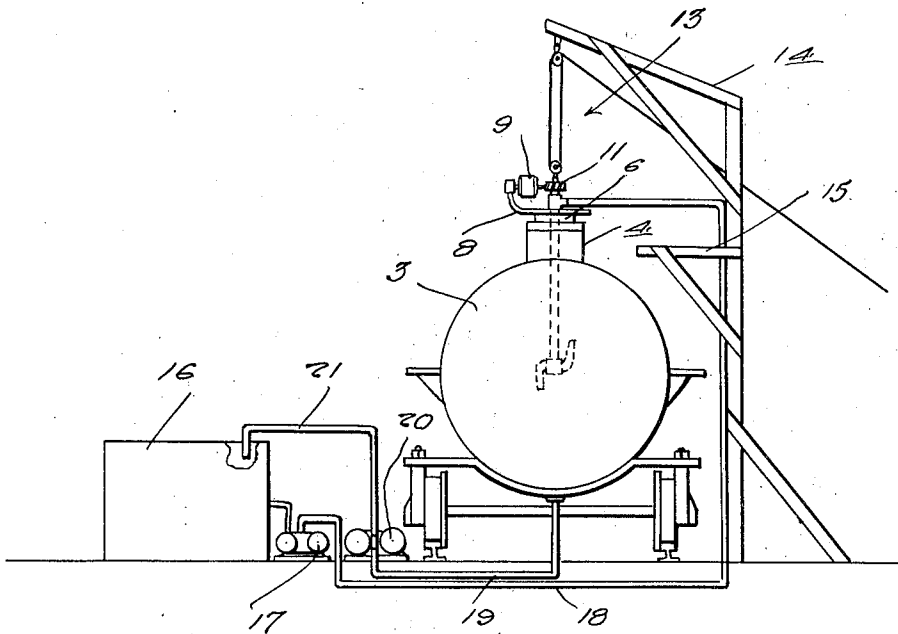
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A. B. BUTTERWORTH

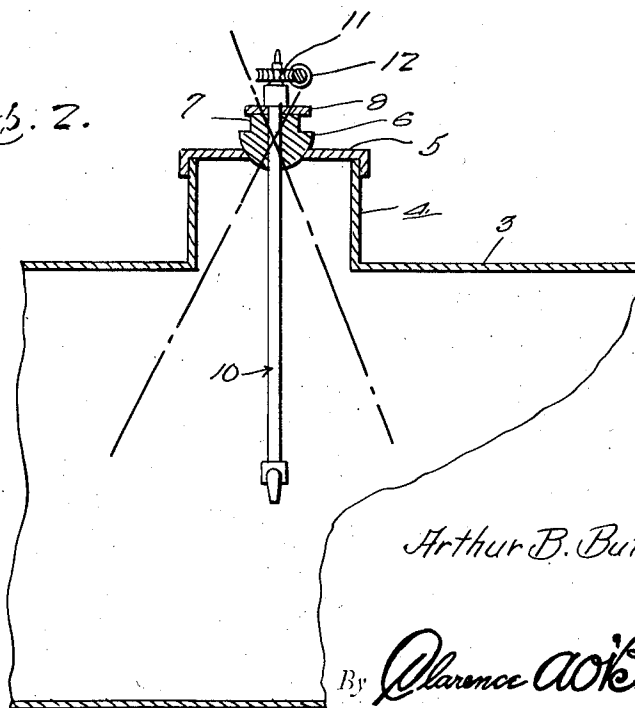
TANK CLEANING DEVICE

Filed Sept. 15, 1927

Figs. 1.



Figs. 2.



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TANK-CLEANING DEVICE.

Application filed September 15, 1927. Serial No. 219,684.

The present invention relates to an improved tank cleaning device, and operating equipment, constructed for cleaning oil tankers, tank cars, storage tanks, and similar containers.

The invention has particular reference to an improvement upon Patent No. 1,557,240 granted to me, under date of October 13, 1925.

The principal improvement is directed to a novel mounting for the cleaning device and fluid circulator whereby it is associated with the tank in such a way as to permit movement and to permit the fluid to be directed over a larger area in the tank and to thus render the structure more efficient.

The particular details cooperating to produce the improved structure will become more readily apparent from the following description and drawings.

In the drawings:—

Figure 1 is an elevational view showing the device and the supporting equipment, and the manner in which it is associated with a tank car, for cleaning the car.

Fig. 2 is an enlarged fragmentary sectional view showing the improved mounting for the cleaning device and fluid circulator.

Referring to the drawings by reference numerals, it will be seen that the reference character 3 designates the body of the tank car which is provided at its top with the customary filler neck 4 having a closing cap 5. In this connection, the cap is formed at its center with an opening the peripheral portion of which is beveled to provide a seat for a rockable mounting 6. This mounting 6 is in the form of a body having a vertical hole passing through its center and having its lower portion of semi-spherical form to rest movably in said seat.

The extended top portion 7 is flat and provides a rest for an arm 8 which supports a suitable drive or motor 9. Depending into the interior of the tank as shown in Fig. 2, is the fluid circulating and cleaning device represented generally by the reference character 10. This device is the subject matter of the aforesaid Patent, No. 1,557,240.

This device embodies a depending tube having injector nozzle at its bottom and having a gear 11 at its top. Incidentally, the aforesaid motor 9 is equipped with a shaft having a worm drive 12 in mesh with the gear 11, thus serving to rotate the device 10. With this arrangement, it will be noticed that the worm drive is in constant mesh irrespective

of the movement of the cleaning device 12. In other words, the cleaning device may be swung to the dotted line positions to vary its positions as shown in Fig. 2, while rotating.

Ordinarily, this cleaning device is rigidly mounted, and the fluid can only be sprayed through a limited area. With this arrangement, the device can be swung longitudinally and transversely so that the spray can be directed over a considerable area, in the tank.

Associated with the upper end of the details just described, is a hoisting means designated generally at 13, this being suspended from a suitable support 14 carried on the upper end of a properly braced standard. These parts provide a scaffold which also includes a platform 15, which the operator may walk upon.

The reference character 16 designates a storage tank containing fluid. Associated with said tank is a fluid pressure pump 17 which circulates the fluid through the piping 18 and conducts it into and through the cleaning device 10.

A drain pipe 19 is connected with the bottom of the tank 3 and is then connected with the suction pump 20, and leads back to the tank 16 as at 21. This pipe 19 and pump 20 serve to remove the sediment laden fluid from the tank 3, whereupon it is returned to the tank 16.

With this structure, it is not necessary to send men into the tank. This eliminates the danger and discomfort of this character of work. The heater coils do not have to be removed and replaced after cleaning. No hand or pneumatic scaling is necessary, as the force of the liquid stream removes practically all sediment and dirt. One man can handle the equipment and carry the work to a successful conclusion. Any number of cars can be cleaned at once, limited only by the size of the cleaning apparatus and track facilities.

Attention is also invited to the fact that the apparatus can be employed for cleaning out tanks. This is advantageous because before repairs are undertaken in tank cars or other tanks, that have contained a volatile oil, acids and the like, it is necessary to steam them to kill the gas before allowing the men to enter and the apparatus here outlined can be used for this purpose, as well as for the tank cleaning purpose already described.

Undoubtedly, however, these advantages and others will be quite clear to persons skilled in the art to which the invention relates.

Therefore, a more lengthy description is thought unnecessary.

Changes in shape, size, and re-arrangement of parts coming within the field of the invention claimed, may be resorted to if desired.

Having thus described my invention, what I claim as new is:—

1. In a tank cleaning device of the class described, a cap adapted to fit upon a filler neck on said tank, said cap having a central opening whose peripheral edge portion is beveled to provide a seat, a tank cleaning and fluid circulating nozzle, a mounting for said nozzle, said mounting having a vertical hole through which a portion of said nozzle passes, said mounting including a semi-spherical base resting rockably upon said seat, and means for rotating said nozzle, said means being supported from the mounting.

2. In a tank cleaning device of the class described, a closing cap having a central opening whose edge portion is beveled to provide a seat, a tank cleaning and fluid circulating nozzle, a mounting for the nozzle having a

vertical hole through which a portion of the nozzle passes, said mounting comprising a body having a semispherical base fitting into said opening and having a portion resting rockably upon said seat, an arm carried by the mounting, a motor supported from the arm and a driving connection between the motor and the upper end portion of said nozzle, whereby to permit said nozzle to be rocked back and forth in the tank while simultaneously rotating.

3. In a structure of the class described, a tank cleaning and fluid circulating device including a pipe provided at its bottom with distributing nozzles, a universal mounting on said device permitting it to be swung in a pendulous manner in various directions while introducing the fluid into a tank under pressure, and means for simultaneously rotating said device with respect to the mounting while it is being swung in said tank.

In testimony whereof I affix my signature.

ARTHUR B. BUTTERWORTH.