

July 14, 1925.

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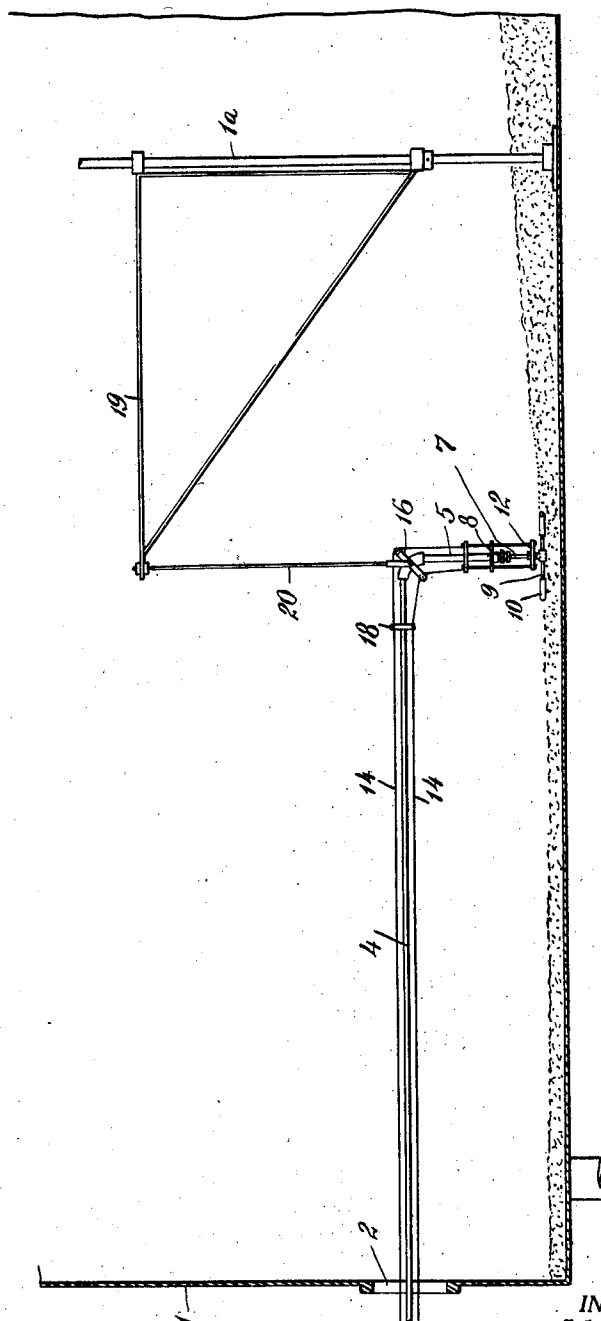
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APPARATUS FOR WASHING SEDIMENT FROM OIL TANKS

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Fig. 1.



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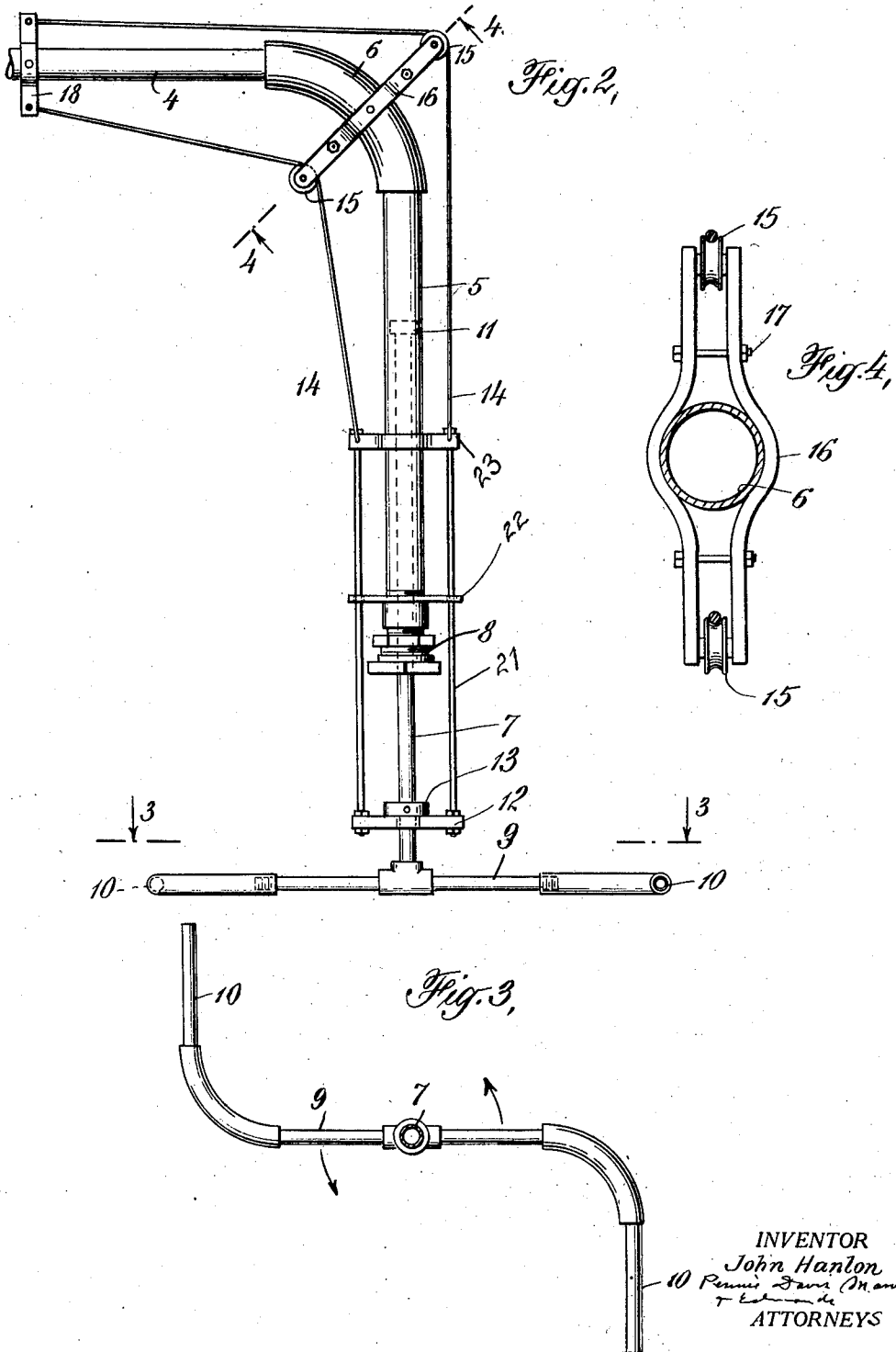
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UNITED STATES PATENT OFFICE.

JOHN HANLON, OF BAYONNE, NEW JERSEY.

APPARATUS FOR WASHING SEDIMENT FROM OIL TANKS.

Application filed February 27, 1922. Serial No. 539,793.

To all whom it may concern:

Be it known that I, JOHN HANLON, a citizen of the United States, residing at Bayonne, in the county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Apparatus for Washing Sediment from Oil Tanks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in washing apparatus, and relates particularly to apparatus for removing sediment from tanks adapted to contain oil and the like. Oils of every character carry in suspension more or less solid matter, and when the oils are permitted to stand for any length of time, the solid matter is deposited in the form of a sediment. With the lapse of time, the layer of sediment in the tank increases in depth and density, until it reaches a height such that it interferes with the handling of the oil. When this occurs, the usual procedure is to empty the tank, and remove the sediment by means of shovels. This is an operation requiring some time, and of a difficult nature, and because of the fumes within the tank, the operation is attended with a degree of danger. The workmen can remain in the tank but a short time, when they must be relieved, otherwise they will be overcome by the fumes.

In the present invention, I provide mechanism for loosening and removing the sediment, capable of being controlled and operated from outside the tank, and is so arranged that every part of the tank may be easily, quickly and thoroughly cleaned, and the sediment withdrawn from the tank.

The invention will be more clearly understood after a study of the accompanying drawings which illustrate a preferred embodiment. In these drawings:—

Figure 1 is a sectional view of a part of a tank provided with the improved washing apparatus for carrying out the method,

Figure 2 is a front view of the apparatus removed,

Figures 3 and 4 are sections on the lines 3—3 and 4—4, respectively, of Figure 2.

The present embodiment of the invention is shown in connection with a tank 1 of usual character, having a manhole 2 in its side wall, near the bottom, and having a

center post 1^a. The washing apparatus is designed to be inserted through the manhole 2, and the said apparatus comprises a pipe 4, which is adapted to be connected at one end, by any suitable mechanism, as for instance a hose, with a source of water supply. The pipe has a depending portion 5, which is connected to the pipe 4 by an elbow 6, and a discharge pipe 7 is mounted to telescope into the portion 5. A water-tight connection 8 of any suitable character, as for instance a stuffing box is arranged between the portion 5 of the pipe and the discharge pipe 7, and the discharge pipe has a nozzle in the form of a crosshead 9. The ends 10 of the cross head are bent in opposite directions as shown more particularly in Figure 3, so that when water is discharging through the nozzle, the pipe 7 will be rotated, the said pipe being rotatable in the portion 5 of the pipe 4. A collar or head 11 is provided on the discharge pipe 7, for limiting the outward movement thereof with respect to the portion 5 of the pipe 4, and suitable mechanism is provided for raising and lowering the discharge pipe. The said mechanism comprises a crosshead 12 secured to the pipe 7, below a fixed collar 13 thereon. Rods 21 are connected with the ends of the crosshead 12, and these rods extend upwardly alongside the pipes 7 and 5, through a guide 22 on the pipe 5. The upper ends of the rods are connected by a slide 23 mounted to slide on the pipe 5, and flexible members 14 are connected with the ends of the crosshead. These members pass upwardly over pulleys 15 journaled in the ends of a support 16, which is secured to the elbow 6 intermediate the ends thereof. This support comprises a pair of members, engaging opposite sides of the elbow, and secured together by means of nuts and bolts 17. The pulleys 15 are journaled between the ends of the respective members as shown. From the pulleys 15, the flexible members 14 pass to the ends of a crosshead 18, which is mounted to slide on the pipe 4, and which is moved by any suitable means, such for example as the flexible members 14 which have been shown in Fig. 1 as being extended to the exterior of the tank 1 through the opening 2. If found advisable, the mechanism may be supported from a davit 19 on the center post 1^a of the tank, the said davit being mounted to oscillate about the post, so that the nozzle may be given a translatory as

well as rotary movement and every part of the tank may be cleaned by the discharge from the crosshead. It will be understood that this translatory movement of the nozzle
 5 may be effected by manipulating the end of pipe 4 which extends to the exterior of tank 1 through the opening 2. The pipe 4 is connected to the davit by a flexible member 20 and the said member may engage the sup-
 10 port 16 on the elbow.

In operation, the device is introduced through the manhole 2, and is engaged with the davit. If too large for the manhole, the device may be readily dismantled prior
 15 to its introduction, and reassembled within the tank. This is unobjectionable as the fumes do not arise to any substantial degree until the washing action begins. The water is turned on. As the water discharges, the
 20 sediment is stirred up, and washed away through a drain or drains 24. As the sediment is washed away, the crosshead is permitted to drop, until all of the sediment is removed. The water laden with the sedi-
 25 ment may be pumped out during the operation, and the contained oil may be recovered from the water. The davit mounting permits the nozzle to be moved so that every part of the tank bottom may be engaged by
 30 the discharge from the nozzle. The water may be from a standpipe, or from a water main, or from any source having sufficient head to rotate the nozzle. Two or more of the devices could be simultaneously used in
 35 a tank; as for instance two might be used, being mounted at opposite sides of the center post.

I claim:

1. Apparatus for washing sediment from
 40 oil tanks, comprising the combination of a pipe, a discharge nozzle on the end of the pipe, means within the tank supporting the nozzle for translatory movement in a horizontal plane, and means operable from the
 45 exterior of the tank for moving the nozzle in a vertical plane.

2. Apparatus for washing sediment from oil tanks, comprising a pipe adapted to be

passed through a manhole in the side of the tank, and provided with a depending
 50 portion at its inner end, a discharge pipe telescoping into the depending portion and provided with a rotatable discharge nozzle, and means operable from the exterior of the
 55 tank for controlling the position of the discharge nozzle relative to the bottom of the tank.

3. Apparatus for washing sediment from oil tanks, comprising a pipe adapted to be
 60 passed through a manhole in the side of the tank, and provided with a depending portion at its inner end, a discharge pipe telescoping into the depending portion and provided with a discharge nozzle in the form
 65 of a crosshead, the ends of which are curved in opposite directions to cause the discharge pipe to rotate when liquid is discharged from the crosshead, means for moving said
 70 crosshead toward and away from the depending portion, said means being operable from the exterior of the tank.

4. Apparatus for washing sediment from oil tanks, comprising the combination of a
 75 pipe adapted to be passed through a manhole in the side of the tank, a rotatable discharge nozzle on the end of the pipe, means within the tank supporting the nozzle for translatory movement in a horizontal plane
 80 while rotating, and means operable from the exterior of the tank for moving the nozzle in a vertical plane.

5. Apparatus for washing sediment from oil tanks comprising the combination of a
 85 discharge nozzle, means within the tank supporting the nozzle for translatory movement in a horizontal plane, a pipe for conducting water under pressure to the nozzle, means operable through an opening in a
 90 wall of the tank for imparting the translatory movement to the nozzle, and means also operable through an opening in a wall of the tank for raising and lowering the nozzle relative to the bottom of the tank.

In testimony whereof I affix my signature.

JOHN HANLON.