March 16, 1954 A. K. DOLEN 2,672,373

APPARATUS FOR MOVING EARTH AND THE LIKE

Filed Aug. 30, 1950

Fig. 1.

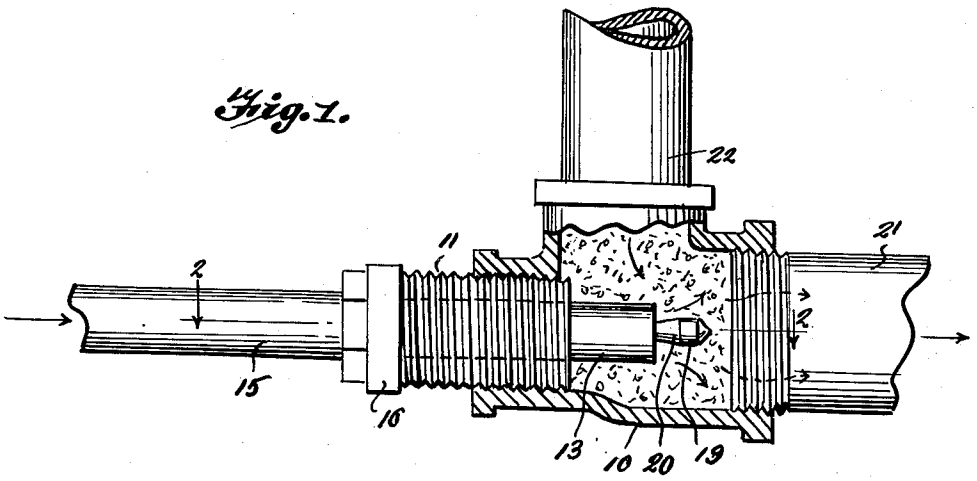


Fig. 2.

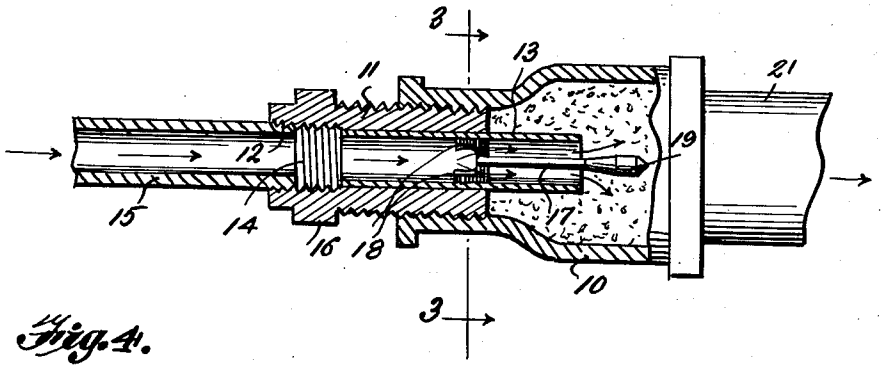


Fig. 4.

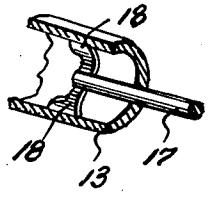
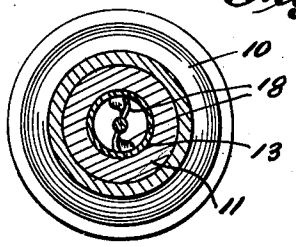


Fig. 3.



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APPARATUS FOR MOVING EARTH AND THE LIKE

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2 Claims. (Cl. 302—15)

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The present invention relates to an apparatus for moving earth and the like and it consists in the combinations, constructions and arrangements of parts herein described and claimed.

Generally there is provided an apparatus for the moving of sand, gravel and like materials and it consists of a water inlet pipe which is connected with a fitting of the T-type. The water inlet pipe terminates in a nozzle of novel construction within the fitting. An outlet pipe is connected to the fitting in longitudinal alignment with the water inlet pipe and a suction pipe is also connected to the fitting but at right angles to the previously mentioned pipes. When a jet of water projects from the nozzle it causes a suction in the suction pipe and at the same time forces any material which may be delivered to the fitting from the suction pipe through the outlet pipe. The apparatus is particularly useful for removing sand and gravel from crevices, creek beds and the like and may also be adapted to the dredging of bay and river bottoms or the like.

It is accordingly an object of the invention to provide a device of the character set forth which is simple in construction, inexpensive to manufacture and yet effective and efficient in use.

Another object of the invention is the provision of a novel fitting and associated parts forming parts of the invention.

Another object of the invention is the provision of a novel water spreader forming a part of the invention.

A still further object of the invention is the provision, in a device of the character set forth, of novel means for imparting a whirling motion to a jet of water.

Other and further objects of the invention will become apparent from a reading of the following specification taken in conjunction with the drawing, in which:

Figure 1 is a side elevational view, partly broken away, of an embodiment of the invention,

Figure 2 is a sectional view, partly in elevation, taken along line 2—2 of Figure 1,

Figure 3 is a sectional view taken along line 3—3 of Figure 2, and

Figure 4 is a fragmentary perspective view, somewhat enlarged, illustrating certain vanes forming a part of the invention.

Referring more particularly to the drawing, there is shown therein a T-fitting 10 in one end of which is threaded a collar 11 whose outer portion is interiorly threaded, as indicated at 12.

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A nozzle 13 is provided with exterior threads 14 in its outer portion for threading the same into the threads 12 and the nozzle 13 extends inwardly of the collar 11 and terminates approximately centrally within the fitting 10. A water supply pipe 15 is threaded into the outer end of the collar 11, utilizing the threads 12 for this purpose and the collar 11 is provided with an integrally formed nut head 16.

The stem 17 is centrally and longitudinally positioned in the inner portion of the nozzle 13 and is affixed at its rear end to a pair of outwardly extending vanes 18 whose outer ends are affixed to the inner surface of the nozzle 13, preferably by welding. The extreme inner end of the stem 17 is provided with an integrally formed spreader head 19 having a frustro-conical surface 20 which presents its smaller portion toward the innermost end of the nozzle 13.

Connected to the fitting 10 in longitudinal alignment with the nozzle 13 and supply pipe 15 is what may be termed a delivery pipe 21 and connected to the fitting 10 perpendicularly to the pipes 15 and 21 is a vacuum pipe 22.

In operation, it will be apparent that water may be supplied to the nozzle 13 to the pipe 15 and that in passing through the nozzle 13 the water will be given a whirling motion by means of the vanes 18, each of which is provided with a curvular pitch and that thereafter such whirling water will emerge from the innermost end of the nozzle 13 to impinge against the frustro-conical surface 20 of the spreader head 19 to thereby be evenly distributed within the fitting 10 and in a direction toward the delivery pipe 21.

It will also be apparent that such action will create a suction in the pipe 22 and that the pipe 22 may be placed at its other end in any material which is desired to move through the pipe 22 and thence through the pipe 21 to another position. It will also be seen that the pipe 22 may be flexible in nature so that its free end may be manually or otherwise moved from place to place to make the operation of the apparatus more facile. The device will work equally as well with liquids such as mud, muck or the like as well as with powdered and granular material such as gravel or sand since the whirling action of the water emanating from the nozzle 13 will encompass all particles coming into the fitting 10 from the vacuum pipe 22 and force the same through the delivery pipe 21. The pressure of water entering the pipe 15 may be regulated in conventional manner to suit the particular needs of any operation.

While but one form of the invention has been shown and described herein, it will be readily apparent to those skilled in the art that many minor modifications may be made without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. An apparatus of the character described comprising a T-fitting, a water supply pipe connected to said fitting, a delivery pipe connected to said fitting in longitudinal alignment with said water supply pipe, a vacuum pipe connected to said fitting perpendicularly to said water supply pipe and said delivery pipe, a nozzle connected to said water supply pipe and having its open end positioned in said fitting, a longitudinally extending stem positioned in the inner end portion of said nozzle, a pair of vanes each having a curvular pitch affixed centrally to said stem and at their outer edges to the inner wall of said nozzle, said stem extending out of the open end of said nozzle, and a spreader head affixed to the free end of said stem.

2. An apparatus of the character described comprising a T-fitting, a water supply pipe connected to said fitting, a delivery pipe connected to said fitting in longitudinal alignment with said water supply pipe, a vacuum pipe connected to said fitting perpendicularly to said water supply pipe and said delivery pipe, a nozzle connected to said water supply pipe and having its open end positioned in said fitting, a longitudinally extending stem positioned in the inner end portion of said nozzle, a pair of vanes each having a curvular pitch affixed centrally to said stem and at their outer edges to the inner wall of said nozzle, said stem extending out of the open end of said nozzle, and a spreader head affixed to the free end of said stem, said head having a frustro-conical portion presenting its smaller end toward the open end of said nozzle.

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