July 27, 1943. V. MIKAN 2,325,336

EXCAVATOR

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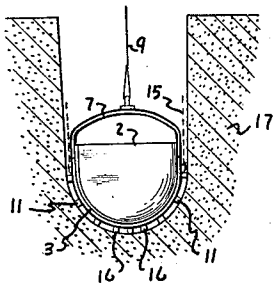


Fig. 4.

Fig. 1.

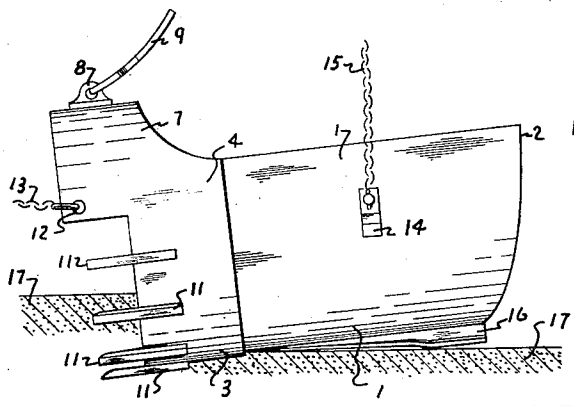


Fig. 2.

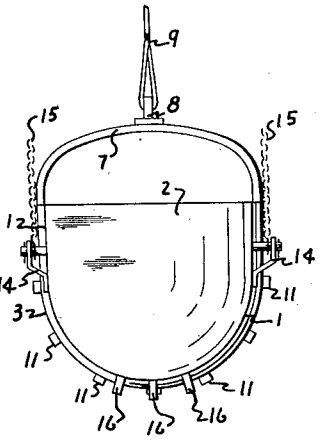


Fig. 3.

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EXCAVATOR

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Application February 27, 1941, Serial No. 380,780

2 Claims. (Cl. 37—135)

The present invention relates to drag line ditchers and more particularly to a drag line ditcher designed to be self-centering and straight line operating in use.

Prior art drag line ditchers have been provided with the excavating lip thereof either flat or substantially flat, with the result that in operation, it is an exceedingly difficult matter to dig a straight ditch. According to the present invention, this difficulty has been eliminated by providing a drag line ditcher having an excavating bucket provided with a substantially semi-circular bottom and a substantially semi-circular excavating lip. With a construction designed in this manner, the ditcher not only provides its own clearance, but in use it is self-centering and digs a ditch automatically in a straight line.

An object of the invention is to provide a self-centering drag line ditcher.

Another object of the invention is to provide a drag line ditcher having an excavating lip which curves upwardly from the lowermost point thereof to points on opposite sides of the ditcher, substantially above the lowermost point.

A still further object of the invention is to provide a drag line ditcher having a semi-circular bottom and excavating lip.

A still further object of the invention is to provide a drag line ditcher having the excavating lip thereof disposed in advance of the bucket and radially outwardly therefrom.

These and other objects residing in the arrangement, combination and construction of the parts will be apparent from the following specification when taken with the accompanying drawing, in which:

Fig. 1 is a perspective of the invention,

Fig. 2 is a side view thereof showing the same digging into dirt,

Fig. 3 is a rear view of the invention, and

Fig. 4 is a front view of the invention, showing it disposed in a ditch dug by it.

Referring particularly to Fig. 1 of the drawing, illustrating in perspective a drag line ditcher according to the present invention, the reference character 1 indicates a bucket having sides, a bottom, and a closed end 2. At the open end of the bucket 1, there is provided an excavating lip member 3 in the form of a ring, having sides 4 and 5, a bottom 6 and an arch 7 bridging the sides 4 and 5, the arch 7 having secured thereto a bracket 8, to which is connected a supporting cable 9.

The excavating lip member 3 is provided at the forward edge thereof with an excavating lip 10. The excavating lip 10 is semicircular in shape and is provided about the periphery thereof with excavating teeth 11. Portions of each side of the arch 7 overhang the excavating lip 10, and are provided with holes 12 by means of which dragging chains 13 are secured to the structure.

The sides 4 and 5 and bottom 6 of the excavating lip member 3, as a group, are preferably semi-circular in cross section, having the same curvature as the excavating lip 10. Also, the bucket 1 is semi-circular in cross sectional configuration, and nests within the excavating lip member 3. Thus, the excavating lip member 3 constitutes an extension of the bucket 1 and the excavating lip 10 is radially disposed outwardly from the line of the bucket 1. The bucket 1 has secured to the sides thereof brackets 14 to which are connected lifting chains 15 in a manner well known in the art.

Secured to the underside of the bucket 1 are three skids 16 which project radially from the bottom of the bucket 1 and diverge downwardly and rearwardly. The skids 16 support the rear portion of the bucket 1 from the ground and tip the ditcher downwardly and forwardly so as to direct the teeth 11 on the excavating lip 10 into the earth to cause the same to bite into the earth when the ditcher is dragged forwardly by the chains 13.

In operation, the ditcher is supported by the lifting chains 15 and the supporting cable 9 from a derrick, not shown, in a manner well understood in the art and it is dragged forwardly by the chains 13 along the path of the ditch to be dug. As shown in Fig. 2 the skids 16 direct the teeth 11 downwardly at an angle so that they bite into the earth 17. When the bucket is filled, the ditcher is lifted from the ditch being dug by the lifting chains 15 and supporting cable 9 and is dumped by the manipulation of the supporting cable 9 in a manner well known by those skilled in the art.

In using the ditcher according to the present invention, it will be clear from Fig. 4, that the ditcher will center itself in the bottom of a ditch being dug, due to the curvature of the bottom of the ditcher, and the resulting curvature of the bottom of the ditch which it digs. This feature is important because prior art ditchers having a substantially flat bottom will not center especially when through some avoidable circumstance, the ditch being dug has a portion wider than the width of the ditcher, although even under favorable circumstances they tend to wander to one side. The centering accomplished by the present

invention will not only result in digging a ditch of uniform width, but will also result in the ditch following a straight line. Furthermore, the fact that the excavating lip 10 and the teeth 11 therefor extend up the sides of the ditcher, results in the ditcher providing its own clearance, as it is used.

From the foregoing specification, it will be apparent that while the disclosed cross sectional shape of the bucket 1, the excavating lip member 3 and the excavating lip 10 provide a structure which operates as described, it is not essential that the curvature be that of a true semi-circle, as other forms of bottom curves of a relatively small radius will provide the same result.

Having thus described my invention, what I desire to secure by Letters Patent and claim is:

1. A drag line ditcher comprising an excavating bucket having an open end, and being of substantially uniform width throughout its length, an excavating lip on said end, said lip having substantially vertical and parallel side portions, and a generally semi-cylindrical bottom portion curved upwardly to meet said side portions, said lip having a plurality of teeth arranged in spaced relation along the full length of the same, whereby the tendency of the ditcher to deviate from a straight line in operation is restrained.

2. A drag line ditcher comprising an excavating bucket having side walls, a bottom, a closed end, and an open end, said bucket being of substantially uniform width throughout its length, said open end having an excavating lip member at least a portion of the cross section of which corresponds to the cross section of said bucket, said bucket being supported in said excavating lip member in at least partial overlapping relation therewith, said excavating member comprising an extension of said bucket from said open end, and an excavating lip on said excavating lip member at the outer end thereof, said lip having substantially vertical and parallel side portions and a generally semicylindrical bottom portion curved upwardly to meet said side portions, said lip having a plurality of teeth arranged in spaced relation along the full length of the same, whereby the tendency of the ditcher to deviate from a straight line in operation is restrained.

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