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E. COHEN

HYDRAULIC LIFTING DEVICE

Filed August 1, 1925

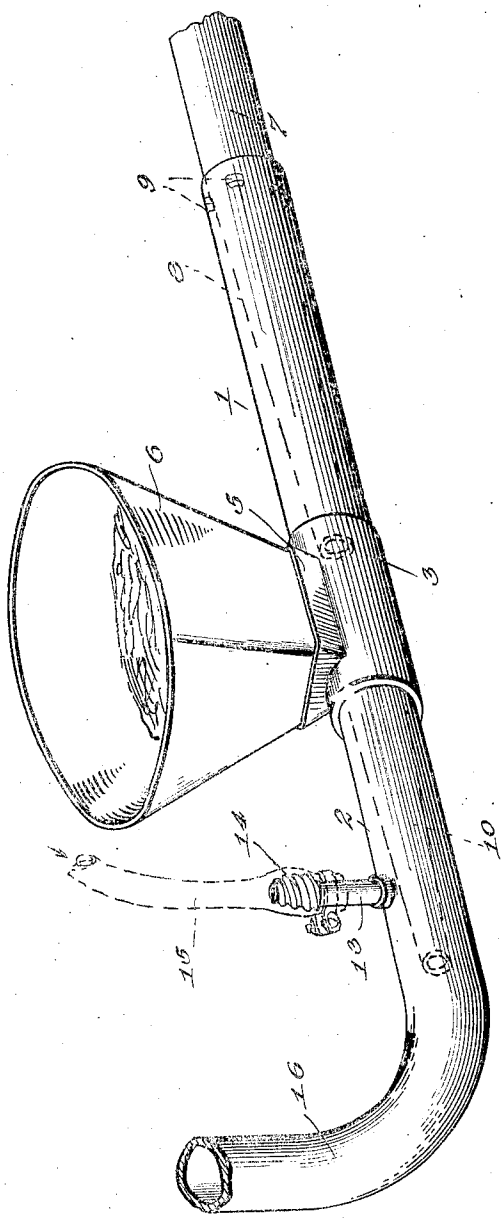

Fig. 1.

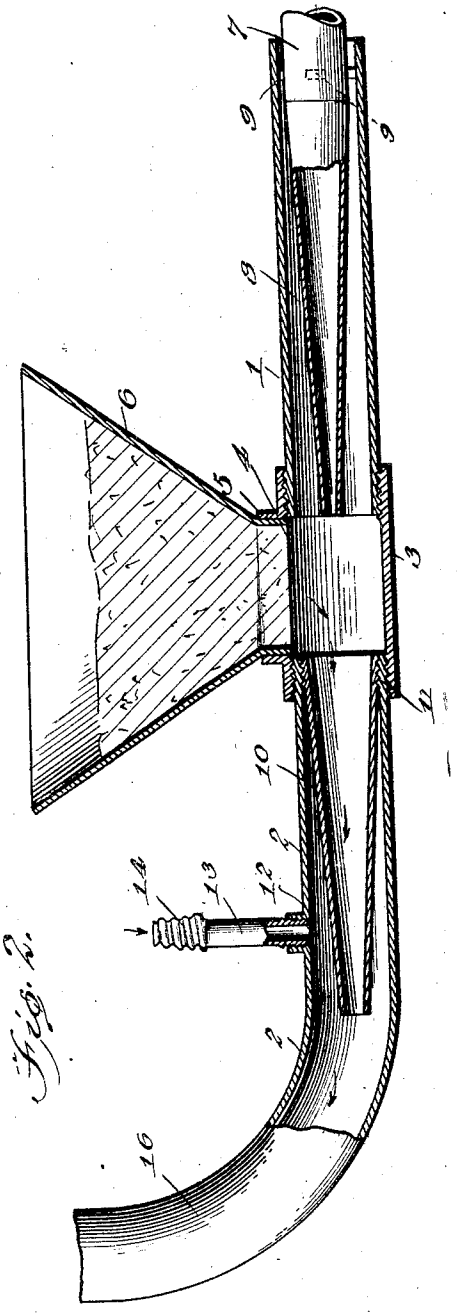

Fig. 2.

WITNESSES

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HYDRAULIC LIFTING DEVICE.

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My invention is a hydraulic lifting device for elevating sand, gravel and other granular material, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is the provision of a simple and reliable device which affords facilities for making use of hydraulic pressure to transfer sand, gravel or other granular material from a given place to a desired place, which is located at a higher elevation.

Other objects and advantages of the invention will be apparent from the following description, considered in conjunction with the accompanying drawings, in which:—

Figure 1 is a perspective view showing the improved hydraulic lifting device in position for use.

Figure 2 is a view showing a portion of the structure exhibited in Figure 1 in longitudinal vertical section and showing the remaining elements of said structure in side elevation.

The improved hydraulic lifting device comprises a tubular body which may include a pair of end tubular sections 1 and 2, respectively, and a union 3 which connects the adjacent end portions of the sections 1 and 2. The body of the device is provided with a feed opening in the upper part thereof. This feed opening is shown as being formed in the upper side of the union 3, as at 4, and the union 3 is shown as having an upturned integral tubular boss 5 surrounding the upper end of the feed opening 4. A hopper 6 is comprised in the device, the lower end portion of the hopper fitting in the tubular boss 5 so that granular material will fall by gravity from the hopper 6 through the feed opening 4 into the bore of the union 3.

A hydraulic supply conduit 7 extends in the tubular section 1 of the body of the device and includes a tapering nozzle 8, the discharge end of which terminates substantially flush with the end of the section 1 that is connected to the union 3. The nozzle 8 is preferably held concentric with the section 1 of the body of the device by upwardly extending radial spacing lugs 9 which are provided on the nozzle and are spaced about the circumference of the nozzle, such lugs contacting at their outer ends with the inner wall of the section 1 of the body of the device.

A tapering discharge nozzle 10 is supported in the inner end portion of the section 2 of the body of the device in axial alignment with the hydraulic supply nozzle 8. The nozzle 10 may have external screw threads on the larger end portion thereof engaged with internal screw threads on the inner end portion of the section 2, as at 11, whereby the nozzle 10 will be supported substantially in axial alignment with the nozzle 8, the smaller or discharge end of the nozzle 10 being turned in the direction opposite or away from the nozzle 8 so that the nozzle 8 and the nozzle 10 will discharge in the same direction in the body of the device. The section 2 of the body of the device is provided with an air intake opening 12 in its upper side at a point adjacent to but rearwardly of the discharge end of the discharge nozzle 10. A nipple 13 may have an end portion thereof secured in the intake opening 12 and this nipple may be adapted at its outer end, as at 14, for connection with an air supply tube 15 which may be a hose or other flexible pipe.

The portion of the section 2 of the body of the device that extends beyond the discharge end of the nozzle 10 curves upwardly, as indicated at 16, preferably along the arc of a circle. The outer end portion of the section 2 may be of sufficient length to extend to any desirable place, which may be located at a considerable height above the level of the union 3.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. Sand, gravel or other granular material which is to be conveyed by means of the device is placed in the hopper 6 and feeds by gravity through the feed opening 4 into the space within the portion 3 of the body of the device. The liquid supply conduit 7 leads from any suitable source of liquid pressure supply. The granular material which falls through the opening 4 into the space within the portion 3 of the body of the device is struck by the liquid which passes at a considerable velocity from the liquid supply nozzle 8 and is forced with such liquid through the delivery nozzle 10 into and along the section 2. Air under pressure passes into the tubular section 2 rearwardly of the discharge end of the nozzle 10 and aids the pressure liquid in forcing the granular material along the section 2. The pressure on

said granular material passing from the delivery nozzle 10 will be sufficient to force the granular material along the section 2 to a considerable height and granular material, such as sand, gravel and the like therefore may be delivered or transferred quickly and easily from a given place to a place which is located at a higher elevation.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawings, and I therefore consider as my own all such modifications and adaptations thereof as fairly fall within the scope of the appended claim.

I claim:—

A pressure fluid lifting device comprising a hollow body, said body including tubular end members and a union connecting the adjacent end portions of said tubular end members, said union having a feed opening in the upper part thereof, a hopper having the lower end portion thereof secured in said feed opening, a hydraulic supply conduit extending in one end member of said body and including a nozzle having the discharge end thereof terminating substantially flush with the adjacent end of said feed opening, a delivery nozzle having the larger end portion thereof fitting in the second end member of the body of the device adjacent to the opposite end of said feed opening, said first named nozzle being adapted to discharge liquid through the space within said union into said second named nozzle, said second end member of the body of the device having an air inlet opening adjacent to but rearwardly of the discharge end of the second named nozzle for admitting air under pressure into the second end member of the tubular body, said second end member being turned upward in advance of the discharge end of said second named nozzle.

EPHIE COHEN.