Oct. 11, 1932. W. M. VENABLE 1,882,307

MATERIAL HANDLING APPARATUS

Filed Dec. 8, 1926 2 Sheets-Sheet 1

Fig: 1.

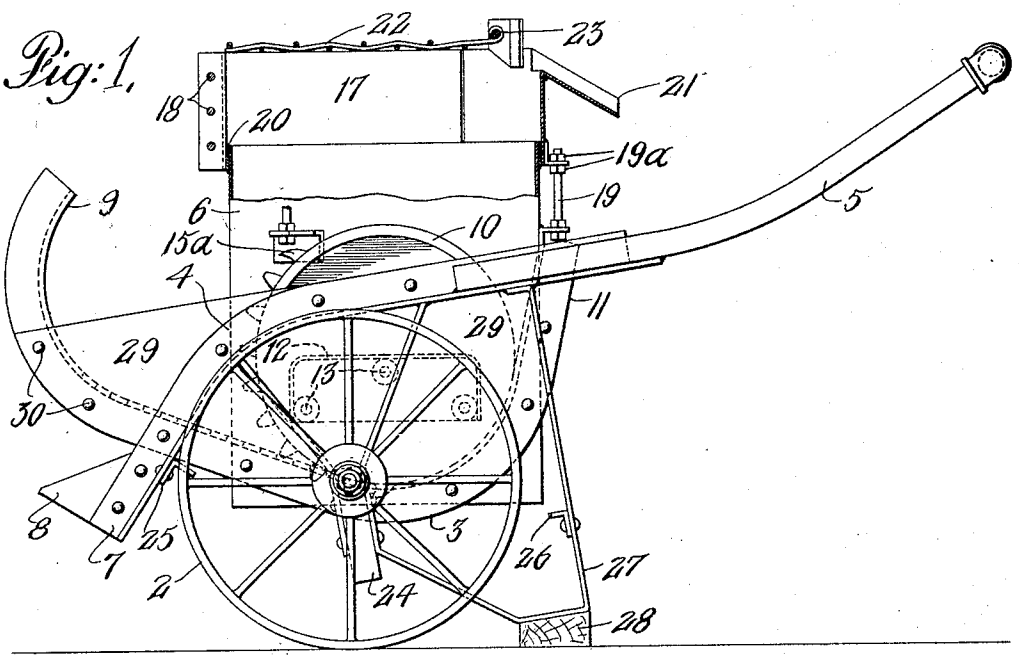
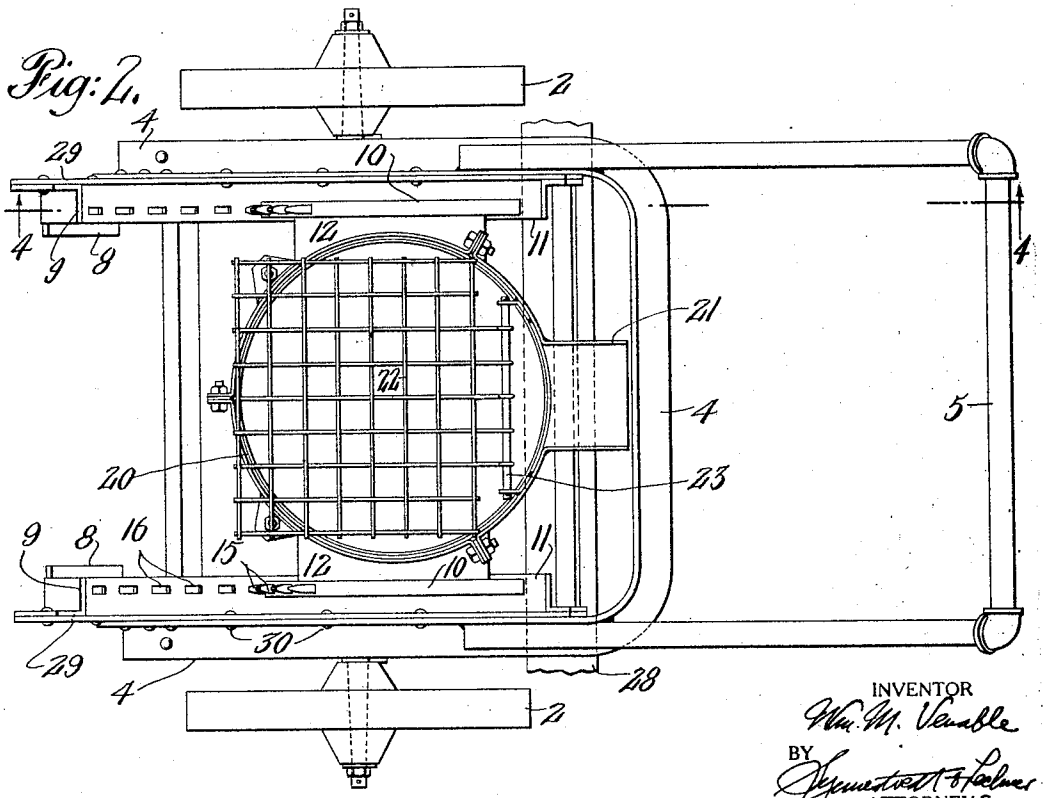


Fig: 2.



INVENTOR
Wm. M. Venable
BY
Lyon Watson & Palmer
ATTORNEYS

Oct. 11, 1932. W. M. VENABLE 1,882,307

MATERIAL HANDLING APPARATUS

Filed Dec. 8, 1926 2 Sheets-Sheet 2

Fig: 3.

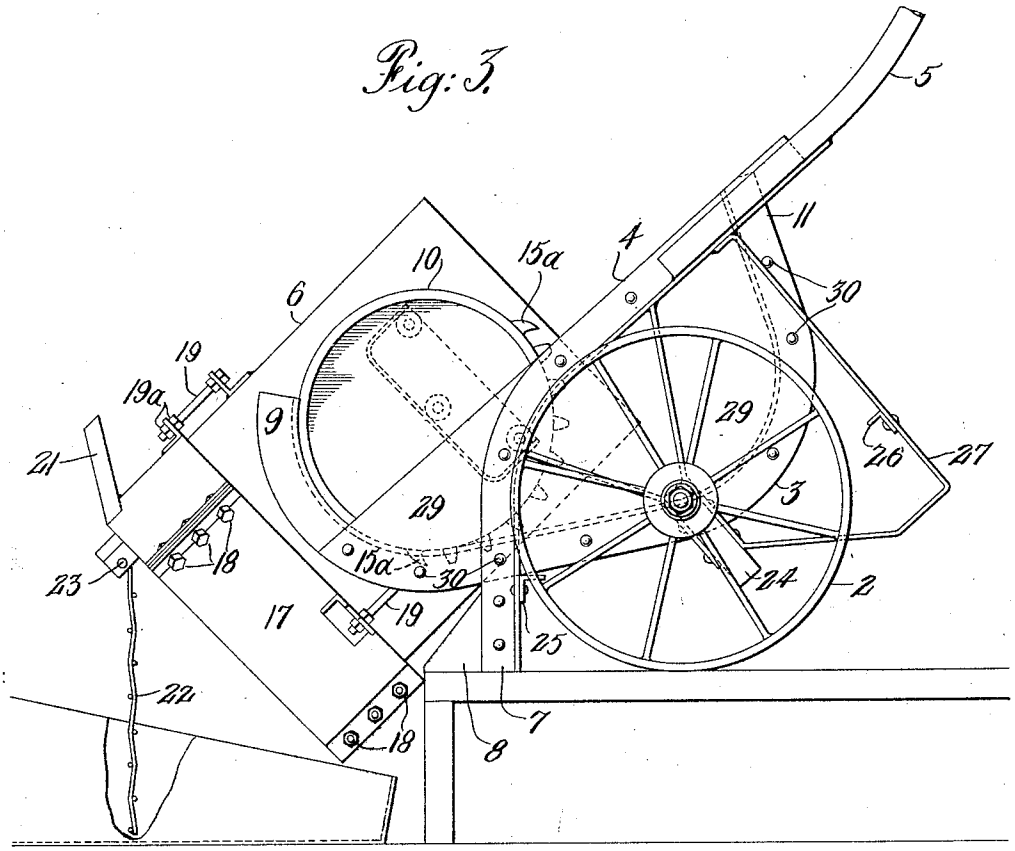
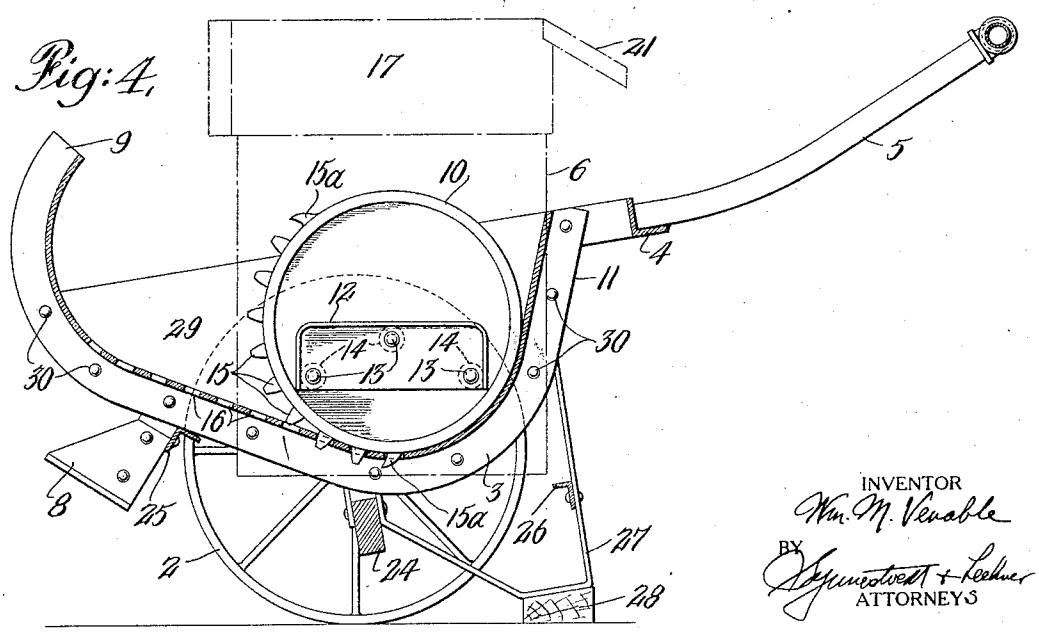


Fig: 4.



INVENTOR
Wm. M. Venable
BY
Synnestvedt & Lechner
ATTORNEYS

Patented Oct. 11, 1932 1,882,307

UNITED STATES PATENT OFFICE

WILLIAM MAYO VENABLE, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO BLAW-KNOX COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY

MATERIAL HANDLING APPARATUS

Application filed December 8, 1926. Serial No. 153,303.

This invention relates to material handling apparatus, and more particularly to apparatus for the measurement, conveyance and dumping of materials.

It is especially useful in connection with the handling of materials for mixing concrete and the like, and may be used in measuring and handling the sand, the stone, or other ingredients. It is, as will further appear, well adapted for use either where the material is dry or where it is wet, and in connection with the handling of the sand it is suited to the measurement of the same by the inundation method, i. e., the method wherein the sand and water for a concrete mix are measured together, the sand being completely saturated.

In mixing concrete, on the field, it is usually necessary to wheel the material from the stock pile to the mixer, and wheelbarrows are ordinarily used for this purpose, the material being dumped into the charging hopper of the mixer. Where such handling is employed, the measurement of the materials is subject to great inaccuracies. I aim, therefore, by my invention, to overcome such disadvantages, to provide for accurate measurement of the materials and the most convenient handling thereof.

Another object of the invention is to provide a measuring, conveying and dumping apparatus or buggy to accomplish these ends, which is of rugged construction, and, at the same time, easily handled, and which is capable of ready volumetric adjustment.

How the foregoing, and other advantages which will occur to those skilled in the art, or which are incident to my invention, are obtained, will be clear from the following description thereof, having reference to the accompanying drawings, wherein:—

Fig. 1 is a side elevation of the device with certain parts shown in section.

Fig. 2 is a top plan view thereof.

Fig. 3 is a side view of the device in dumping position, and

Fig. 4 is a section taken on the line 4—4 of Fig. 2.

Referring generally to the drawings, it will be seen that I have therein illustrated a two-wheeled buggy having wheels 2, a frame 3, 3, 4, a handle 5, and a container or measuring receptacle 6.

The ends 7, 7, of the frame member 4 are bent downwardly to form a stop or rest to take the shock of dumping, as shown in Fig. 3, and a flanged foot or base 8 may be attached to, or formed integral with, each end 7, to provide a more solid foundation to take such shock. The two frame members 3 form tracks or runways to receive the wheels 10 of the container 6, and the forward ends 9 of said frame members are curved upwardly to limit the movement of the container when it is dumped (as shown in Fig. 3) while the rear ends 11 thereof curve up to meet the frame member 4 and position the container (as in Fig. 4) for loading. The frame as a whole is stiffened, and the track strengthened, as against the weight of the load, and the thrust when the load is dumped, by the side plates 29, secured between the frame member 4 and tracks 3 by bolts or rivets 30.

The measuring body or container 6 is equipped at each side with a wheel 10 mounted fast thereon, as by the bracket-like member 12 and bolts 13. Shims or washers 14 may be employed to adjust the wheels 10 laterally so that the cogs or spurs 15 will register properly with the holes 16 in the track. It will be clear (particularly from Fig. 4) that the wheels 10 need be equipped with such spurs only upon such portion of their periphery as makes contact with the flat portion of the track, and that the end spurs 15*a* may be of hook-like contour to prevent dislodgement of the container at either extreme of its rotation.

The container itself is variable as to volume, by means of a sectional upper portion 17 clamped together, as by bolts 18, and adjustable longitudinally by the bolts 19 and nuts 19*a*. A gasket or piece of rubber tubing 20 may be clamped between the container proper and the movable upper part to make a watertight joint. At the top of the container an overflow spout or lip 21 is provided, for use when measuring inundated sand, and a screen 22 to break up or exclude lumpy material, the screen being pivoted at 23 so that, when

the device is in dumping position (as shown in Fig. 3) the screen will swing out of the way of the material.

The buggy is strengthened by suitable cross members 24, 25 and 26, the bracing member 26 tying together the rear feet or supports 27. The latter, for convenience in wheeling the device, are short of the ground line when the tank or container is upright (as shown in Figs. 1 and 4) and may be blocked up by any convenient means, such as the board 28, when the buggy is at rest and being loaded.

From the foregoing description it will be clear that in operation the buggy is charged while in the position shown in Figs. 1 and 4, with the container properly adjusted for volume and the top thereof level. If gravel or other coarse material is being measured, the screen may be used to grade it. If sand is being measured, by the inundation method, the tank will first be about two-fifths filled with water, or sufficient to fill the interstices in a full measure of sand, and the sand then filled in through the screen so that it will sift into the water and settle to form a saturated mass, any surplus water flowing off over the lip 21. The position of the container with relation to the axis of the wheels of the buggy (when the container is in filling or vertical position) is one of substantial balance, so that the buggy may be easily wheeled to the place of dumping. To dump the charge the workman merely raises the handle until the feet of the buggy rest on the ground, whereupon the container rolls forward, the screen 22 swinging out of the way (as shown in Fig. 3), and the material is discharged well forward of the buggy. Upon tipping the buggy back upon the feet 27, the empty container returns to loading position.

Obviously, accurate measurement of the materials handled may be made even by unskilled workmen, since the receptacle may first be properly adjusted as to volume, and simply filled level with the top at each charge. The spurs 15 always insure proper positioning of the container on the track so that rocking of the buggy to the limits imposed by its feet 8 and 27 will always bring the container into proper dumping or filling position, respectively. The stop means or upturned ends of the track prevent the rolling off of the container, while the hooked spurs 15*a* prevent dislodgement from the holes 16 in the track.

What I claim is:—

1. A material handling and transporting apparatus including in combination a two-wheeled buggy having a frame adapted to be tilted about the axis of the wheels, said frame having a handle portion at one side of the axis of the wheels and a trackway projecting beyond said axis on the opposite side thereof, and a dumping container having curved supporting means adapted to rest upon the inner end of said trackway during normal or transporting position of the frame, said container, upon raising of the frame by said handle means, traveling outwardly on said trackway and simultaneously rotating or tipping on its supports to dump the contents thereof and, upon lowering of the frame, returning to its normal position.

2. In apparatus of the character described, runways having holes therein and upwardly curved ends, and a container having wheels fitting said runways with cogs on a portion of their peripheries adapted to engage the holes, the end cogs on each wheel being hooked to prevent the wheels leaving the runways at either end thereof.

In testimony whereof I have hereunto signed my name.

WILLIAM MAYO VENABLE.