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TRUCK MIXER

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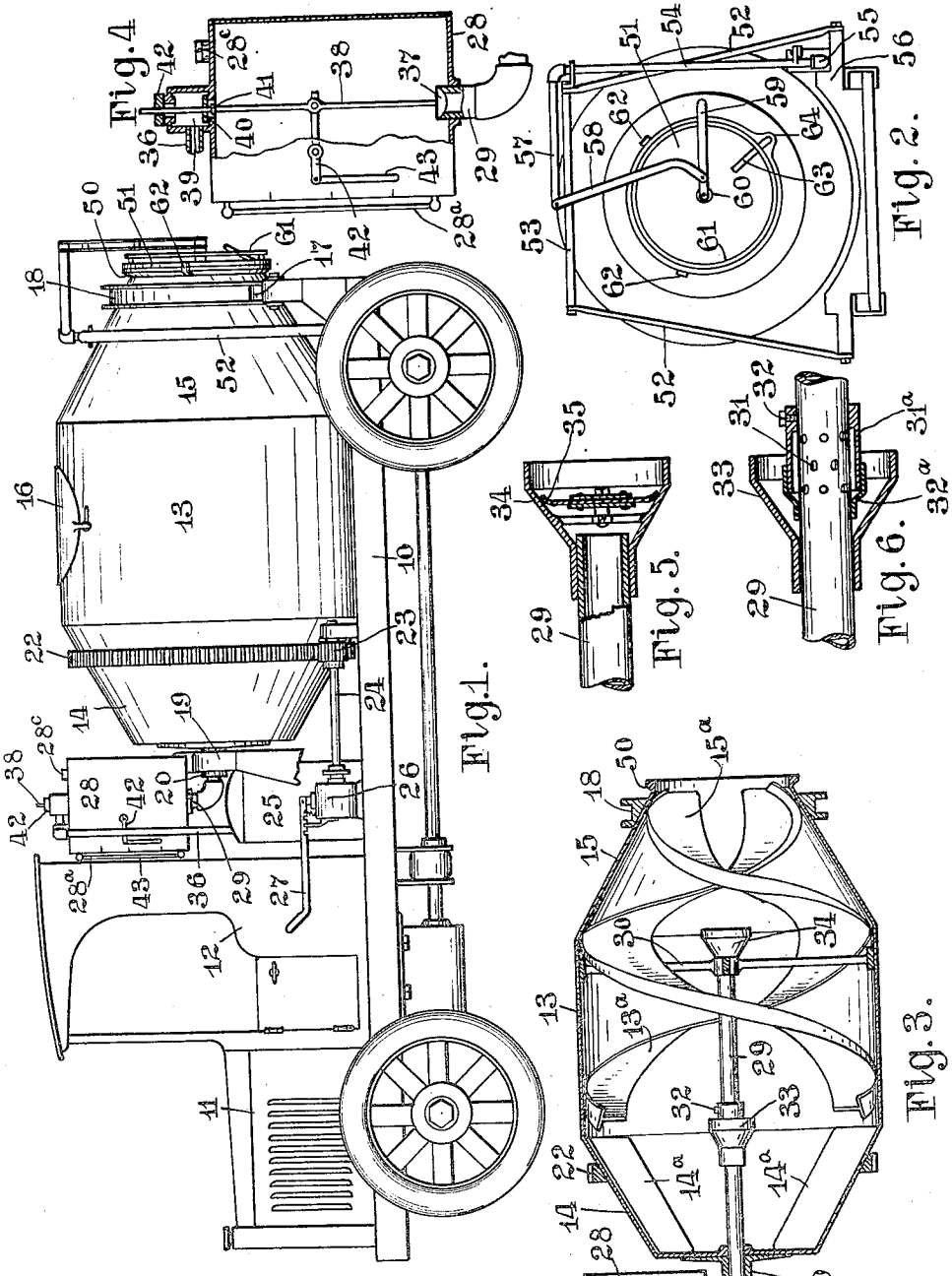


Fig. 1.

Fig. 4.

Fig. 2.

Fig. 5.

Fig. 6.

Fig. 3.

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TRUCK MIXER

Application filed December 7, 1929. Serial No. 412,529.

This invention relates generally to concrete mixing apparatus and particularly to such as have a mixing drum mounted on a motor vehicle whereby the concrete may be mixed or transported or mixed during transportation.

The object of the invention generally is to provide a simplified and improved construction of machine whereby the materials of the concrete may be rapidly and thoroughly mixed. Other particular objects will appear from the disclosure herein.

The invention is embodied in the example herein shown and described, the features of novelty being finally claimed.

In the accompanying drawing—

Figure 1 is a view in side elevation of an apparatus according to the invention, with a small portion broken out.

Fig. 2 is a rear view of the mixing vessel showing the closure for the discharge opening and its mounting.

Fig. 3 is mainly a central longitudinal section of the mixing vessel showing parts in full therein.

Fig. 4 is a sectional detail of the water tank.

Fig. 5 is a sectional detail of one of the devices for protecting an outlet of the water supply conductor.

Fig. 6 is a similar section of another device for protecting another outlet of the water supply conductor.

In the views the truck is shown as an ordinary motor driven vehicle including the front and rear wheels and the chassis 10 supported thereby. The engine for propelling the vehicle is provided with the usual hood at 11 and the driver's cab shown at 12.

The mixing drum consists of a central cylindrical portion 13 having at its forward end a closed tapered portion 14 and at its rear a tapered portion 15 open at its terminus for the discharge of the mixed material. The dry materials are preferably supplied through an opening in the cylindrical portion 13, said opening being covered with a removable but lockable closure 16.

The interior wall of the drum at its forward tapering portion 14 is provided with a series of substantially straight mixing blades 14^a standing at right angles to the tangent of their direction of motion. The wall of the cylindrical portion of the drum is provided with spiral mixing and conveying blades 13^a extended into the rear tapering discharge portion as wider spiral blades 15^a.

The drum is preferably mounted horizontally on the chassis and to turn on its axis by means of rollers such as at 17 engaging a grooved track 18 fixed to and encircling the rear tapered end of the drum and by means of a standard 19 receiving a central hollow journal 20 at the axis of the forward tapered end of the drum.

Secured around the forward tapered end of the drum is a toothed rack 22 engaged by pinion 23 on a shaft 24 adapted to be driven by a gasoline engine 25. The shaft 24 extends into a housing 26 containing a reversing gear mechanism operable by means of a handle 27 from the driver's seat whereby the said shaft 24 can be driven first in one direction or the other, or not at all, when the power engaging means is in neutral position. Such a mechanism is shown in an application filed by Gebhard Jaeger, October 2, 1929, S. No. 296,671.

The circular discharge opening at the rear-end of the drum is surrounded by a projecting locking ring or flange 50.

The cover for the opening is designated 51. The truck bed is equipped with a stationary frame for supporting the cover, said frame comprising converging slanting risers 52, and a top cross piece 53. The cover is movably supported in said stationary frame by means of a vertical standard 54 journaled at its lower end in a bearing 55 supported by the bracket 56 fastened to the truck bed, the upper end of the standard being journaled in the stationary frame. Said standard has a horizontal extension 57 from which pivotally depends a bent arm 58 to the lower end of which is fulcrumed a hand lever 59 having a sleeve 60 at its end loosely encircling the tubular extension of the cover. It will be observed that by this means the cover is capable of a sort of universal movement, that is, it can be swung bodily toward and from the discharge opening of the mixing drum on

the axis of the vertical standard, upward and downward by means of the pendent arm 58, and rotated on its axis. Said cover is provided with a hand rail 61. For latching the cover to the rim of the discharge opening of the mixing drum the cover is provided with lugs 62 affixed thereto and a movable lug on the swinging handle 63, said swinging handle being journaled in a bearing 64 on the rim of the cover. The construction and mode of operation of the cover are set forth in an application filed by me July 5, 1929, S. No. 376,108.

A tank or reservoir for water to be supplied to the mixing vessel is shown at 28. The tank is provided with a sight glass 28^a and a scale so that the quantity of water supplied to the mixing drum can be noted, and limited by operation of the valve 37. Water is supplied to the tank through a closable opening at 28^c.

Connected with the bottom of the tank is a pipe or other conductor 29 extending through the journal 20 into the tank on the axis of the latter. The rear end of the said pipe 29 can, if desired, be supported on a suitable spider 30 fixed to the interior wall of the drum. Near its forward end the pipe 29 is made with a number of perforations 31 covered with a metallic sleeve 31^a spaced from the pipe but secured to the pipe by a set screw 32 so that water can escape from the pipe into the drum. On the pipe beyond the forward end of the sleeve is secured a piece of flexible tube 32^a of rubber normally closing the forward opening from the sleeve but adapted to be spread by pressure on the water to permit the discharge thereof into the mixing drum. This flexible sleeve is, in effect, a valve; and it is protected from injury by the materials being mixed by means of a metallic flaring shield 33 secured on the pipe forward of the flexible sleeve.

The pipe 29 is open at its rear end for the discharge of water into the mixing drum and said end is provided with a flaring metallic shield 34 secured to the end of the said pipe. In said shield 34 is carried a flexible disk 35 of rubber or leather, the rim of which normally bears against the inner wall of the shield, said disk acting as a valve adapted, when pressed by water in the pipe, to permit the escape of the water into the mixing vessel but to prevent the access of the mixed material in the vessel into the pipe. The metallic shield 34 protects the disk 35 from injury by the materials being mixed.

The water tank 28 has connected to its upper end the exhaust pipe 36 of the gasoline engine. In the lower end of said tank is a valve 37 to open and close the discharge of the tank to the pipe 29.

Said valve 37 has fixed to it a stem 38 extending upward through the tank and a small chamber 39 at the top of the tank into which small chamber the exhaust pipe of the engine discharges. Loose on said stem 38 is a valve 40 adapted to close access of the exhaust pressure to the tank through the opening in the top of the tank, and on said stem 38 is a stop 41 adapted, when the valve 37 is lifted, to also lift the valve 40 thereby admitting exhaust pressure to the tank to expel water into the mixing drum.

The small chamber 39 has a vent at its upper end through which the stem 38 also extends; and loose on said stem is a valve 42 of a specific weight according to the maximum pressure it is desired to have exerted on the water in the tank. For example if it be desired that a maximum pressure of five pounds shall be exerted on the water in the tank said valve may be such as to weigh five pounds, the excess escaping by "popping" said valve.

When it is desired that water shall be discharged into the mixing drum the driver raises the valve 37 by means of a bell-crank lever 42, one arm of which is engaged internally with the rod 38 while the other arm is provided with handle 43 within reach of the driver's seat. By drawing the handle 43 downward both valves 37 and 40 are lifted thereby admitting exhaust pressure to the tank and the discharge of water into the mixing drum. Should the pressure in the tank begin to exceed the desired amount the valve 41 permits the discharge of the excess.

The materials to be mixed can be supplied to the drum preferably through the opening in the cylindrical portion thereof. But in the absence of such lateral opening or other such opening the drum can be charged through the discharge opening.

In practice the mixing drum in the construction as shown with the materials supplied thereto and the covers closed is rotated clock-wise, when viewed from the rear, to effect the mixing operation. The effect of the such rotation is to move and mix while moving the materials forward toward and into the tapered end of the drum. Because the forward end is tapered its bottom being inclined and provided with substantially straight mixing blades the materials are returned to the cylindrical portion of the drum or counter to the action of the spiral blades thereby causing a swirling or stirring as well as a cascading of the concrete materials.

The discharge of the mixed materials is preferably effected by removing the cover of the end discharging opening and reversing the rotation of the mixing drum, that is, in the instance shown, by rotating it anti-clock-wise. But if desired or necessary the discharge can be effected through the lateral opening in the cylindrical portion of the mixing drum, in which case the drum is turned and arrested to place the charging

opening at the bottom and the material, being fluent, allowed to flow out by gravity.

The forms of the parts can be changed without departing from the gist of the invention as claimed. It will be understood, for example, that the exhaust from the engine for driving the vehicle can be used to produce the pressure.

Matter shown but not claimed herein constitutes the subject of a divisional application S. No. 582,240, filed December 21, 1931.

What I claim is:

1. In a concrete mixer, a mixing vessel mounted to turn on an axis, said vessel having a middle cylindrical portion terminating in tapered end portions, one of which end portions has a discharge opening, substantially straight mixing blades in the non-discharging tapered portion of the mixing vessel and spiral mixing and conveying blades in the cylindrical portion and discharging tapered portion.

2. In a concrete mixer, a mixing vessel mounted to turn on an axis, said vessel having a middle cylindrical portion terminating in tapered end portions, one of which end portions has a discharge opening, mixing blades in the non-discharging tapered portion of the mixing vessel and spiral mixing and conveying blades in the cylindrical portion and the discharging portion, the blades of said discharging portion being of enlarged width.

3. In a concrete mixer, a mixing vessel mounted to turn on an axis, said vessel having a middle portion terminating in tapered end portions, one of which end portions is closed and non-discharging while the other has a discharge opening, substantially straight mixing blades in said closed non-discharging tapered portion and spiral mixing and conveying blades in the middle portion and discharging portion.

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