Nov. 29, 1932. R. F. LEE 1,889,558

MIXER

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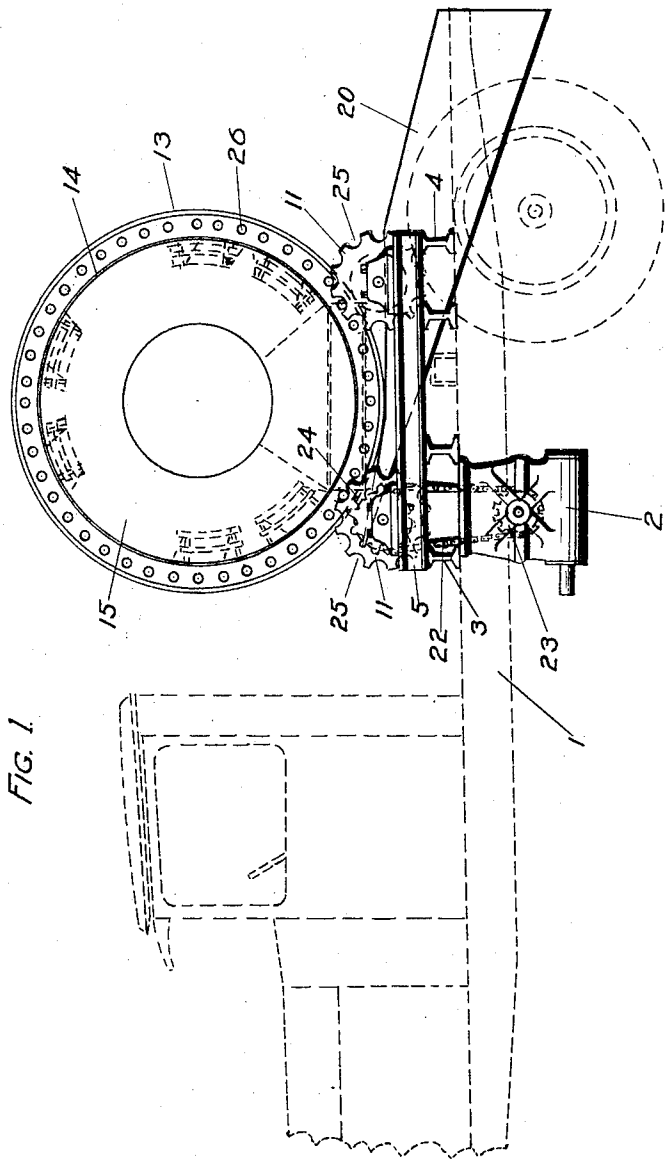


FIG. 1.

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FIG. 2.

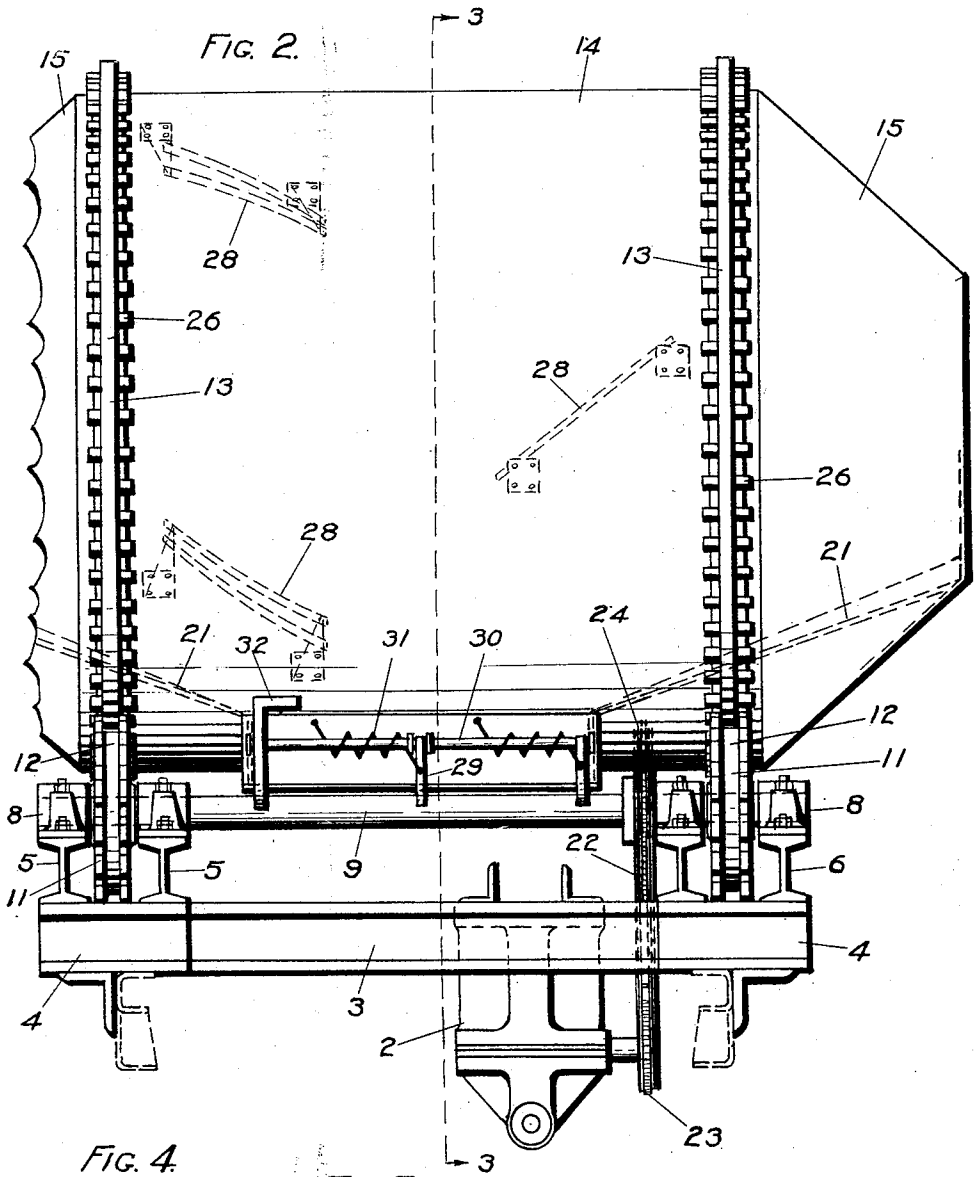


FIG. 4.

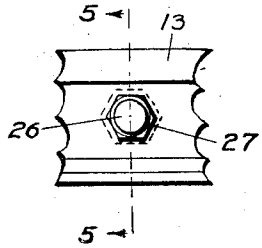
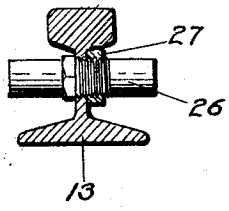


FIG. 5.



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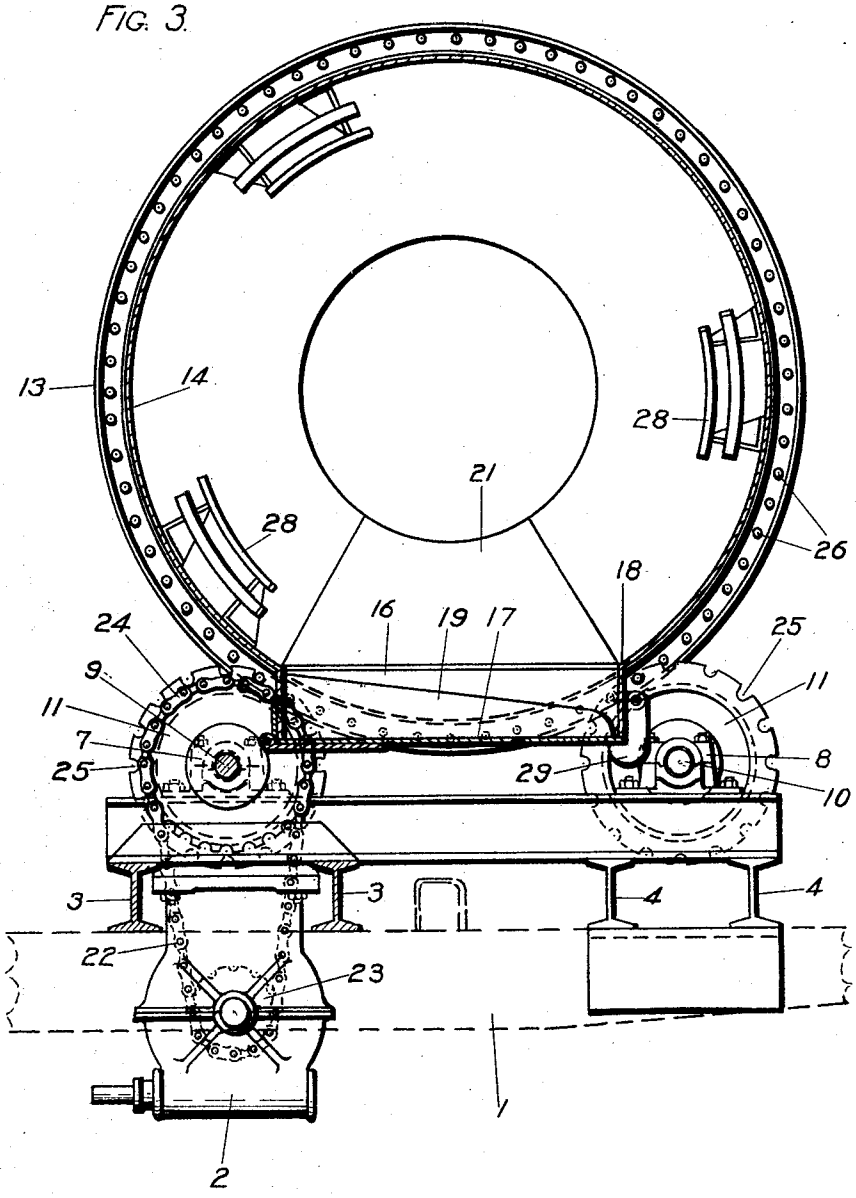
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FIG. 3.



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Patented Nov. 29, 1932 1,889,558

UNITED STATES PATENT OFFICE

ROSCOE F. LEE, OF INDIANAPOLIS, INDIANA

MIXER

Application filed January 8, 1930. Serial No. 419,231.

This invention relates to mixers of that class adapted for general use and primarily for mixing concrete and similar substances and one feature of the invention is the provision of means for rotatably mounting a mixing drum on a vehicle so that it may be transported from place to place, as desired.

A further feature of the invention is the provision of means for utilizing the propelling means for the vehicle for rotating the mixing drum, either while the vehicle is stationary or traveling over the road.

A further feature of the invention is the provision of means within the mixing drum for thoroughly agitating and mixing the contents of the drum, as the drum is rotated.

A further feature of the invention is the provision of means for discharging the contents of the drum by gravity.

A further feature of the invention is in so mounting the drum on the vehicle, that it may be elevated bodily in any suitable manner for dumping the contents thereof on parts of a building or structure under construction, or at any other suitable point distant from the vehicle.

A further feature of the invention is in so mounting the mixing drum that it may be rotated in either direction from the driving element for the vehicle.

Other objects and advantages will be hereinafter more fully set forth and pointed out in the accompanying specification.

In the accompanying drawings which are made a part of this application,

Figure 1 is a diagrammatic elevation of a vehicle with the mixer mounted thereon.

Figure 2 is an enlarged elevation of the mixer and operating elements therefor, from the rear of the vehicle.

Figure 3 is a sectional view thereof as seen along line 3—3, Fig. 2.

Figure 4 is an enlarged detail side elevation of a portion of the driving mechanism for the mixer drum, and,

Figure 5 is a section thereof as seen along line 5—5, Fig. 4.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, the numeral 1 designates the chassis of a vehicle, in this instance a truck, and 2 indicates a power takeoff associated with the main power transmitting element of the vehicle (not shown).

Extending transversely of the chassis 1 are supporting bars 3 and 4, the bar 3 extending entirely across the chassis, while the bar 4 is made in two sections, said bars 3 and 4 supporting longitudinally extending bars 5 and 6, which are preferably arranged in pairs. Mounted on the bars 5 and 6 are bearings 7 and 8, in which are mounted shafts 9 and 10, said bearings being arranged in pairs on the bars 5 and 6 to accommodate supporting wheels 11, each of which is provided with a peripheral channel 12, for the reception of track rails 13, surrounding the mixing drum 14.

The drum 14 comprises an elongated hollow body portion with tapering, substantially cone shaped ends 15, so that the contents of the drum will move by gravity towards the longitudinal center of the drum and discharge through an opening 16 in the horizontal wall of the drum. The opening 16 has a closure or door 17, hinged at one end thereof to the frame 18, surrounding the opening 16, the two side edges of the door having flanges 19 for guiding the contents of the drum into a chute 20 attached to the rear end of the chassis 1. To insure that the mixture will readily flow from all parts of the drum, when the door 17 is opened, guide plates 21 are extended from the apex ends of the tapered ends of the drum 14 to the edges of the opening 16.

The shaft 9 is positively driven in either direction, from the power takeoff 2, through the medium of a sprocket chain 22, which passes around a sprocket wheel 23, associated with the power takeoff 2 and around a similar sprocket 24 on the shaft 9 and in order to positively drive the drum 14, the flanges on the supporting wheels 11 are provided with a plurality of notches 25, with which cooperate pins 26 extending transversely through the webs of the track rails 13, nuts 27 being provided for securely anchoring the pins to the rails.

The drum 14 has frictional contact with the supporting wheels 11, so that by extending any suitable hoisting cables or the like, around the drum between the track rails 13, the drum may be lifted bodily from the truck chassis and suspended over parts of a building or other structure and then dumped by opening the door 17, thus avoiding the necessity of providing expensive elevators for conveying the contents of the drum to an elevated position.

In order to thoroughly mix the contents of the drum 14, a plurality of agitating blades 28 are arranged in series within the drum, said blades being so arranged that when the drum is rotated, the mixture within the drum will be constantly moved from end portions of the drum towards the center thereof, thus thoroughly mixing the various ingredients used.

Any suitable means may be employed for retaining the door 17 in closed position, in this instance latches 29, which are fixed to a shaft 30 on the end of the frame 18, said latches being held in closed position by means of springs 31, one of the latches having a handle 32 for releasing said latches, when the contents of the drum is to be dumped, or when the door 17 is to be opened to fill the drum.

In the event the mixture, when being dumped from the drum 14, is sluggish and slow in discharging from the chute 20, the drum may be slightly rotated, which will cause the door 17 to move downwardly through the chute and act as a scoop for expelling the mixture from the chute.

In operating the device, a quantity of substances to be mixed are entered into the drum 14, and owing to the construction of the drum and the omission of a central shaft therethrough, the drum may be filled to almost its capacity. If the mixture is to be transported, the driving means for the vehicle is set in motion, which at the same time sets up motion of the power take-off mechanism, thus imparting rotating motion to the drum, and such motion continues so long as the vehicle is being driven.

It will be understood, of course, that the mixer may be operated through the power takeoff without driving the vehicle, the transmission to the driving wheels of the vehicles being disconnected in the usual manner.

While the description and drawings illustrate in a general way certain instrumentalities which may be employed in carrying the invention into effect, it is evident that many modifications may be made in the various details without departing from the scope of the appended claims, it being understood that the invention is not restricted to the particular examples herein described.

What I claim is:

1. In combination, a drum, a port located in the peripheral surface of said drum, a door pivoted on said drum for closing said port, a chute mounted adjacent said drum and registering with said door, said door being proportioned to lie, when opened, with its free end in said chute, and means for oscillating said drum about its axis whereby the free end of said door is caused to reciprocate in said chute.

2. A mixer comprising a drum mounted for rotation on a substantially horizontal axis, means for rotating said drum in opposite directions, and means in said drum operable, upon rotation in one direction, to agitate the contents of said drum and to move the same toward the ends of said drum, and operable, upon rotation of said drum in the opposite direction, to agitate the contents of said drum and to move the same toward the axial center of said drum.

3. A mixer comprising a cylindrical mixing drum mounted for rotation on a substantially horizontal axis and provided at its opposite ends with heads formed as truncated cones, said drum being formed with an opening in its cylindrical wall substantially at the axial center thereof, a door normally closing said opening, means for rotating said drum in opposite directions, means in said drum providing plane surfaces having a width substantially equal to the peripheral width of said opening and extending from the apices of said heads to the adjacent edges of said opening, and means in said drum operable, upon rotation in one direction, to agitate the contents of said drum and to move the same toward the ends of said drum, and operable, upon rotation of said drum in the opposite direction, to agitate the contents of said drum and to move the same toward the axial center of said drum.

4. A mixer comprising a horizontally extending mixing drum having an ingress or egress opening in the wall thereof, means for rocking said drum, a door for normally closing said opening, a member disposed to receive material discharged from said opening, said door when opened lying in the path of the discharging mixture with its free edge slidably supported on said member whereby, when the drum is rocked, said door will act as a scoop to propel such mixture forwardly along the surface of said member.

5. A mixer comprising a horizontally extending mixing drum having substantially cone shaped ends and also having an opening in the peripheral wall thereof, means for rocking said drum, a frame surrounding said opening, a door hinged to said frame for normally closing said opening, a member positioned to receive material discharged from said opening, said door, when opened, cooperating with said member to forward the discharging mixture along the surface of said member when a rocking action is imparted

to the drum, means for normally retaining said door in closed position, means within said drum for agitating the contents thereof and moving the same toward the longitudinal center of said drum, and means for frictionally supporting said drum.

In testimony whereof, I have hereunto set my hand on this the 24th day of December, 1929.

ROSCOE F. LEE.