

June 24, 1930.

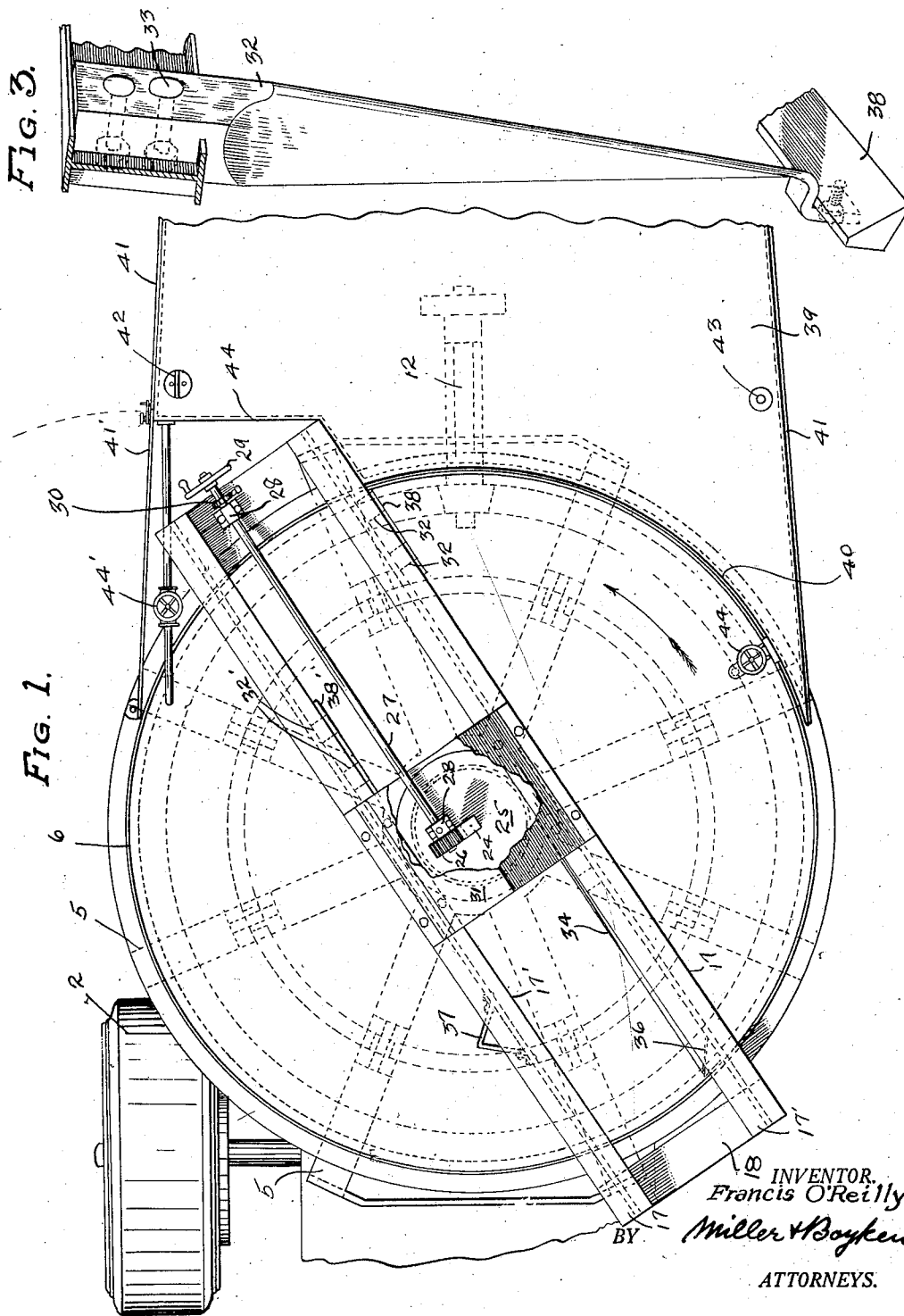
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ROTARY CONCRETE MIXER

Filed Sept. 12, 1928

2 Sheets-Sheet 1



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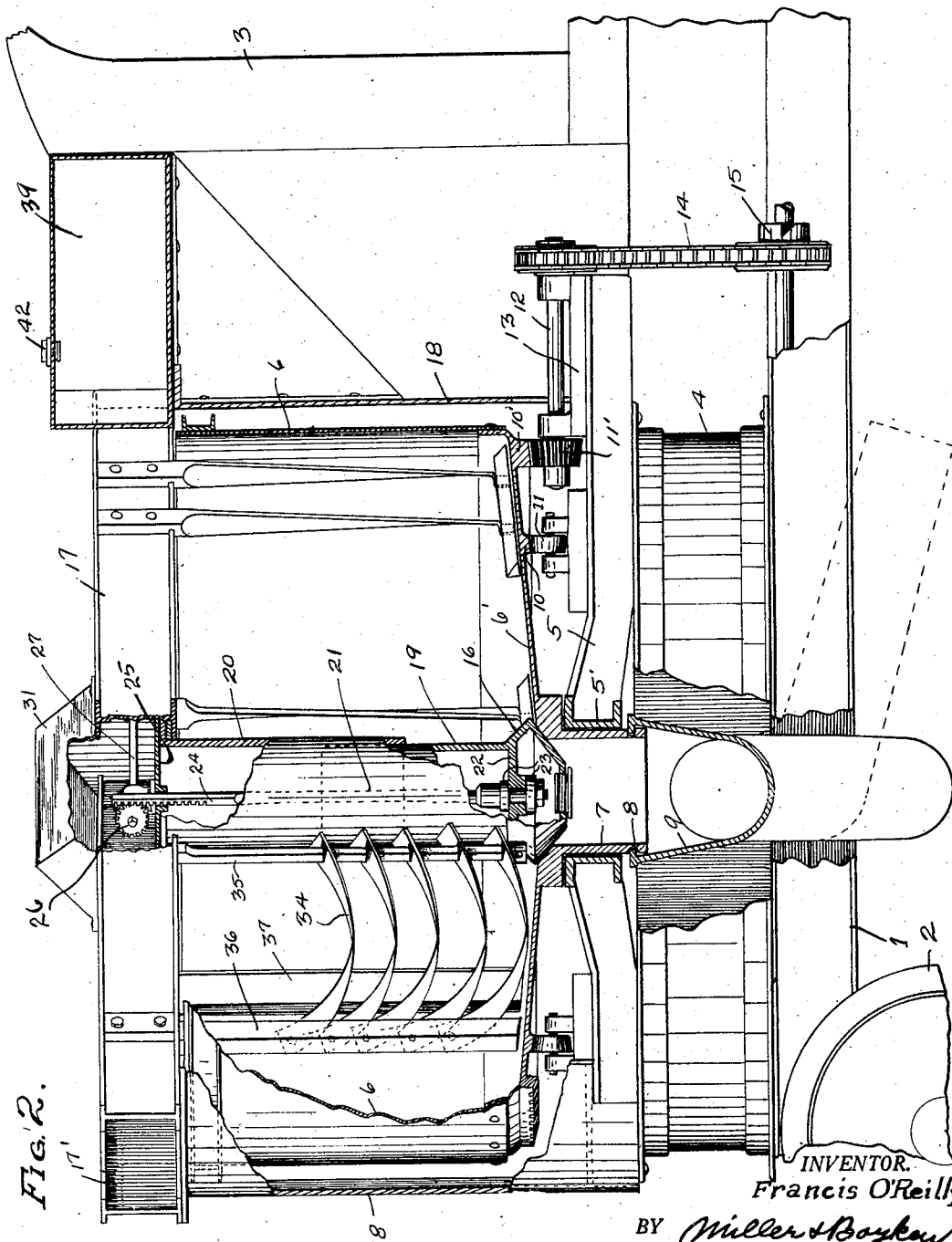
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UNITED STATES PATENT OFFICE

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ROTARY CONCRETE MIXER

Application filed September 12, 1928. Serial No. 305,340.

This invention relates to mixers as used for concrete or other material and has for its objects improvements in this type of machinery whereby it will form a compact efficient mixing unit in combination with a motor truck and operated thereby, also such a construction which will be easy to assemble and maintain.

The drawings show the preferred form of my invention, it being understood that changes may be made within the spirit of the invention and scope of the appended claims:

Fig. 1 is a plan view of my improved mixer mounted on a motor truck, a portion only of the truck being shown and the forward end of the water tank being broken away.

Fig. 2 is a side elevation of the mixer with the front wall of the mixing receptacle or bowl and other parts broken away so as to reveal the internal construction.

Fig. 3 is an enlarged perspective view showing one of the stationary mixing arms which project downward into the bowl, and shows the upper attachment of the arm to a beam support and the lower attachment to a bottom scraper-bar.

Briefly described my improved mixer comprises a vertically disposed cylindrical bowl-like receptacle open on top and mounted on a motor truck for bodily revolution by a power connection from the truck.

The bottom of the bowl is conical or slanted downward toward a central discharge opening closed by a large valve opening upwards through means of a hand control, while under the discharge valve is a revolvable chute adapted to be turned longitudinally with or project laterally of the truck chassis.

Within the bowl are specially formed stationary mixing arms and blades secured to an overhead frame.

In detail the construction comprises a motor truck the frame of which is indicated at 1, rear wheels 2, and cab 3. Firmly secured to the top of the frame is a circular base 4 which forms a support for a series

of radial beams 5 projecting from a hub 5' preferably cast integral and which beams form the support for the mixing receptacle or bowl.

The bowl is preferably constructed with a steel plate side wall 6 and a cast bottom 6', secured thereto, the bottom slanting downwardly to a central discharge opening in a sleeve 7 revolvably positioned in hub 5'. The outer wall of the sleeve 7 is circumferentially grooved as at 8 and revolvably suspended in this groove is a discharge spout 9 adapted to turn in the groove so as to point the spout in various angles from the side of the truck or swing to lie centrally and longitudinally under the truck.

The bowl is formed underneath with a circular track 10 resting on a plurality of idler rollers 11, one rotatably mounted on each of the radial beams 5, the track and idlers preferably being conical to compensate for the surface movements involved.

At the outer edge of the bottom is a bevel gear ring 10' engaged for driving the bowl by a pinion 11' secured to a shaft 12 rotatably mounted on a plate 13 bridging two of the beams 5, and which shaft is further geared or otherwise connected with suitable power transmission elements as at 14 for driving by the truck motor in any of the well understood ways not shown in the drawings, it being understood that the arrangement will include a clutch somewhere in the system as at 15 for connecting or disconnecting the mixer drive from the engine when desired.

Closing the discharge opening of the bowl is a downwardly seating conical valve 16 suspended from a pair of overhead beams 17, 17' crossing the upper end of the bowl and fixedly supported on standards 18. The valve 16 is preferably casting machined to fit against a seat on the upper end of sleeve 7 and is formed with an upwardly extending cylindrical neck 19 slidably fitting within a downwardly extending outer cylinder 20 secured to the beams 17, the arrangement being such that the valve seated against sleeve 7 can turn with the bowl

while its neck 19 will revolve within the fixed cylinder 20.

To raise and lower the valve 16, a rod 21 extends downwardly within the tubular elements 19, 20 and at its lower end rotatably engages a web 22 extending inwardly of member 19, ball or plain thrust collars 23 being arranged at both sides of the web so that the valve 16 can freely revolve with respect to rod 21 whether suspended thereon or forced to its seat thereby.

Secured or attached to the upper portion of rod 21 is a square rack bar 24 guided for vertical movement through a square hole in a fixed plate 25, and engaging the rack is a pinion 26 mounted on a horizontal shaft 27 revolvably supported in bearings 28 and provided at its outer end with a hand-wheel 29 for operation to raise or lower the valve, a ratchet and double pawl device at 30 serving to hold the valve at any point of opening.

Positioned over the valve gear is a conical or wedge-shaped roof 31 adapted to deflect material into the bowl in loading the same from an overhead bunker.

The mixing of material placed in the bowl is effected through means of specially shaped and positioned devices supported from beams 17, 17' and projecting into the bowl, and which devices include several twisted arms 32, 32' bolted as at 33 to the beams and extending substantially straight downward into the bowl, also a set of looped blades 34 extending horizontally between two downwardly extending bars 35, 36, and also a deflecting arm or plow 37 extending straight down from one of the beams 17.

The arrangement and form of these devices is important, and, assuming the bowl to be revolving in direction indicated by the arrow those at 32 are arranged to force the material inward to heap it toward an intermediate ring in the bowl. This ring of material is split by the plow 37, the split rings are caught by the hanging loop blades 34 which are shaped to exercise a lifting of the material as well as a sidewise spreading thereof toward the center of the bowl and the arms at 32' are arranged to force the material toward the valve 16 for discharge therefrom if the same be open.

Arms 32 and 32' are tied together at their lower end by bottom plows 38, 38' respectively, and the angles of the arms or twist changes toward the upper end of the arms so as to exert a greater effort on the material in the directions indicated, or in other words the working pressure on the lower ends of the arms or where they are weakest is reduced.

Device 36 is formed with an angular face to act as a plow against the vertical wall of the bowl and throw the material inward.

A water tank 39 is arranged horizontally

adjacent the forward edge of the bowl and is cut out at a crescent as at 40 to come close to the periphery of the bowl yet preserve the open top thereof clear for the introduction of the load to be mixed.

This tank 39 is supported on the framing as indicated and is provided with extra side enclosing plates 41 extending downward to protect the driving machinery and also make a better appearance.

The tank is filled at 42, has an air escape valve at 43, and is cut away at 44 to provide working room for manipulation of the valve wheel 29. A door 41' in one of the side plates 41 serving to make the wheel accessible from the side of the truck.

Water may be admitted to the bowl from the tank through one or more pipe nozzles valved as at 44, 44'.

In operation, a load of concrete or other material to be mixed is deposited from above into the bowl, and when it is desired to mix the material sufficient water is run into it from the tank and the bowl revolved by power from the engine as described, the valve opened when sufficiently mixed and the load discharged.

The double pawl ratchet wheel 30, it should be noted, provides for forcing the valve downward and locking it, and the construction at 21, 22 provides for revolution of the machine with the valve held at any desired opening.

I claim:

1. In a mixer of the character described, an open topped bowl, provided with a central bottom discharge opening, means by which said bowl may be bodily revolved on a vertical axis, and means extending within said bowl arranged and adapted for mixing a load of material in the bowl and for forcing it toward said central opening, a conical valve seated downwardly against said opening provided with a tubular neck extending upward in said bowl, and means for lifting and lowering said valve extending into said neck, and a fixed tubular member depending into said bowl guiding said neck.

2. In a structure as specified in claim 1, the means for lifting and lowering the valve comprising a rack bar extending upwardly from the valve, a pinion engaging the rack, and a shaft upon which the pinion is mounted revolvably supported above the bowl.

3. In a structure as specified in claim 1, a roof-like cover positioned over the upper end of the valve and guiding members and the means for lifting and lowering the valve.

4. In a structure as specified in claim 1, the means for lifting and lowering the valve comprising a rack bar extending upwardly from the valve, a pinion engaging the rack, and a shaft upon which the pinion is mount-

ed revolvably supported above the bowl and means for locking said shaft with valve raised or lowered to its seat.

5 In a mixer of the character described, a bowl, the bottom of said bowl converging centrally downward and provided with a
10 central discharge opening, a valve arranged and adapted for closing said opening, and mixing devices extending into the bowl arranged and adapted for mixing a mass
15 therein and forcing it toward said discharge opening, said devices including a plurality of downwardly projecting arms formed and arranged to force the mass toward an intermediate ring-like position in said bowl, and
a device positioned and arranged for disrupting said ring.

6. In a mixer of the character described, a bowl, the bottom of said bowl converging
20 centrally downward and provided with a central discharge opening, a valve arranged and adapted for closing said opening, and mixing devices extending into the bowl arranged and adapted for mixing a mass
25 therein and forcing it toward said discharge opening, said devices including a plurality of downwardly projecting arms each formed to present a varying angular surface from top to bottom of the bowl to
30 material in the bowl upon revolving the bowl and arms relatively and a bottom plow secured to said arms.

7. In a mixer of the character described, a revolvable bowl, means for revolving the
35 bowl and means for lifting the material in stages from the bottom toward the top of the bowl comprising a series of curved loop-like blades suspended horizontally from vertically depending bars.

40 8. In a mixer, a revolvable bowl, and means for mixing material therein comprising a series of curved loop-like blades suspended horizontally from vertically depending bars.

45 9. In a mixer, a vertically revolvable bowl, stationary mixing means in said bowl adapted for forcing the material to be mixed toward an intermediate position in the bowl, and stationary means arranged for
50 spreading said layer laterally.

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