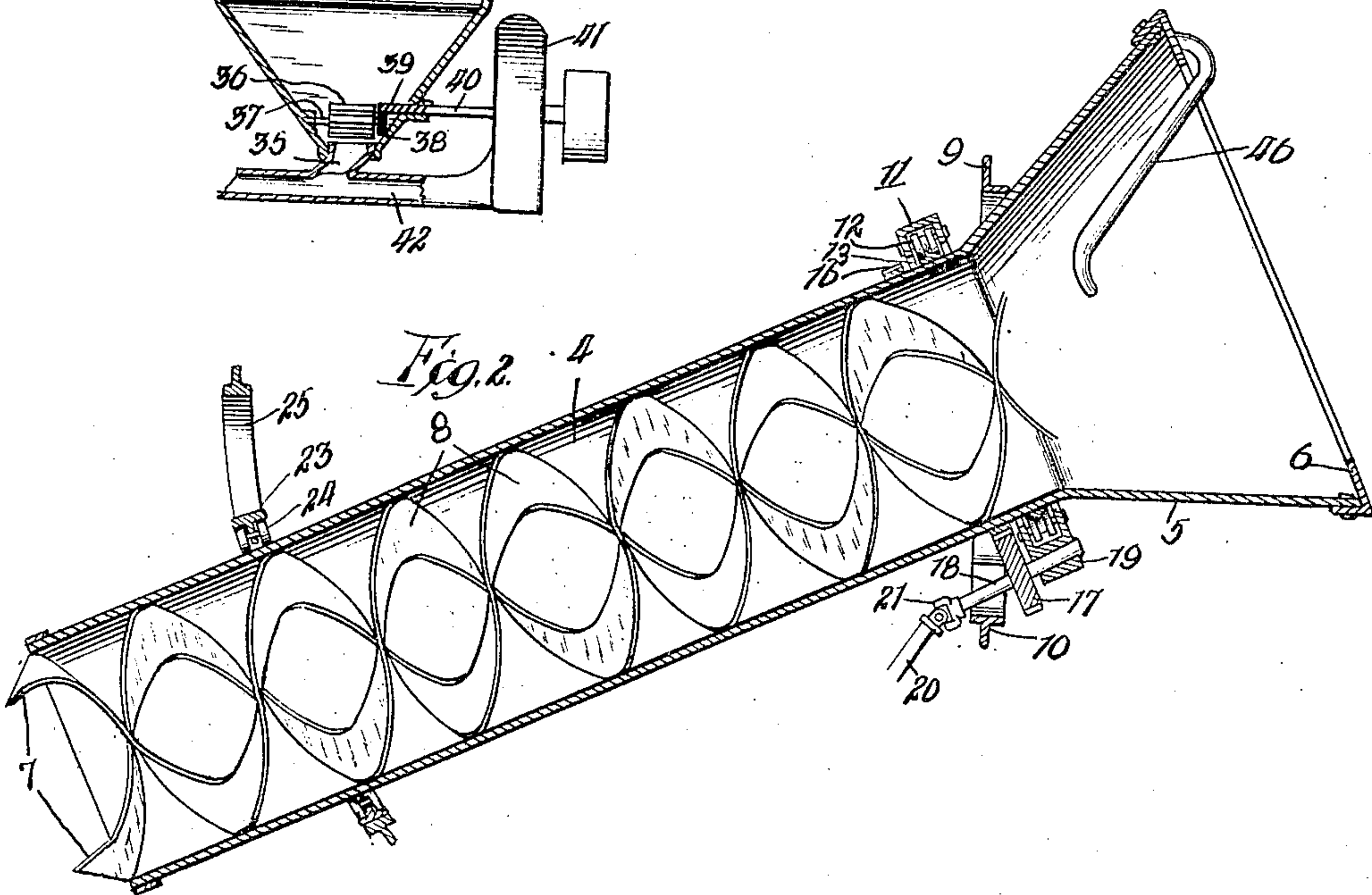
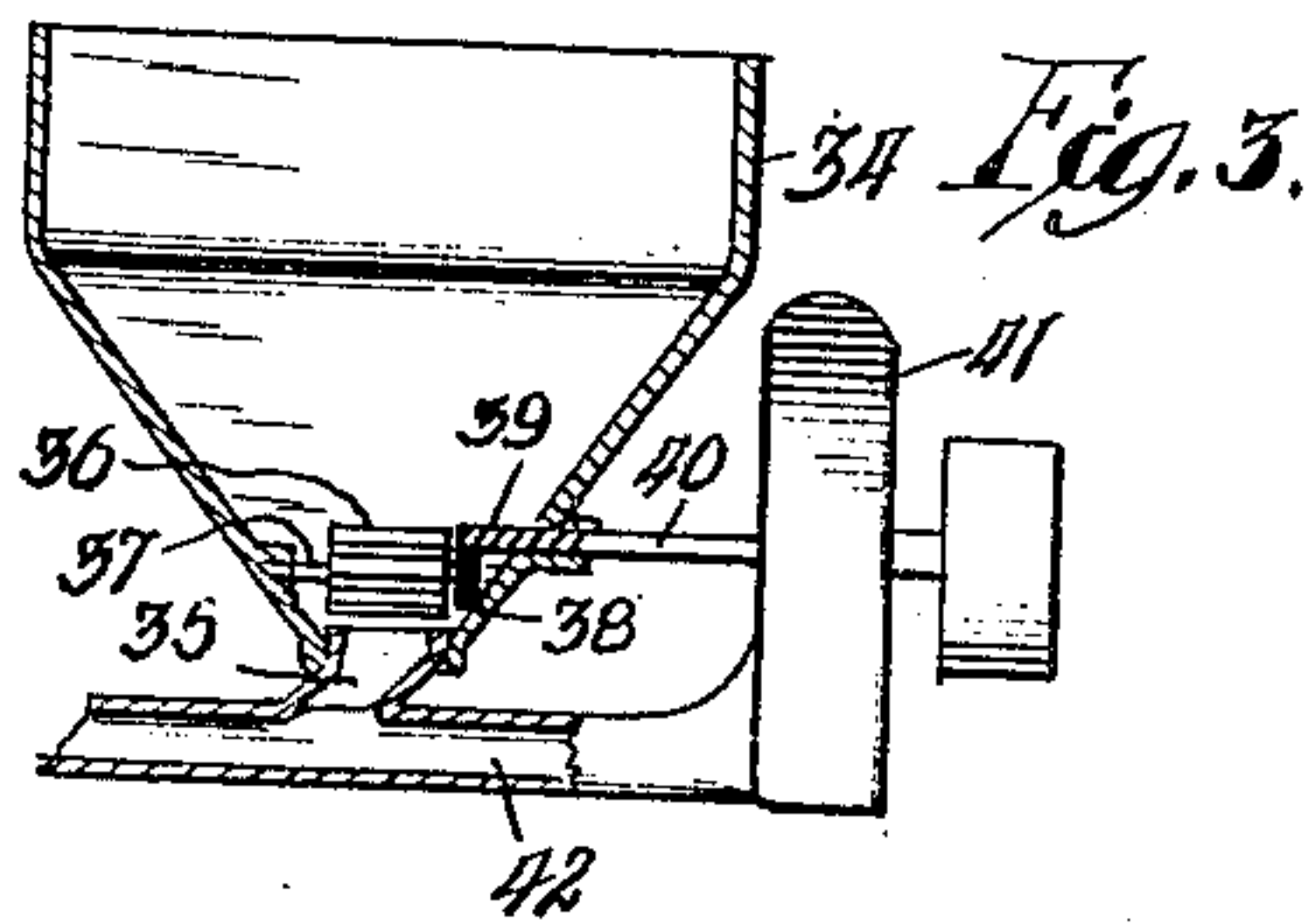
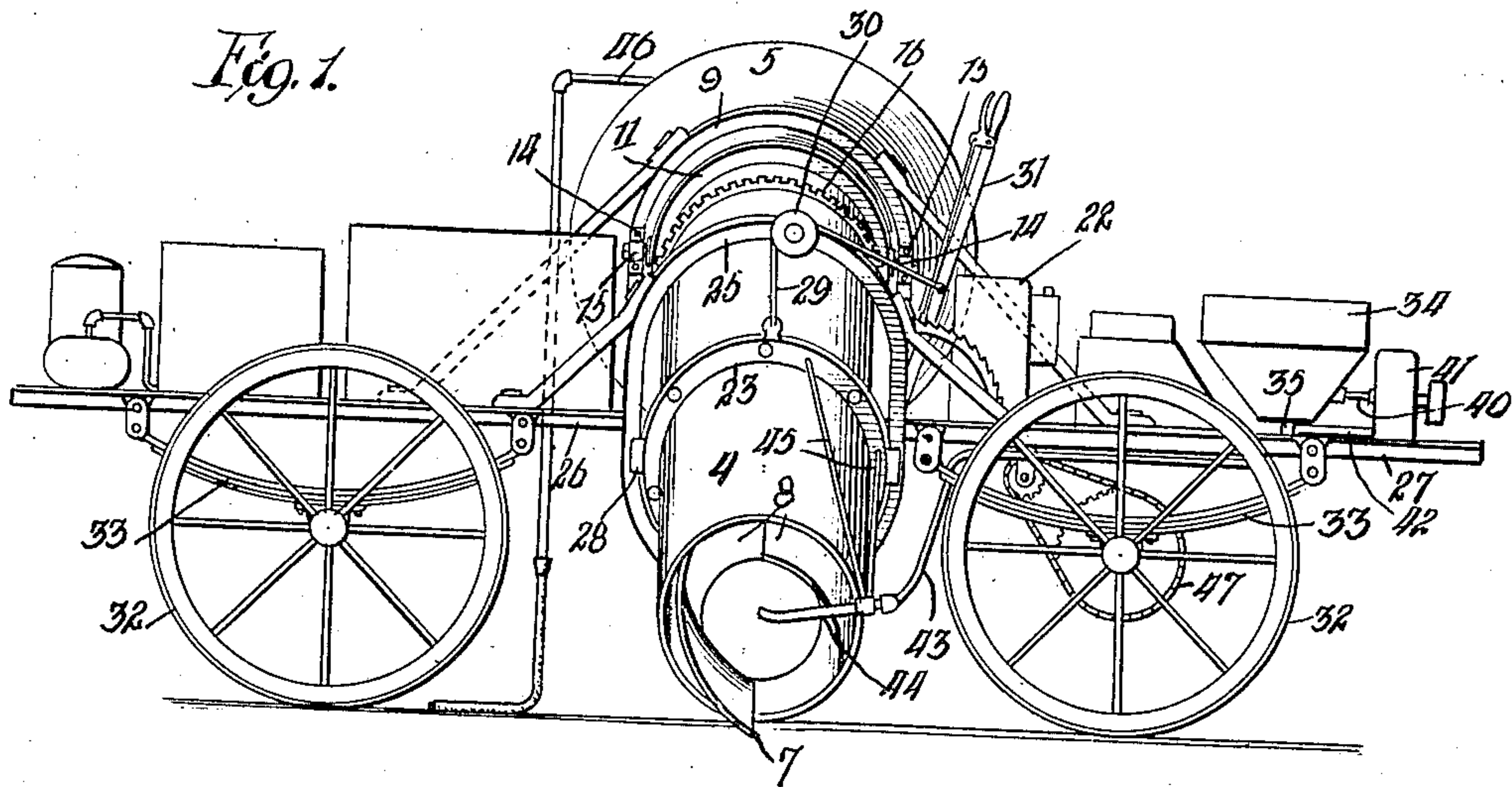


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CONCRETE MIXER.  
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908,120.

Patented Dec. 29, 1908.



Witnesses:

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# UNITED STATES PATENT OFFICE.

ALEXANDER D. NEY, OF AURORA, ILLINOIS.

## CONCRETE-MIXER.

No. 908,120.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed July 10, 1908. Serial No. 442,871.

*To all whom it may concern:*

Be it known that I, ALEXANDER D. NEY, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a specification.

This invention relates to concrete mixers more especially adapted for use in the mixing of concrete for paving purposes; and the object of the invention is to so construct the mixer that, as it is driven back and forth along the street in the course of paving, it will scoop up the raw material on one side and deliver it mixed with cement and in the form of concrete on the other side, thereby obviating the necessity for making and delivering the concrete in piles and thereafter distributing it to the points required.

The invention relates particularly to the construction and mounting for the rotatable concrete tube and to the feeding means employed therewith for scooping up the material at the intake end and elevating and discharging it at the discharge end; to the construction and arrangement of the means employed for pneumatically feeding the cement to the point of admixture with the broken stone; to the framework of the machine and the mechanism employed for raising, lowering and rotating the tube; and to the construction of the machine as a whole and the individual parts thereof.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the concrete mixer, looking toward the intake end of the tube; Fig. 2 a longitudinal sectional view of the tube; and Fig. 3 a sectional view of the feed for the cement hopper.

The invention comprises a tube 4 of cylindrical formation, which is set at an incline with respect to the ground level and terminates, at its upper end, in a flared mouth 5, the wall of which, on its lower side, occupies a position substantially parallel with the ground level. The flared mouth is provided, around its lip or edge, with an inturned flange 6, which serves as an abutment for partially limiting or obstructing the discharge which causes the material to fall from the upper surface of the mass in the form of a breaking wave, thereby

increasing the agitation. The lower or intake end of the tube has projecting outwardly therefrom shovels 7 of substantially plow shape, the inner faces of which have a pitch or angle greater than the angle of incline of the tube, which outer shovels or plows form a part of and cooperate with inner feed shovel blades 8 of similar formation, which are located entirely within and extend the length of the tube. The tube, near its upper end, is held within an arch 9 connected with a longitudinally extending rear side sill 10, which forms a portion of the frame of the vehicle. The tube is surrounded, near its upper end, by a collar 11 of channel formation, within which collar are journaled a plurality of grooved rollers 12 which engage a circular flanged ring 13 on the tube and permit the tube to revolve within the collar, the latter meanwhile serving to support the upper end of the tube.

In order to permit the intake end of the tube to be raised and lowered as desired, the collar 11 is provided with trunnions 14 which are mounted within journal bearings 15 on the sides of the arch 9, as shown in Fig. 1. Immediately below the collar 11 is a gear ring 16, which meshes with a pinion 17 mounted upon a stub shaft 18, which shaft is journaled within a lug 19 on the lower side of the grooved collar 11, as shown in Fig. 2. The stub shaft is connected with a driving shaft 20 by means of a universal joint 21, and the driving shaft is suitably connected with any convenient source of power, as, for instance, a gasolene engine 22 conveniently located with respect to the tube. The tube is encircled, near its lower end, by a bearing ring or collar 23, provided with rollers 24 which engage the surface of the tube and permit the revolving thereof, and the ring or collar 23 is slidably mounted within a yoke 25 of oval shape, which yoke is connected with the sill sections 26 and 27 which extend parallel with the sill 10 and form, in conjunction therewith, the main portion of the frame of the machine. The ring 23 is guided in its movement up and down the yoke 25 by means of guide flanges 28; and in order to permit the tube to swing from the trunnions 14 as a bearing, the yoke 25 is bowed in the arc of a circle, having the axis of movement of the tube as a center. The collar 23 has secured thereto a cable 29 which passes over a roller 30 on the yoke 25



and connects with a lever 31 adapted to be moved to different positions to regulate the elevation of the tube.

The machine is mounted upon wheels 32, leaf springs 33 being interposed between the frame and the wheels for the purpose of preventing injurious shocks or jars being transmitted to the working portions of the machine.

The cement is contained within a hopper 34 having, in its bottom, a discharge passage 35, which passage is controlled by means of a longitudinally grooved feed roller 36 mounted upon a shaft 37 immediately above the discharge passage 35. The shaft 37 carries a worm wheel 38 which meshes with a worm 39 on the inner edge of a blower shaft 40. The shaft 40 passes through a blower 41, from which leads an air blast pipe 42, which pipe connects with a discharge passage 38 and serves to furnish a blast for carrying forward the cement fed down by the rotation of the grooved feed roller 36. The blast pipe 42 connects with a rubber hose 43 leading down to the intake end of the tube, at which point the hose connects with an inwardly extending rigidly supported section of pipe 44 carried by brace rods 45 which are connected with the adjustable collar 23; and the inner end of the pipe 44 is inwardly bent or turned to discharge the cement into the lower end of the tube and in position to mingle with the broken stone scooped up thereinto.

Water is admitted to the discharge mouth 35 of the tube through a supply pipe 46 having a spray discharge and suitable source of supply. A gas engine 22 or other source of power is mounted at a suitable point on the frame and serves to drive the vehicle by means of a sprocket chain 47, and also serves to actuate the tube and the blower.

In using the mixer for the preparation of concrete for paving purposes, the broken stone will be deposited in a heap or ridge crosswise of the street, and the mixer will be driven back and forth across the street with the tube lowered to a position to bring the plow 7 into position to act upon the ridge or pile of broken stone. As the machine is moved forward, the tube will be revolved by the action of the engine or motor which drives the power shaft and operates the gearing, and this revolution of the tube will cause the plow or plows, with each revolution, to scoop up a sufficient quantity of broken stone or other material, which mass will be fed up the tube, by reason of the fact that the pitch of spiral is greater than the slope of the tube, so that, as the material enters the intake end of the tube, it will be carried upward in the form of a mass or column by the action of the spiral within the tube, to the point of discharge into the mouth 5 of the tube. The inner feed spiral 8 facilitates the travel of the material and further serves, by the revol-

ing of the tube, to mix and agitate the mass, which is composed of broken stone and cement powder. As the mass enters the flared discharge mouth of the tube, at the terminal end of the spiral, it will encounter the inwardly extending flange 6, which obstructs the outflow of the mass so that the body of the mass, in discharging, will be fed from near the center of the tube and will be thoroughly mixed and agitated during its discharge. As the progress of the mass is arrested on the level surface of the discharge mouth, the water delivered thereon will be thoroughly mixed with the mass, so that, when the mass is finally discharged from the inner edge of the inwardly extending flange, around the edge of the discharge mouth, it will be thoroughly mixed and wet and in condition for use. In view of the fact that the floor of the discharge mouth upon which the mass is supported is at a substantial angle with respect to the body of the tube, the water admitted to the mass will be retained in this part of the device and will not run down, in any appreciable amount, to mix with the dry mass during its progress up the tube. This facilitates the feeding operation and admits the water to a thoroughly mixed mass of dry material. The cement will be uniformly fed to the tube by the action of the grooved feed roller, and the blast which carries forward the cement in the form of a fine dust or powder serves to distribute the cement evenly and uniformly over the mass of broken rock or other material while revolving in the tube and in the course of agitation.

The method of feeding and agitating the mass is one which enables the machine to be driven back and forth during the mixing operation, so that the machine acts in the double capacity of a depositor and mixer, delivering the concrete in condition for use at the points intended.

What I regard as new and desire to secure by Letters Patent is:

1. In a concrete mixer, the combination of a revolvably mounted tube, a plow shaped feeding plate outwardly projecting from the intake end of the tube, means for revolving the tube and means for introducing a pulverulent material, as cement, into the tube, near its intake end, substantially as described.

2. In a concrete mixer, the combination of a revolvably mounted tube, a plow shaped feeding plate outwardly projecting from the intake end of the tube, means for revolving the tube, a portable vehicle frame upon which the tube is carried and means for introducing a pulverulent material, as cement, into the tube, near its intake end, substantially as described.

3. In a concrete mixer, the combination of a portable vehicle frame, a tube extending



transversely thereof and provided, at its intake end, with an outwardly projecting plow shaped feed plate, bearings for rotatably mounting the tube, means for raising and lowering the tube, means for rotating the tube and means for introducing a pulverulent material, as cement, into the tube, near its intake end, substantially as described.

10 4. In a concrete mixer, the combination of a portable vehicle frame mounted on wheels, a tube extending transversely thereof and provided, at its intake end, with an outwardly extending plow shaped feed plate, 15 upright members supported upon the frame of the vehicle between which the discharge end of the tube is entered, a collar surrounding the tube, trunnions on the collar journaled within the upright members, 20 rollers journaled within the collar and serving to rotatably mount the tube, means for raising and lowering the intake end of the tube, means for rotating the tube and means for introducing a pulverulent material, as cement, into the tube, near its intake 25 end, substantially as described.

5. In a concrete mixer, the combination of a portable vehicle frame mounted on wheels, a tube extending transversely thereof 30 and provided, at its intake end, with an outwardly extending plow shaped feed plate, upright members supported upon the frame of the vehicle between which the discharge end of the tube is entered, a collar surrounding the tube, trunnions on the collar 35 journaled within the upright members, rollers journaled within the collar and serving to rotatably mount the tube, a collar provided with rollers engaging the 40 tube near its intake end, a guide for said collar, a cable connected with said collar for raising and lowering the same, means for rotating the tube and a pipe entered into the intake end of the tube for supplying 45 a pulverulent material, as cement, thereto, substantially as described.

6. In a concrete mixer, the combination of a portable vehicle frame mounted on wheels, a tube extending transversely thereof 50 and provided, at its intake end, with an outwardly extending plow shaped feed plate, upright members supported upon the frame of the vehicle between which the discharge end of the tube is entered, a collar surround- 55 ing the tube, trunnions on the collar journaled within the upright members, rollers journaled within the collar and serving to rotatably mount the tube, a collar provided with rollers engaging the 60 tube near its intake end, a guide for said collar, a cable connected with said collar for raising and lowering the same, gear teeth on the tube, a gear pinion meshing with said gear teeth, a power transmission 65 shaft for actuating said pinion and a pipe

entered into the intake end of the tube for supplying a pulverulent material as cement, thereto, substantially as described.

7. In a concrete mixer, the combination of a portable vehicle frame mounted on wheels, 70 a cylindrical tube extending transversely thereof and provided, in its intake end, with an outwardly extending plow shaped feed plate, a flaring mouth for the tube affording a mixing chamber and provided, around its 75 edge, with an inturned flange, a ring or collar surrounding the tube near its discharge end and provided with rollers for rotatably mounting the tube, an arch embracing the ring or collar, trunnions for pivoting the ring 80 or collar to the arch, the ring or collar surrounding the tube near its intake end, rollers journaled therein and serving to rotatably mount the tube, a yoke coöperating with the ring or collar and furnishing a guide for the 85 latter, a cable connected with the last named ring or collar and serving to raise and lower the same, means for rotating the tube and means for introducing a pulverulent material, as cement, into the tube, near its in- 90 take end, substantially as described.

8. In a concrete mixer, the combination of a tube, mechanical means for feeding material into and through the tube, a cement hopper provided with a discharge passage or 95 spout, a blast pipe with which said passage communicates, the blast pipe leading to the tube near its intake end, and a blower for directing a blast through the blast pipe, substantially as described. 100

9. In a concrete mixer, the combination of a tube, mechanical means for feeding material into and through the tube, a cement hopper provided with a discharge passage or 105 spout, a blast pipe with which said passage communicates, the blast pipe leading to the tube near its intake end, a blower for directing a blast through the blast pipe, a grooved feed roller in the cement hopper for regulating the discharge therefrom, and means for re- 110 volving said roller, substantially as described.

10. In a concrete mixer, the combination of a vehicle frame, wheels upon which the frame is mounted, a tube extending transversely of the frame and having its intake 115 end, when lowered, near the ground level, a plow shaped feed plate outwardly projecting from the intake end of the tube, a flaring mouth at the discharge end of the tube provided with an inturned flange, an arch 120 through which the discharge end of the tube is located, a grooved ring trunnioned to said arch and provided with rollers furnishing a roller bearing for the discharge end of the tube, means for revolving the tube, a yoke 125 embracing the tube near its intake end, a collar slidably mounted within said yoke, rollers carried by said collar and furnishing a roller bearing for the tube, means for raising and lowering said last named collar, a cement 130



hopper provided with a discharge passage, a blower pipe communicating with said discharge passage, a blower adapted to direct a blast of air through said pipe, and pipe connections leading from said blast pipe to the intake end of the tube, substantially as described.

11. In a cement mixer, the combination of a vehicle frame, a motor adapted to drive the frame, a tube carried by the frame and provided, on its interior, with spiral blades, an outwardly projecting shovel or plate for scooping up material into the interior of the tube, means, actuated by the motor, for rotating the tube and a pipe entered into the intake end of the tube for supplying a pulverulent material, as cement, thereto, substantially as described.

12. In a concrete mixer, the combination of a portable vehicle frame mounted on wheels, a cylindrical tube extending transversely thereof and sloping downward at an oblique angle with respect thereto, and provided, in its interior, with a feeding screw, a flaring discharge mouth for the tube, forming a mixing chamber having a floor at a substantial angle with respect to the wall of the tube, a flange around the edge or lip of the flaring mouth, means for introducing a pulverulent material into the intake end of the tube, and means for introducing water into the flaring mouth, substantially as described.

13. In a concrete mixer, the combination

of a portable vehicle frame mounted on wheels, a cylindrical tube extending transversely thereof and sloping downward at an oblique angle with respect thereto, and provided, in its interior, with a feeding screw, a flaring discharge mouth for the tube, forming a mixing chamber having a floor at a substantial angle with respect to the wall of the tube, a flange around the edge or lip of the flaring mouth, means for introducing a pulverulent material into the intake end of the tube, means for introducing water into the flaring mouth, and means for revolving the tube and the mouth connected therewith, substantially as described.

14. In a concrete mixer, the combination of a frame, a cylindrical tube extending transversely thereof and sloping downward at an oblique angle with respect thereto, and provided, in its interior, with a feeding screw, a flaring discharge mouth for the tube, forming a mixing chamber having a floor at a substantial angle with respect to the wall of the tube, a flange around the edge or lip of the flaring mouth, means for introducing a pulverulent material into the intake end of the tube, and means for introducing water into the flaring mouth, substantially as described.

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