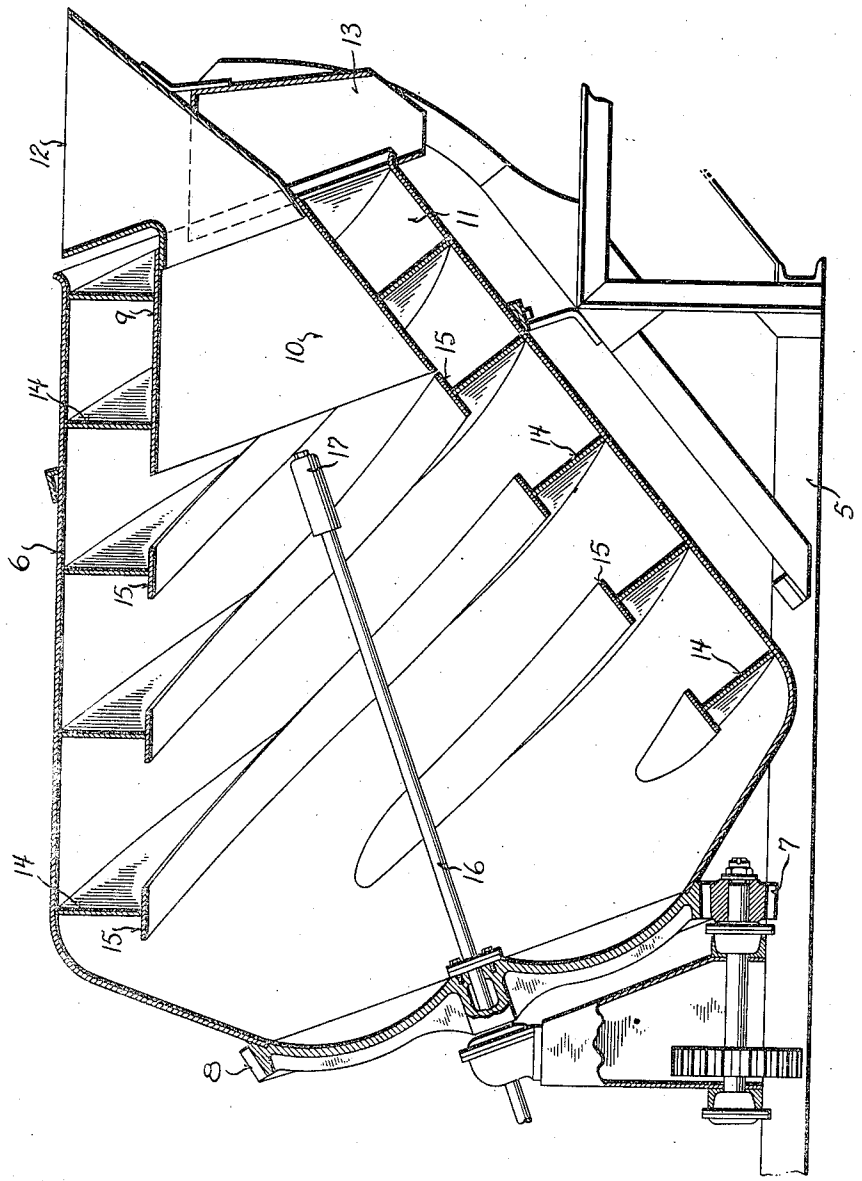
Sept. 2, 1941. M. L. ANDRAE 2,254,639

CONCRETE MIXER

Filed Jan. 17, 1940



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Patented Sept. 2, 1941

2,254,639

UNITED STATES PATENT OFFICE

2,254,639

CONCRETE MIXER

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Application January 17, 1940, Serial No. 314,270

6 Claims. (Cl. 259—161)

This invention relates to improvements in concrete mixers, and refers particularly to the internal construction or blading of the mixer drum.

In certain types of concrete mixers, particularly the so-called transit mixers, it is desirable, as stated in Patent No. 2,029,126, issued January 28, 1936, to Adolph W. Rybeck, to employ a mixing drum having but a single opening.

With this construction, the drum is preferably conical and is mounted to revolve about an axis inclined to the horizontal with the open small diameter end of the drum uppermost. Charging is effected through the center of the open end of the drum while discharging is accomplished by spirally arranged blades extending in from the side wall of the drum and operable upon rotation of the drum in one direction to propel or convey the drum contents upwardly over the inclined bottom of the drum and out through its open end.

When the drum revolves in the opposite direction, the blades continuously work the drum contents toward the closed end of the drum.

The present invention broadly follows this same concept but contemplates an improvement in the construction of the drum; and to this end has, as one of its objects, the provision of blades so shaped and arranged as to form troughs at opposite sides thereof.

With the above and other objects in view, which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates one complete example of the physical embodiment of the invention constructed in accordance with the best mode so far devised for the practical application of the principles thereof, and in which:

The single figure is a longitudinal sectional view through a mixing drum embodying this invention.

Referring now particularly to the accompanying drawing, in which like numerals indicate like parts, the numeral 5 designates the supporting structure of a concrete mixed which, as in the aforementioned patent, may be mounted on the chassis of a truck.

Journalled in appropriate bearings carried by the supporting structure is a rotatable mixing drum 6. The drum is substantially cone-shaped and is mounted with its axis inclined to the horizontal. The large diameter end of the drum which is closed is lowermost so that the opposite small diameter open end of the drum is at a higher elevation than the closed end.

Any suitable means such as a pinion 7 driven from an engine or other power unit (not shown) and meshing with a ring gear 8 fixed to the closed large diameter end of the drum may be employed to rotate the drum about its axis.

In the small diameter open end of the drum is a truncated cone 9 which provides a central charging passage 10 and an annular discharge passage 11. A hopper 12 is positioned to direct aggregates into the charging passage, and a hopper 13 is located to receive mixed concrete ejected from the discharge passage 11.

The truncated cone 9 is held spaced from the wall of the drum by spiral vanes or blades 14 which extend radially across the space therebetween. Inwardly of the truncated cone, these vanes or blades are continued to form an internal screw or helix by which the drum contents are conveyed from one end of the drum to the other, depending upon the direction of rotation of the drum.

When the drum revolves in one direction, the spirally arranged blades keep moving the drum contents toward the closed end of the drum and away from the discharge opening to effect the desired mixing action; and when the drum revolves in the opposite direction, these spiral blades continuously work the material up the inclined bottom of the drum and out through the discharge opening.

To insure the optimum mixing and conveying action, the spiral blades, below the truncated cone, have a substantially T-shaped cross section with the flanges 15 formed by the head of the T spaced from and overlying the adjacent portions of the drum wall.

Hence, the head of the T cooperates with the adjacent wall portions and the web or stem of the T blade to form troughs at opposite sides of the blade. The materials are thus held against rolling freely off the inner edge of the blade and as a result, a more efficient mixing and conveying action is obtained.

Water is introduced into the interior of the drum for admixture with the dry aggregates in any suitable manner as by means of a water line 16 which enters the closed end of the drum through its bearing and which terminates in a nozzle 17 protected against the ingress of dry agregates.

From the foregoing description taken in connection with the accompanying drawing, it will be apparent that this invention provides a substantial improvement in the construction of mixing drums and that it materially improves the mixing action and the effectiveness of that type of drum wherein charging and discharging is accomplished through the same end of the drum.

What I claim as my invention is:

1. In a rotatable mixing drum: a mixing blade

on the inner wall of the drum, said blade being spirally arranged with relation to the axis of the drum and having a substantially T-shaped cross section with the head of T spaced from and overlying the adjacent portions of the drum wall so that said portions of the drum wall in coaction with the adjacent convolutions of the blades and the flanges formed by the head of the T form a partially enclosed spiral trough leading from one end of the drum to the other and communicating with the interior of the drum through the space between the flanges on adjacent convolutions of the blade.

2. In a concrete mixer: a rotatable mixing drum; and blades adjacent to the inner surface of the drum for mixing the drum contents, said blades being disposed spirally with relation to the axis of the drum so as to have a number of spiral convolutions between the ends of the drum and having a substantially T-shaped cross section with the head of the blades spaced from the adjacent portions of the drum wall and extending toward each other on adjacent convolutions of the blades so as to overlie portions of the drum wall betwen said adjacent convolutions of the blades.

3. In a concrete mixer: a rotatable mixing drum; means supporting the drum with its axis inclined to the horizontal, said drum having a substantially conical shape with its large diameter portion lowermost and its small diameter portion raised, the end of the drum at its small diameter being open; and spiral blades on the inner wall of the drum extending with a number of convolutions from the open raised end of the drum toward the lower large diameter closed end of the drum, said blades having a substantially T-shaped cross section throughout the major portion of their length with the head of the T spaced from and overlying the adjacent portions of the drum wall and extending toward each other on adjacent convolutions of the blades so as to form troughs at opposite sides of the blades to facilitate conveyance of the drum contents toward the closed end of the drum for mixing purposes upon rotation of the drum in one direction, and conveyance of the drum contents upwardly toward the opposite open end of the drum for discharging the contents during rotation of the drum in the opposite direction.

4. In a concrete mixer: a rotatable mixing drum; means supporting the drum with its axis inclined to the horizontal, said drum having a substantially conical shape with its large diameter portion lowermost and its small diameter portion raised, the end of the drum at its small diameter being open; a frustroconical charging chute disposed centrally in the open end of the drum with its conical side wall spaced from the side wall of the drum and substantially concentric therewith; spiral blades on the inner wall of the drum extending continuously with a number of spiral convolutions from the open raised end of the drum to the lower large diameter closed end of the drum, said blades bridging the space between the side walls of the drum and charging chute to form closed spiral troughs opening to the open end of the drum; and spiral convolutions on the inner edges of the blades and extending to opposite sides thereof to give the blades a T-shaped cross section with the heads of the T forming substantially continuations of the wall of the charging chute and overlying portions of the drum wall at opposite sides of the blades to thereby form partially enclosed spiral troughs between the adjacent convolutions of the blades inwardly of the charging chute, said partially enclosed troughs constituting continuations of the closed spiral troughs at the open end of the drum.

5. In a rotatable mixing drum open at one end and closed at its other end: blade means fixed on and projecting from the inner wall of the drum, said blade means being spirally arranged with relation to the axis of the drum and extending continuously from one end of the drum to the other so as to move materials in the drum toward the closed end thereof in a mixing action upon rotation of the drum in one direction and to move materials in the drum toward the open end thereof in a discharging action upon rotation of the drum in the opposite direction; a flange on the mixing side of said blade means overlying the adjacent portions of the drum wall and cooperating with the blade means and said adjacent portions of the drum wall to form a spiral trough having its open side facing the closed end of the drum to positively convey aggregates without segregation of the coarse and fine constituents thereof toward the closed end of the drum during rotation thereof in said first named direction and thus thoroughly mix the aggregates; and a flange on the discharge side of said blade means overlying the adjacent portions of the drum wall and cooperating with the blade means and said portions of the drum wall to form a spiral trough having its open side facing the open end of the drum to positively and rapidly convey materials toward the open end of the drum to discharge the same upon rotation of the drum in said opposite direction.

6. In a rotatable mixing drum open at one end and closed at its other end: blade means fixed on and projecting from the inner wall of the drum, said blade means being spirally arranged with relation to the axis of the drum and extending continuously from one end of the drum to the other so as to move materials in the drum toward the closed end thereof in a mixing action upon rotation of the drum in one direction and to move materials in the drum toward the open end thereof in a discharging action upon rotation of the drum in the opposite direction; a flange on the mixing side of said blade means overlying the adjacent portions of the drum wall and cooperating with the blade means and said adjacent portions of the drum wall to form a spiral trough having its open side facing the closed end of the drum to positively convey aggregates without segregation of the coarse and fine constituents thereof toward the closed end of the drum during rotation thereof in said first named direction and thus thoroughly mix the aggregates; and a flange on the discharge side of said blade means overlying the adjacent portions of the drum wall and cooperating with the blade means and said portions of the drum wall to form a spiral trough having its open side facing the open end of the drum to positively and rapidly convey materials toward the open end of the drum to discharge the same upon rotation of the drum in said opposite direction, the troughs on adjacent sides of adjacent convolutions of the blade means facing each other and coacting to form a single spiral channel having a restricted entrance defined by the space between the outer edges of adjacent flanges.

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