

Nov. 9, 1948.

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TILTING BOWL CONCRETE MIXER

2,453,583

Filed March 8, 1946

2 Sheets-Sheet 1

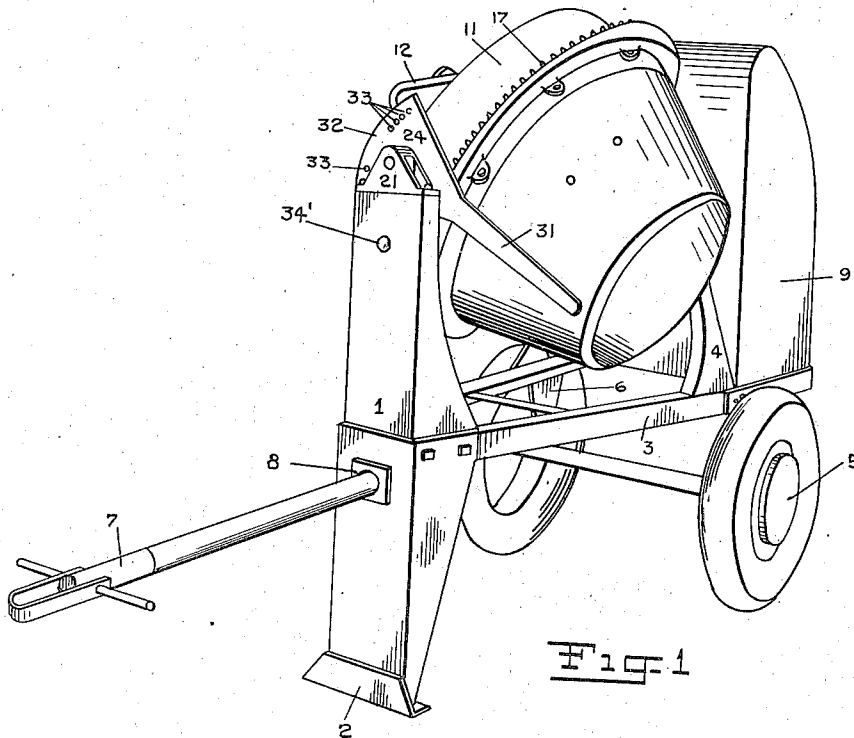


Fig. 1

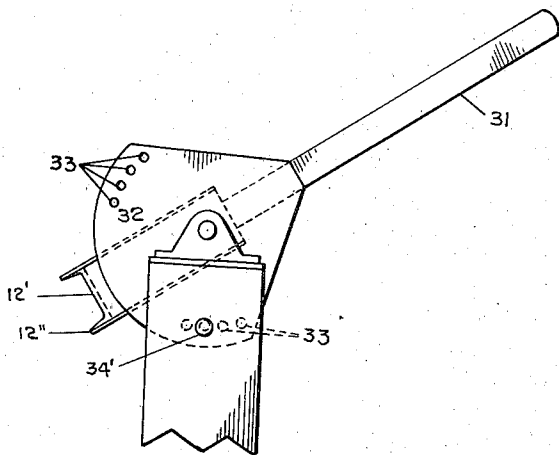


Fig. 2

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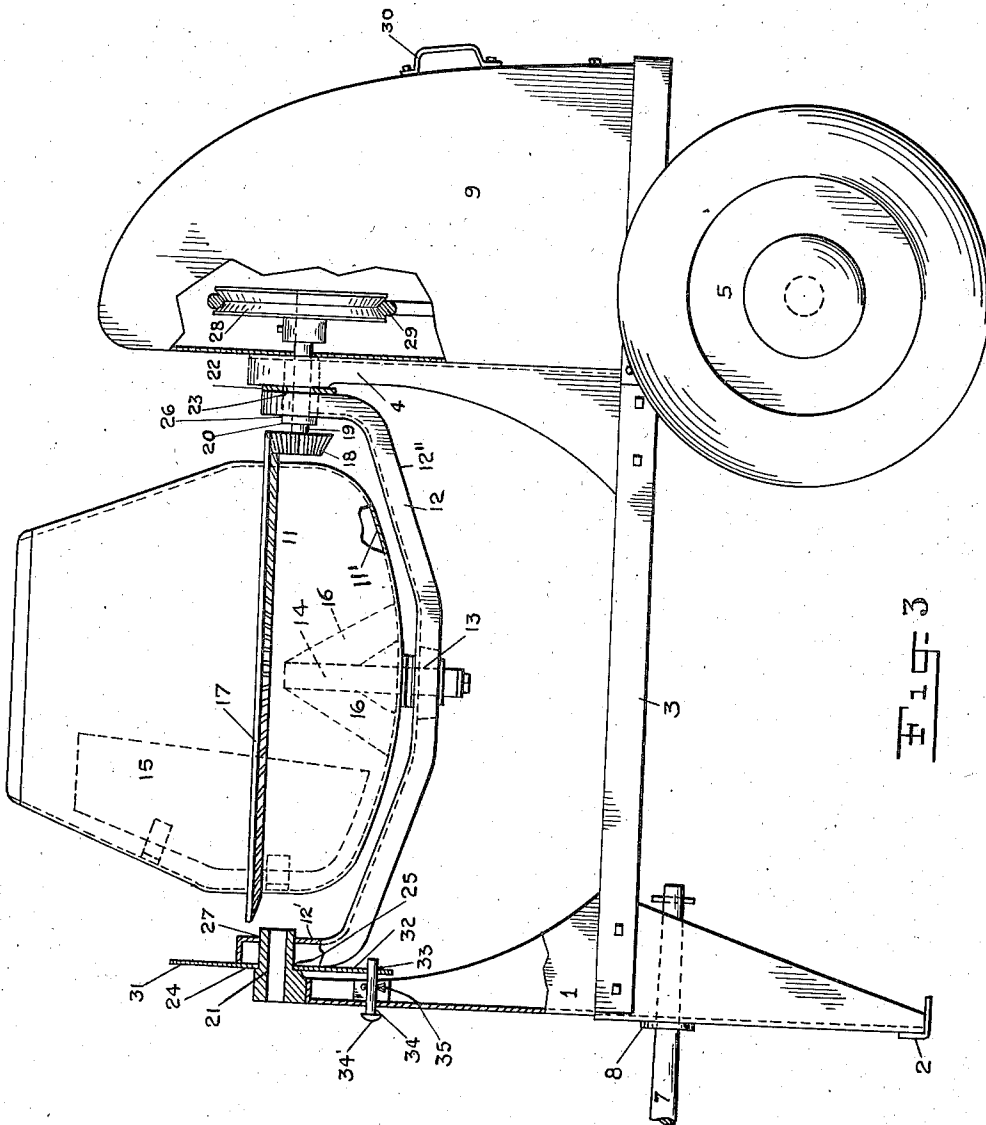


Fig. 3

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TILTING BOWL CONCRETE MIXER

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Application March 8, 1946, Serial No. 653,006

9 Claims. (Cl. 259—176)

1 The improvements relate to concrete mixers, and the like, and more particularly to mixers of the tilting bowl or tub type of mixing drum. More specifically the improvements relate to the improved mechanical mounting and control of the tub or bowl of the machine and parts involved therein.

Among the objects of the improvements are the provision of a new construction and method of mounting the tilting mixer drum and its yoke for swingable operation and means for positioning the mixer drum positively in a wide selection of positions, and also of rotating the said drum and improving the efficiency and durability of the rotating gears. Further and incidental objects and advantages of the improvements will appear in connection with the following description in which the accompanying drawings are referred to.

In the drawings, Figure 1 is a perspective view of the mixer in a discharge position;

Fig. 2 is a side view of the tilting lever and mixer drum positioning and retaining mechanism, on an enlarged scale;

Fig. 3 is a side elevation, partly in vertical section, showing the mixer drum, yoke, mounting and the drum positioned mechanism, also on an enlarged scale.

The construction and operation of the mixer shown herein is exemplary and may be varied within certain limits without departing from the scope of the present improvements which may be embodied in apparatus of this character of modified details of construction and arrangement.

In the said drawings, 1 represents the main upright frame member, with shoe 2 at its bottom, 3 the horizontal members and 4 the upright post at the drive end forming the rigid frame of the machine supported on wheels 5 in depending brackets 6 at one end and on the shoe 2 when at rest at the other end. A pulling handle 7 is slidably connected with the upright member or post 1 by being passed through a reinforced aperture 8 therein, so that when not in use it may be pushed in and stowed inside the frame. On the rear end of the frame the housing 9 for the power unit (not shown) of the machine is located.

The mixing bowl or tub 11 is mounted for rotation in the yoke 12, preferably consisting of a single U-shaped channel iron, by means of a central post 14 fixed thereto and projecting through its bottom and mounted in suitable bearings 13 in the lowest portion of the yoke. The bowl 11, as shown, is substantially in the form of a truncated cone and has on its interior cooperative mixing blades 15 and 16 for mixing the concrete

2 or the like, the latter secured to the post 14 at its upper part and to the shell 11 of the bowl for mutual positioning and reinforcement and the former to the interior of said shell. Secured to the exterior of this bowl is an annular beveled rack 17 located well above its bottom and at its greatest diameter, and this rack is constantly in mesh with a mitre pinion 18 on the drive shaft 19.

10 The yoke 12 with the rotating bowl 11 supported therein is mounted by being hung from the bearing 20 of the drive shaft 19 fixed in the upper part of the post 4, and, at its opposite end, from the hollow pivot member 21 secured to the top of the main upright member 1 of the frame, so that it can swing thereon through an arc of more than 180°. This mounting is provided by welding a plate 22 with an opening 23 to receive the bearing 20 to the outer edges of the flanges 12' of the channel forming the yoke at the drive end and welding thereto a plate 24 with an opening 25 to receive the pivot 21 at the opposite end. The bottom web 12' of the channel is also provided with apertures 26 and 27 to permit the passage of the bearing and the pivot member respectively therethrough. The mounting of the yoke on the bearing 20 of the drive shaft 19 is provided for by the extension of the bearing inwardly beyond the inner surface of the post 4 and inwardly of the channel through which it first passes, and this construction and arrangement not only provides for a strong, secure and durable pivot on which the yoke swings, but reinforces the drive shaft 19 and secures other manufacturing and operating advantages. The pivot member 21 at the opposite side is in exact alignment with the bearing 20 and is of the same diameter, so that the yoke will swing on these pivots to vary the position of the bowl 11 with entire freedom from unnecessary friction or binding.

40 The drive shaft 19 is driven by the pulley 28 which in turn is driven by the V-belt 29 from the power shaft of a suitable power unit in the housing 9, which is removable by means of the handle 30 so that the power unit can be quickly lubricated and serviced. A suitable gland may be provided for lubricating the shaft 19 and bearing 20, and also for bearing 21.

50 For the purpose of swinging the yoke and bowl to various positions on the bearings 20 and 21 a hand lever 31 integral with the plate 24 is provided, and an extension 32 of the plate 24 with holes 33 therein concentric with the pivot 21 of the yoke are provided for securing the yoke and bowl in various mixing positions to which it may

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be tilted, so that the action of the mixing blades may be varied to suit different materials or different consistencies of the said materials. These holes are engaged by a pin 34 provided with a head 34' and extending through the frame member 1 and through the said holes of the plate portion 32, being provided with a cotter-pin 35 to prevent the pin 34 from moving out of engagement with the said frame member. To discharge the contents of the bowl after mixing, the pin 34 is disengaged from the plate portion 32 and the bowl inverted by means of the hand lever to a sufficient extent to accomplish that purpose.

What I claim is:

1. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on the inwardly projecting portion of said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl a driving shaft on which said pinion is fixed, said shaft extending through and journaled in one of said bearing members outwardly and inwardly of said yoke, said yoke-metal being provided with an aperture in its inwardly disposed web through which said bearing member passes.

2. In apparatus of the character described, a pair of upright frame members, aligned bearing members fixed therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted wholly on the inwardly projecting portion of said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and journaled in one of said bearing members outwardly of said yoke and said bearing member extending inwardly of said yoke, said yoke-metal being provided with an aperture in its web through which said bearing member passes.

3. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on the inwardly projecting portions of said bearing members near its ends and normally extending downwardly between them, the web of said yoke metal being disposed inwardly, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and journaled in one of said bearing members and said bearing member extending inwardly of said yoke, said yoke-metal being provided with an aperture in its inwardly disposed web through which said bearing member passes.

4. In apparatus of the character described, a pair of upright frame members, bearing mem-

bers therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on the inwardly projecting portions of said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and journaled on one of said bearing members and outwardly of said yoke, plates inside said frame members secured to and uniting the yoke-metal flanges and spanning the space between them and provided with apertures through which the said bearing members pass.

5. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on the inwardly projecting portions of said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and journaled in one of said bearing members and outside of said yoke, plates inside said frame members secured to and uniting the yoke-metal flanges through which said bearing members extend and an extension of one of said plates forming a hand lever for oscillating said yoke and bowl.

6. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and journaled in one of said bearing members and outside of said yoke, plates inside of said frame members secured to and uniting the yoke-metal flanges and spanning the space between them and provided with apertures through which the said bearing members pass and an extension of one of said plates forming a segment and having holes concentric with its bearing member for the reception of a detent to hold the same and the yoke and bowl in positions to which they may be tilted on the bearing members.

7. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh

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with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and inwardly of said yoke and journaled in one of said bearing members, plates inside said frame members secured to and uniting the yoke-metal flanges and spanning the space between them and provided with apertures through which the said bearing members pass and an extension of one of said plates forming a segment and having holes concentric with its bearing member for the reception of a detent to hold the same and the yoke and bowl in positions to which they may be tilted on the bearing members, and a longitudinally movable pin mounted on one of said frame members movable into and out of engagement with said holes.

8. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, an annular rack on the exterior of said bowl, a pinion in mesh with said rack for rotating said bowl, a driving shaft on which said pinion is fixed, said shaft extending through and inwardly of said yoke and journaled in one of said bearing members, plates inside said frame members secured to and uniting the yoke-metal flanges and spanning the space between them and provided with apertures through which the said bearing members pass and an extension of one of said plates forming a

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segment and having recesses concentric with its bearing member for the reception of a detent to hold the same and the yoke and bowl in positions to which they may be tilted on the bearing members.

9. In apparatus of the character described, a pair of upright frame members, bearing members therein and projecting inwardly therefrom, a yoke formed of a curved piece of metal substantially U-shaped in cross section mounted on said bearing members near its ends and normally depending downwardly between them, a mixing bowl mounted for rotation in said yoke between said bearing members and adapted to oscillate thereon with said yoke, means for rotating said bowl comprising a driving shaft extending through and inwardly of said yoke and journaled in one of said bearing members, said yoke-metal being provided with an aperture in its web through which said bearing member passes, and a plate inside said frame members united with and spanning the flanges of said yoke and provided with an aperture aligned with the aperture of said web through which said bearing passes.

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The following references are of record in the file of this patent:

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