Sept. 20, 1932. A. E. MASON 1,878,504

CONCRETE MIXER

Filed June 18, 1929 2 Sheets-Sheet 1

Fig. 1.

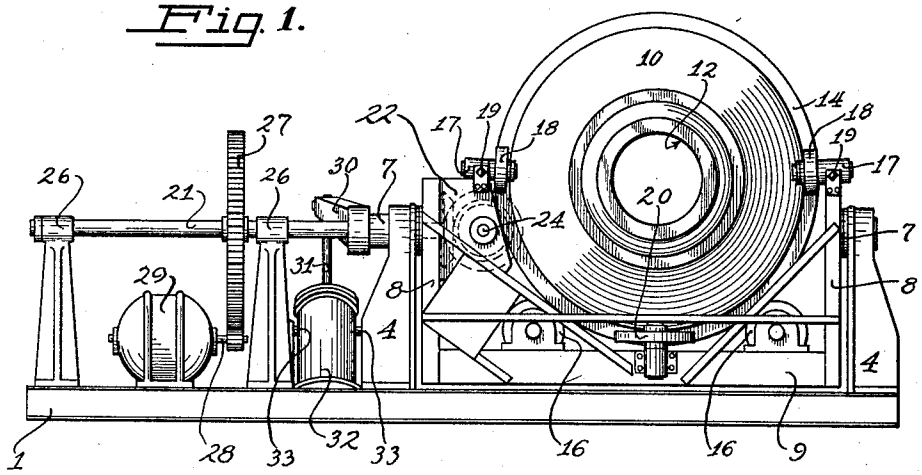

Fig. 2.

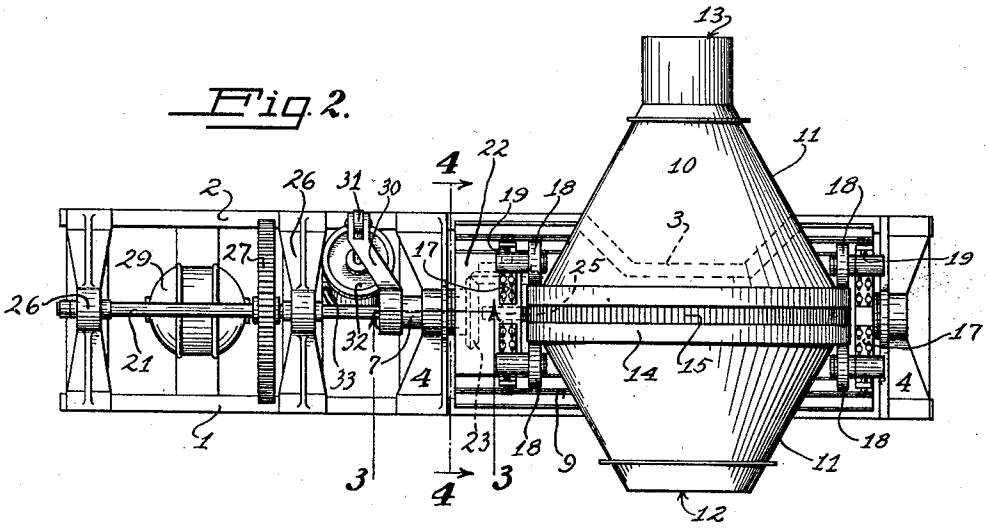

Fig. 3.

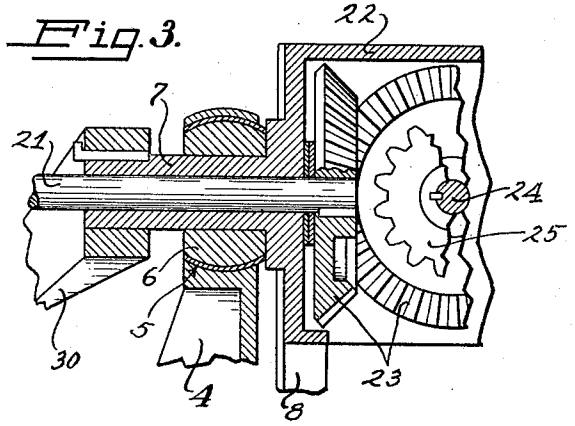

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Fig. 4.

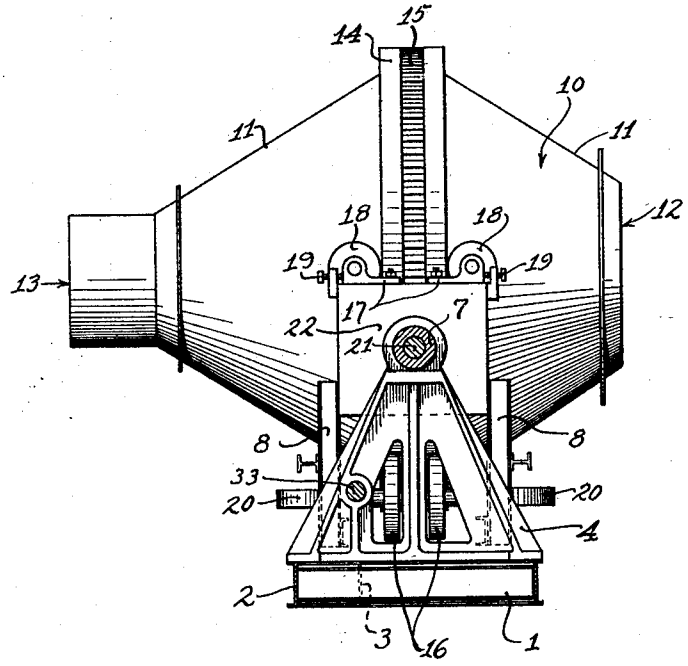
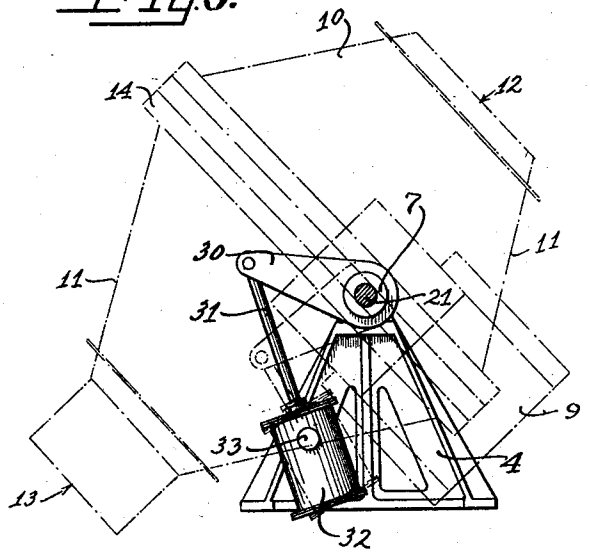


Fig. 5.



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UNITED STATES PATENT OFFICE

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CONCRETE MIXER

Application filed June 18, 1929. Serial No. 371,917.

This invention relates to concrete mixers and particularly to a mixer of the permanent or plant type as distinguished from the portable type, and one of a very large batch capacity.

Among its objects, the invention provides a continuously rotatable drum having a balanced mounting on a novel form of frame structure which permits of the construction of a sufficiently wide frame to afford ample supporting area and at the same time to provide a sufficiently great dumping angle for the drum. To provide a novel form of bearing for mounting the drum supporting frame trunnions whereby extreme accuracy in alignment of the trunnions is not necessary to enable their free axial rotation, and to provide a trunnion bearing which will permit free working of the trunnions even though the same should become slightly out of alignment due to the settling or warping of the foundation or main frame or due to other causes.

A further object is to provide a novel form of adjustably mounted thrust and guide rollers for the mixing drum whereby adjustment for wear may be quickly made. Other objects are to provide a pneumatic dumping apparatus for the drum and a simple form of mechanical drive.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more clearly comprehend the invention, reference is directed to the accompanying drawings, wherein—

Fig. 1 is a view in front elevation of the preferred embodiment of my invention.

Fig. 2 is a view in top plan.

Fig. 3 is a sectional view on line 3—3 Fig. 2, showing ball and socket trunnion bearing and gear box.

Fig. 4 is a transverse sectional view on line 4—4 Fig. 2.

Fig. 5 is a view in detail of the pneumatic drum tilting mechanism.

Referring to the several views of the drawings, wherein like characters designate corresponding parts, 1 is an open apparatus frame, oblong in plan. The frame side forming member 2 is, near one end, bent inwardly or inset at 3 to afford a clearance for the discharge end of the mixing drum when pivoted to dumping position, and permits the same to be pivoted to an extreme angle for dumping.

Upwardly from the frame extend the pedestals 4 provided with aligned socket openings 5 in which are mounted ball ring bearings 6. Through the ring bearings 6 project trunnions 7 extending in alignment from the upper ends of the side frame members 8 of a drum mounting frame or cradle 9 which is, as illustrated, hung between the pedestals. Within the frame rests a mixing drum 10 consisting of conical ends 11 united at their bases and each open at its apex, one opening affording a material inlet 12 and the other a material discharge 13. A drum ring 14 surrounds the drum at its point of greatest diameter, it being formed with a toothed center 15. The drum which is disposed transversely across the frame 9 is supported therein by bearing rollers 16 arranged in pairs at opposite ends of the bottom member of the frame and on which the surface of the ring 14 at opposite sides of the toothed center operates. The members 8 of the frame 9 above the trunnions 7 carry laterally adjustable brackets 17 each mounting a spindle carrying a thrust and guide roller 18. These rollers bear against the opposite sides of the drum ring 14 in pairs at opposite sides of the axis of rotation of the drum. The brackets 17 are guided in their adjustment by the studs and are held in their adjusted position by a lock screw 19. This structure of thrust roller mounting affords a take-up means to compensate for wear between the drum ring edges and the thrust rollers. Other thrust and guide rollers 20 are mounted between

the bearing rollers 16, as clearly illustrated in Figs. 1 and 4.

One of the trunnions 7 is hollow—Fig. 3, and through the same a drive shaft 21 extends into a gear box 22, which is carried by the cradle 9. In the latter is mounted a pair of bevelled gears 23 from one of which extends a shaft 24 mounting a gear 25 intermeshing with the toothed portion 15 of the drum ring. The shaft 21 is rotatable in bearing frames 26 and carries a gear 27 which intermeshes with a pinion on the armature shaft 28 of an electric motor 29. Thus the operation of the motor 29 drives the drum in its mixing operation, and the gears 23, 25 and 15 being continually in mesh, the rotation of the drum is continuous, both when in normal position and when tilted.

To the hollow trunnion 7 is keyed an arm 30 connected with the piston 31 of a pneumatic cylinder 32 fulcrumed at 33 permitting rocker movement of the cylinder. The pneumatic operation of the piston pivots the drum mounting frame on its trunnions into and from dumping position and without, in any manner, interfering with the rotation or mixing action of the drum.

I claim:—

1. A concrete mixer comprising a drum having an intake opening and a discharge opening, an apparatus frame having one of its side walls inset, a pair of pedestals extending upwardly from said apparatus frame adjacent the inset portion, a ball and socket bearing in each pedestal, a mounting frame within which said drum is seated for rotation, trunnions extended in axial alignment from opposite sides of the mounting frame and journalled one in each ball and socket bearing, means for rotating the drum, and means for tilting the mounting frame to an angle whereby the discharge opening is received within the inset of the apparatus frame.

2. A concrete mixer comprising a drum having a conical discharge portion, an apparatus frame the wall of which is inset for a portion of its length, a pair of pedestals extending upwardly from said apparatus frame, one at each end of said frame inset, a mounting frame within which the drum is seated for rotation, trunnions extended from opposite sides of said mounting frame and journalled in movable bearings in said pedestals, one of said trunnions being hollow, means extended through said hollow trunnion for rotating said drum, a lever arm connected to one trunnion and pressure operated means connected with said lever arm for tilting said mounting frame with the drum discharge portion within said inset to position said drum at an acute angle to dump the contents therefrom.

3. A concrete mixer comprising an apparatus frame having an inset portion, a pair of pedestals one adjacent each end of the inset portion of the apparatus frame, a tiltable frame between said pedestals provided with trunnions having bearing in said pedestals and adapted to afford a horizontal pivot for said tiltable frame, one of said trunnions being hollow, a conical-ended drum seated within said frame and mounted for axial rotation, one of said pedestals extending upwardly fram said apparatus frame being provided with a bearing opening to pivotally receive said hollow trunnion, a source of power, a drum power shaft connection between the source of power and rotatable drum through said pedestal bearing opening and said hollow trunnion, a fluid cylinder and piston, and an operative connection between the piston and said drum mounting frame, said last mentioned connection including means secured to said hollow trunnion whereby on the operation of said piston said drum is pivoted to and from dumping position.

In testimony whereof I have signed my name to this specification.

ALFRED E. MASON.