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2,223,307

CONCRETE MIXER

Filed April 15, 1940

Fig. 1-

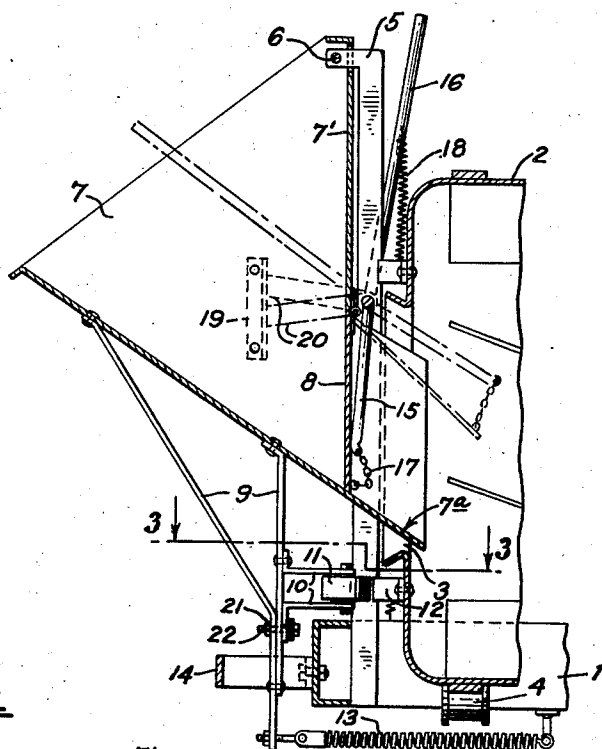


Fig. 2-

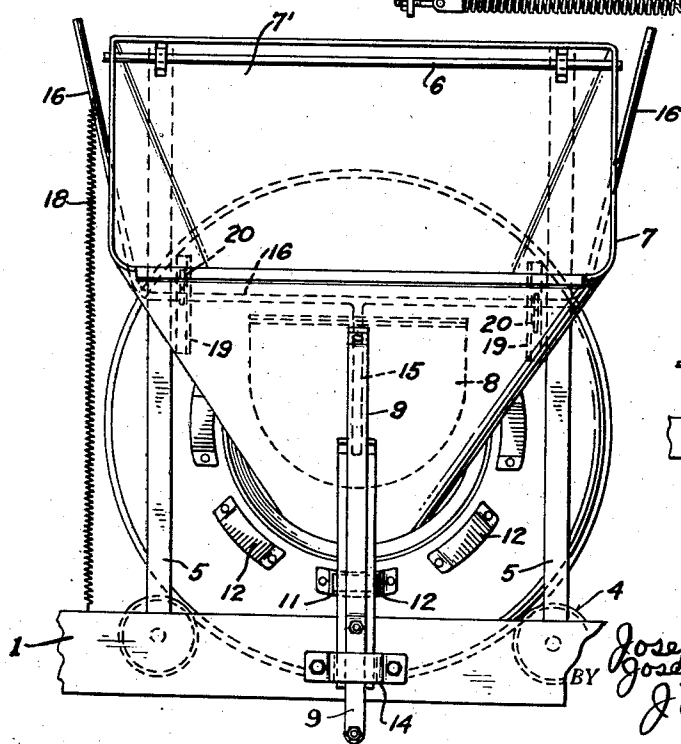
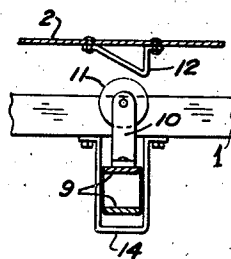


Fig. 3-



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CONCRETE MIXER

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Application April 15, 1940, Serial No. 329,697

3 Claims. (Cl. 259-164)

This invention relates to improvements in concrete mixers, and more particularly to improved charging means for effectively feeding the concrete material into the mixing chamber of a mixer.

An object of our invention is to provide improved charging means for concrete mixers, embodying novel agitating mechanism associated with the supply hopper for causing the uninterrupted feeding of the concrete material into the mixing drum during the rotation of the latter.

Another object of our invention is to provide improved charging means for concrete mixers, embodying an improved control for selectively causing the agitation of the supply hopper during the rotation of the mixing drum or for allowing the independent operation of the drum without the accompanying agitation of the hopper.

Other and further objects of our invention will be pointed out hereinafter or will be indicated in the appended claims, or will be obvious to one skilled in the art upon an understanding of the present disclosure. For the purpose of this application we have elected to show herein certain details of concrete mixing apparatus representative of our invention; it is to be understood, however, that the embodiment of our invention herein shown and described is for the purpose of illustration only, and that therefore it is not to be regarded as exhaustive of the variations of the invention; nor is it to be given an interpretation such as might have the effect of limiting the claims short of the true and most comprehensive scope of the invention in the art.

In the accompanying drawing:

Fig. 1 is a vertical section illustrating my improved charging means for concrete mixers;

Fig. 2 is a rear elevation of the same; and

Fig. 3 is a sectional view taken on the line 3-3 of Fig. 1.

Since our invention relates to but the charging means for concrete mixers, we have illustrated only that fragmentary part of a conventional mixer which has to do with the induction of materials into a rotatable mixing drum. It is to be understood that our invention may be satisfactorily employed with any one of a number of well known makes of concrete mixers now in use.

Referring to the drawing, the numeral 1 designates a supporting frame having a rotatable mixing drum 2 mounted thereon. The mixing drum is provided with an axially disposed charging opening through which the various ingredients making up a batch of concrete are introduced in-

to the drum. The drum is rotated by any suitable means, such as by a power actuated friction roller 4 engaging with its periphery.

Secured to the frame 1 are two laterally disposed upstanding standards 5 having a cross rod 6 carried at their upper ends on which a hopper 7 is pivotally suspended. Forming a part of the rear side 7' of the hopper 7 is a horizontally hinged door 8 capable of controlling the movement of materials through a trough-like extension 7a which extends into the mixing drum 2 through the charging opening 3.

Supported by a suitable depending frame 9 secured to the hopper 7 are spaced brackets 10 which mount a rotatable wheel 11. The wheel is adapted to be successively engaged by a series of circularly arranged cam members 12 secured to an end of the rotatable mixing drum 2. A spring 13 anchored at one end to the depending frame 9 and at its other end to the supporting frame 1 exerts a pulling force in a direction whereby the wheel 11 engages with the cam members 12. When the hopper is fairly well filled with material, the weight thereof exerts a downward force tending to actuate the frame 9 and the wheel 11 in a direction whereby the wheel engages with the cam members. A U-shaped guide member 14 secured to the frame 1 confines the swinging movement of the frame 9 and the hopper 7 within a definite path about the rod 6 as a pivot.

When material is not being admitted into the mixing drum 2 from the hopper 7 the door 8 is maintained in a closed position by a depending bar 15 rigidly secured to a U-shaped operating member 16 which is pivotally mounted on the upstanding standards 5. The lower end of the depending bar 15 is connected as by a chain 17 to the door 8, and when the said U-shaped operating member 16 is manually moved to a position indicated by the dotted lines in Fig. 1, the said door is carried to an open position, thereby allowing the contents of the hopper 7 to proceed through the trough-like extension 7a into the mixing drum 2. One or more springs 18 connected to the U-shaped operating member 16 and the frame 1 serve to releasably maintain the said operating member in either of two positions. One of the positions is such that the door 8 is held in an open position, and the other of said positions is such that the said door is held in a closed position. In the latter position it is desirable to permit the free rotation of the mixing drum without the accompanying engagement of the cam members 12 with the wheel 11. So as to prevent the wheel 11 from engaging with

the cam members 12 during the period when the door 8 is closed, we have secured two substantially vertical plates 19 to the opposite sides of the hopper 7 and have secured two bars 20 to the U-shaped operating member 16 and have positioned them so that when the said operating member is in its normal position the said bars engage with the plates and hold the hopper 7 in such a position that the wheel 11 does not engage with the cam members 12. In this normal position the mixing drum freely rotates without the accompanying engagement of the wheel 11 with the cam members 12. When the U-shaped operating member 16 is moved so as to open the door 8, the bars 20 are disengaged from the plates 19, thereby allowing the hopper 7 and the frame 9 to be actuated by the spring 13 or by the weight of the material in the hopper in a direction toward the mixing drum 2. The wheel 11 thereupon engages with the cam members 12, and upon the rotation of the drum 2 the successive engagement of the said cam members with the wheel causes the jarring or vibration of the hopper, thus shaking the material down through the open end of the hopper and into the mixing drum. The bars 20 are angularly positioned with respect to a horizontal plane passing through the central part of the U-shaped operating member 16, as shown in Fig. 1, thereby insuring such a firm engagement with the plates 19 that they do not become released except when the operating member is manually actuated in a downward direction.

So as to prevent the wheel 11 from striking against the drum each time a cam member 12 disengages therefrom, we have positioned a bolt 21 on the depending frame 9 so its head strikes against the supporting frame 1 and thereby limits the movement of the said wheel in a direction toward the drum. By placing one or more washers between the head of the bolt 21 and the frame 9, and thereafter threading a nut 22 on the said bolt, suitable variable means may be provided for regulating the amount of movement of the wheel 11 toward the drum after each disengagement of a cam member 12 with the said wheel.

Having described our invention, what we claim is:

1. In a material mixer, a rotatable mixing drum having a charging opening, a movable hopper positioned to discharge material into the drum, door means for controlling the discharge of material from the hopper, means interposed between the hopper and the drum for vibrating the hopper when the drum rotates, whereby the material in the hopper will be automatically shaken downwardly and manually controlled means for closing the door means and at the same time discontinuing the vibration of the hopper.

2. In a material mixer, a rotatable mixing drum having a charging opening, a pivoted hopper mounted for rearward and forward swinging movement and positioned to discharge material into the drum, means interposed between the hopper and the drum for vibrating the hopper when the drum rotates, whereby the material in the hopper will be automatically shaken downwardly, door means for controlling the discharge of material from the hopper, means for preventing the vibration of the hopper irrespective of the rotation of the drum and means for simultaneously operating the door means and the last mentioned means.

3. In a material mixer, a rotatable mixing drum having a charging opening in one of its ends, a movable hopper positioned to discharge material into the drum through the opening, a door in the hopper for controlling the movement of material therethrough, a pivoted lever for opening and closing the door, a frame secured to the hopper, a wheel mounted on the frame, a plurality of circularly arranged and spaced cam members carried by the end of the drum and successively engageable with the wheel, whereby upon the rotation of the drum the cam members will successively engage with the wheel and cause the vibration of the hopper to shake the material held therein downwardly and means actuated by the pivoted lever when the door is closed for moving the hopper to a position whereby the wheel does not engage with the cam members.

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