Nov. 11, 1958 C. L. GRAYBILL 2,859,950

COMBINATION CONCRETE MIXER AND PORTABLE DISPENSER

Filed Oct. 15, 1956 2 Sheets-Sheet 1

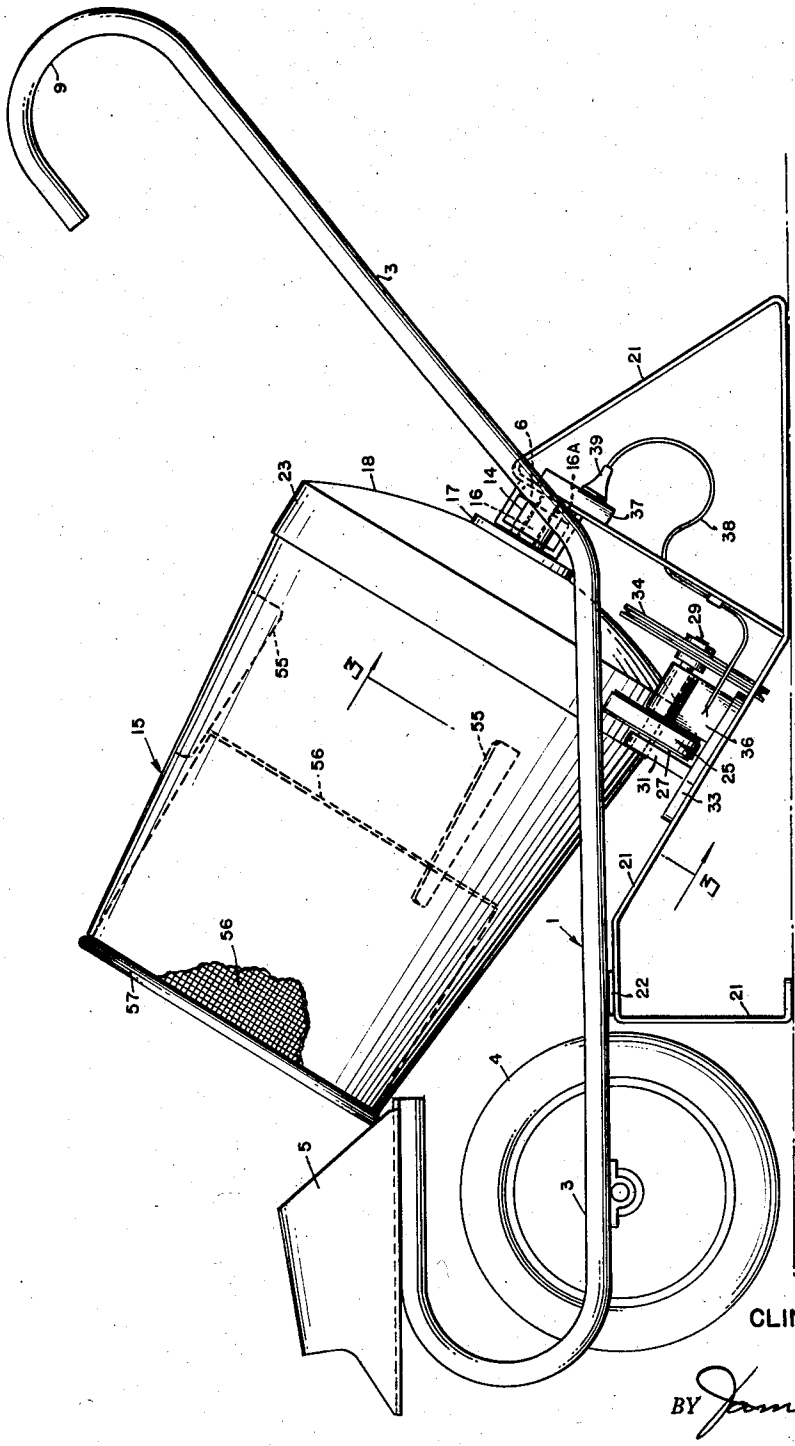


FIG. 1

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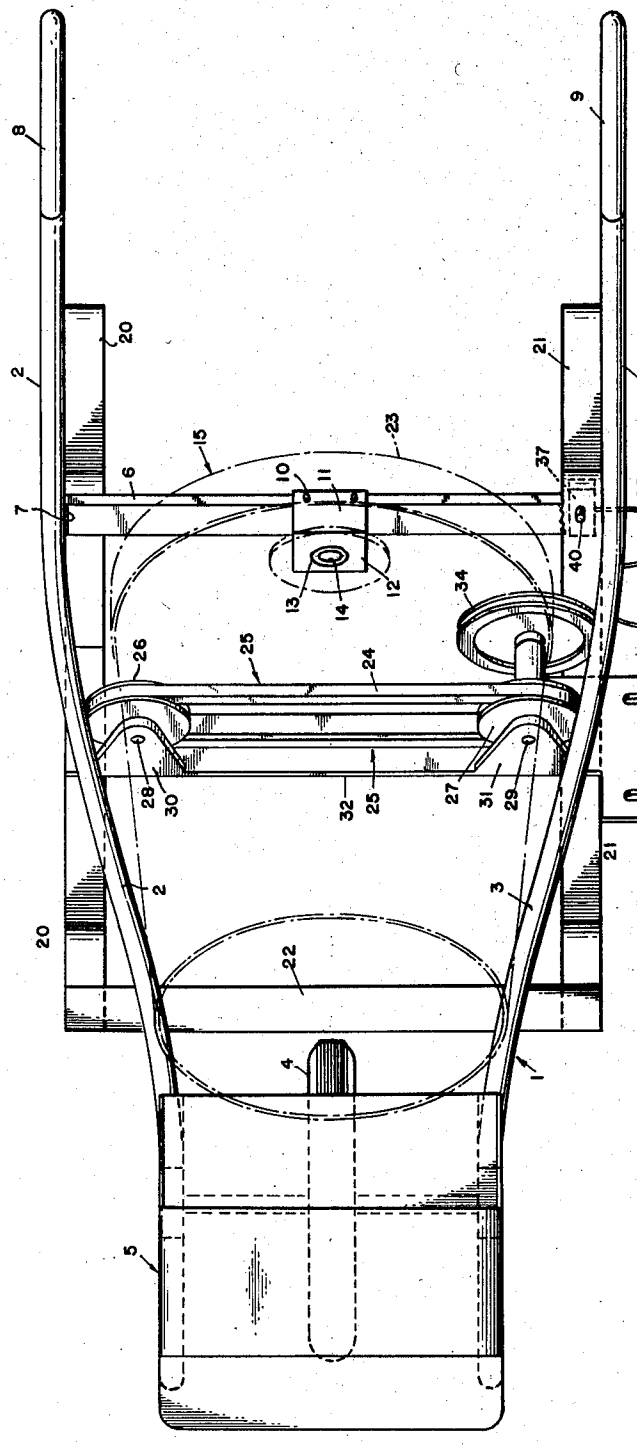


FIG. 2

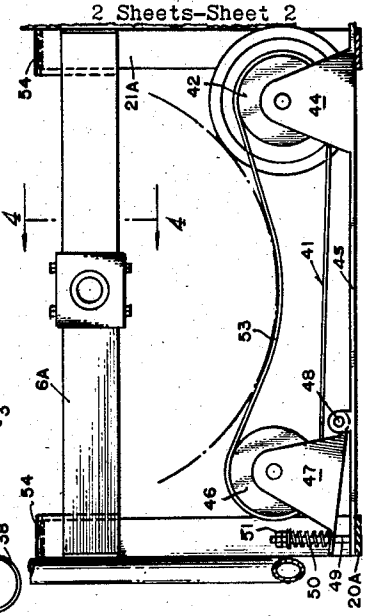


FIG. 3

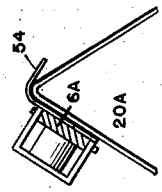


FIG. 4

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COMBINATION CONCRETE MIXER AND PORTABLE DISPENSER

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7 Claims. (Cl. 259—177)

This invention relates to improvements in concrete or cement mixers and more particularly to a combination mixer and dispenser and automatically controlled power actuated means for operating the mixer.

It is one of the principal objects of the invention to provide a combination of the character described wherein the mixing hopper and dispensing chute for its contents are mounted upon a wheel-supported chassis provided with handles and thereby readily portable in the manner of a wheelbarrow.

Another important object of the invention is the provision of a base frame for supporting said chassis in its entirety; the provision of power actuated means carried by the frame for rotating the mixing hopper, means carried by the frame for automatically starting the power actuated means, and hence the mixing operation, the instant the chassis comes into a supported position upon the frame and for stopping said operation when the chassis is tilted forwardly with respect to the frame preparatory to removal therefrom upon its supporting wheel.

Another object of the invention is the provision of a screening unit removably disposed within the mixing hopper for screening sand or similar substances entering the hopper.

The foregoing and other objects and advantages which will subsequently become apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout and in which:

Figure 1 is a side view of a combination mixer and portable dispenser, made in accordance with my invention.

Figure 2 is a top plan view of Figure 1 with a fragment broken away for convenience of illustration, also with the mixing tub removed but shown in broken lines.

Figure 3 is a sectional view taken along the line 3—3 of Figure 1, with the mixing hopper removed and illustrating a modified form of belt drive.

Figure 4 is a sectional detail view taken along the line 4—4 of Figure 3.

Referring now more particularly to the drawings, wherein like numerals of reference designate corresponding parts throughout the several views, the numeral 1 indicates generally a chassis comprising longitudinal tubular frame members indicated at 2 and 3, provided with a supporting wheel 4 at its forward end.

The forward end of the frame members are turned upwardly, then rearwardly in parallel relation to each other to provide a support upon which is mounted a dispensing chute 5. The frame members are interconnected intermediate their ends by a cross member 6, welded as at 7, or otherwise secured at both of its ends to the frame members. The frame members extend rearwardly and upwardly from the cross member 6 and terminate in forwardly curved handgrips 8 and 9. Secured as at 10 to the center of the cross member 6 and extending forwardly therefrom is a box frame 11, whose front wall 12 is provided with a central opening 13, within which is secured one end of a sleeve-bearing 14, whose opposite end is secured in any suitable manner to the cross member 6.

A mixing hopper generally indicated at 15, and of any suitable design and capacity, is provided with a shaft 16 secured to or formed integral with a bearing plate 17 secured concentrically to the closed end 18 of the hopper. By means of the shaft 16 the hopper is rotatably mounted within and carried by the bearing 14 and box frame 11 secured to the cross member 6, as aforesaid. The shaft 16 extends through an aligned opening 16A in the cross member 6 and is provided with any suitable retaining means such as a cotter pin or the like.

For rotating the hopper and to mix its contents I provide a base frame comprising a pair of parallel frame members 20 and 21, both shaped in side view as shown in Figure 1 and interconnected at their forward elevated end by a cross member 22 which provides a support for the forward end of the chassis 1 when mounted upon the base frame. When so mounted the cross member 6 of the chassis bears against the front legs of the triangular rear portions of the base frame near the apices thereof, while the flat rim portion 23 of the hopper rests upon and in operative engagement with the top run 24 of a V-belt indicated generally at 25 and entrained over two pulleys 26 and 27 rotatably mounted by their shafts 28 and 29 in bearing brackets 30 and 31, respectively. Both bearing brackets are cast integral with or otherwise secured to a supporting plate 32 whose ends are secured to the base frame members 20 and 21 on the downwardly and rearwardly inclined forward portions thereof, as shown in Figure 1. The supporting plate 32 is extended outwardly from the base member 21 and enlarged as at 33 as shown in Figure 2 to provide a supporting base for a prime mover (not shown), such as an electric motor or an internal combustion engine provided with a V-pulley and belt for driving a V-pulley 34 secured to the extended end 35 of the shaft 29 also journaled in a bearing bracket 36 carried by the supporting plate 32. Thus operation of the driving and driven pulleys will rotate the mixing hopper 15 when in operative engagement with the belt 25, as shown in Figure 1.

In the event that an electrical motor is used as a prime mover and mounted upon the support 33, I provide a switch-box 37 secured to the inside of the forward leg of the triangular rear portion of the base frame member 21 and adapted for connection in the conventional manner to a source of electrical energy. Electrical current is supplied to the motor by means of conductors 38 provided with a plug 39 for connection to a plug receptacle (not shown) carried by the switch-box 37. The interior of the switch-box contains a switch in circuit with the plug receptacle and actuated by a push-button 40 extending through and outwardly from said leg of the triangular portion of the base frame 21, as best illustrated in Figure 2. By this arrangement the circuit through the switch is closed and the motor is automatically put into operation when the chassis 1 is backed into a supported position upon the base frame and the cross member 6 comes to rest against the forward legs of said triangular rear portions of the base frame. Conversely, upon tipping the chassis forwardly and upwardly preparatory to transporting the loaded hopper, the circuit through the switch will automatically be broken as the cross member 6 is moved away from the push-button 40.

In the modified form of belt drive illustrated in Figure 3, I utilize a flat belt 41 instead of the V-belt as shown in Figure 2, and entrain the same over a flat pulley 42 rotatably mounted in a bearing bracket 44 cast integral with or secured to a supporting plate 45, secured at both of its ends to the base frame members 20A—21A. The opposite end of the belt is entrained over a flat pulley 46

rotatably mounted in a bearing bracket 47 pivotally attached as at 48 at one of its ends to the supporting plate 45 and slidably embracing at its opposite end a vertical shaft 49 welded at its bottom end to the supporting plate 45, and surrounded by a compression spring 50 bearing against the bearing bracket and against adjusting nuts 51 at the top end of the shaft 49. From the foregoing it will be apparent that the belt will be in tension at all times, whether under a load imposed by the hopper 15A or with the hopper removed. This arrangement provides an automatic belt tightener which will prevent the belt from running off either pulley, which sometimes occurs when driven and driving pulleys are operating on fixed axes of rotation in the absence of a load.

To limit the downward movement of the loaded hopper into the most efficient operative engagement with the top run 53 of the belt 41, I provide the ends of the chassis cross member 6A with cleats or hook elements 54 adapted to engage the top of the triangular rear portions of the base frame members 20A and 21A. The interior of the hopper is provided with mixing fins 55 and with a removable wire mesh basket 56 arranged concentrically within the hopper and provided with a ring 57 supported by the rim of the open end of the hopper.

The loaded chassis can be readily dismounted from the base frame by merely lifting upwardly on the handles 9. This will cause the forward end of the chassis to fulcrum about the cross member 22 of the base frame and bring the supporting wheel 4 into contact with the ground, whereupon the load can be conveniently transported to a point of discharge in the manner of a wheelbarrow. When discharging the load the chassis is tilted to a higher elevation until the load spills from the hopper into and through the dispensing chute 5. It will be noted that the open end of the hopper extends over the bottom of the open rearward end of the dispensing chute to direct the contents of the hopper through the chute without any spillage to either side thereof.

Although I have described the invention as a concrete or cement mixer, it will be readily understood that it is capable of mixing other substances such as feed, fertilizer, hot-bed soil, and the like or it could be used as a washing machine.

While I have shown particular forms of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art, without departing from the spirit and scope of the invention. Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A combination mixer and portable dispenser, comprising a base, an endless belt entrained over power driven pulleys rotatably mounted upon the base, a chassis provided at one of its ends with a single supporting wheel and adapted to be selectively supported in its entirety upon the base independent of said supporting wheel, a mixing hopper rotatably carried by said chassis and adapted to bear against one run of said belt and to be rotated thereby when the chassis is supported upon the base.

2. A combination mixer and portable dispenser as claimed in claim 1, wherein one of said pulleys is carried by a supporting bracket pivotally attached at one of its ends to said base and biased downwardly at its opposite end to constantly maintain the belt in tension.

3. A combination mixer and portable dispenser as claimed in claim 1, including a screening element disposed on the interior of said hopper and supported by the rim of the open end of said hopper.

4. A combination mixer and portable dispenser, comprising an elongated base, an endless belt entrained over power driven pulleys rotatably mounted upon the base, a chassis provided at one of its ends with a single supporting wheel and adapted to be selectively supported in its entirety upon the base independent of said supporting wheel, a mixing hopper rotatably carried by said chassis and adapted to bear against one run of said belt and to be rotated thereby when the chassis is supported upon the base, a dispensing chute mounted upon the forward end of said chassis and having its rearward end underlying the forward open end of said hopper to thereby dispense the contents of the hopper when the chassis is supported by its wheel and tilted forwardly with respect thereto.

5. A combination mixer and portable dispenser comprising a stationary base provided with means for supporting a prime mover, a prime mover mounted upon the base, an endless belt entrained over an idling pulley and over a spaced apart driving pulley adapted to be operatively connected to said prime mover, a wheeled chassis, a mixing hopper carried by the chassis and rotatable about a single fixed axis of rotation inclined downwardly and rearwardly relative to the chassis, said chassis adapted to be supported in its entirety upon said base by a supporting element extending thereacross and by said hopper bearing upon one run of said belt, whereby the hopper will be rotated by operation of the belt.

6. A combination mixer and portable dispenser as claimed in claim 5 wherein said chassis is adapted to be supported in its entirety upon said base by a supporting element extending across the base and by means carried by the chassis engageable with the base in addition to the said support provided by said one run of said belt.

7. A combination mixer and portable dispenser comprising an elongated stationary base provided with means for supporting an electric motor, a switch mounted upon the base in an electric circuit leading to said motor, an endless belt having a top run and a bottom run entrained over an idling pulley and over a spaced apart driving pulley, both pulleys being rotatably carried by the base and adapted to be operatively connected to said electric motor, a wheeled chassis, a mixing hopper rotatably carried by the chassis and adapted at one of its ends to be supported upon and rotated by said top run of the belt, said chassis adapted to be supported in its entirety upon said base by a supporting element extending across the base and by means carried by the chassis engageable with the base in addition to the said support provided by said top run of said belt and said last mentioned means being adapted to close said switch when the chassis is supported upon said base and to open the switch when the chassis is tilted forwardly with respect to the base.

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