May 23, 1939. S. M. SKRZYNSKI 2,159,184

CONCRETE MIXER

Filed Dec. 16, 1937

Fig. 1.

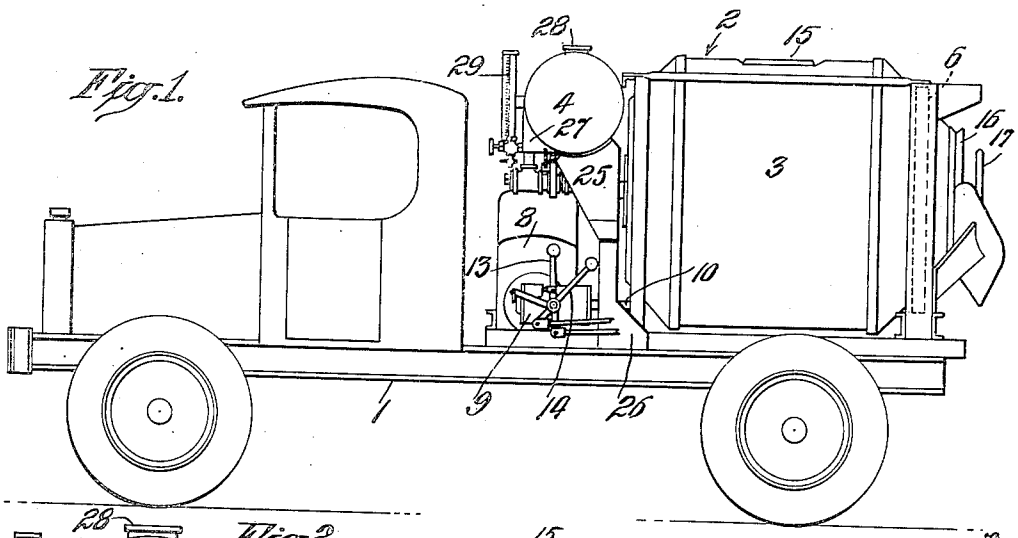


Fig. 2.

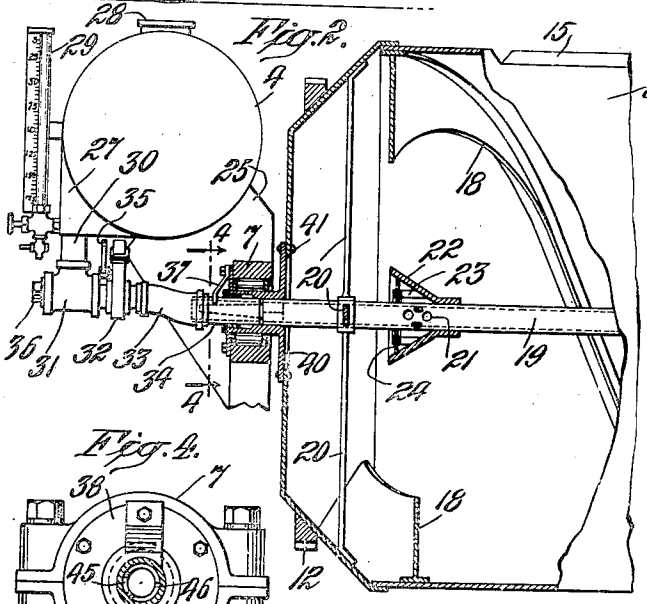


Fig. 7.

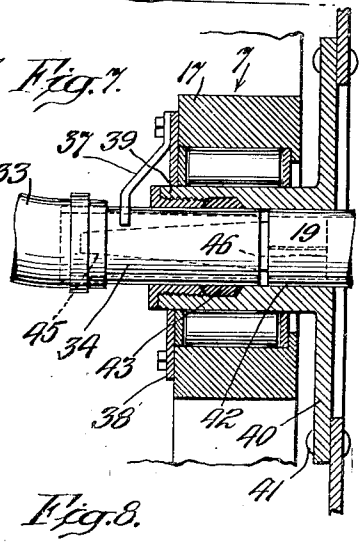


Fig. 4.

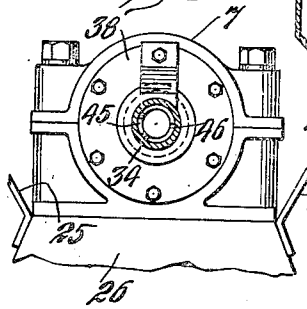


Fig. 8.

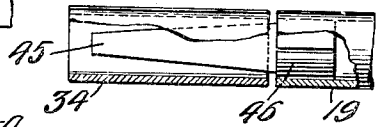


Fig. 5.

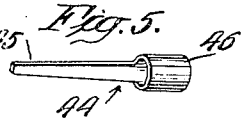


Fig. 6.

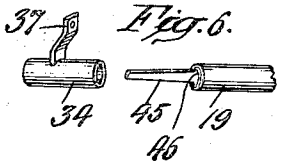
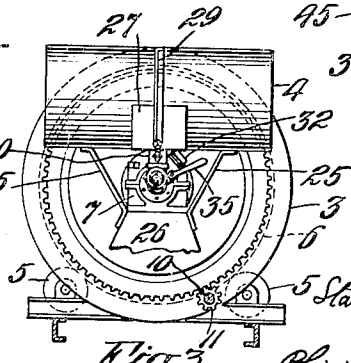


Fig. 3.



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UNITED STATES PATENT OFFICE

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CONCRETE MIXER

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Application December 16, 1937, Serial No. 180,068

2 Claims. (Cl. 259—168)

This invention relates to concrete mixers and more particularly to such mixers in which the mixing is accomplished in a rotary mixing drum.

It is an object of the invention to provide improved water supply means for a concrete mixer, achieving certainty in measurement and at the same time reducing the need for cleaning and facilitating cleaning when necessary.

It is a further object of the invention to provide a construction adapted to cramped installations, such as those mounted on trucks for mixing in transit.

With these and other objects not specifically referred to in view, the invention consists in certain novel parts, arrangements and combinations which will be described in connection with the accompanying drawing and the novel features pointed out in the claims hereunto annexed.

A preferred construction for effecting the objects of the invention is shown in the accompanying drawing, in which—

Figure 1 is a side elevation of a truck with a mixing unit mounted thereon;

Figure 2 is a fragmentary side elevation of the mixing unit of Figure 1, on an enlarged scale and with part of the casing broken away to reveal internal features of construction;

Figure 3 is an end view of the mixing unit looking to the right of Figure 1;

Figure 4 is a cross-section on an enlarged scale taken on the line 4—4 of Figure 2;

Figure 5 is a perspective view of a scraping blade hereinafter described;

Figure 6 is an exploded perspective view showing the relation of the blade of Figure 5 to other parts of the apparatus unassembled;

Figure 7 is an enlarged view of part of Figure 2; and

Figure 8 is a view partly broken away of a portion of Figure 7.

Referring now to the drawing, the apparatus is generally of a familiar type illustrated, for example, in Jaeger Patent No. 1,948,715, consisting of a motor truck 1 upon which is mounted the mixing unit 2, comprising a rotatable mixing drum 3 and a relatively stationary water supply tank 4.

The drum 3 is supported at its discharge or rear end by rollers 5 (Figure 3) on the truck engaging a cylindrical track 6 on the drum and at the front end by a roller bearing 7 (Figure 4). Means for rotating drum 3 is provided and comprises a motor 8 with gear box 9, shaft 10 and pinion 11 on the truck engaging a gear wheel 12 on the drum (Figure 3), the usual clutch and gear shift levers 13, 14, being provided for disconnecting the drive or for driving in either direction.

The invention is particularly useful in truck mounted installations provided with separate drive for the drum, due to space limitations, but it is not restricted to such installations, being applicable also to the well known types of apparatus in which the truck engine itself drives the drum or in which the unit is not truck mounted.

The drum is provided with the usual inlet port for dry materials, such as cement, sand, gravel, stone and the like, which is closed during operation by cover 15, and is also provided with the usual discharge port 16 which during operation is opened and closed by a hand wheel 17.

Internally the drum carries helicoidal mixing blades 18 and a water pipe 19 fixed to it by struts 20 on the drum. Outlets 21 from pipe 19 furnish water to the interior of the drum and are shown as guarded by a bell 22. A bracket 23 within bell 22 carries an annular rubber flap 24 at the open end of the bell which closes the outlets 21 against ingress of the drum's solid materials. Water emitted from outlets 21 forces flap 24 open and passes into the drum between the inner edge of the flap and pipe 19 and also between the outer edge of the flap and bell 22. When no water is flowing through outlets 21 the flap 24 serves the purpose of preventing or retarding passage of solid materials into and clogging pipe 19.

Water tank 4 is supported by brackets 25 from a bearing post 26 and is generally cylindrical in shape except for a rectangular offset portion 27 (Figure 3). It is provided with the usual filling cap 28 and gauge glass 29, the latter being calibrated, usually in gallons, although it may be calibrated in gravimetric rather than volumetric units where local regulations or particular specifications require it. Leading from offset 27 is an outlet nipple 30 which communicates, through a T 31, a gate valve 32, a hose 33 and a pipe 34 with water pipe 19 and its outlets 21. Gate valve 32 is of the type known as quick acting, being provided with a readily accessible handle 35, depressing or raising of which through an arc of approximately 90° serves to close or open the valve completely. The forward branch of T 31 is provided with a closure member such as plug 36 which may be unscrewed for inspection or cleaning of the water line into the drum.

Fixed to pipe 34, as by welding, is a bracket 37 by means of which this pipe is secured to bearing 7. One of the cap screws customarily used to fasten the face plate 38 of the bearing may, as

shown, be used to attach this bracket to the bearing.

A stuffing box 39 is employed as a trunnion or journal for the drum 3 and is fastened thereto by an integral flange 40 and rivets 41. Internally, stuffing box 39 has a smooth cylindrical bore 42 fitting quite closely, but not necessarily watertight, the forward end of pipe 19 and the rearward end of stationary pipe 34 as shown best in Figure 7, these two pipes being separated a small distance, which may be of the order of a quarter inch. The forward end of stuffing box 39 is provided with substantially water tight packing 43, relative rotation between the stuffing box 39 and its packing 43 on the one hand and stationary pipe 34 on the other being permitted.

A cleaning and agitating device 44 is provided and advantageously takes the form of a tapered cylindrical blade 45 formed integral with a split collar 46, the latter having a driven fit with pipe 19 as shown best in Figures 4, 7 and 8, and the former extending into pipe 34 substantially its length and being in close contact with its inner surface. A convenient method of manufacture of this part 44 is to cut it out of a section of tubing or pipe or a flat piece of metal bent into a split tube, in which case suitable steel may be employed to secure durability and resistance to pounding of the split collar 46 and blade 45 may be tempered for hardness and stiffness. Alternatively, member 44 may be made of a solid pipe section and undercut or relieved, as necessary, to enter pipe 19 with a close fit. Such method of manufacture, while not quite as simple, results in a member inherently of somewhat greater strength. As pipe 19 is affixed to drum 3, and hence rotates therewith, and pipe 34 is stationary, rotation of drum 3 results in rotation of blade 45 within pipe 34, continuously scraping the inner surface of the latter and agitating any solid materials which may be within it.

In the usual operation of the apparatus drum 3 is filled with dry materials through the inlet port, normally closed by cover 15, and is rotated sufficiently to mix these materials in a dry state as much as may be desirable, during which time handle 35 will be depressed and gate valve 32 closed. Tank 4 will normally be substantially filled so that gauge glass 29 gives a zero reading. When water is to be introduced into the drum the operator opens valve 32 by lifting handle 35 and watches the gauge glass until the required amount of water has run out as indicated thereby, whereupon handle 35 is quickly depressed, closing valve 32. After introduction of the water, the rotation of drum 3 is continued as long as may be necessary to achieve thorough mixing.

As best shown in Figures 2, 3 and 7, T 31, valve 32, hose 33 and pipe 34 are substantially in line. In consequence, it is necessary only to remove plug 36 and open valve 32 to have a substantially unobstructed view of the water line for inspection and a clear passage for the insertion of cleaning implements. Hose 33 may advantageously be given a slight downward inclination, as shown, without seriously interfering with inspection or cleaning, and this inclination has a tendency to prevent solid materials remaining in the hose and setting. Setting of solid materials in pipe 34 is prevented by blade 45, previously referred to.

As suggested above, no device such as the rubber flap 24, previously referred to, can absolutely prevent the passage of solid matter back into the water supply, and this is particularly true when such a device has been in use and has become worn. For this reason it is found in practice that solid material often will travel back through the water supply system so far as this is open and in a case where the supply of water is regulated by a standpipe or the like in the tank, rather than by a valve, the solid material may be found even in the tank itself. As a result, experience has shown that a mixer unit without the improvements of the present invention may, in addition to requiring frequent cleaning, require a long time for each cleaning, ranging up to an hour or two, or even longer. With the present invention the only parts which require cleaning are those located rearwardly of the gate valve 32 and these are readily inspected by removing the plug 36 and may be cleaned through this opening, or, if required, by disconnecting hose 33. Setting of solid material in the hose 33 is impeded by the slight inclination of this member, by the rotary movement imparted to water within pipe 34 by the blade 45, and by the flexible nature of the hose and the vibration imparted thereto by the rotation of the mixing drum. In any event, this member is easily cleaned because of its flexible nature.

What is claimed is:

1. In a rotary concrete mixer, and in combination, a rotatable mixing drum, means for rotating said drum, means for introducing water axially of said drum, including a pipe stationary relative to said drum, and a second pipe located axially of said drum, fixed thereto for rotation therewith and adapted to discharge water into the interior thereof, said pipes being disposed in axial alignment with ends adjacent, and means for preventing setting of concrete materials in the first mentioned pipe, comprising a blade affixed to said second pipe for rotation therewith and extending into said first mentioned pipe.

2. In a rotary concrete mixer, and in combination, a rotatable mixing drum, means for rotating said drum, means for introducing water into said drum, comprising a forward pipe section, a rearward pipe section and a gate valve located therebetween, said pipe sections and gate valve being substantially axially aligned, and said forward pipe section being provided with a removable forward closure member, whereby when said gate valve is open and said closure member removed, said means for introducing water form a substantially cylindrical open passage, and a cleaning member attached to said drum for rotation therewith and extending forwardly into said rearward pipe section.

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