

M. J. DEMOREST.
CONCRETE MIXER.
APPLICATION FILED JUNE 19, 1906.

935,782.

Patented Oct. 5, 1909.

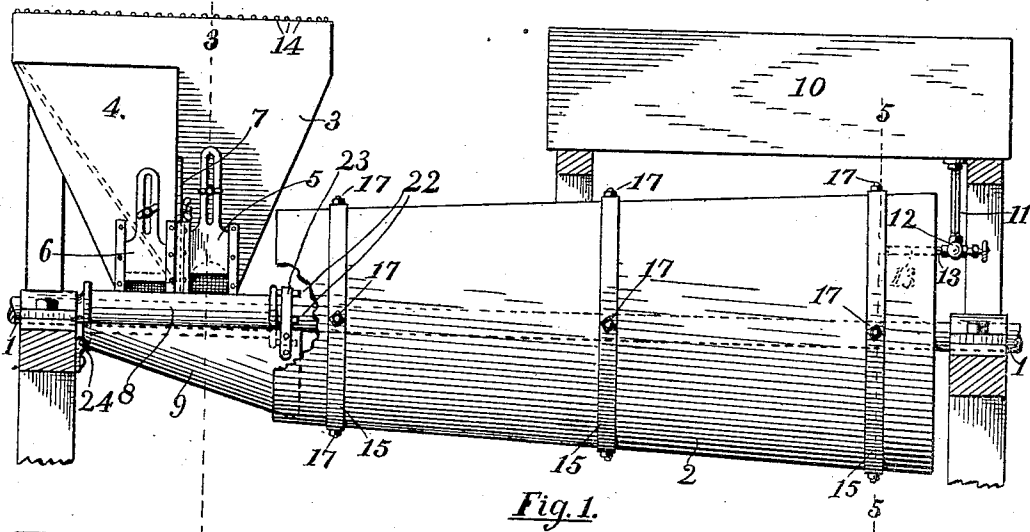


Fig. 1.

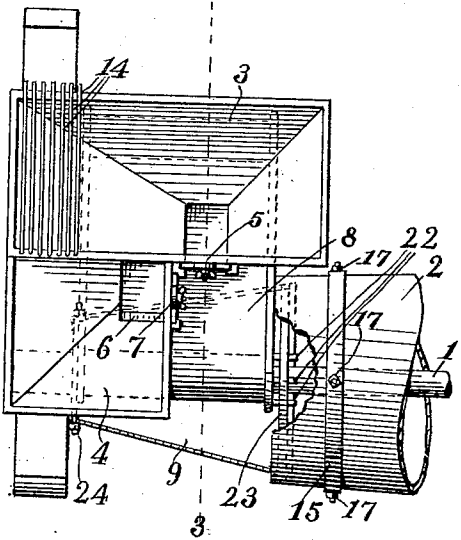


Fig. 2.

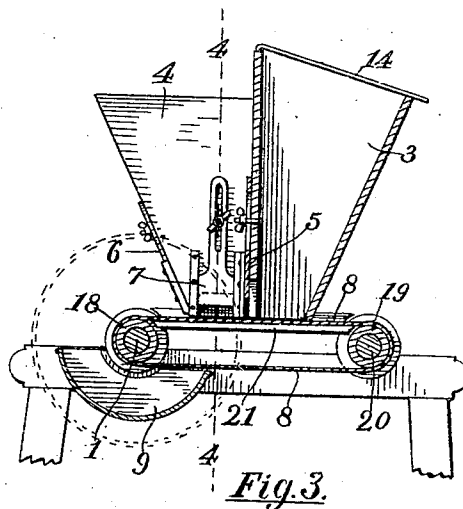


Fig. 3.

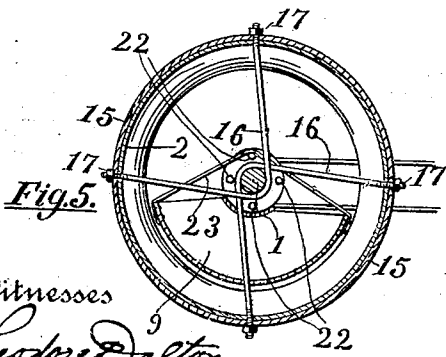


Fig. 5.

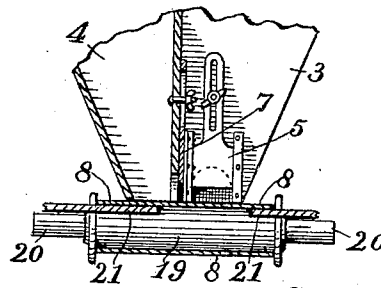


Fig. 4.

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CONCRETE-MIXER.

935,782.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MILON J. DEMOREST, a citizen of the United States, residing at Belding, in the county of Ionia and State of Michigan, have invented certain new and useful Improvements in Concrete-Mixers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in concrete mixers; and its object is to provide a device that will properly and automatically apportion the ingredients; that will intimately and properly mix the same; to simplify the construction; and to provide the same with various new and useful features, as hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which:

Figure 1. is a side elevation of a device embodying my invention with part of the frame removed; Fig. 2. a plan view of a portion of the same; Fig. 3. a vertical section of the same on the line 3—3 of Figs. 1 and 2; Fig. 4. a detail in vertical section on the line 4—4 of Fig. 3; and, Fig. 5. a transverse section of the mixing drum taken on the line 5—5 of Fig. 1.

Like numbers refer to like parts in all of the figures.

1 is the main driving shaft supported and journaled in a suitable frame and rotated by any convenient means; 2 is a truncated conical mixing drum mounted on said shaft and open at both ends; 3 a hopper to receive the sand; 4 is a smaller hopper to receive the cement and arranged opposite one end of the hopper 3; 5 a gate in the side of the sand hopper to regulate the discharge of sand therefrom; 6 a similar gate in the side of the cement hopper for a like purpose, and 7 is another gate in the cement hopper that permits the cement to escape laterally from the hopper 4; 8 is a broad endless belt or apron extending horizontally beneath the openings in the bottom of the hoppers and close thereto, and this belt engages a roll 18 on the driving shaft 1 at one side of the hoppers and a roll 19 mounted on a countershaft 20, at the other side of the hoppers. The upper part of this belt extends horizontally close to

the open lower ends of the hoppers, forms a horizontally moving bottom to the same, and is supported close to the hopper by means of horizontal tables 21, which tables extend beneath the outer edges of the belt only leaving the middle portion of the belt unsupported except as by the tension of the same, whereby any hard lumps of sand or stones will spring the belt downward and pass under the gate 5 without injury to the machine.

A chute 9 is provided beneath the roll 18 into which the cement and sand is discharged from the belt and conveyed by this chute into the adjacent end of the mixing drum 2. To prevent the material from clogging in this chute, and to assist in mixing said material, the chute is arranged to vibrate vertically at the lower end by being pivoted to the frame on a horizontal axis at its upper end as at 24, and supported at its lower end by means of a bail 23 which rests upon pins 22 projecting from the end of the drum 18. As these pins rotate under the bail, they impart to the lower end of the chute a vertical vibratory movement which causes the contents of the chute to slide downward and to become more or less mixed before escaping into the drum.

14 is a screen of parallel, downwardly inclined rods arranged above the hopper 3 to screen out the stones that are too large to pass through under the gate 5. Only a part of these rods are shown in the drawing, it being understood that the entire top of the hopper 3 is provided therewith.

10 represents a water tank or other means for supplying water; 11 is a pipe extending downward adjacent to the large end of the mixing drum; provided with a valve 12 and thence extended horizontally within the drum to discharge water from the tank into the drum a sufficient distance from its lower end to permit of intimately mixing the water with the sand and cement before the same leaves the drum.

I also provide an improved construction of mixing drum consisting of the truncated tapered shell 2 provided at intervals with surrounding bands 15, and this shell is supported and adjusted concentric with the axis of the shaft 1 by means of rods 16 bent near the middle to partially surround the shaft 1 and having their respective ends extended radially from the shaft outward through the

shell and bands and provided with adjusting nuts 17 on their outer ends, whereby the drum is supported in place and properly adjusted on the shaft.

5 In operation the gate 5 is adjusted to determine the quantity of sand that will be carried out from the hopper 3 by the movement of the belt, and the gates 6 and 7 are in like manner adjusted to determine the flow
10 of cement from the hopper 4. This sand and cement is discharged from the belt 8 into the chute 9 and from thence into the mixing drum 2, which being downwardly inclined at its lower side will gradually convey the sand and cement toward its larger
15 end. This sand and cement will also be stirred and mixed by the rotation of the drum, and thus intimately incorporated before reaching that portion of the drum
20 where the water is discharged from the pipe 13. The sand and cement properly moistened by the water will finally escape from the large end of the drum in proper condition for use.

25 It will be noted that the construction is very simple and not likely to get out of order, and that the moving parts are all connected directly to the single shaft 1 and operated thereby.

30 Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:

1. In a concrete mixer, a hopper having a side opening, a vertically adjustable gate for
35 said opening, a horizontally movable belt forming a bottom to the hopper, said belt also being vertically yieldable opposite the gate and having its margins extended beyond the gate, supports for margins only of
40 the belt, and means for moving the belt.

2. In a concrete mixer, a driving shaft, a countershaft arranged parallel with the driving shaft and spaced apart therefrom, opposing rolls on said shafts, hoppers above
45 said shafts and at a distance from the said rolls and having side openings, adjustable gates to said openings, a belt engaging said rolls and forming a bottom to said hoppers, said belt also being yieldable opposite said
50 gates, a mixing drum on the driving shaft

and a chute beneath the belt and driving shaft.

3. In a concrete mixer, the combination of a driving shaft, a truncated conical mixing drum on the shaft, a roll on the shaft, a
55 chute beneath the roll and extending into the small end of the drum, a countershaft arranged parallel with the driving shaft and spaced apart therefrom, a roll on the countershaft, a horizontally movable and vertically
60 yieldable belt engaging the rolls and moved thereby, hoppers above the belt and having side openings opposite the yielding part of the belt, and vertically adjustable gates to said openings.

4. In a concrete mixer, the combination of a hopper, a mixing drum, a chute between the hopper and drum, a hinge supporting one end of the chute upon a horizontal axis, a rigid bail supporting the other end of the
70 chute, a rotating disk, and pins mounted in the disk to successively engage and support the bail.

5. In a concrete mixer, the combination of a sand hopper, a cement hopper, a belt beneath the hoppers, rolls supporting the belt,
75 pins in the end of one of the rolls, a chute below said roll, a pivotal support for the upper end of the chute, a bail supporting the lower end of the chute, the pins in the roll
80 successively engaging and supporting the bail.

6. In a concrete mixer, a sand hopper, a cement hopper, a driving shaft and a countershaft below the hoppers, rolls on the said
85 shafts, a belt engaging the rolls and extending beneath the hoppers, a mixing drum on the driving shaft, a chute beneath the driving shaft, a pivotal support for the upper
90 end of the chute, a bail supporting the lower end of the chute, and pins in the end of the driving shaft drum and successively engaging and supporting the bail.

In testimony whereof I affix my signature in presence of two witnesses.

MILON J. DEMOREST.

Witnesses:

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