No. 859,919. PATENTED JULY 16, 1907.

A. J. CROPP.

MIXING MACHINE.

APPLICATION FILED AUG. 9, 1906.

2 SHEETS—SHEET 1.

Fig. 1

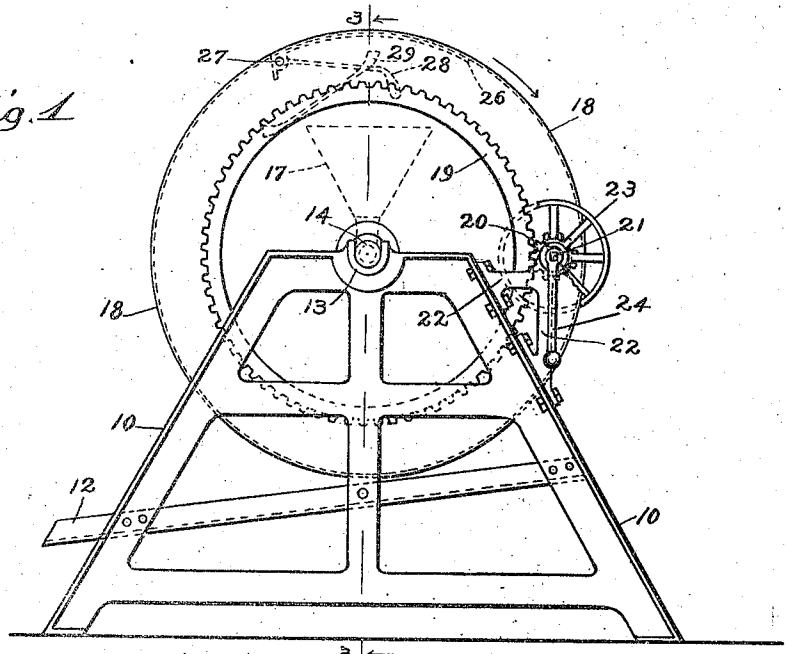
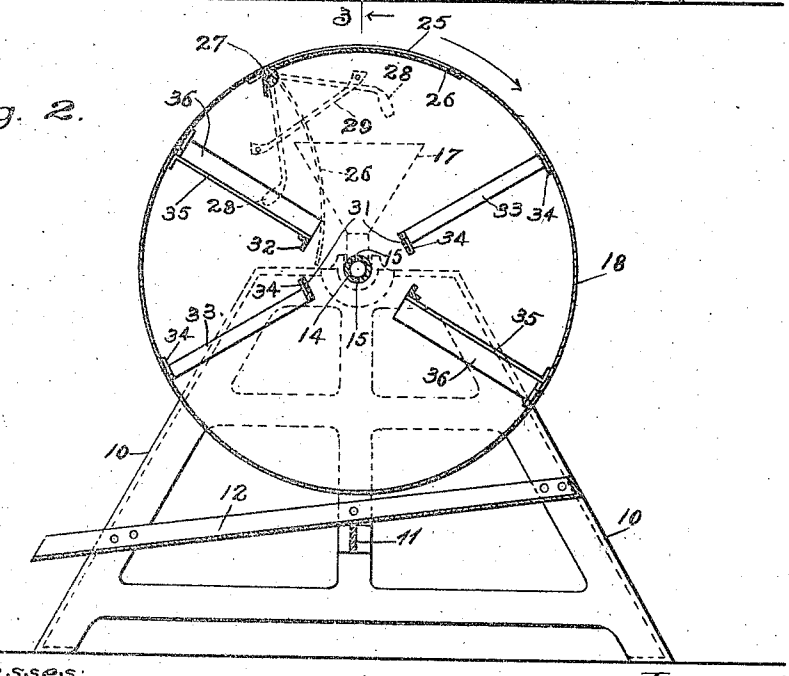


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

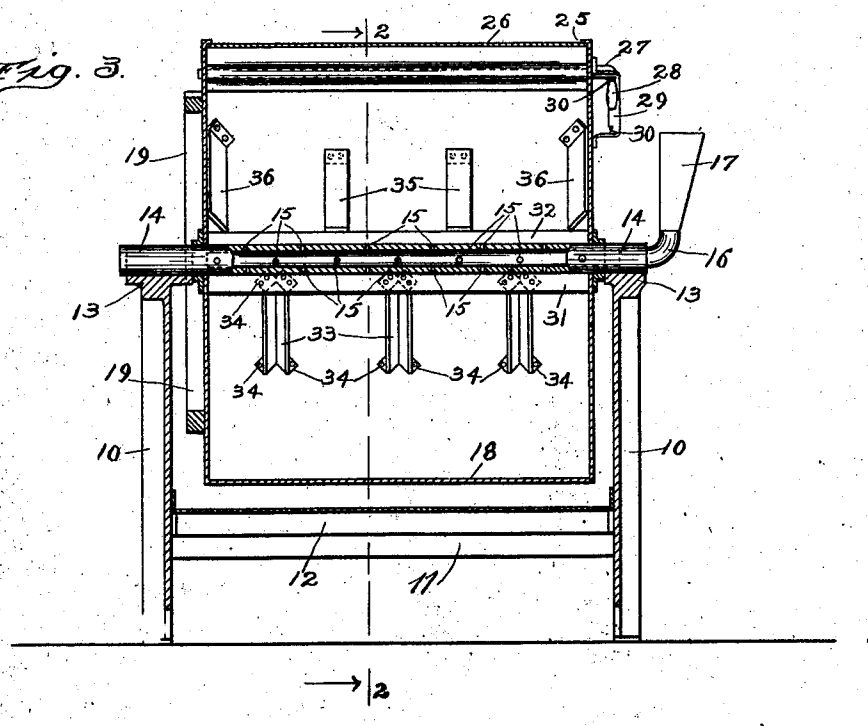


Fig. 4.

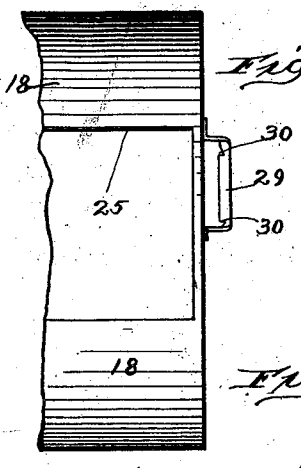


Fig. 5.

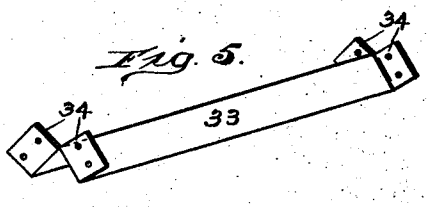
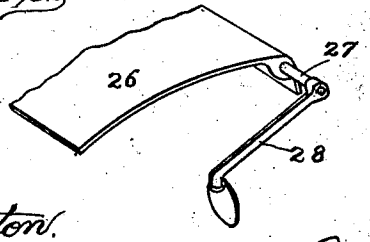


Fig. 6.



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UNITED STATES PATENT OFFICE.

ANDREW J. CROPP, OF CHICAGO, ILLINOIS.

MIXING-MACHINE.

No. 859,919. Specification of Letters Patent. Patented July 16, 1907.

Application filed August 9, 1906. Serial No. 329,804.

To all whom it may concern:

Be it known that I, ANDREW J. CROPP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification.

This invention relates to improvements in a mixing machine, and while it is more especially intended for use in combining material to produce a concrete mixture suitable for construction and building purposes, yet it is applicable and may be employed for mixing other suitable materials.

The principal object of the invention is to provide a portable machine of the above-named character, which shall be simple and inexpensive in construction, strong, durable and so made that its parts may be easily assembled or readily detached, for the purpose of conveniently handling the same, and also to operate in such a manner as to intermingle the materials rapidly and thoroughly.

Another object of the invention is to provide simple and efficient means for the discharge of the materials after being mixed by the machine.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is an end view in elevation of a mixing machine embodying my invention, showing the parts in position ready for operation. Fig. 2 is a vertical cross-sectional view taken on line 2, 2 of Fig. 3 looking in the direction indicated by the arrows. Fig. 3 is a longitudinal sectional view taken on line 3, 3 of Fig. 1 looking in the direction indicated by the arrows. Fig. 4 is a plan view of a portion of a rotary drum, showing it detached from the supporting-frame. Fig. 5 is a detached perspective view of one of the mixing or stirring arms; and Fig. 6 is a perspective view of a portion of the door of the drum, showing the handle for opening and closing the same attached thereto.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

The main or supporting frame consists of two end pieces 10, which are substantially A-shaped, and are united together near their lower portions by means of a cross-bar 11, as well as by means of an inclined chute 12, which serves the double purpose of assisting in bracing the end pieces 10 and securing them together, as well as receiving the mixed material when emptied from the rotary or mixing-drum. As shown in Figs. 1 and 3, the upper horizontal portion of each of the end pieces 10 is provided with a journal-box 13, in which is transversely located a hollow or tubular shaft 14, which is provided with a series of perforations 15, for the discharge of water into the drum. One end of the tubular shaft 14 communicates through a pipe 16 with a tank 17, or other source of water supply. Rotatably mounted on the shaft 14 between the end pieces 10 of the main frame is the mixing drum 18, which is cylindrical in shape and is preferably made of metal, and has each of its ends closed, as shown. One end of the drum 18 has mounted thereon a gear 19, which meshes with a pinion 20, which is mounted on a shaft 21 journaled on a suitable bracket 22 on one of the end pieces on the main or supporting frame. The shaft 21 may also have mounted thereon a pulley 23, to which power may be applied for rotating the drum, or a crank-handle 24 connected to the said shaft may be used, when it is desired to operate the machine manually. The drum 18 is provided in its peripheral wall with an opening 25, which is closed by means of a door 26 rigidly mounted at one of its side edges on a rod or shaft 27, which is journaled in the ends of the drum near their peripheries and at or near one edge of the opening 25, as will be clearly understood by reference to Fig. 2 of the drawings. The shaft 27 extends through one of the ends of the drum and has secured thereon a handle 28 used for opening and closing the door. Secured to that end of the drum adjacent to the handle 28 on the shaft 27 is a strap or keeper 29, which, as shown in Figs. 3 and 4, is located at a slight distance from the end of the drum, and is provided near each of its ends on its inner surface with a notch 30 to engage the handle 28 so as to hold the door in its closed or open position, for it will be understood that the handle 28 extends between the strap 29 and end of the drum.

Located within the drum and extending from one end thereof to the other at suitable distances from the tubular shaft 14, and at suitable distances apart, are a number of flat bars 31 and a number of bars 32, which latter bars are preferably angular in cross-section. Radially located in the drum 18 and secured at one of their ends to the inner periphery of the drum are a number of arms 33, which are angular in cross-section, as shown in Figs. 3 and 5, and have their other ends secured to the bars 31, and for this purpose the ends of the arms 33 are provided with apertured flanges 34, which flanges will abut against the periphery of the drum and against the bars 31, to which parts they may be fastened by means of bolts or rivets. Radially located in the drum and secured at one of their ends to the inner periphery of the drum are a series of arms 35, which are preferably flat, as shown in Figs. 2 and 3, and have their other ends secured to the bars 32, which bars as before stated, are preferably angular in cross-section to afford good supports for said arms.

By reference to Figs. 2 and 3 of the drawings, it will

be seen that the angular arms 33 are located radially yet diametrically opposite each other, and that the same may be said of the flat arms 35, and further, that the arms 33 and 35 are alternately disposed with respect to one another, but disposed in longitudinal rows on the inner surface of the drum. In alinement with the arms 35 and at each end of the drum is located an arm or bar 36, each of which has its outer end secured to the periphery of the drum and their inner ends resting on the bars 32. Each of the arms or bars 36 is inclined inwardly, as shown in Fig. 3, so that the material within the drum acted on by said arms will be thrown towards the middle of the drum or away from the ends thereof.

The operation of the machine is simple and as follows:—To place the material in the drum the door 26 is opened by turning the crank-handle 28 to the lower position, shown in Fig. 2, when it is evident that a sufficient quantity of the material may be deposited through the door into the drum, when by applying power to the shaft 21, the drum will be rotated through the instrumentality of the pinion 20 on said shaft and the gear 19 with which said pinion meshes. After the material has been deposited in the drum and before the latter is rotated, the door 26 should be closed by raising the handle 28, which may be caused to engage one of the notches 30 in the strap or keeper 29 located on one side of the drum. In the rotation of the drum, water may be distributed through the perforations 15 in the tubular shaft 14, and it is apparent that as the drum rotates the arms 33 and 35 will thoroughly stir and mix the material, and that the arms or bars 36 will act to throw the material inwardly from the ends of the drum, while the angular-shaped arms 33 will divide it, as the apex of said angular arms will be presented forwardly or against the material, thus causing it to be moved slightly sidewise. To thoroughly mix the material in the shortest time and with the least amount of labor or fewest number of revolutions of the drum, a sufficient quantity of water should be added to the material to render it semi-liquid or mush like in form, and enough material and water to about half fill the drum should be employed. When the material is in this condition, it is apparent that in the revolution of the drum it will maintain substantially a level position with its upper surface, and that some will be carried upwardly by the stirring arms from which it will fall back to mingle with the main body of the material. As the stirring arms extend from the peripheral wall of the drum to near its center, it is evident that they will act on the entire mass of the material so as to thoroughly and quickly mix it, and not merely agitate or mix the portion of the material which lies close to the periphery of the drum as is done by the old style mixing machines.

Having thus fully described my invention, what I claim as new and desire to secure by Letters-Patent, is—

1. In a mixing machine, the combination with the main frame, of a perforated tubular shaft mounted thereon and having communication with a supply of water, a drum mounted on the shaft and having an opening in its peripheral wall, a door hinged to close said opening, a series of radially disposed and spaced apart arms secured at one of their ends to the inner surface of the peripheral wall of the drum and extending at their other ends to near the said shaft, the said arms arranged in longitudinal rows with respect to the drum, the arms of one of the rows being alternately disposed with respect to the arms in the row adjacent thereto, an inclined chute mounted on the lower portion of the main frame beneath the drum, and means to rotate the drum, substantially as described.

2. In a mixing machine, the combination with the main frame, of a perforated tubular shaft mounted thereon, means for supplying water to said shaft, a drum mounted on the shaft, a series of angular in cross-section and radially disposed and spaced apart arms secured at one of their ends to the inner surface of the peripheral wall of the drum and extending at their other ends to near the said shaft, the said arms arranged in longitudinal rows with respect to the drum, another series of spaced apart and radially disposed arms located in longitudinal rows on the inner surface of the drum and arranged alternately with respect to the rows of angular shaped arms, an inwardly inclined arm or bar located at each end of the drum in alinement with one or more of the rows of said arms, and means to rotate the drum, substantially as described.

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