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C. W. LEVALLEY.
CONCRETE MIXER.
APPLICATION FILED JAN. 6, 1912.

1,027,055.

Patented May 21, 1912

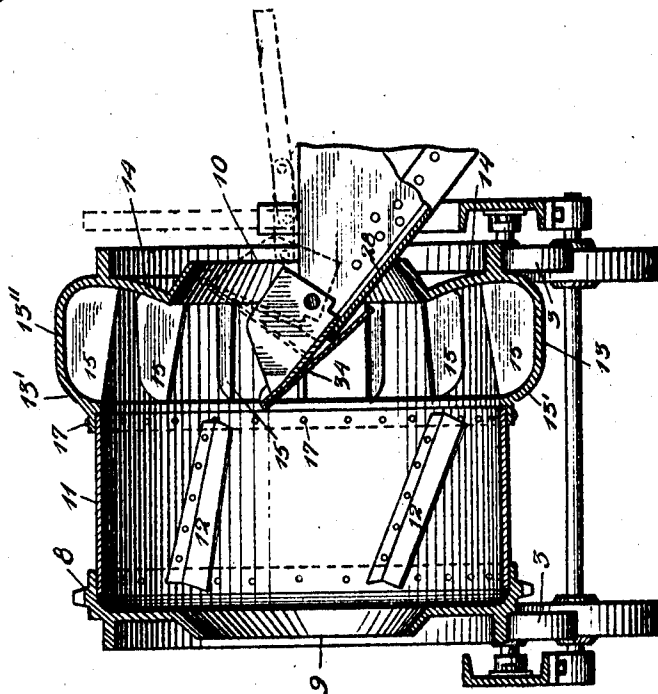


Fig. 2.

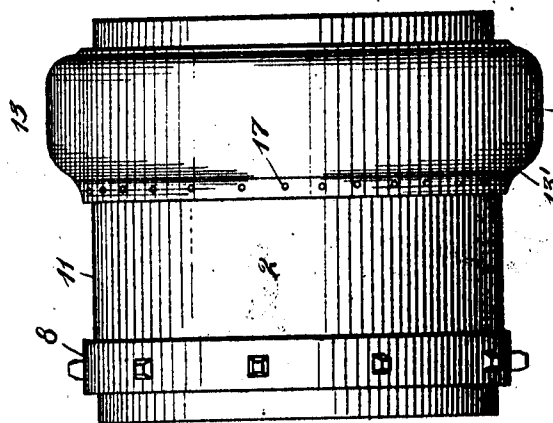


Fig. 1.

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CONCRETE-MIXER.

1,027,055.

Specification of Letters Patent.

Patented May 21, 1912.

Original application filed November 10, 1908, Serial No. 461,891. Divided and this application filed January 6, 1912. Serial No. 669,841.

To all whom it may concern:

Be it known that I, CHRISTOPHER W. LEVALLEY, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Concrete-Mixers, of which the following is a specification.

This case is a division of my application No. 461,891, filed November 10, 1908.

The invention herein presented relates to machines for mixing materials and has been devised with especial reference to the mixing of concrete.

It has for its object to improve the form of the mixing drum of such a machine so as to increase the mixing capacity thereof and at the same time insure that the ingredients which enter into the mixture being produced shall be commingled rapidly and in an exceedingly advantageous manner.

In the accompanying drawings: Figure 1 is an external elevation of the drum or mixing receptacle of a concrete mixing machine constructed according to my invention. Fig. 2 is a central longitudinal vertical section of a concrete mixer embodying my improvements.

In the drawing 2 indicates, as a whole, the revolving drum or receptacle of a concrete mixing machine. It is supported so as to be rotatable, as upon wheels or rollers 3, that are mounted in a suitable frame. The drum receives its rotary motion from any suitable source of power, the drum shown in the drawings being arranged to be driven by a sprocket chain that engages with a sprocket ring 8 attached exteriorly to the drum. The drum is formed with central axial openings, that at 9 being the one through which the materials to be mixed are fed into the drum, and that at 10 the one through which the finally mixed concrete or other material being treated is discharged. A longitudinal section of the drum, designated 11, adjacent to the feed end thereof and preferably extending about half the length of the drum or a little more, is cylindrical in shape and provided with internal mixing and advancing flights 12, these being arranged to carry upward and then let fall

the material delivered to the mixer, at the same time advancing it longitudinally through the machine. Another portion of the drum adjacent to the delivery end thereof, designated 13, is enlarged by having the walls of the receptacle bulge outward circumferentially, between the cylindrical section 11 and the rear end wall 14, as clearly represented in Fig. 2 of the drawings. This construction forms a sort of pocket in the lower segment of this section, 13, of the drum where the concrete or other material being mixed tends to collect. I prefer that that portion of the drum between the cylindrical section 11 and the bulge 13, which I have designated 13', should curve outwardly so as to form a concave interior surface over which the material being mixed can easily slide with a somewhat accelerated speed in passing from the cylindrical section 11, to the substantially cylindrical part 13'' of the bulge, where it may be retained as long as desired to insure proper mixing or until the attendant is ready to discharge the machine. By thus constructing the drum there is no tendency for the concrete material to collect and become hardened in passing into the enlarged or bulge section, thus clogging the machine. This form of drum insures a thorough preliminary mixing of the ingredients delivered to the machine, in the cylindrical part or section thereof, 11, where however the material is not long retained, but is advanced, more or less rapidly, according to the inclination at which the flights 12 are set. On the other hand the enlarged recurving bulging portion 13 of the mixing drum, constitutes a sort of receptacle in which the concrete mass collects and receives its final mixing, and where it is retained until it is desired to discharge it. This section of the drum is provided with suitable internal flights or mixing blades 15 which, as shown in the drawings and owing to the enlarged and bulging shape of this section of the drum, may be of greater depth than the flights 12, to insure a correspondingly increased lifting action.

It will be seen, by reference to Fig. 2 of the drawings, that the end wall 14 extends so far inward or toward the axis of revolution

of the drum, that the discharge opening 10 therein is of a diameter considerably less than the internal diameter of any portion of the drum. This end wall thus operates to retain the mass of material being operated upon within the bulging section of the drum notwithstanding the fact that the lifting and advancing blades with which the drum is provided and also the inclined wall 13' of the drum, tend to force the material toward the rear end of the machine; and also operates in a large measure to prevent the material splashing out of the drum, while being retained and mixed in the said bulging section.

It often happens in mixing concrete that the ingredients have not been properly mixed when they arrive at the discharge end of the drum, or that the concrete when it arrives at this part of the mixer is not in the desired physical condition for use, being, for instance, either too thin or too thick. A drum of the construction just described having a bulging section near its discharge end, when combined with discharging devices that in their operation are under the control of an attendant, permits the retention of the mass of concrete within the drum a sufficient length of time to effect the desired mixing of the ingredients; and when a drum of this construction is used in connection with adjustable means arranged to return the concrete that is lifted by the flights 15 toward the head or feed end of the drum, it is entirely feasible to collect in the rear portion of the drum close to the discharge opening a considerable mass of the concrete which may be observed and tested so that if desired it can be returned toward the forward part of the drum for remixing, with added materials, to give it the desired consistency.

The drum constructed as described is preferably formed of a plurality of sections. I have represented the sections 11 and 13 as being separately formed and united by rivets 17. The front section 11 is preferably of sheet steel.

28 designates a stationary discharge chute extending through the opening 10 into the drum.

It will be understood that the flights 15, when the drum is run at the proper working speed, lift the concrete mixture and let it fall upon the inner end of the delivery chute which then conducts it out of the machine. With this chute I preferably combine an adjustable gate or cut-off adapted, when in one position, as that represented in dotted lines in Fig. 2, to prevent the material lifted and discharged by the flights 15 from entering the chute but instead returning it toward the head end of the drum for further mixing; but when adjusted to another position, as that shown in full lines, to allow the mate-

rial to pass directly to the chute and out of the machine.

There are numerous forms of gates or cut-offs well known in the art to which my invention belongs that may be used in connection with the drum herein described. That which I have illustrated is of novel construction and arrangement and forms the subject-matter of claims presented in my aforesaid application of which this case is a division. I do not deem it necessary to describe the said gate or cut-off in detail, it only being necessary, for the purposes of this case, that it should be adjustable and operate in the manner already described.

The drum described is of great strength and at the same time does not wear out and deteriorate rapidly even when operated to its full capacity, which, as has been demonstrated, is greater than that of any machine, of which I have knowledge, of similar size.

What I claim is:

1. In a machine for mixing concrete, a rotatable drum having a substantially cylindrical portion into which the material is first delivered and where the preliminary mixing takes place, and a second section near the delivery end of the drum having curved circumferential bulging side walls and an end wall in which is an axially disposed discharge opening, the diameter of which opening is less than the interior diameter of any portion of the drum, the said second section of the drum being adapted to receive substantially an entire charge of the material and retain it during the final mixing thereof.

2. In a machine for mixing concrete, a rotatable mixing drum having axially disposed openings in its end walls, and comprising a cylindrical section where the material is first delivered and mixed, and another, circumferentially bulging, section near the delivery end of the drum for the final mixing of the material and formed with a substantially cylindrical part near its end wall and an outwardly curved part forming an inner concave surface over which the material being mixed passes, located between the said cylindrical part of the first mentioned section and the cylindrical part of the bulge section the axial opening at the discharge end of the drum being of less diameter than the interior diameter of any portion of the drum, and mixing and lifting flights carried by each of the sections of the drum.

3. In a machine for mixing concrete, a rotatable mixing drum having an axially disposed opening in its discharge end wall of a diameter less than the interior diameter of any portion of the drum, the portion of the drum adjacent to the discharge end being of circumferentially bulging construction

and larger in diameter than the portions of the drum toward the feed end, whereby there is formed a collecting pocket or section in which an entire charge of mixed concrete may be retained before final discharge, in combination with adjustable discharge devices under the control of the operator, arranged to deliver the material

from the drum or return it toward the front of the drum for further mixing, accordingly 10 as such devices are set.

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