No. 761,541. PATENTED MAY 31, 1904.

E. L. RANSOME.

MIXING MACHINE.

APPLICATION FILED APR. 2, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

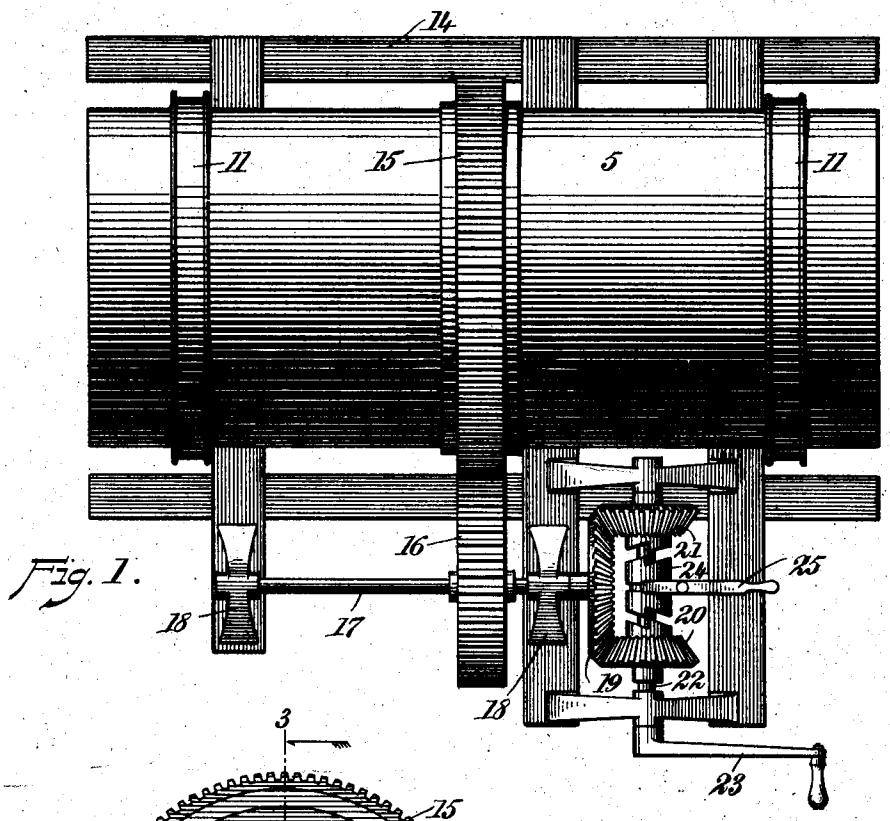


Fig. 1.

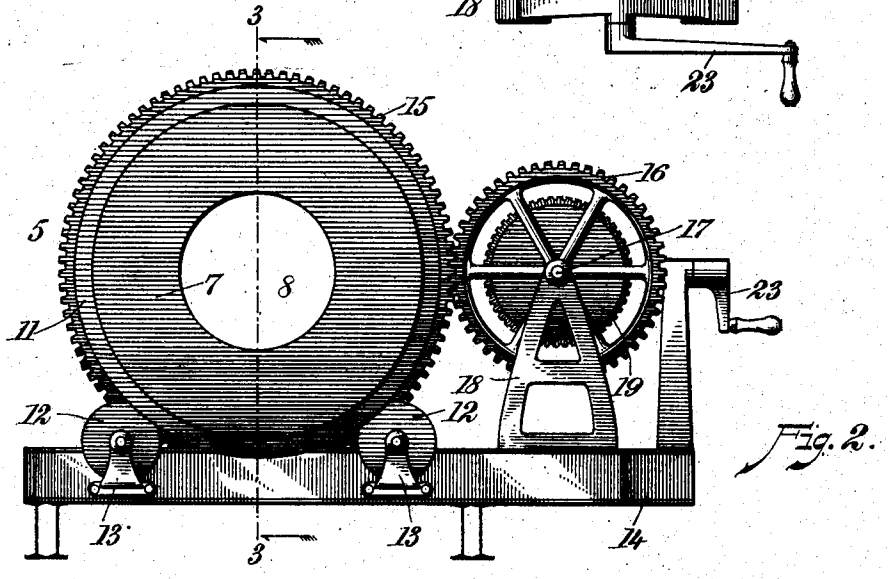


Fig. 2.

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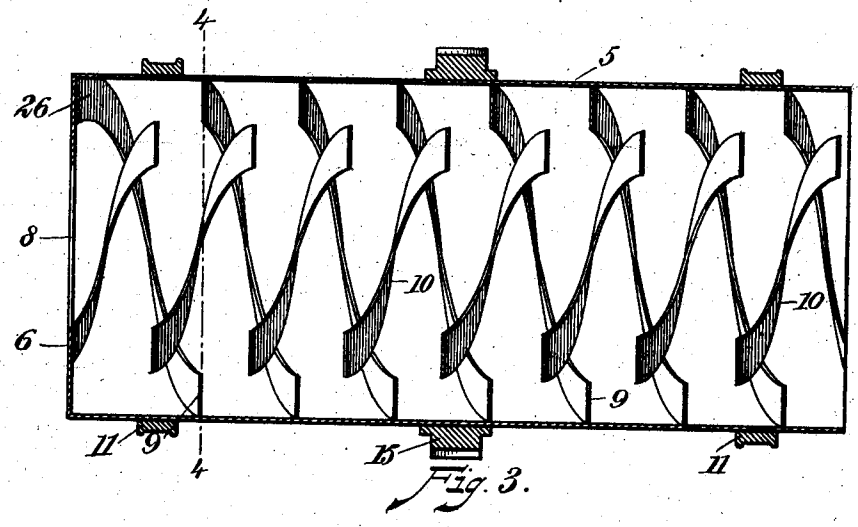


Fig. 3.

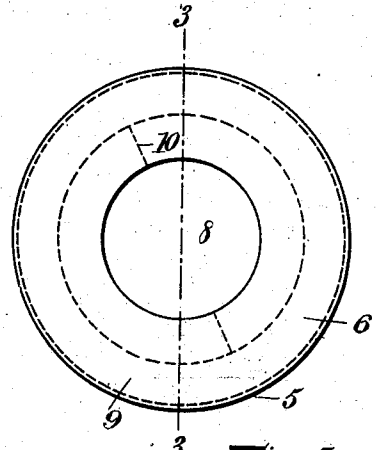


Fig. 5.

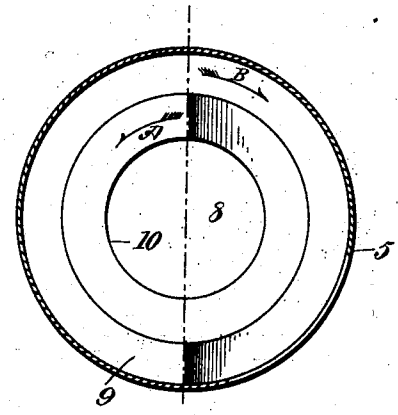


Fig. 4.

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No. 761,541. Patented May 31, 1904.

UNITED STATES PATENT OFFICE.

ERNEST LESLIE RANSOME, OF NEW YORK, N. Y.

MIXING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 761,541, dated May 31, 1904.

Application filed April 2, 1903. Serial No. 150,727. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Mixing-Machine, of which the following is a full, clear, and exact description.

This invention relates to improvements in mixing-machines especially adapted for use in combining materials to produce a concrete mixture suitable for construction and building purposes, although the machine may be used for mixing other suitable materials.

The chief object that I have in view is to produce an improved construction which may be used to good advantage both as a continuously-acting mixer or as a batch-mixer without alteration of either of its parts.

A further object is to equip the machine with means which operate to intermingle the materials thoroughly and rapidly; furthermore, to provide for the rapid discharge of the materials when desired, and, furthermore, to provide a simple form of reversible driving means for rotating the revoluble member or drum in one direction or the other.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of a mixing-machine contemplated by the present invention. Fig. 2 is an end elevation thereof. Fig. 3 is a vertical longitudinal section through the revoluble mixing drum or cylinder, taken in the plane of the dotted lines 3 3 of Figs. 2 and 5. Fig. 4 is a vertical transverse section on the line 4 4 of Fig. 3, and Fig. 5 is an elevation of the feed end of the revoluble hollow member.

5 designates a suitable cylinder, case, or drum, which I will hereinafter designate as a "revoluble hollow member." This member is provided at one end with a head 6, and in this head is a central opening 8 of suitable diameter. (See Fig. 3.) The other end of the revoluble member 5 is open for the full discharge of the material when the drum and its contained bafflers are rotated in one direction.

The important feature of my invention consists in the provisions of two helical bafflers 9 and 10, arranged one within the other and each extending continuously throughout the length of the hollow revoluble member.

The baffler 9, of large diameter, is disposed within the member 5 to engage directly with the inner surface thereof, and this baffler is a continuous spiral, the flights of which are right-handed. The other baffler, 10, is of smaller diameter than the baffler 9, and this smaller baffler is of an opposite hand to the larger baffler 9, the smaller baffler 10 being a left-hand spiral, while the baffler 9 is a right-hand spiral. The smaller baffler crosses or intersects the flights of the external baffler, and these bafflers may be secured within the hollow member and within one another in any suitable way. I prefer, however, to attach the outer baffler 9 directly to the hollow member by suitable means, whereas the inner baffler 10 is fastened at its points of intersection to the spiral flights of the outer baffler.

The hollow member may be mounted in any suitable way on any kind of supporting-frame; but as shown by the drawings this member 5 is provided with external track bands or rings 11, which are adapted to engage with carrying-rolls 12, that are mounted in suitable brackets 13, attached to a base or frame 14. The hollow member equipped with spiral bafflers of opposite hand is adapted to be rotated continuously in one direction, or it may be rotated for short intervals in back and forth directions alternately.

As a suitable means for driving the hollow member and for reversing the direction of its rotation I have shown one style of driving-gear by Figs. 1 and 2 of the drawings. The member 5 is equipped with an external gear 15, with which engages a gear-wheel 16, mounted on a horizontal shaft 17, the latter being journaled in the brackets 18, attached to the base or frame 14. This shaft 17 is equipped with a bevel-gear 19, which engages with a pair of bevel-gears 20 21, the latter being fitted loosely on a driving-shaft 22,

which is journaled in suitable bearings on the base or frame. As shown by the drawings, this driving-shaft 22 is adapted for manual operation, and to this end said shaft has a hand-crank 23 fixed thereto; but it will be understood that the shaft 22 may be equipped with a pulley or other power-transmitting element, whereby the shaft may be driven by power, if desired. The spaced bevel-gears 20 21 are adapted to be made fast individually with the shaft 22 by the employment of a shiftable clutch 24, the latter being feathered on said shaft 22 and adapted to slide thereon when manipulated by a suitable reversing-lever 25, said lever being fulcrumed on a part of the frame and engaging loosely with a grooved portion of the slidable clutch 24. It is evident that the clutch may be moved in one direction for engagement with the bevel-pinion 20, thus making the latter fast with the shaft 22 and causing it to transmit the motion of said shaft to the counter-shaft 17, which in turn drives the drum or hollow member 5 in one direction. The lever 25, however, may be manipulated to slide the clutch 24 along the shaft 22 and make it engage with the other bevel-gear 21, whereby the shaft 17 and the hollow member are driven in an opposite direction.

The ends of the helical bafflers 9 and 10 may be made of any desired shape to facilitate the transfer of the material from one baffler to the other. One modification of the end portion of the baffler is indicated at 26 in connection with the baffler 9 in Fig. 3.

In the operation of the machine as a continuous mixer the hollow member 5 is rotated in the direction indicated by the arrow A in Fig. 4, the material being fed into the member through the open end thereof. While the member is rotating in this direction the helical baffler 10 remains practically inactive, because the material passes through the drum in a way to be acted on practically by the flights of the outer baffler 9; but if it is desired to improve the mixture the clutch should be shifted to make the driving-gear rotate the drum in an opposite direction and as indicated by the arrow B in Fig. 4. The reversal in the direction of the rotation of the drum should continue for a few seconds at a time, and to discharge the material the drum is rotated in the direction of the arrow B for the baffler 9 to deliver the material through one open end of the drum.

To operate the machine as a batch-mixer, the material may be fed into the drum at the open end, and said drum or hollow member is driven in the direction indicated by the arrow A in said Fig. 4, the drum being of sufficient capacity to contain the entire batch of material. The outer helical baffler 9 operates to carry the material toward the head 6, about which material accumulates or piles until it shall have become sufficiently high to be brought into the field of operation of the inner baffler 10. At this period the inner baffler becomes effective in removing the material as fast as it comes within its field of action, and the material thus operated on by the inner baffler 10 moves in an opposite direction to the material advanced by the outer baffler 9, such movement of the material under the action of the inner baffler taking place until the upper strata or layer of material can fall down within the field of action of the outer baffler 9, whereupon the material is again carried forward by the outer baffler only to be returned again as long as the mixer works in the direction of the arrow A. In order to discharge the mixture, the drum should be rotated in the direction of the arrow B, and the baffler 9 operates to transfer the contents of the mill rapidly through the open end of the drum or member 5.

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

1. A concrete-mixer having an imperforate revoluble member provided with a head at its inlet end, bafflers of opposite hand disposed in and revoluble with said member, and a reversible driving mechanism operatively related to said member for rotating it and the bafflers in either direction at will; one of said bafflers and the head being effective in piling the material in the path of the other baffler when said member is rotated in one direction.

2. A concrete-mixer comprising an imperforate revoluble hollow member having a head at its inlet end and an open discharge end, a baffler within said member, and a reversible driving mechanism operatively related to said member for rotating it and the baffler in either direction at will; said baffler on the rotation of the member in one direction being effective in discharging the material through said open end.

3. A mixer of the class described, comprising an imperforate revoluble hollow member having a head at its inlet end and an open delivery end, bafflers disposed reversely to and within one another and revoluble with the member, and means for rotating said member and the bafflers in one direction or the other at will; one of said bafflers on the rotation of the member in one direction being effective in discharging the material through said open end.

4. A mixer of the class described, comprising an imperforate revoluble hollow member having a head and an open discharge end, internal bafflers revoluble with said member and disposed reversely to and within one another, and means controllable at will for rotating said hollow member and the bafflers in either direction; said bafflers in conjunction with the barrier afforded by the head being effective in feeding the material back and forth within the member on the rotation thereof in one direction, and one of said baf-

flers serving to discharge the material through the open end of the member when the latter is rotated in an opposite direction.

5. A mixer of the class described, comprising an imperforate revoluble hollow member having an open discharge end, spiral bafflers of opposite hand arranged for the flights of one baffler to cross the flights of the other, one baffler being disposed within the other and both bafflers being revoluble with the hollow member, and a reversible driving mechanism operatively related to the member for rotating the latter and the bafflers in either direction at will; one of said bafflers being effective in discharging the material through the open end of the hollow member on the rotation thereof in one direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST LESLIE RANSOME.

Witnesses:

NELLY BRYANT,

JOHN G. ELLENDT.