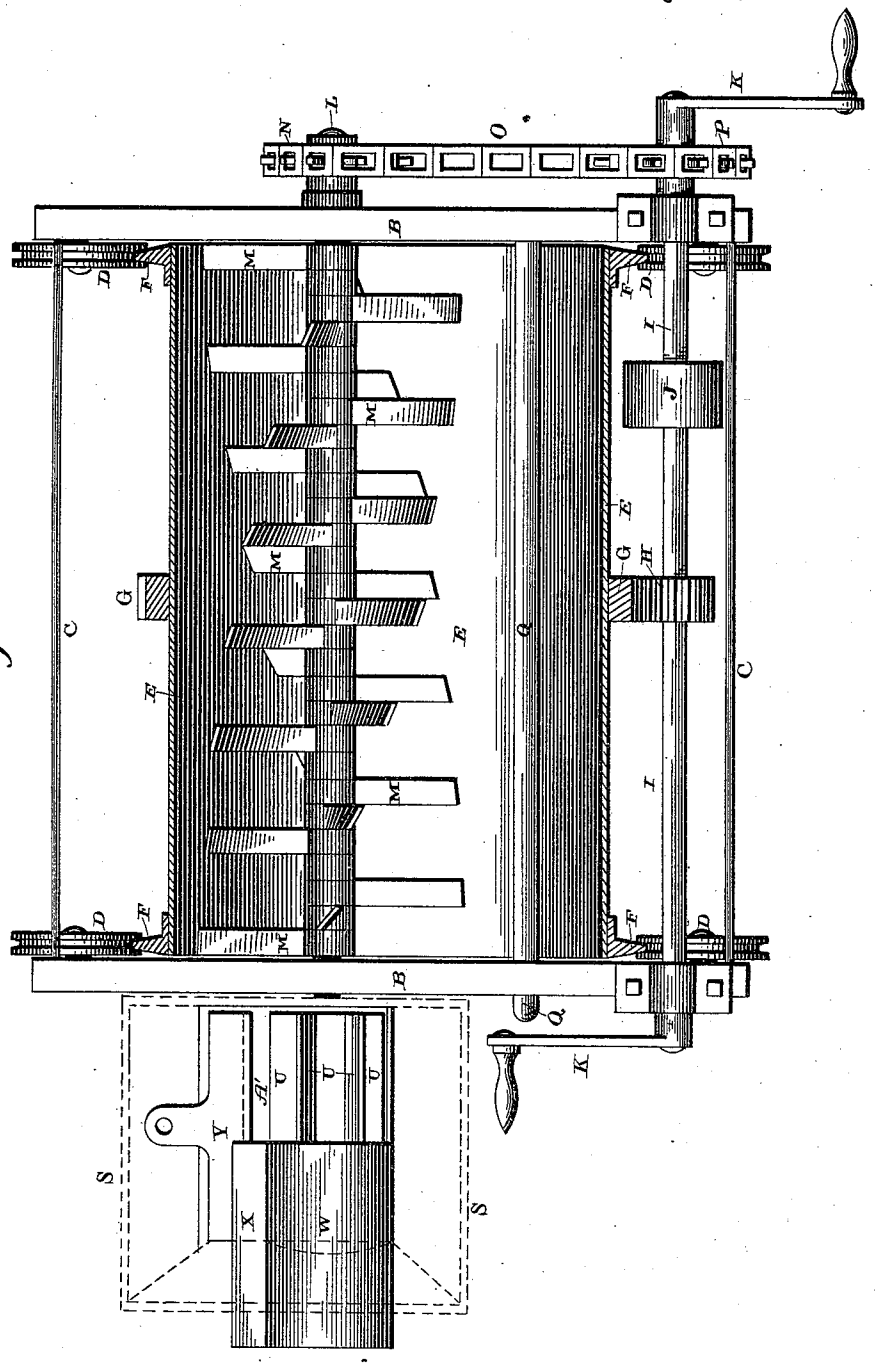
(No Model.) 2 Sheets—Sheet 1.

F. S. BALDWIN.

CEMENT OR MORTAR MIXER.

No. 451,992. Patented May 12, 1891.

Fig. 1.



Witnesses:
E. P. Ellis,
J. M. Nesbit

Inventor:
F. S. Baldwin
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attys.

(No Model.) 2 Sheets—Sheet 2.

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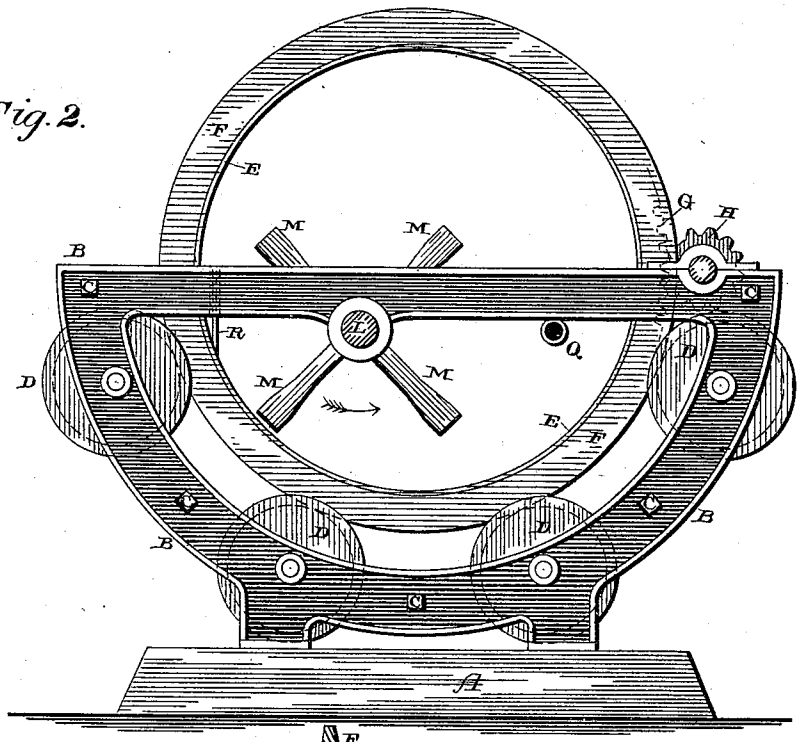
Fig. 2.



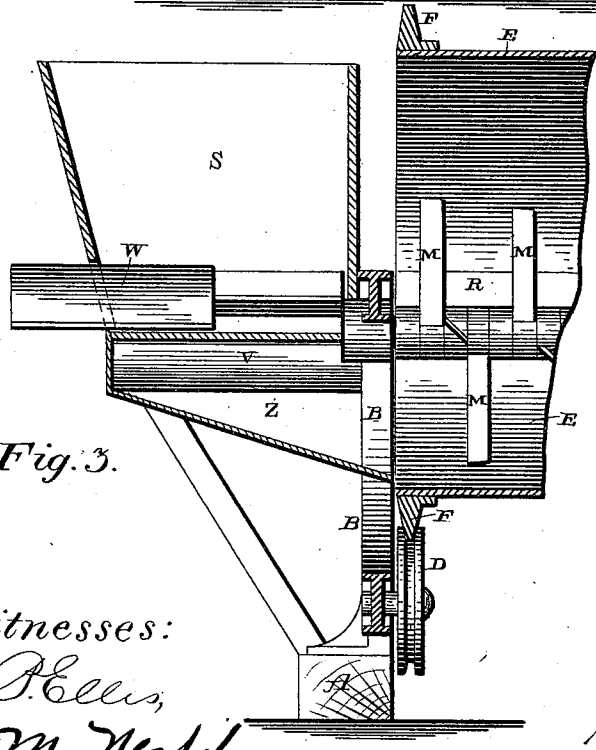


Fig. 3.

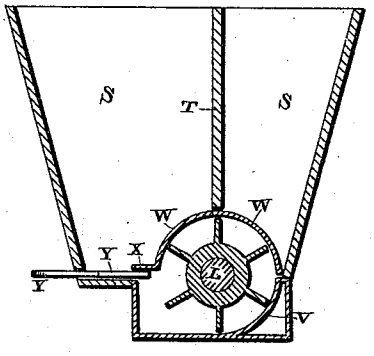


Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANK S. BALDWIN, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF TO R. NAPIER ANDERSON, OF NEW YORK, N. Y.

CEMENT OR MORTAR MIXER.

SPECIFICATION forming part of Letters Patent No. 451,992, dated May 12, 1891.

Application filed August 4, 1890. Serial No. 360,978. (No model.)

To all whom it may concern:

Be it known that I, FRANK S. BALDWIN, of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Cement or Mortar 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in cement or mortar mixers; and it consists in the combination and arrangement of parts, which will be fully described hereinafter.

The object of my invention is to produce a machine by means of which the cement or lime is mixed with sand in certain regulated quantities, and then this mixture is fed into a revolving open-ended cylinder, where a suitable quantity of water is added to the mixture, and from which cylinder the mortar is discharged ready for use.

Figure 1 is a plan view of a machine which embodies my invention, the upper portion of the cylinder being cut away. Fig. 2 is an end view of the mixer, the hopper being removed. Fig. 3 is a longitudinal vertical view taken through the hopper in the end of the cylinder. Fig. 4 is a vertical cross-section taken through the hopper.

A represents two ground sills or timbers, to which two end plates or castings B are secured. These end plates may be of the shape shown in Fig. 2 or any other form that may be desired, and are secured rigidly together by the rods C. Journaled upon suitable bearings which extend from the inner sides of these end plates are grooved rollers D, which are arranged in a semicircle, as shown, and which serve to support the open-ended cylinder E in position. This cylinder E is of any suitable size and length and is provided with flanges F at its ends to catch in the grooves in the rollers D, and thus the cylinder is enabled to revolve freely around upon the rollers D at the same time that it is held in position by the flanges F. Secured to the center of the cylinder is the curved rack G, which extends entirely around the outer side of the cylinder and with which the pinion H upon the shaft I engages, so that when the shaft I is caused to revolve, either by the pulley J or the hand-cranks K on its ends, the cylinder is made to revolve while the mortar is being mixed in it.

Journaled in suitable boxes upon the castings B, and extending entirely through the cylinder E from end to end, is the shaft L, which is located to one side of the center of the cylinder, as shown in Fig. 2, and to which the propeller-blades M are spirally secured, and which as they revolve force the mortar out of the cylinder at the farther end from the hopper. If the cylinder E is placed at an inclination, the mortar can be caused to move more rapidly out of the cylinder than when the cylinder is placed in a horizontal position. Upon one end of this shaft is placed a sprocket-wheel N, around which passes the driving-chain O from a sprocket-wheel P upon the shaft I. When the shaft I is caused to revolve, the cylinder is caused to revolve in one direction and the shaft L and blades M in the opposite one at a different rate of speed. The revolution of the cylinder E has a constant tendency to carry upward the mortar, while the blades M, revolving in the opposite direction, force it backward toward the bottom of the cylinder, the blades being just long enough to about just touch the sides of the cylinder, as shown in Fig. 2. Extending into or through the cylinder is a perforated water-pipe Q, through which water is forced from any suitable source upon the mixture in the cylinder and in just sufficient quantity to convert it into mortar. Inside of this cylinder above the point where the blades M act upon the mixture is placed a scraper R, as shown in Fig. 2, and which serves to prevent any of the mixture from adhering to the inside of the cylinder and being carried on up around.

It will be seen from the above that the cylinder E is supported entirely upon the rollers D and is caused to revolve in one direction, while the shaft L and blades M are caused to revolve in the opposite one, and that the blades touch or nearly touch the cylinder at

one side of its bottom for the purpose of preventing the revolution of the cylinder from carrying up and around any of the mortar that is being mixed. Located at one end of the machine is the hopper S, which is divided by a vertical partition T into two compartments, one of which is larger than the other. In the small compartment is to be placed the lime or cement and in the larger one is placed the sand. The shaft L extends entirely through the bottom of this hopper S and has secured to it a number of blades U, which form chambers or buckets, which are filled or partially filled, as the shaft and the buckets U are made to revolve, with the lime or cement. The bottom of the hopper under the smaller chamber is formed of a segment V, which serves to prevent any of the lime or cement from falling down in the hopper below a certain point, and the amount of lime or cement which is allowed to drop into the buckets or chambers upon the shaft is regulated by the sliding cover W, which moves in a line with the shaft, as shown in Fig. 3. This cover W is provided with a flange X upon one side, which is made to overlap the slide Y, which is forced through a slot in one side of the hopper, and which regulates the amount of sand that shall be fed into the inclined bottom Z of the hopper. The farther the slide W is forced into the hopper the shorter are the buckets, pockets, or chambers which are to be filled by the cement or lime and which are filled first because the chambers or pockets are caused to revolve so that they move under the smaller chamber of the hopper first. As the shaft is caused to revolve, bringing the chambers filled with lime or cement under the partition T and through the larger chamber filled with sand, the frictional contact of the buckets or chambers upon the sand causes a regulated amount of sand to be fed through the slot A′ into the inclined bottom Z of the hopper, from which the mixture of the cement or lime and the sand fall into one end of the revolving cylinder E. The slide Y regulates the width of the slot A′, and thus regulates the amount of sand which is to be mixed with the lime or cement. The flange X upon the slide or cover W, by catching over the top of the slide Y, prevents any sand from being fed through the slot A′ beyond the inner end of the slide. It is only necessary to place the lime or cement into the smaller chamber of the hopper and the sand in the larger one, and then when the machine is set in motion a regulated amount of cement or lime is fed into the revolving cylinder, where they have water added to them and are then mixed so as to form a mortar of any desired consistency, which is discharged from the end of the cylinder E, ready for use.

It is obvious that by substituting gear-wheels for the sprocket-wheels and chain the inner cylinder can be driven in the same direction as the outer one. In this case the twist of the revolving blades would be reversed and their relative motion increased, allowing the material to fall back from the scraper by gravity against the revolving blades. While this method requires more power to operate, it may be used to advantage under some conditions, therefore I do not confine myself to one direction of movement.

Having thus described my invention, I claim—

1. In a mortar-mixer, the combination, with a frame, of grooved rollers journaled therein at each side of its center, an open-ended horizontal cylinder having annular flanges which engage the grooved rollers, a hopper at one end thereof having two compartments, a shaft below the hopper having a series of pockets to receive the material therein, a stirrer within the cylinder, a pipe for admitting water, and mechanism for revolving the cylinder, the stirrer, and the shaft having pockets, substantially as described.

2. In a mortar-mixer, the combination, with a horizontal revolving cylinder, a hopper at one end of the cylinder, a shaft which passes through the cylinder and under the hopper, stirring devices secured to the said shaft within the cylinder, and buckets upon the shaft below the hopper, of a chute below the shaft and hopper for delivering the material into the cylinder, a pipe for admitting water, and means for revolving the cylinder and the shaft, substantially as shown.

3. In a mortar-mixer, the combination, with a frame having rollers journaled in each end thereof in a circular line, of a horizontal cylinder resting upon the rollers, circular cogs upon the cylinder, a hopper at one end of the cylinder, a shaft passing through the cylinder and below the hopper carrying stirring devices and buckets for the purpose described, a shaft journaled outside of the cylinder parallel therewith, a gear-wheel upon the shaft engaging the circular gear upon the cylinder, and connecting-gearing between the two named shafts, combined to operate in the manner substantially as shown and described.

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

FRANK S. BALDWIN.

Witnesses:
OSCAR KEEN,
JOHN R. HARDIN.