(No Model.)

2 Sheets—Sheet 1.

E. L. RANSOME.

CONCRETE MIXING MACHINE.

No. 322,006. Patented July 14, 1885.

Fig. 2.

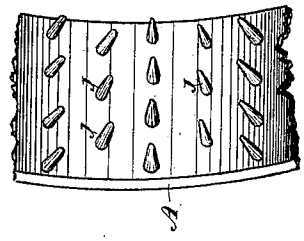
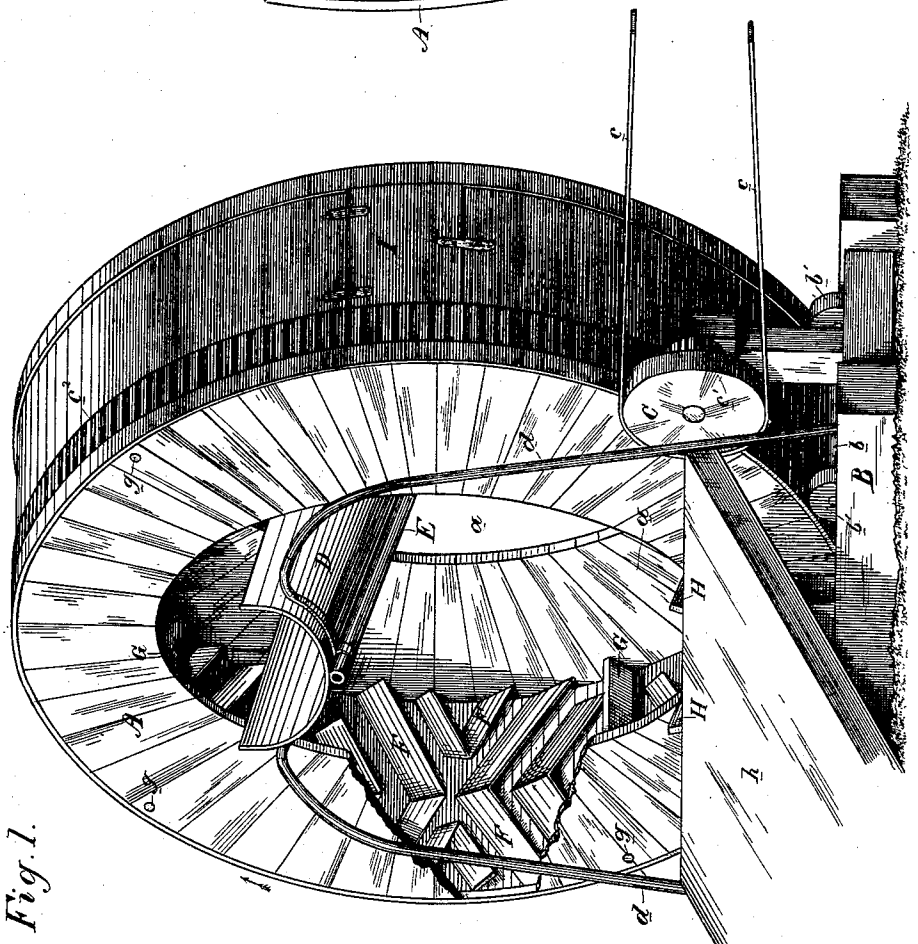


Fig. 1.



Witnesses,
Geo. H. Strong.
J. H. Stouse.

Inventor,
E. L. Ransome
By Dewey & Co.
Attorneys

(No Model.)

2 Sheets—Sheet 2.

E. L. RANSOME.

CONCRETE MIXING MACHINE.

No. 322,006. Patented July 14, 1885.

Fig. 4.

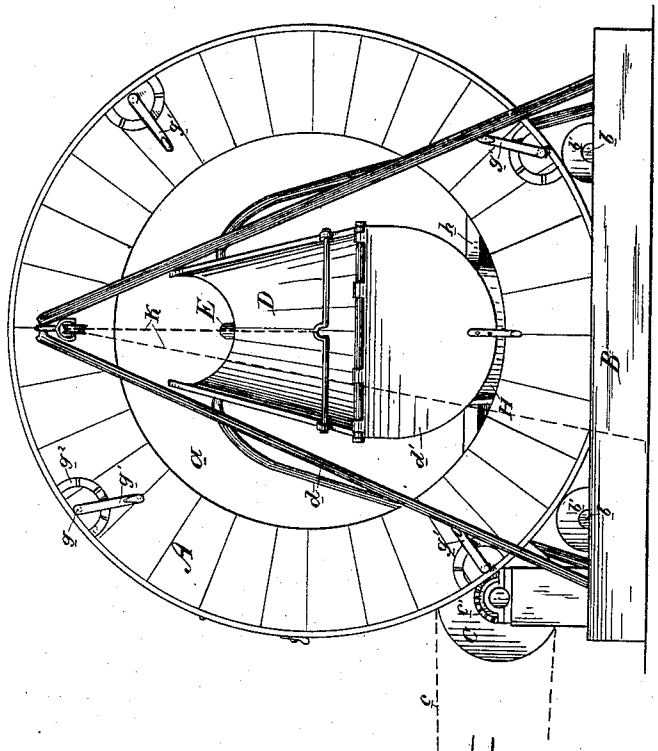
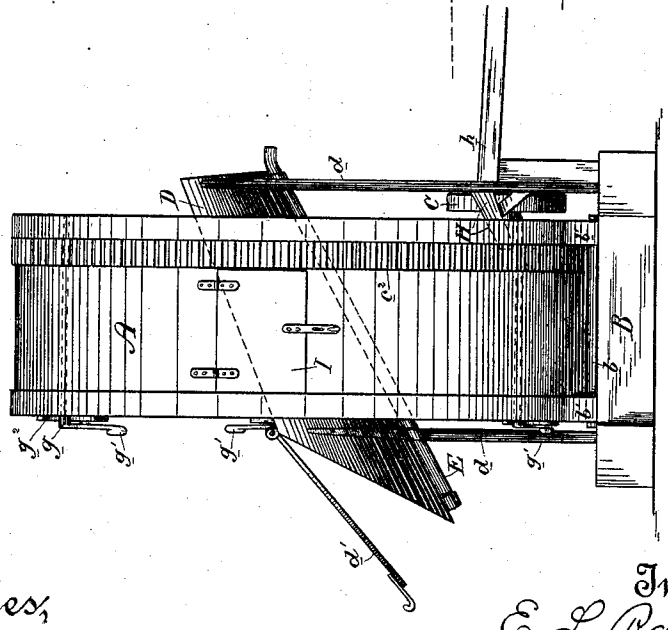


Fig. 3.



Witnesses,
Geo. H. Strong.
J. R. Trowbridge.

Inventor,
E. L. Ransome
By Dewey & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ERNEST LESLIE RANSOME, OF SAN FRANCISCO, CALIFORNIA.

CONCRETE-MIXING MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,006, dated July 14, 1885.

Application filed May 15, 1885. (No model.)

To all whom it may concern:

Be it known that I, ERNEST L. RANSOME, of the city and county of San Francisco, State of California, have invented an Improvement in Concrete-Mixing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of machines in which a rotating casing is employed to receive and mix the materials to form concrete; and my invention consists in a hollow rotating drum provided with side apertures, and having upon the inner surface of its periphery peculiar directing guides or flanges and oscillating or adjustable shelves or flanges for the purpose of lifting the materials as the drum revolves. Extending transversely and at an inclination through the drum is a discharge chute or spout supported independently of the drum by suitable standards or hangers, and provided with a swinging end gate. A small and independent hopper or chute and a platform in connection with the hopper are employed to facilitate the feed to the drum. Secured to and under the transverse spout is a pipe, perforated throughout its length, whereby water is introduced within the drum.

The object of my invention is to provide a simple and effective machine for mixing concrete.

Referring to the accompanying drawings, Figure 1 is a perspective view of my machine, a portion of one of the heads being broken away. Fig. 2 is a detail view showing pins J. Fig. 3 is an end elevation of the machine. Fig. 4 is a side elevation of the chute or spout D, suspended and adapted to swing to position.

A is the hollow drum, having apertures *a* in each side, of a diameter smaller than the diameter of the drum, whereby heads are formed, providing the proper annular chamber in which the materials are mixed.

B is any suitable bed-frame, upon which is mounted a shaft, *b*, at each end, provided with anti-friction rollers *b'*, upon which the drum A rests, suitable tracks or rolling-surfaces being provided on said drum, whereby it is mounted in a manner adapting it to be readily rotated. Any suitable means may be employed for rotating the drum, though, perhaps, the most practical are the following:

C is a pulley, operated by the endless belt *c* from a suitable source of power. Upon the shaft of the pulley C is a pinion, *c'*, which meshes with a cog-band, c^2, encircling the periphery of the drum.

D is the discharge chute or spout. This consists of a concave piece lying transversely within the circumference of the drum and independent thereof, being supported at each end by standards *d*, which are themselves supported by the bed-frame. This chute has a suitable inclination, and the drum rotates about it, while the chute remains stationary. It is not essential, however, that the chute or spout should remain permanently fixed in its position within the drum, as in some cases it could be so suspended or hinged as would adapt it to be swung to its position when needed and to be withdrawn from the drum when not in use. This I show in Fig. 4. The standard at the discharge end is run up higher, and a chain, K, is secured to its top. The lower end of the chain is secured at a point on the chute where it nearly or perfectly balances it. This will enable the chute to be swung into the drum, its upper end engaging and resting on the other side standard *d*, and to be swung out again when not in use. The discharge end of the chute has a swinging gate, *d'*.

Secured under the chute is the water-pipe E, the upper end of which may be connected with any suitable water source. It is perforated, as shown, throughout its length, whereby the water may be discharged into the drum.

Upon the inner surface of the periphery of the drum are secured the angling or approximately V-shaped directing-flanges F. These in cross-section have the shape of a right-angle triangle approximately, the hypotenuse facing the direction of rotation of the drum. These flanges may be arranged in any suitable series with relation to one another, the principle idea, however, being that the apex of one flange should be adjacent to the opposite flange—that is to say, that each pair of flanges or each set should be bent in opposite directions. I prefer the arrangement shown in the drawings, where the main flanges are

bent in opposite directions, the spaces behind and between them being filled in by smaller angular flanges, also bent in opposite directions. The purpose of this arrangement I shall presently describe.

G are the lifting shelves or flanges. These consist of oblong plates mounted upon oscillating shafts *g*, journaled transversely in the drum, and adapted to be moved by means of a handle-lever, *g'*, on their outer ends, which engages with a rack, *g''*, on the outer surface of the side of the drum. By moving the handle *g'* the flanges may be made to lie down close to the surface of the drum, or they may be moved to extend inwardly at a suitable angle to enable them to lift the material. There may be any number of these lifting-flanges within the drum, though I think it best to have about four. H is a small feed chute or hopper supported independently of the drum, and extending slightly within it, and *h* is a platform upon which a wheelbarrow containing the material to be mixed can be pushed, whereby its load can be dumped into the directing-chute H, from which it is delivered to the drum.

The operation of the machine is follows: The drum is rotated by the mechanism described. The material to be mixed is delivered to the drum through the chute H, and water is also delivered through the perforated pipe E. The lifting-flanges G are turned to lie as flat as possible, so that they do not interfere with the mixing process, their function being merely one of discharging into the chute D. The material meeting the directing guides or flanges (the sloping sides of which lie in the direction of revolution, thereby avoiding any lifting function) is first directed to the center and then toward the sides of the drum, according as it meets the oppositely-bent flanges. In this way the various materials are thoroughly mingled, no one being allowed to keep to itself. When they have become thoroughly mixed, the material is picked up by the lifting-flanges G, which are turned inwardly to the proper angle. Small quantities are lifted by these flanges, and are discharged above into the spout D, down which the material runs or passes by its own gravity, and is discharged through the swinging gate *d'*.

If desirable, I may have a discharge-door, I, in the circumference of the drum. When working with sand, I may use instead of or conjointly with the flanges F a series of pins, J, driven or otherwise secured in the drum, as shown in Fig. 2.

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

1. In a concrete-mixing machine, a hollow rotating drum having upon the inner surface of its periphery directing guides or flanges by which the materials are thrown together and mixed, substantially as herein described.

2. In a concrete-mixing machine, a rotating drum having upon the inner surface of its periphery a number or series of angular or approximately V-shaped guides or flanges arranged or bent in opposite directions in pairs or sets, substantially as herein described.

3. In a concrete-mixing machine, the rotating drum A, provided on the inner surface of its periphery with the angular or V-shaped oppositely-arranged and sloping-sided flanges F, adapted to direct the materials to the center and to the sides of the drum, substantially as herein described.

4. In a concrete-mixing machine, a hollow rotating drum, in combination with hinged or swinging transverse lifting flanges or shelves on the inner surface of its periphery, adapted to be moved inwardly to a suitable angle to lift the material or to be turned back to let it slip by, substantially as herein described.

5. In a concrete-mixing machine, a hollow rotating drum, in combination with hinged or swinging transverse flanges or shelves upon the inner surface of its periphery and a mechanism on the exterior of the drum, connected with the swinging flanges within, whereby they are moved to a different plane, substantially as herein described.

6. In a concrete-mixing machine, the hollow rotating drum A, in combination with the sets or series of oppositely-arranged directing guides or flanges F and the series of swinging lifting flanges or shelves G, both flanges and shelves being upon the inner surface of the periphery of the drum, substantially as herein described.

7. In a concrete-mixing machine, a hollow rotating drum provided with suitable lifting devices upon its inner surface, in combination with a transverse inclined discharge chute or spout within the circumference of the drum, substantially as herein described.

8. In a concrete-mixing machine, a hollow rotating drum having on the inner surface of its periphery suitable lifting devices for elevating the material, in combination with a fixed or stationary inclined discharge chute or spout lying transversely within the circumference of the drum, substantially as herein described.

9. In a concrete-mixing machine, the hollow rotating drum A, having side apertures, *a*, forming heads, and provided on the inner surface of its periphery with suitable lifting devices, in combination with the transverse inclined chute or spout D, within the drum and supported independently thereof, said spout being adapted to discharge through the side of the drum, substantially as herein described.

10. In a concrete-mixing machine, the combination of the rotating drum A, the inclined and transverse chute or spout D within the drum, and the swinging lifting flanges or shelves G on the inner surface of the periphery of the drum, operated from without, substantially as herein described.

11. In a concrete-mixing machine, the combination of the rotating drum A, the oscillating or movable lifting flanges or shelves G, the

oppositely-arranged angular or V-shaped directing-flanges F upon the inner surface of the periphery of the drum, and the transverse inclined chute or spout D within the drum, substantially as herein described.

12. In a concrete-mixing machine, the combination of the drum A, having suitable lifting and directing flanges upon the inner surface of its periphery, as described, the transverse inclined chute or spout D within the drum, and the perforated water-pipe E, secured to the under surface of the spout, substantially as herein described.

In witness whereof I have hereunto set my hand.

ERNEST LESLIE RANSOME.

Witnesses:
S. H. NOURSE,
H. C. LEE.