

(No Model.)

E. L. RANSOME.
CONCRETE MIXING MACHINE.

No. 416,950.

Patented Dec. 10, 1889.

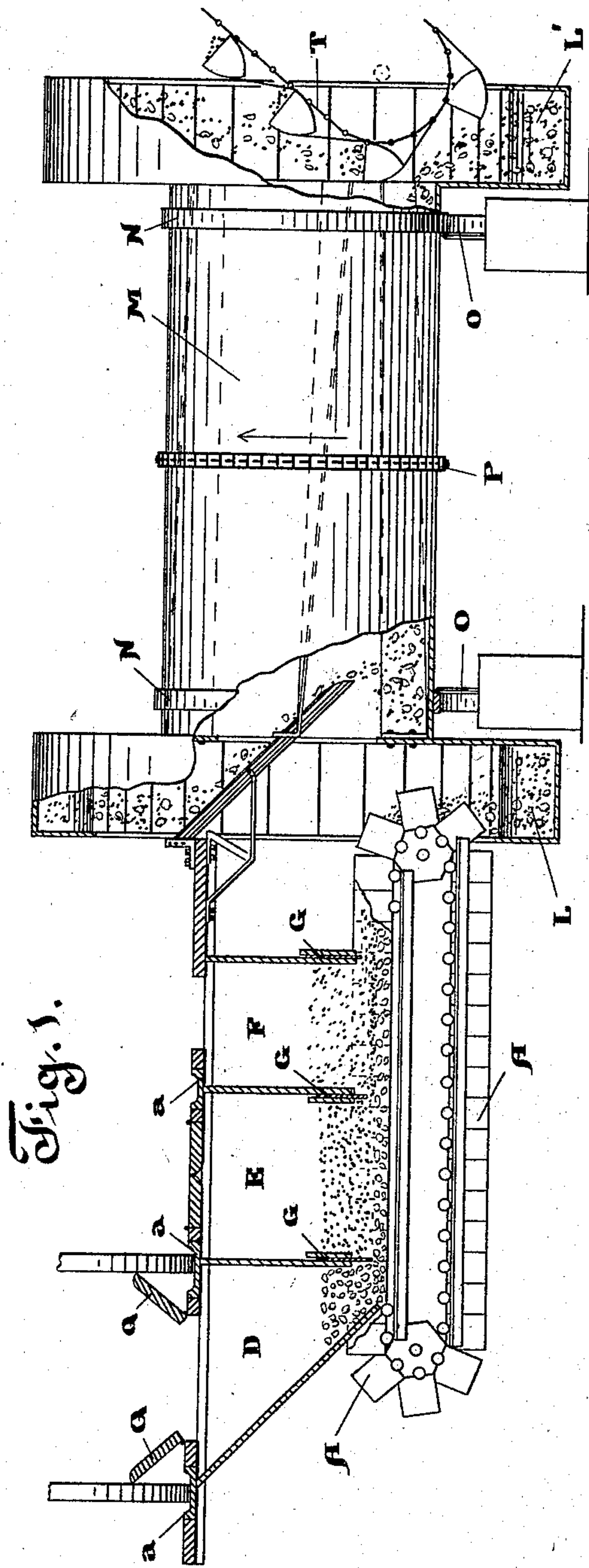


Fig. 1.

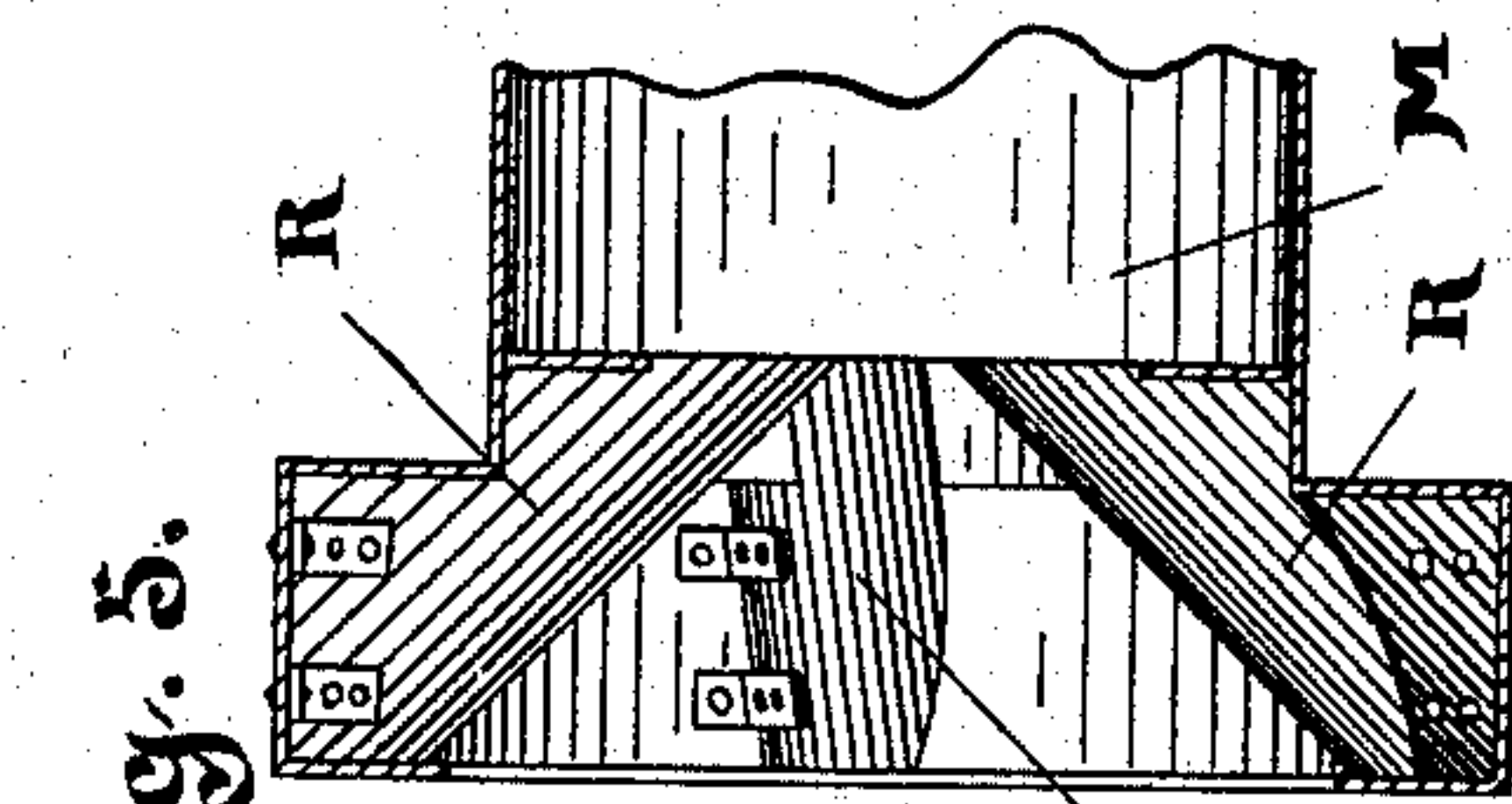


Fig. 2.

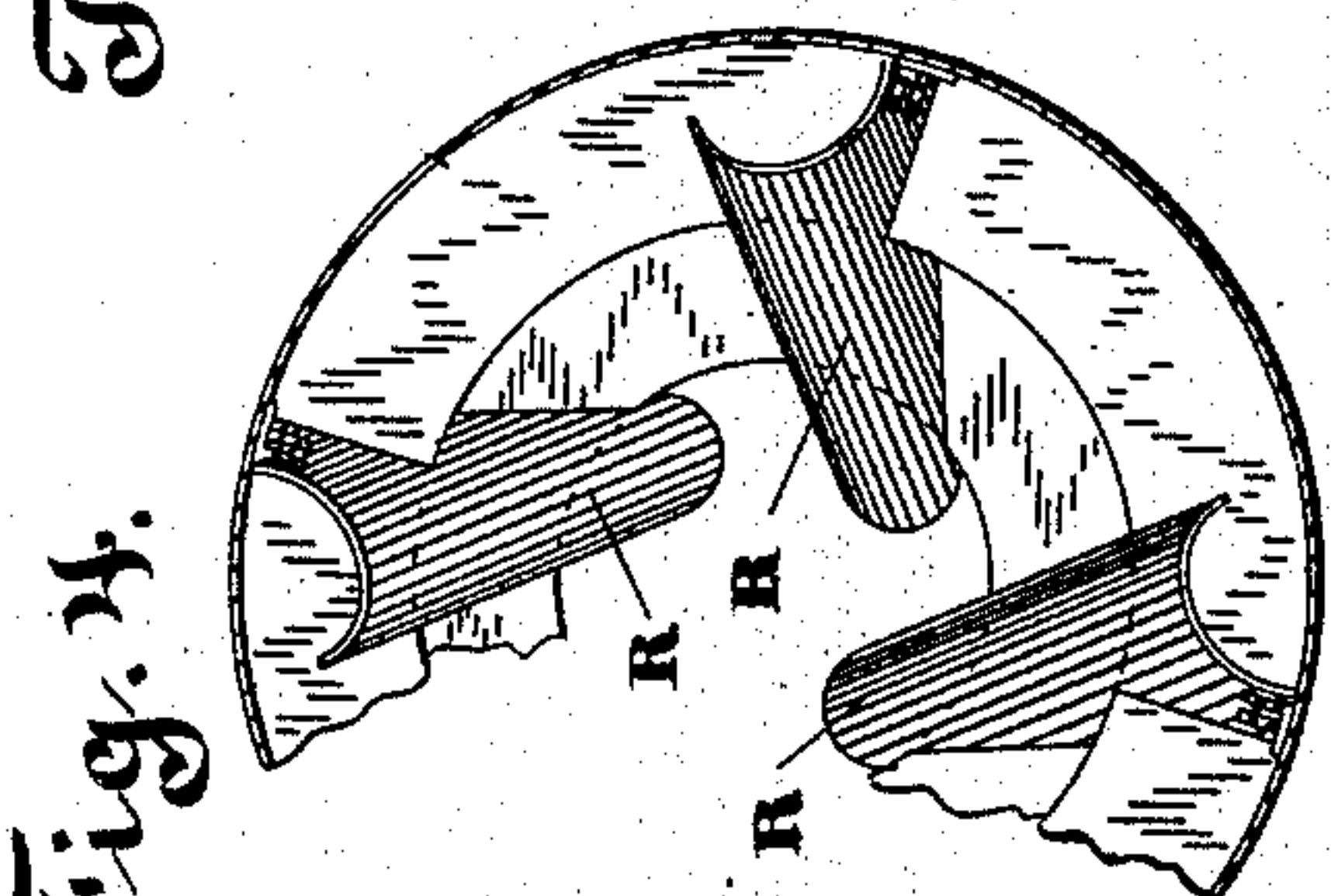


Fig. 3.

Fig. 4.

Fig. 5.

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ERNEST LESLIE RANSOME, OF SAN FRANCISCO, CALIFORNIA.

CONCRETE-MIXING MACHINE.

SPECIFICATION forming part of Letters Patent No. 416,950, dated December 10, 1889.

Application filed May 28, 1889. Serial No. 312,465. (No model.)

To all whom it may concern:

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

My invention relates to a machine for automatically measuring and mixing the materials of which concrete or artificial stone is
10 formed.

It consists of a mechanism which will be more fully explained by reference to the accompanying drawings, in which—

15 Figure 1 is a side view, partially in section. Fig. 2 is a detached view showing one of the regulating-gates and the means for operating it. Figs. 3, 4, and 5 are detached views of the lifting-carriers within the receiving-head.

20 This apparatus is designed to automatically measure and mix the ingredients which are employed in making concrete, and for other similar purposes, without the necessity of handling or considerable manual labor.

25 It consists of a horizontal traveling box or carrier, above which are situated the containing chambers or hoppers D, E, and F. The first of these chambers is designed to receive the broken rock which enters into the composition of the concrete, (and to deliver it
30 upon the carrier with as little friction as possible,) the second receives the gravel or sand, and the third receives the hydraulic cement or other material which forms the
35 bond to unite the other substances and form concrete. Any required number of hoppers may be used, or they may be placed in one or more rows either way, or placed separately with independent carriers. Each of
40 these chambers is provided with a gate, as shown at G, and these gates are adjustable, so as to control the amount of material passing out of the three chambers. In the present case I have shown the gates, as in
45 Fig. 2, sliding upon guides H, and having a stout bar I fixed across them with nuts J at either end, through which pass the screws K. These screws have their ends supported in suitable journal-boxes, so that they may turn
50 to advance the nuts J in either direction, and thus open or close the gates. When properly adjusted, it will be seen that a certain

amount of the crushed rock will be carried forward from the chamber D by the carrying-boxes A, and, passing beneath the chamber E, a layer of the sand within that chamber will be intermingled with the rock. This is carried forward upon and with the rock to a point beneath the chamber F, where it receives the proper proportion of cementing material from this last chamber, the whole being then carried forward by the carrier and discharged into the enlarged head L of the rotary mixer. The hoppers or chambers D have their rear sides sloped or inclined in the direction of the travel of the carrier, so as to support the greater part of the weight of the contained material and deliver it freely upon the belt without any considerable weight or friction upon the belt.

70 This mixer consists of the two enlarged heads L and L' and the intermediate small cylindrical portion M. This intermediate portion forms a drum of any desired length, having the heavy bands N, which rest upon the supporting flanged rollers O, the whole device being rotated by a chain which passes around the chain-pulley P, shown as surrounding the central portion of the drum. This construction enables me to place the drum so that the enlarged ends L will travel within a few inches of the ground or floor; and I am thus enabled to lower the feed-opening, so that if the concrete material is to be delivered into the head L from a wheelbarrow. 85 it is done without the necessity of making an elevated platform or lifting the material too high, and when discharged from the carriers previously described the carriers may be placed at a low level, so that the receiving-chambers above are so low that the carts bringing the material can have an easier and shorter incline upon which to haul the material to the floor above, and the gates Q being opened the material is dumped at once into the receptacles above the carriers. The floor above the receptacles has channels or tracks a, which guide the wheels of the carts as they pass upon the floor, and after they are in position the gates Q open against the wheels, as shown in Fig. 1, and form guides to direct the material to its place when dumped.

The drum M is provided with any suitable mixing or stirring devices in its interior, and

the material is raised and discharged into the drum portion from the head L by means of lifters or buckets of any suitable form. I have here shown two forms which are well adapted for the purpose. In Fig. 3 I have shown cups or buckets R, which are bolted within the periphery of the head L, and which raise the materials of the concrete and discharge them into a chute S, which delivers the material directly into the drum M. In Figs. 4 and 5 I have shown the lifting devices placed at an angle and inclined so that they themselves form the chutes, and when the material has been lifted to a proper height it will slide down these chutes and discharge into the drum. The rotation of the drum gradually carries the material forward and at the same time intimately mixes it, and when it reaches the discharge end it falls into the head L', from which it is lifted by buckets and delivered into the endless bucket-carrier T or other suitable device, and may be discharged from this into carts or other conveyances to be transported to the point where it is to be used. By this construction I am enabled to measure and thoroughly mix the materials of the concrete and to graduate the proportions as nicely as may be desired, and the whole work is done automatically.

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

1. A device for measuring and mixing concrete or other material, consisting of the rotary mixing-drum, the endless traveling carrying-belt discharging thereinto, a series of independent containing-chambers situated above the belt and successively in the line of its travel, discharge-openings, and regulating-gates through which the contents of the chambers are measured and delivered successively and continuously upon the belt, substantially as herein described.

2. The independent chambers standing in succession and containing materials to be mixed, an endless traveling belt disposed with relation to the chambers so as to re-

ceive the discharge from them successively, discharge-openings in the bottom of the chambers, and gates and adjusting mechanisms whereby the proportions of the material delivered from the chambers are regulated and controlled, substantially as herein described.

3. The rotary mixing-drum having an enlarged head into which the material is discharged, and lifting-chutes or boxes within said head, whereby the material is transmitted from the head into the smaller mixing-drum, substantially as described.

4. The mixing-drum mounted upon supporting rollers or wheels, and having enlarged heads L L' at opposite ends, boxes or lifting-chutes fixed in one of said heads, so as to raise the material and discharge it into the central mixing-drum at one end and into the receiving-elevator at the other end, and an endless elevator the lower end of which travels within the opposite-head, so as to receive the mixed materials and discharge them therefrom, substantially as described.

5. The endless traveling carrying-belt, chambers fixed above said belt, with discharge-openings and regulating-gates, inclined bottoms or chutes upon which the contents of the chambers are supported, said chutes delivering their contents upon the carrier in the direction of its travel, so that the movement of the belt carries away the supply as it is delivered thereon, substantially as herein described.

6. The hoppers or chambers, and the floors above with the guides or tracks for the wheels of vehicles, in combination with the hinged doors or gates Q, opening so as to form direction boards or guides, substantially as described.

In witness whereof I have hereunto set my hand.

ERNEST LESLIE RANSOME.

Witnesses:

S. H. NOURSE,
H. C. LEE.