

R. EDMONDSON.
MIXING MACHINE.
APPLICATION FILED AUG. 8, 1908.

922,112.

Patented May 18, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

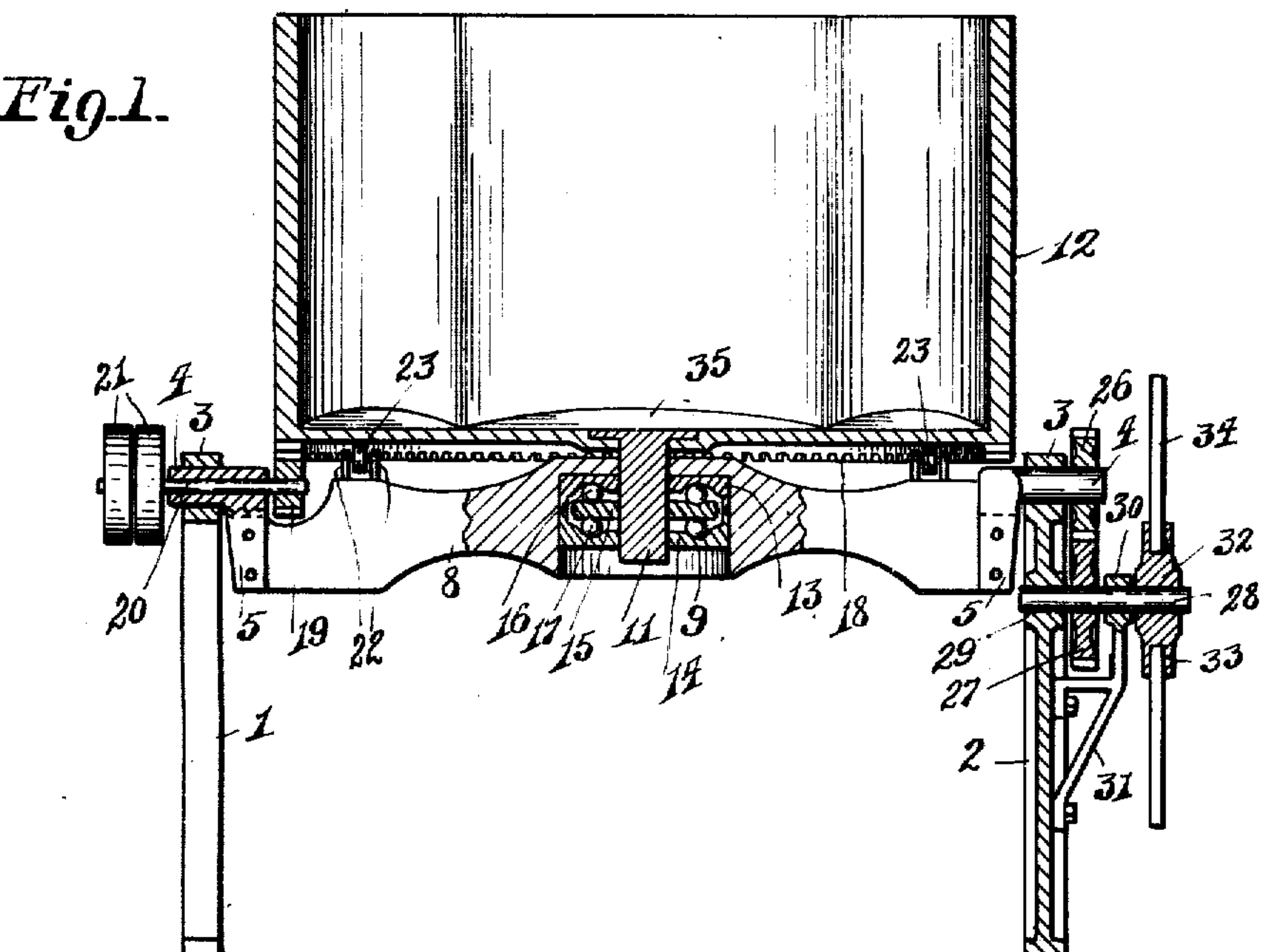
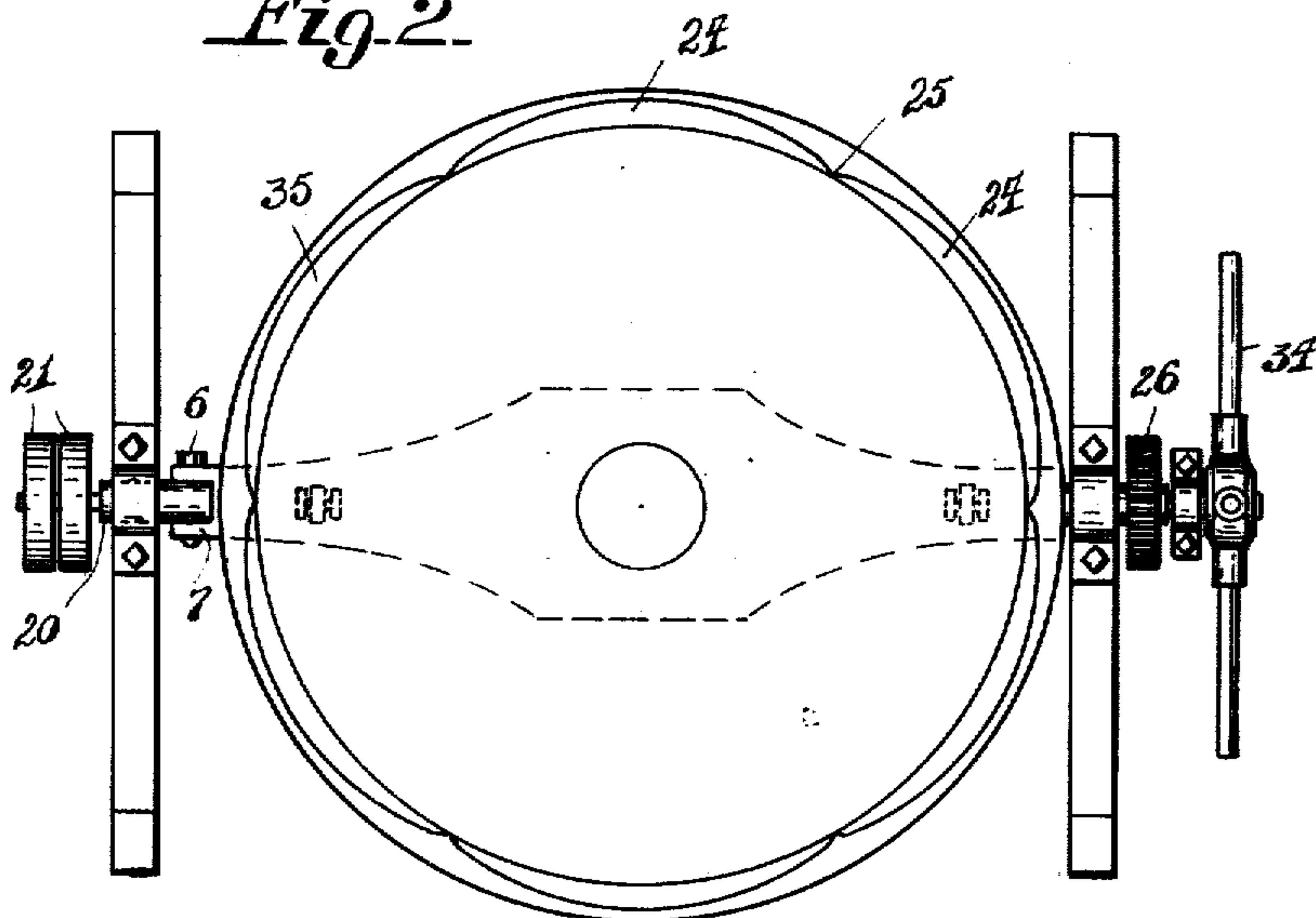


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

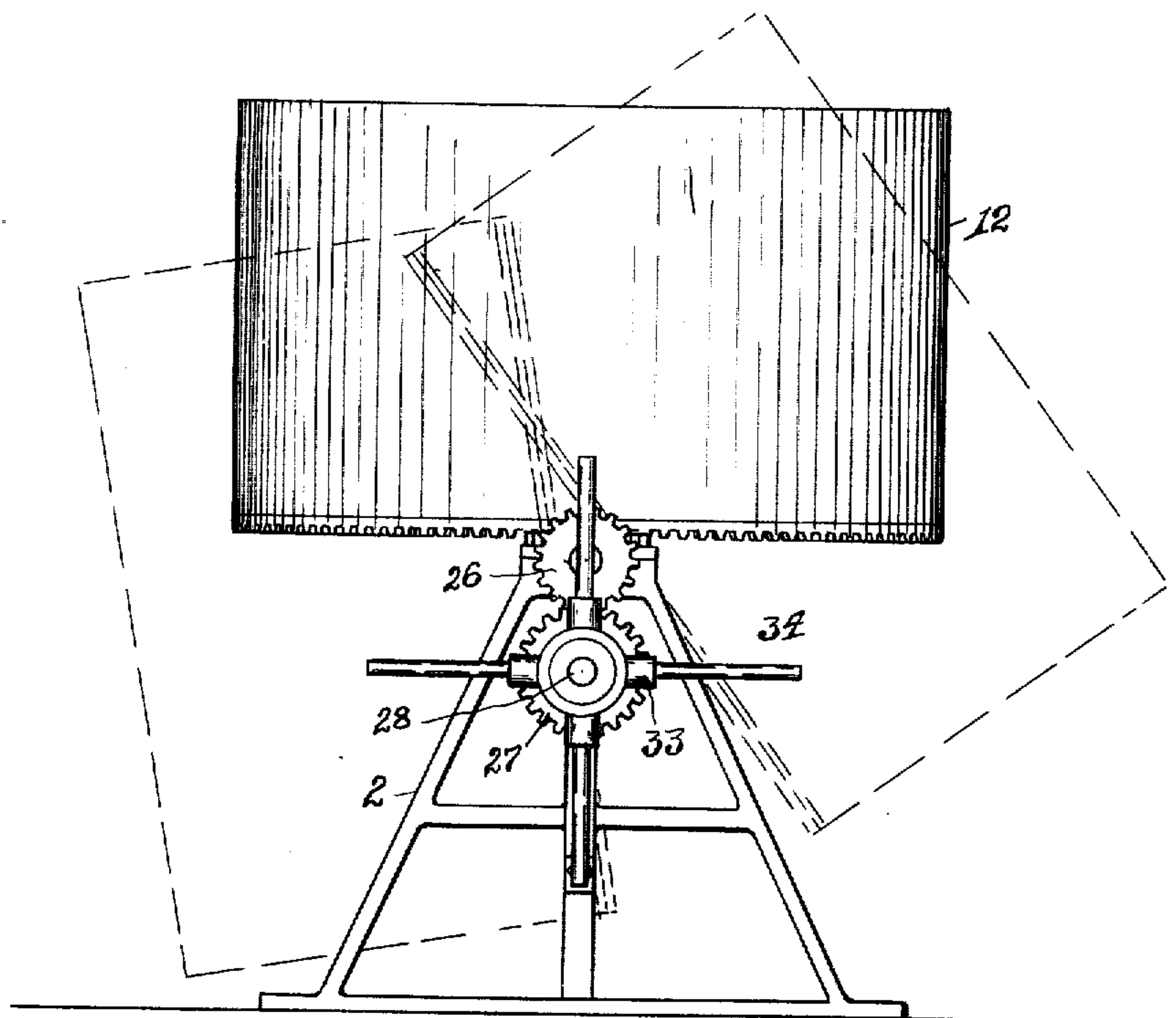
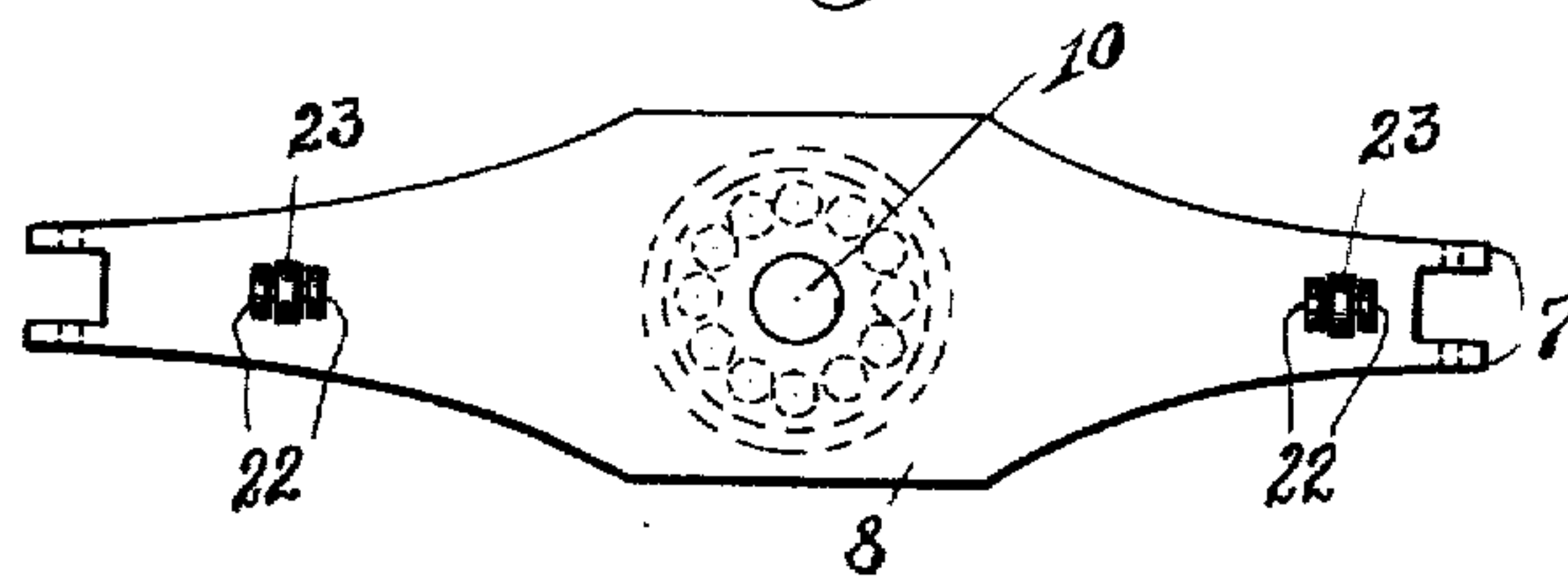


Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT EDMONDSON, OF MOUNT VERNON, OHIO.

MIXING-MACHINE.

No. 922,112.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed August 8, 1908. Serial No. 447,608.

To all whom it may concern:

Be it known that I, ROBERT EDMONDSON, a citizen of the United States, residing at Mount Vernon, in the county of Knox and State of Ohio, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification.

This invention relates to concrete mixing machines.

One object of the invention is to provide a concrete mixer embodying such characteristics that it may be easily and freely rotated to mix concrete material and subsequently tilt it to discharge the mixed material therefrom in such a way that the drum will not be operated or disengaged from the elements by which it is rotated.

Another object of the invention is to mount the mixing drum upon a swinging support, so, that the drum and support may be swung together when it is desired to relieve the drum of its contents.

A still further object of the invention resides in the provision of a mixing drum for concrete mixers whose interior is so formed that the concrete material ingredients will be caused to rise and fall during rotation of the drum to insure efficient mixing of the material and also to provide for a free and easy discharge of the material from the drum in such a manner as to obviate the possibility of the material sticking to the sides or the juncture between the sides and bottom of the drum.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that changes may be made in the form, proportion, size and minor details without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a vertical sectional view of the invention. Fig. 2 is a top plan view. Fig. 3 is an end elevation showing different positions of the drum in dotted lines. Fig. 4 is a top plan view of the swinging cross bar adapted to support the drum.

Referring now more particularly to the accompanying drawings, the reference characters 1 and 2 indicate suitable standards, each provided with a bearing 3 at its upper end adapted to receive the corresponding trun-

nions 4 of each piece 5 which latter are secured by means of suitable bolts 6 in the ears 7 at the corresponding ends of the swinging cross bar 8. These pieces 5 are operable with the swinging cross bar 8 and by reason of their use it follows that the swinging cross bar is made in separable sections.

The swinging cross bar 8 is provided with a recess 9 in its under face with which communicates an opening 10 formed through the top of the cross bar to receive the journal stud 11 fixedly secured to the bottom of the drum 12 in any suitable manner, the journal stud 11 extending into the recess 9 and through a bearing fitted in the latter comprising upper and lower plates 13 and 14 between which latter is arranged a ring 15, the upper and lower plates 13 and 14 and the ring 15 having grooves to provide race-ways for the upper and lower sets of bearing balls 16 and 17, respectively, whereby the drum has an easy and free rotation upon the swinging cross bar regardless of whether the drum be in its normal position or swung downwardly in a manner hereinafter described.

To provide for rotation of the drum I provide the same with an annular toothed rack 18 along its under edge with which meshes a pinion 19 carried at the inner end of a short shaft 20 extended through one of the end extensions 5, as shown in Fig. 1. At the other end of this shaft 20 I provide pulleys 21 for connection with a suitable belt or other driving means (not shown) to rotate the shaft 20 and consequently the drum through the rack and gear connections 18 and 19, respectively. Thus the drum may be readily rotated upon its axis 11 and it is obvious that different speeds of rotation may be accomplished according to requirements.

Frictional resistance incident to the rotation of the drum is reduced by providing the swinging cross bar 8 with a pair of ears 22 near each end thereof for the rotatable reception of the friction wheels 23, which latter bear against the bottom of the drum 12 within the circular rack 18, as clearly shown in Fig. 1.

The mixing drum 12 is preferably concave to provide spaced channels 24 separated by the ridges 25, which latter are preferably equidistant. These channels prevent the material from clinging to the sides of the drum during rotation of the latter. When the drum is rotated the material is caused to rise a certain height in these channels ac-

according to the speed of rotation of the drum. The result is that the material constantly rises and falls in the channels of the drum insuring a thorough mixing of the material and also insuring against the material sticking to the sides of the drum. The mixing drum usually revolves at an angle of from 40 to 60 degrees, and if the sides were smooth, the material if wet, would not turn over, but on the other hand would settle in the bottom of the drum. In the present instance, the ridges 25 arrest the material and cause it to move upwardly in the channels 24 a certain height according to the speed attained by the drum, and roll back to the starting point, that is to the bottom of the drum. The ridges will not hold the material after the latter has been carried to a certain height, but cause the material to roll back and thereby in its frequent turning over insure a thorough mixing of the ingredients of which the concrete material is usually composed. Of course, when the material is carried to its greatest height on the sides of the mixing drums, it has farther to roll back, and consequently the farther the material is caused to elevate in the drum and roll back the more thoroughly and quickly will be the mixing process.

After the material has been thoroughly mixed, the swinging cross bar 8 is swung upon the trunnions 4 of the extensions 5 in any suitable manner, one form of means residing in providing the trunnion 4 of the extension 5 opposite the trunnion in which the shaft 20 is fitted, with a gear 26 designed to mesh with a gear 27 on the shaft 28 journaled at 29 in the standard 2 and also in the outer end 30 of a bracket 31 secured to said standard 2. The shaft 28 is provided with a hub 32 provided with a series of equi-distant sockets 33 designed to receive the handle bars 34.

If the operator will grasp one or more of the handle bars 34 to rotate the shaft 28 it will result in the gear 27, which is in mesh with the gear 26 on the trunnion of one of the extensions of the swinging cross bars 8, to cause a swinging movement of the latter which will consequently throw the drum 12 downwardly upon either side of the axis of

the drum, as shown in dotted lines in Fig. 3 without disengaging the drum from the parts with which it is associated in its position for mixing purposes.

When the drum is tilted, to discharge the material therefrom, it follows that the material will not cling to the inner sides of the drum by virtue of the concave channels 24 which insure the material sliding from the drum quicker and easier than would be the case if the drum were perfectly smooth and not provided with the spaced concave channels, and in order that the material will not cling to the juncture between the sides and bottom of the drum, I provide such juncture with an inclined strip 35 whose outer edges conform to the shape of the inner surface of the walls of the drum, as clearly shown in the drawings.

From the foregoing, it will be seen that I provide a comparatively simple, inexpensive, durable and efficient mixer for the purpose herein outlined, and that since the swinging cross bar is composed of sections, it follows that certain of the sections may be stronger than others or formed of different material for other reasons.

What is claimed is:—

A concrete mixer comprising standards, a cross bar journaled in the standards, a mixing drum rotatively mounted upon the cross bar and having a closed bottom and an open upper end and having the inner surface of its side walls provided with parallel channels extending from the bottom of the drum to the top of the latter and separated by vertical parallel ridges, an inclined strip disposed at the juncture of the bottom and sides of the drum and having its outer edge conforming to the shape of the interior of the side walls to prevent the material from adhering in said juncture when the drum is tilted, means for rotating the drum, and means for tilting the drum.

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

ROBERT EDMONDSON.

Witnesses:

ROBI L. CARR,
IDA BENNETT.