

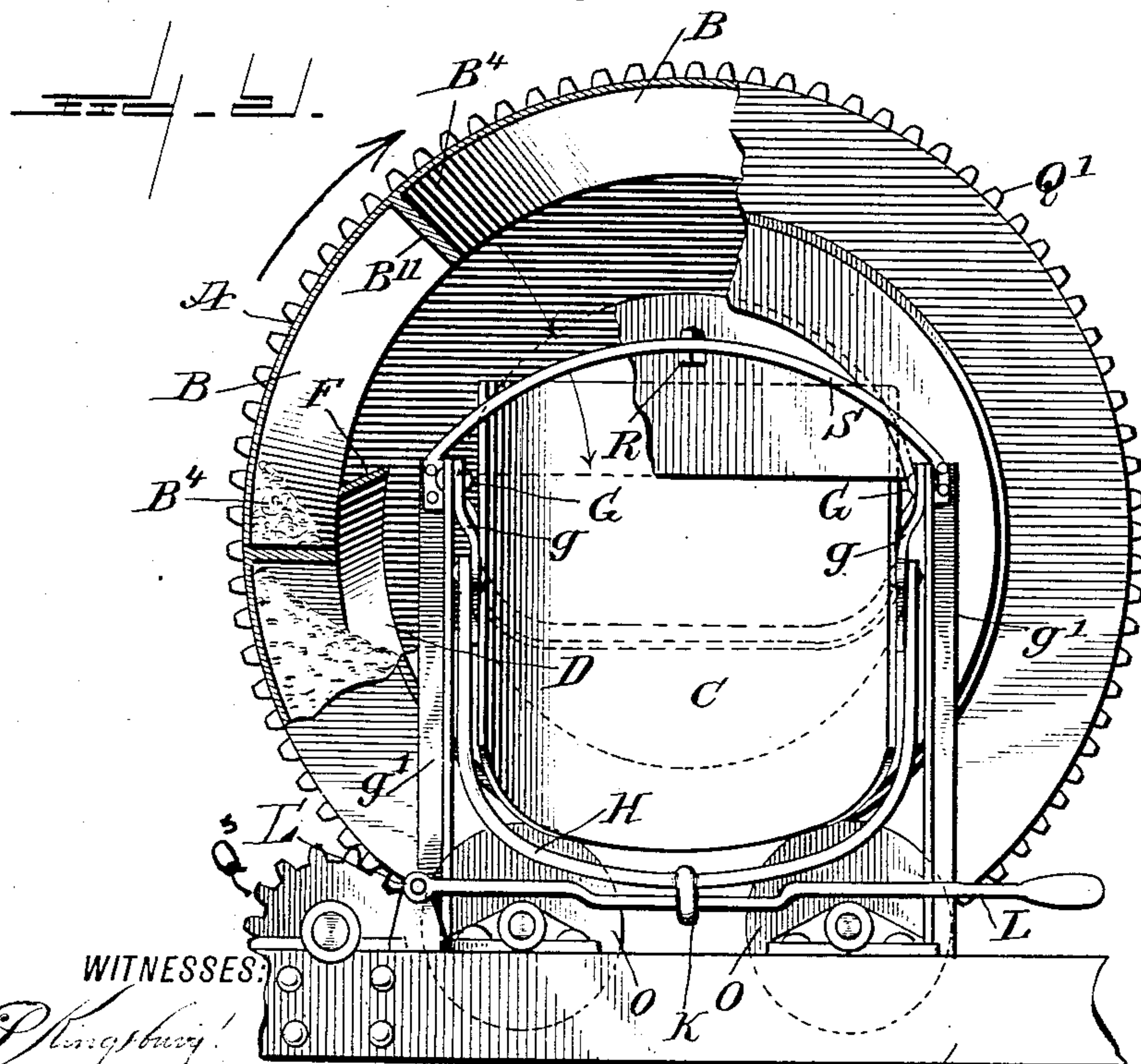
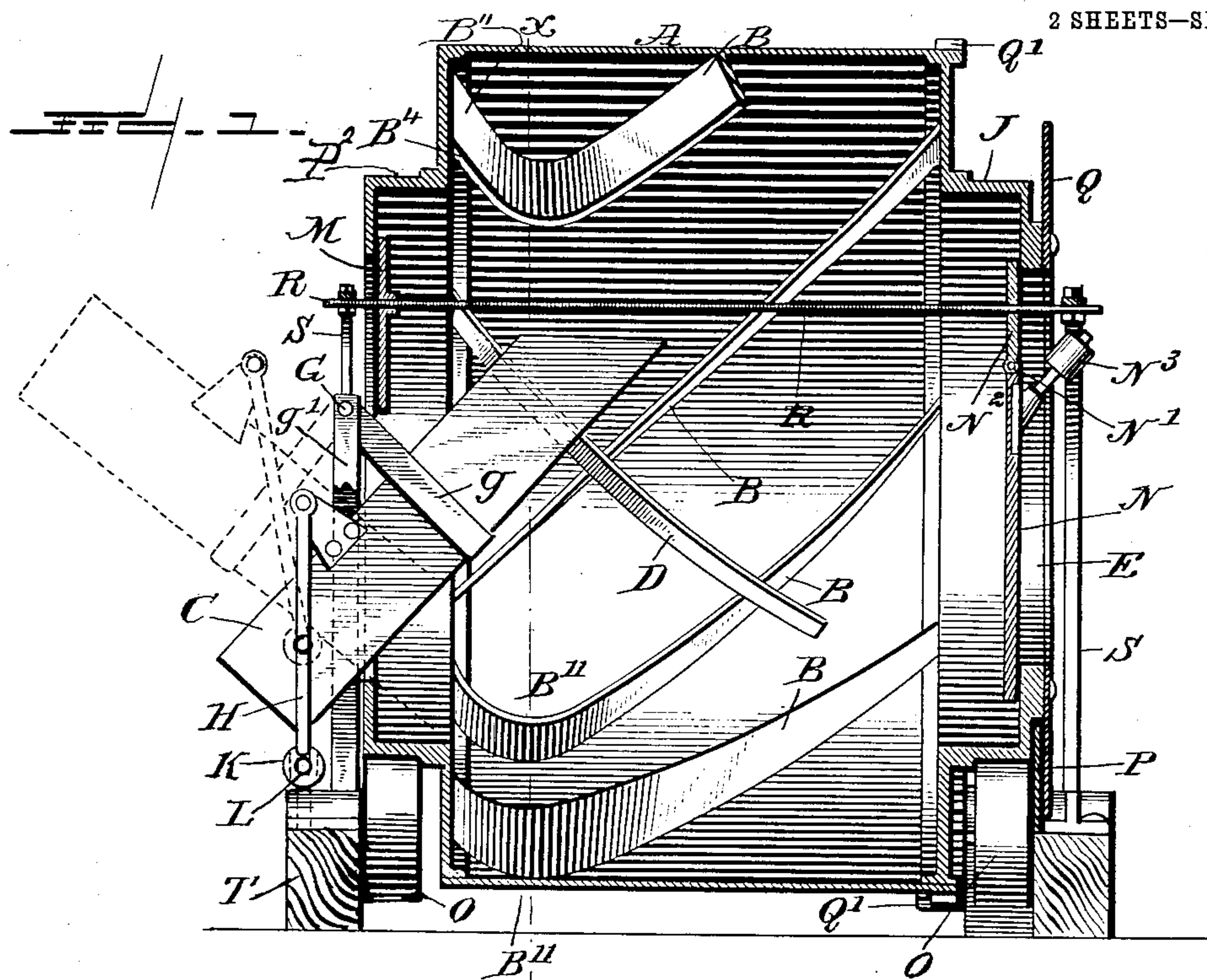
No. 814,803.

PATENTED MAR. 13, 1906.

E. L. RANSOME.
CONCRETE MIXING MACHINERY.

APPLICATION FILED APR. 1, 1902.

2 SHEETS—SHEET 1.



WITNESSES:

G. P. Kingsbury
N. J. Berchard

INVENTOR

E. L. Ransome

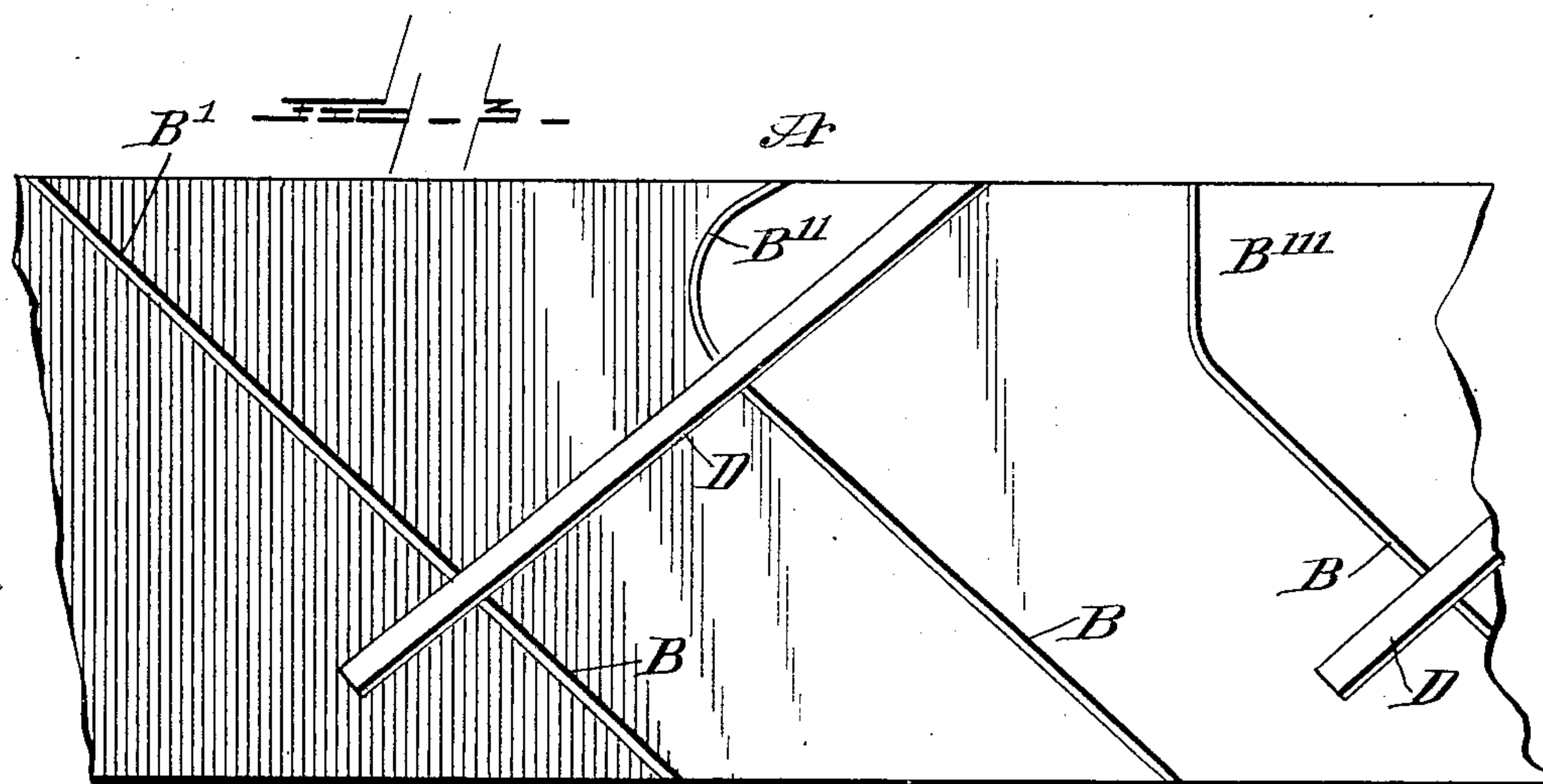
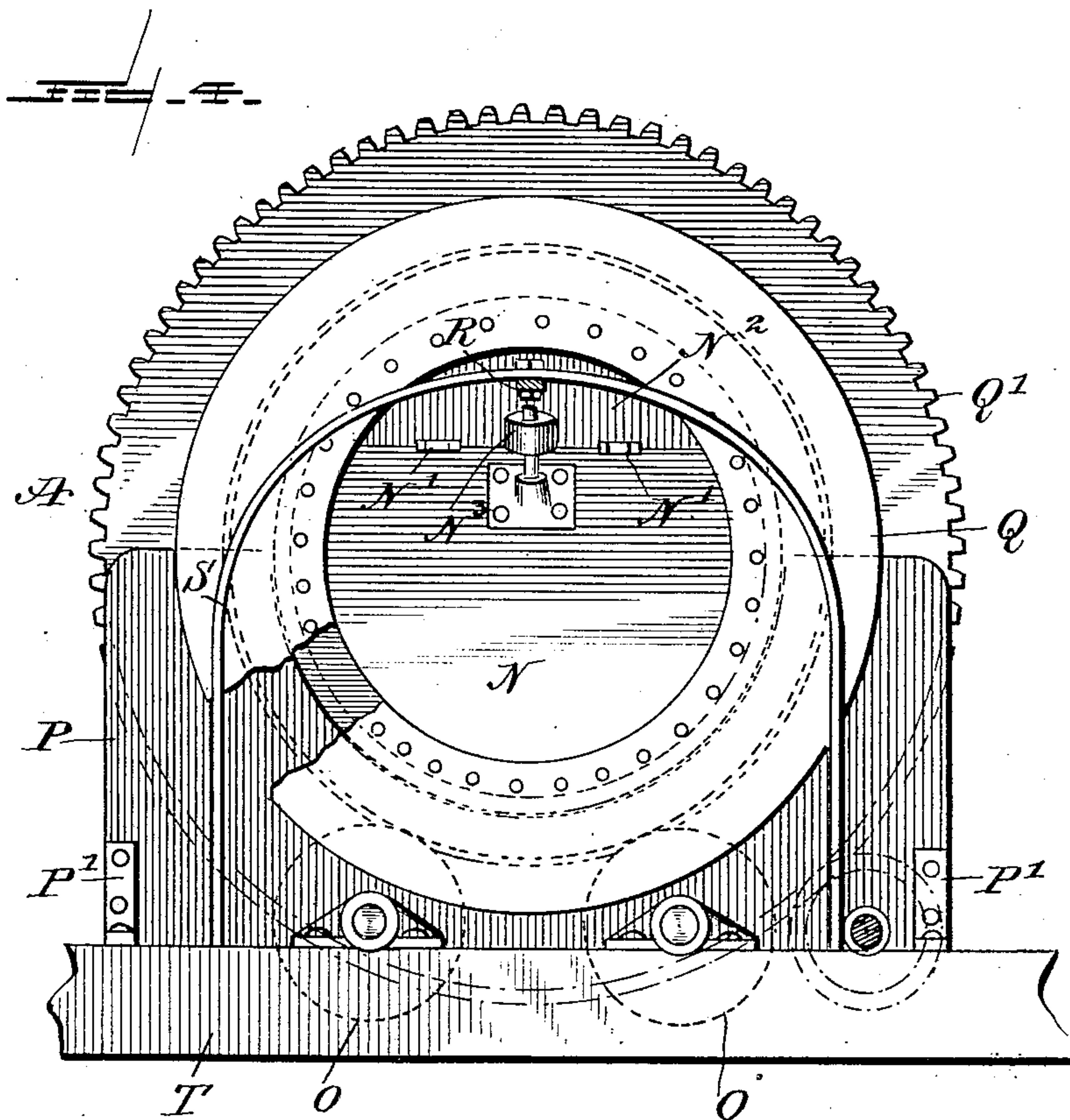
No. 814,803.

PATENTED MAR. 13, 1906.

E. L. RANSOME.
CONCRETE MIXING MACHINERY.

APPLICATION FILED APR. 1, 1902.

2 SHEETS—SHEET 2.



WITNESSES:

Geo. P. Kingsbury
H. J. Bernhardt

INVENTOR

Emmett Leslie Ransome

UNITED STATES PATENT OFFICE.

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

CONCRETE-MIXING MACHINERY.

No. 814,803.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed April 1, 1902. Serial No. 100,938.

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing at Greater New York, in the county and State of New York, have invented Improvements in Concrete-Mixing Machines, of which the following is the specification.

My invention relates to that type of mixers known as "batch-mixers," in which the material to be mixed is placed into the mixer a batch or charge at a time and is in like manner discharged when mixed.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the actual scope thereof 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 vertical sectional elevation of a drum mixer, taken in the plane of the axis of a revoluble drum. Fig. 2 is a discharge-end view of the mixer with parts broken out on the line xx of Fig. 1. Fig. 3 is an elevation looking at the inlet or charging end of the mixer, also with parts broken away. Fig. 4 illustrates the arrangement of the bafflers as they would appear were the cylinders of the mixer spread open.

A designates the revoluble shell or drum of a mixer embodying my invention. This drum is provided at its inlet or charging side with a shouldered head J, and the drum is provided at its outlet or discharging side with a similar shouldered head P². The shouldered heads provide revoluble bearings by which the mixer-drum is mounted for rotation in a vertical plane on a plurality of antifriction-bearings O, which are mounted on the sills of a base-frame T, and said drum A is provided with a gear Q', (see Fig. 1,) with which may mesh a driving-pinion Q⁵, thus making provision for the rotation of the drum A on a horizontal axis.

To the inner surface of the drum A is fastened a plurality of shelves or flanges B, the distinguishing feature of which is that they are placed athwart the width of the mixer in such a manner as not only to cause the mixing of material that comes within their sphere of influence when the mixer is revolving, but

to move such material toward the discharge end of the mixer and also to carry said material up and discharge it at such a height that when the chute C is placed in the required position the mixture to be discharged from the machine falls therein. These shells or flanges may be of any desired number or size. As represented by Fig. 3, one or more of the shelves or flanges may be straight throughout their length, as indicated at B', or each shelf or flange may be bent, as at B'' and B''', for forming pockets B⁴, adapted to elevate and dump the material into the discharge-chute. As shown by Fig. 1 of the drawings, each shelf or flange is continuous, so as to extend from one end to the other of the mixing-drum, each of said continuous shelves or flanges being inclined from the inlet end of the drum to the discharge end thereof for the purpose of conveying the material through said drum. The shelves or flanges when made straight throughout their length, as at B, join with the head P² at the discharge end of the drum in a way to form lifting-pockets B⁴, adjacent to said discharge end of the drum. When the drum is equipped with shelves or flanges having offset ends, such as the curved ends B'' or the angular ends B''', said offset ends B'' or B''' join with or terminate at the head P² to produce lifting-pockets of enlarged capacity, said pockets lying in such relation to the inner surface of the drum as to discharge the material to the best advantage and at a point nearly in the plane of the vertical axis of the drum, as represented by Fig. 2. In order to more thoroughly mix the materials, I may employ another series of shelves or flanges D, the latter being placed athwart the width of the mixer in the opposite direction to the plurality of shelves or flanges B. The shelves or flanges D are supported upon the edges of the shelves or flanges B, as shown by Figs. 1, 2, and 3, and said shelves or flanges D may also be of any desired number or size. I prefer, however, to extend the shelves or flanges D partly across the width of the mixer, as indicated by Figs. 1 and 3, because the object of such shelves or flanges D is not to lift the mixed material high enough for discharging into a chute, but only to commingle the materials more thoroughly by directing the movement of a portion of such material across the move-

ment of some of the material influenced by the shelves or flanges B or by the general movement imparted to the material by the rotary motion of the mixer. The shelves or flanges D extend from, or from a point near to, the delivery end of the mixer part way across the width of the mixer.

In order to increase the power of any of the shelves or flanges, I make the angle between the shelves or flanges and the shell or drum slightly acute, as shown at F in Fig. 2 of the drawings.

When the mixer is fully charged and the drum is in motion, the material is given a constant movement over and down the inner surface of the drum, and down from the heights to which some of said material is carried by the shelves or flanges, and in addition to the described movements the material is moved by the plurality of shelves or flanges back and forth across the width of the mixer, whereby the material is moved in a number of directions to obtain movements which are of great advantage in securing an intimate commingling of the materials.

The employment of the shelves or flanges B, having the lifting-pockets, enables me to use the short chute C, which is located at the delivery end of the mixer. This chute is provided with a bail or band *g*, which is secured at a point intermediate of the length of said chute, and the end portions of said bail are extended beyond the edges of the chute, as shown by Figs. 1 and 2, said extended end portions of the bail being pivotally connected at G to the upper end portions of short stationary posts *g'*, the latter being erected adjacent to the discharge end of the drum, as shown by Figs. 1 and 2. This chute is pivotally suspended in a way for it to be adjusted to the downwardly and outwardly inclined position indicated by full lines in Fig. 1, or said chute may be reversed to assume the upwardly and outwardly inclined position shown by dotted lines in said figure; but in either position of the chute the inner end thereof lies within the opening of the head P² at the discharge end of the revoluble drum.

When the material is being mixed, the chute is adjusted to the upwardly and outwardly inclined position shown by dotted lines, and in this position the chute prevents the material from splashing out of the drum. To secure this end to the best advantage, I prefer to make the curve of the chute correspond to the circumference of the opening in the head P² of the drum when said chute is adjusted to said dotted-line position. After the material shall have been mixed and is ready to be discharged from the mixer, the position of the chute is changed from its dotted-line position to the full-line position, thus making the inner end of the chute extend up-

wardly and inwardly within the drum in order that the material may be dumped therein from the pockets of the drum at the highest point to which the material is elevated by said pockets of the bafflers on the rotary motion of the drum.

A suitable means for adjusting or reversing the position of the chute is shown by Fig. 2 of the drawings, and this means consists of a U-shaped bail H, having pivotal connections at its ends with the chute. To the middle portion of the bail H is connected an eye K, and this eye is in turn connected to a horizontally-disposed lever L, which is mounted in a suitable way on the base T of the machine, so that the lever may swing around its fulcrum L'.

As the use of the shelves or flanges which lift and drop the materials from a height creates a great amount of splashing, I employ a guard-plate M in addition to the chute C, said guard-plate being arranged within the offset or shouldered delivery-head P², as shown by Fig. 1. The shouldered head J, at the charging end of the drum, is circular to produce a charging-opening E, and within this charging-opening is arranged a swinging door or guard-plate N. For the purpose of protecting the rollers O, upon which the mill revolves, from accumulations of the material and also for protecting the rolling-surface afforded by the offset or shouldered head J, I employ the guard-plate P on the receiving side of the mill, said guard-plate being fastened to the base-frame T of the mill by straps or braces P'. (See Fig. 4.) The guard-plate P occupies a stationary position on the base or frame T, and it is disposed in overlapping relation to another guard-plate Q, the latter being circular and fastened to the face of the head J of the mixer, so as to rotate therewith.

The guard-plate M on the delivery side of the mixer may be attached or mounted in any convenient way; but I prefer to suspend said plate M upon the bar R, said bar extending horizontally across the mill and supported at its respective ends by inverted-U-shaped bars S, one on each side. One of said bars S is attached to the base or frame T of the mill, as shown by Fig. 4; but the other bar S on the opposite side of the mill is fastened to the post *g'*, the latter serving to pivotally suspend the adjustable chute C.

The door or guard-plate N at the receiving side of the mill is supported on or by the bar R in a manner to have an inward-swinging movement with relation to the head J of the mill, and this door or guard-plate N has a counterweight N³, (see Figs. 1 and 4,) the same being effective in returning the door or plate N to its closed position. As a preferred construction, this door or guard-plate N is

hinged at N' to a stationary plate or hanger N², the latter being supported by the bar R, and said door or plate N is arranged to readily yield in an inward direction when the charge is dumped into the mill by pushing a wheelbarrow against said door or plate in the act of unloading said barrel by dumping its contents into the rotary drum of the mill.

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

1. In a mixer, the combination of a revoluble mixing-drum having an open end, a lifting-shelf secured within the same, a chute extending outward from the interior of the drum through said open end, a bail attached to the chute, means on which the bail is pivotally mounted, a second bail connected to the chute, and a lever connected to the second bail to permit the reversal of the chute, for the purpose specified.

2. A mixer having a revoluble drum adapted to receive material at one end and discharge it at the other, the drum having a centrally-orificed head at the discharge end, a shelf secured within the drum and extending along the inner side thereof diagonally with respect to the axis of the drum, the discharge end of the shelf extending to the head at the discharge end of the drum and forming a pocket in connection therewith, an additional shelf secured within the drum and extending diagonally of the axis thereof across the first-named shelf, and a means extending through the said orifice in the discharge-head of the drum, for carrying off the material from the drum.

3. A mixing apparatus having a revoluble drum, adapted to receive the material at one end and discharge it at the other end, a lifting-shelf secured to the drum against the inner side thereof, the shelf extending diagonally with respect to the axis of the drum for the major portion of the length of the shelf, and said major portion of the length of the shelf being relatively straight, and the shelf terminating at the discharge end of the drum in an offset portion, the concave side of which faces the direction of revolution of the drum, whereby to form a lifting-pocket.

4. A mixing apparatus having a revoluble drum adapted to receive the material at one end and discharge it at the other end, and a lifting-shelf secured in the drum against the inner side thereof, the shelf extending diagonally with respect to the axis of the drum for the major portion of the length of the shelf, and a shelf terminating at the discharge end of the drum in an offset portion, the concave side of which faces the direction of revolution of the drum, whereby to form a lifting-pocket.

5. A mixing apparatus having a revoluble

drum adapted to receive the material at one end and discharge it at the other end, a shelf secured in the drum against the inner side thereof, the shelf extending diagonally with respect to the axis of the drum for the major portion of the length of the shelf, and the shelf terminating at the discharge end of the drum in an offset portion, the concave side of which faces the direction of revolution of the drum, whereby to form a pocket, and an additional shelf secured in the drum and extending diagonally of the axis thereof across the first-named shelf.

6. A mixing apparatus having a revoluble drum adapted to receive the material to be mixed, and a lifting-shelf secured on the drum against the inner side, the shelf extending diagonally with respect to the axis of the drum for a part of the length of the shelf and terminating at one end in an offset portion, the concave side of which faces the direction of revolution of the drum and overhangs the inner surface of the drum at an acute angle whereby to form a lifting-pocket, for the purpose specified.

7. A machine of the class described, having a revoluble hollow member provided at its discharge end with a head, a plurality of shelves secured to the inside of the member and having offset ends disposed relatively to said head to form a series of lifting-pockets adjacent to the discharge end of the revoluble member, and other shelves extending across the first-named shelves.

8. A mixing apparatus, comprising the combination with a base, of the drum revolvably mounted thereon, said drum having open ends respectively for charging and discharging the material being mixed, a rod extending longitudinally through the drum beyond the ends thereof, means at each end of the drum for mounting the rod on the base independently of the drum, a closure located at each end of the drum and supported from said rod, a chute adapted to project into the discharge end of the drum, means for tiltably mounting the chute independently of the drum, and means for adjusting the chute.

9. A mixing apparatus comprising a revolubly-mounted drum having an open end, lifting-shelves in the drum, a closure located at said open end and comprising two relatively movable parts, and means in connection with one of said parts for mounting the closure independently of the drum whereby to permit the free rotation of the drum independently of the closure, and to allow the other part of the closure to swing, for the purpose specified.

10. In a mixer, the combination of a base, a drum revolvably mounted thereon and having an inlet-opening at one end, lifting-shelves in the drum for the purpose specified,

a closure commanding said inlet-opening, and means hingedly mounting the closure on the base independently of the drum, whereby to permit the closure to swing into the drum
5 during the charging thereof.

11. The combination with a revoluble drum having an open end, of a guard-plate suspended within said open end of the drum, an annular guard-plate surrounding said open

end and attached to the drum to lie outside 10 of the suspended plate and a stationary guard-plate in lapping relation to the annular guard-plate.

ERNEST LESLIE RANSOME.

Witnesses:

A. W. RANSOME,
JOHN ELLENDT.