

No. 845,435.

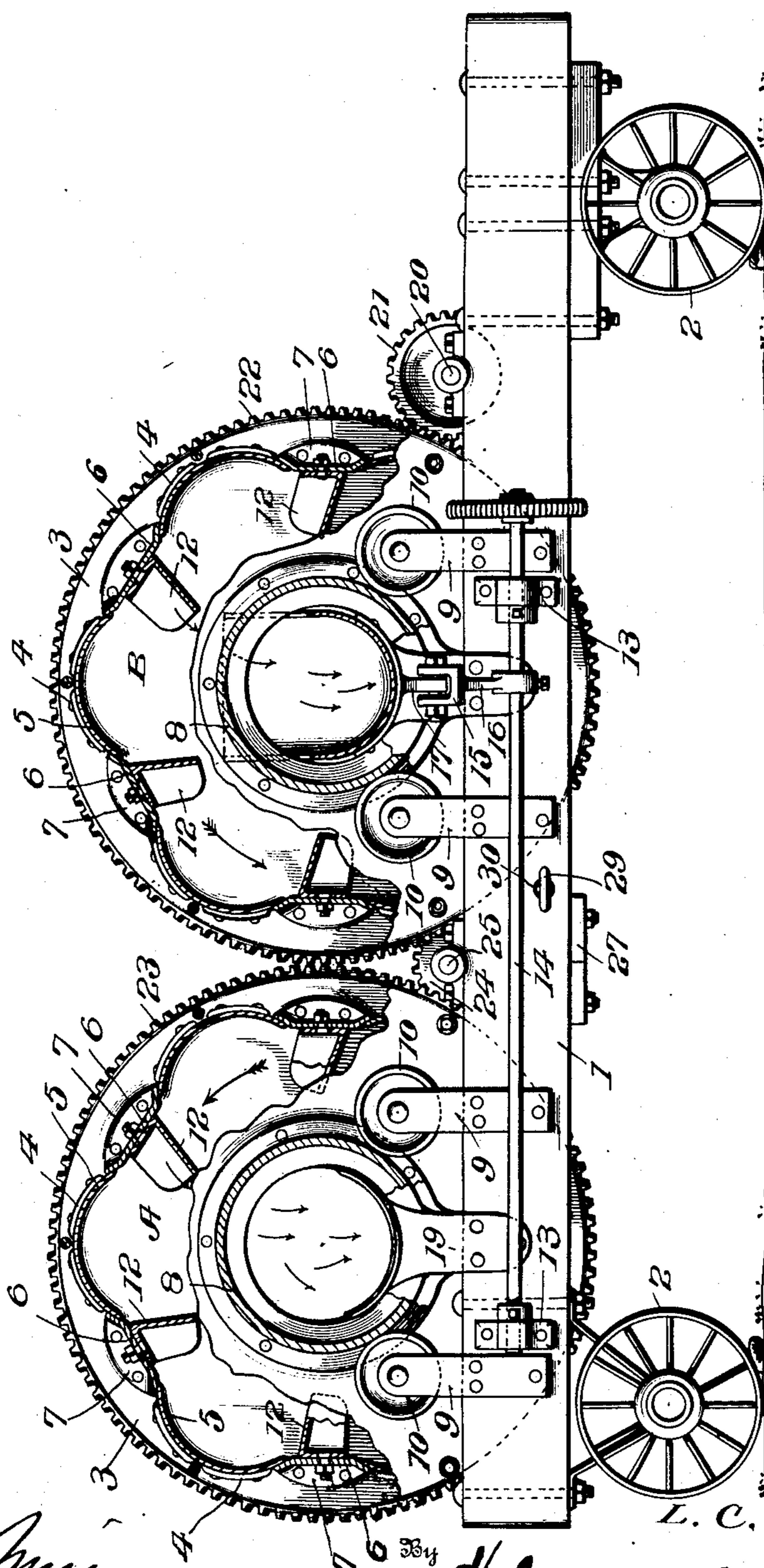
PATENTED FEB. 26, 1907.

L. C. ROBERTS.
MIXING MACHINE.

APPLICATION FILED MAY 15, 1906.

3 SHEETS—SHEET 1.

FIG. 1.



Inventor

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Witnesses

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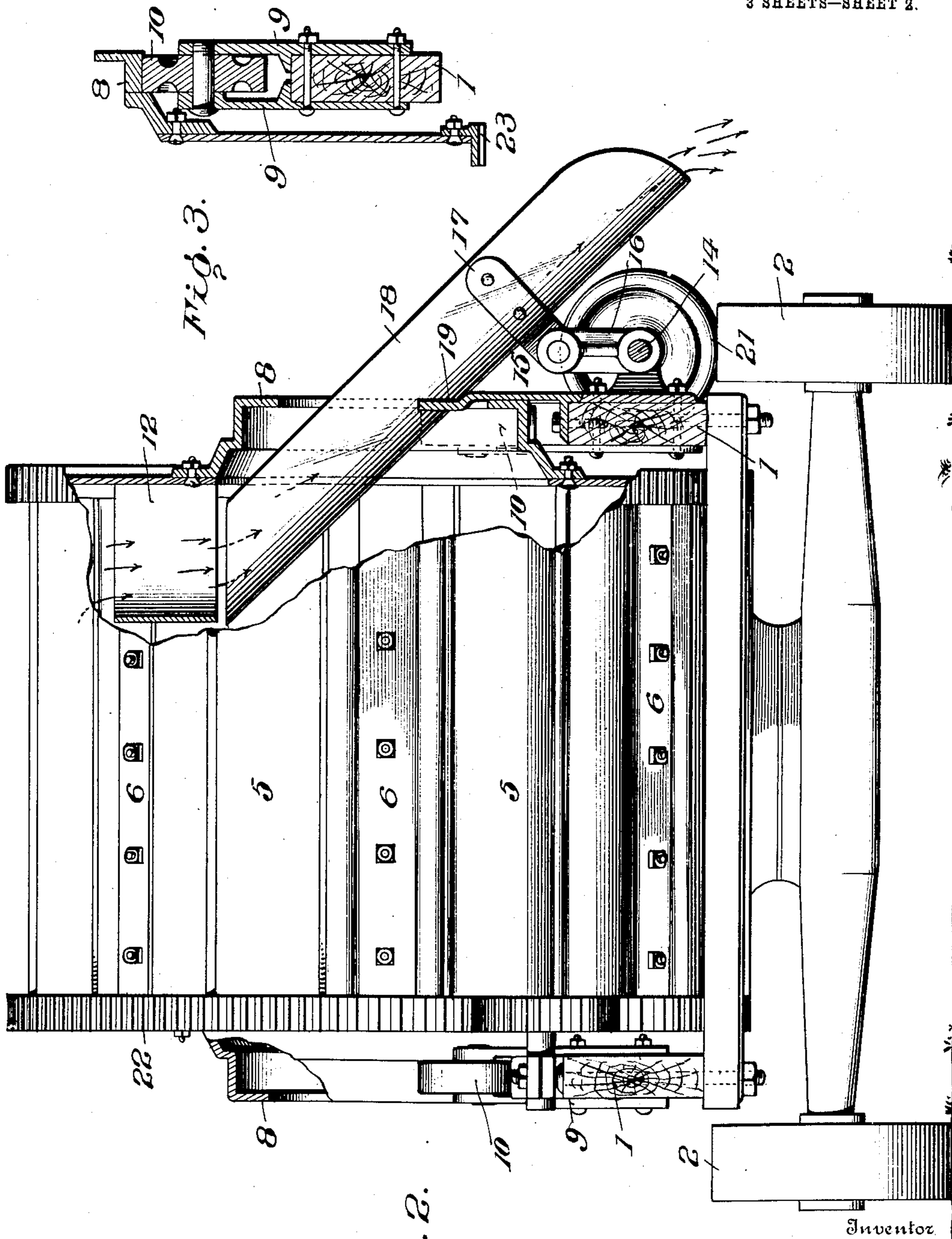
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3 SHEETS—SHEET 2.



Inventor

L. C. Roberts.

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Fig. 2.

By

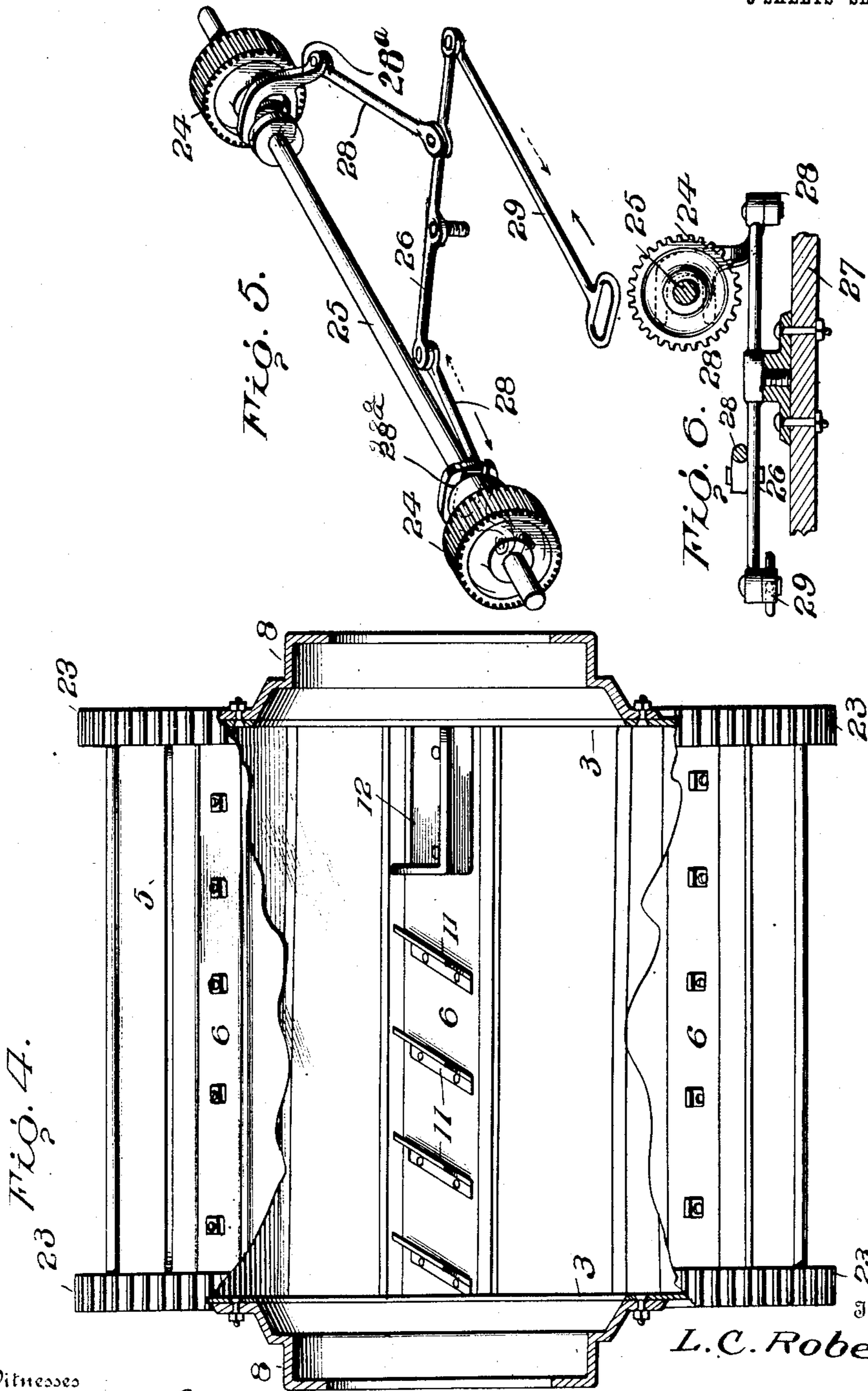
R. H. P. Racy, Attorneys

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3 SHEETS—SHEET 3.



Witnesses

Wm. H. Woodruff

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L. C. Roberts, Attorney

UNITED STATES PATENT OFFICE.

LEONARD C. ROBERTS, OF NUNDA, NEW YORK, ASSIGNOR OF ONE-THIRD
TO SAMUEL G. McTARNAGHAN AND ONE-THIRD TO WILLIAM H. JEFFS,
OF FILLMORE, NEW YORK.

MIXING-MACHINE.

No. 845,435.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed May 15, 1906. Serial No. 317,035.

To all whom it may concern:

Be it known that I, LEONARD C. ROBERTS, a citizen of the United States, residing at Nunda, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Mixing-Machines, of which the following is a specification.

My present invention contemplates certain new and useful improvements in machines for mixing together the necessary ingredients to form concrete and the like.

The primary object of my invention is to provide an improved construction of continuous batch-mixer embodying two mixing-drums that are so arranged that the ingredients or concrete may be discharged from one drum while the other drum is being charged and mixing, one drum being filled while the other is being emptied.

A further object of the invention is to provide an improved continuous batch-mixer of this character provided with a single discharge spout or chute, which may be used with both drums alternately, and said spout being so mounted that it may be readily moved from the discharge end of one drum to the discharge end of the other, and being also so arranged that it may be swung away from the ends of the drums and out of alinement with both of the drums, so as to afford an opportunity of cleaning the latter whenever necessary.

A further object of the invention is to provide improved details of the constructions and arrangements of the parts of the drums, whereby the material fed into one end of a drum will receive a thorough stirring or mixing action and be caught up by a series of revolving cups until a certain point is reached, when it will be dropped downwardly again to the cup next below, and in this way a thorough agitation effected, while at the same time the thoroughly-commingled ingredients will be gradually fed as they are mixed from the feed end of the drum toward the discharge end thereof and finally caught up into buckets in the drum and discharged from said buckets into the discharge spout or chute above mentioned; and a further object is to improve the efficiency of machines of this type and to provide such a machine which will be composed of comparatively few and

simple parts, that will be cheap to construct and assemble, durable in construction, and efficient in operation with a minimum of driving power required.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of my improved mixing-machine. Fig. 2 is an end elevation thereof, parts being broken away and in section. Fig. 3 is a detail sectional view illustrating one of the supports for a drum. Fig. 4 is a view of one of the drums, part being broken away to illustrate the series of inclined mixing devices and a bucket in alinement therewith. Fig. 5 is a detail perspective view of a clutch mechanism employed. Fig. 6 is a detail sectional view thereof.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the present embodiment of my improved continuous batch-mixer I have illustrated two drums (designated A and B, respectively, and mounted in horizontal alinement close to each other upon a framework 1) preferably embodying side bars and cross-bars and preferably mounted upon traveling wheels 2, so that the mixer may be readily moved from place to place. Each drum comprises two circular heads 3, bolted together in spaced relation, each of said heads being provided on its inner face with a circular series of curved or segmental flanges 4, the ends of which are spaced from each other. Bolted to the flanges 4 are transversely-extending segmental plates 5, preferably of sheet-steel or similar light and strong metal, each of said plates constituting a cup. Preferably flat transverse plates 6 are located between the ends of every two adjoining flanges 4 and are provided at their ends with flanges 7, by which they are bolted or riveted to the inner face of the heads 3. The plates 6 are preferably cast. The two heads 3, the series of transverse plates 5, and the series of intermediate plates 6 together constitute the mixing-drum, and the heads are provided at op-

posite sides with feed and discharge openings, respectively, each of said openings being surrounded by a flanged ring 8, bolted or riveted to the outer side of its respective head. Extending upwardly from the side bars of the framework 1 are standards 9, of which there are two pairs for each drum, and in the upper end of each standard is journaled a roller 10. The rollers 10 engage the flanged rings 8, and thereby support the drums in a revoluble manner with a minimum of friction.

To each transverse plate 6 there is secured a series of radially-extending spaced-apart blades 11, arranged obliquely to the axis of the drum, the series of blades 11 extending from the feed or inlet side of the drum to a point short of the outlet or discharge side thereof and in transverse alinement with the series of blades 11, and between one end thereof and that head of the drum which is at the outlet side thereof a bucket 12 is secured to each of the transverse plates 6, as clearly illustrated in the drawings.

To that side bar of the framework which is adjacent the discharge sides of the drums A and B two boxings 13 are secured, and a longitudinal support in the form of a rod 14 is held between said boxings 13. An articulate support 15, comprising a link 16 and a yoke member 17, is mounted to slide longitudinally on the rod 14, and the link 16, in addition to its sliding function, is so mounted upon the rod 14 that it may be swung or turned thereon in a direction at right angles to the sliding movement. The link 16 is pivotally connected to the yoke 17 by means of a knuckle-joint. Within the arms of the yoke 17 a discharge spout or chute 18 is pivotally mounted, the said spout being adapted to be swung inwardly through the discharge-opening of a drum in juxtaposition to the series of buckets 12, in which position it may be supported by means of a curved bracket 19, secured to and projected upwardly from a side bar of the framework 1, two of said brackets being employed, one for each drum. The brackets 19 are preferably stationary, though not necessarily so. The mounting before described for the discharge-spout 18 enables the spout to be swung inwardly to be supported by one of the brackets 19, with its upper end in proper relation to the series of drums 12, as before set forth, and it also permits the spout to be withdrawn from the discharge-opening of a drum and rest against the outer side thereof or against any other stationary part of the apparatus, and, furthermore, the said mounting enables the discharge-spout to be withdrawn from one discharge-opening and slid along the rod 14 and inserted in the discharge-opening of the other drum. Hence the same discharge-spout may be used for any number of drums, arranged as shown in the accompanying drawings, which not only saves expense, but enables the discharge-

spout to be moved out of the way whenever it is desired to obtain access to the interior of the drum through the discharge-opening for the purpose of cleaning the drum or for any other reason. The articulate support 15, it will be seen, enables the discharge-spout to have an upward and downward as well as a swinging motion, so as to be readily thrust into the discharge-opening of a drum and also upwardly therein into proper relation to the buckets 12.

To rotate the drums A and B either simultaneously or one independently of the other, the following mechanism is provided: A counter-shaft 20 extends transversely of the framework 1 and carries toothed pinions or gear-wheels 21, meshing with the circular toothed rims 22 of the heads 3 of one of the drums. In the present instance the shaft 20 is shown at the front end of the wheeled vehicle constituting the support for the mechanism and in engagement with the drum B. It is to be understood that the shaft 20 receives its motion from any desired source of power. The other drum A is also provided with toothed rims, (designated 23,) and the rims 22 and 23 mesh with idlers 24, carried at the ends of a transverse counter-shaft 25, journaled in the framework intermediate of the two drums. The idlers 24 are mounted to slide upon the idle counter-shaft 25, so that they may be moved into and out of alinement with the toothed rims 22 and 23, and to simultaneously actuate the said toothed idlers 24 I have provided a lever 26, fulcrumed intermediate its ends upon a pin projecting from a cross-bar 27 and operatively connected on opposite sides of its fulcrum by means of links 28 and forks 28^a with the grooved hubs of the idlers 24, respectively. The lever 26 may be actuated by means of a transversely-moving hand-rod 29, extending through a slot 30 in one side bar of the framework, as illustrated in the drawings. By means of this gearing just described it is evident that the drum B may be driven independently of or simultaneously with the drum A, in the latter event the drum A receiving its motion indirectly and through the drum B.

In the practical operation of my improved continuous batch-mixer the ingredients are poured or fed by any desired means into one drum and mixed therein while the other drum is discharging. When the ingredients are fed into the drum, the same being in rotation, the ingredients will fill the lowermost pockets or cups constituted by the grooved plates 5 and will be caught up by said pockets until a certain point of elevation is reached, at which time each pocket will empty in an obvious manner and pour its contents down through the series of inclined or oblique blades 11 into the cup or pocket next below, this operation being repeated

continuously and a thorough commingling of the ingredients effected, while at the same time it will be noticed that the inclination of the blades 11 as they pass the material from one cup to the next results in a gradual feeding of the material from the inlet or feeding end of the drums toward the discharge end thereof, where the series of buckets 12 are positioned. By the time the ingredients shall have been tumbled again and again in the revolution of the drum and shall have been fed gradually from the receiving end thereof toward the buckets they will be thoroughly commingled and will be fed into the buckets 12 and carried upwardly thereby and again tumbled out of each bucket as it reaches a certain elevation in the revolution of the drum if the discharge-spout 18 is not inserted within the discharge-opening of the drum. Hence it will be seen that the mixing operation may be continued as long as desired so long as the discharge-spout 18 is not inserted within the discharge-opening of the drum, because the material caught up by each of the buckets will be merely dumped out of the same to the bottom of the drum as the buckets revolve; but when it is desired to empty the drum of its concrete or other contents it is only necessary to insert the discharge-spout 18 through the discharge-opening of the drum and up into the interior of the same in contiguous relation to the series of buckets 12. Then as the buckets revolve they will successively discharge their contents into the upper end of the discharge-spout 18. Concrete or the like will be discharged and carried off to the desired point. After one drum has been completely emptied of its contents, the other drum being charged and mixing during this time, the discharge-spout 18 may be swung downwardly and outwardly and carried along the supporting-rod 14 to assist in the discharge of the material from the other drum, and in this way a continuous operation of batch-mixing may be maintained.

Having thus described the invention, what is claimed as new is—

1. A mixing-machine, comprising a revoluble drum consisting of two heads one of which is provided with a discharge-opening, curved plates extending transversely from one head to the other and secured thereto, intermediate plates also secured to said heads and alternating with the curved plates, and a plurality of inclined blades secured to said intermediate plates and extending in transverse series thereon, and means for rotating said drum.

2. A mixing-machine, comprising a revoluble drum consisting of two heads, one of which is provided with a discharge-opening, curved plates extending transversely from one head to the other and secured thereon, intermediate plates also extending transversely with the curved plates, a plurality of

inclined blades secured to said intermediate plates and extending thereon in transverse series from one end toward the discharge-opening, but terminating short of said opening, and a circular series of buckets, each of which is secured to one of said intermediate plates in line with the inclined blades and at the said discharge-opening, and means for rotating said drum.

3. A mixing-machine, comprising a revoluble drum having a part of its periphery forming a series of cups, a series of inclined blades extending transversely within the drum and alternating with the cups, and a circular series of buckets, each of which is in line with one of the series of blades, the drum being provided with a discharge-opening, and the buckets being located adjacent said opening.

4. A mixing-machine comprising a revoluble drum having a part of its periphery forming a series of cups, a series of inclined blades intermediate of said cups and extending from one side of the drum toward the other side thereof, and buckets at the last-named end of the series of blades, and means for rotating said drum.

5. A mixing-machine comprising a revoluble drum having a part of its periphery forming a series of cups, a transversely-extending series of inclined blades between every two adjacent cups, and a circular series of buckets each of which is located at one end of a series of inclined blades, the drum being provided with a discharge-opening adjacent said series of buckets and means for rotating said drum.

6. A mixing-machine comprising a revoluble drum consisting of two heads provided on their inner faces with flanges, curved plates extending transversely from one head to the other and secured to said flanges, and plates secured to and between said heads and extending transversely intermediate of the ends of said curved plates, there being provided a feed-opening and a discharge-opening in said heads respectively, and a series of mixing-blades secured to said intermediate plates.

7. A mixing-machine comprising a supporting-framework, a plurality of mixers mounted on said framework and each provided with a discharge-opening, means for actuating said mixers, a discharge-spout mounted on said framework, and means mounted on said framework for moving said spout from one discharge-opening to another.

8. A mixing-machine comprising a supporting-framework, mixers mounted on said framework and means for actuating the same, the mixers being provided with discharge-openings, and a discharge-spout carried by the framework said spout being mounted to move in one direction from one discharge-opening to the other and also mounted to move in a right-angular direction

toward and from the said discharge-openings.

9. A mixing-machine comprising a supporting-framework a plurality of mixers mounted thereon, means for actuating said mixers, the mixers being each provided with a discharge-opening, a rod secured to said framework, a spout-support mounted to slide on said rod from one discharge-opening to the other and also mounted to turn axially on said rod, and a discharge-spout carried by said spout-support.

10. A mixing-machine comprising a sup-

porting-framework, a plurality of mixers mounted thereon and each provided with a discharge-opening, means for actuating said mixers, a rod secured to said framework, a link mounted to turn and slide on said rod, a yoke pivotally connected to said link, and a discharge-spout connected to said yoke.

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

LEONARD C. ROBERTS. [L. s.]

Witnesses:

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H. A. DURYEA.