

H. E. TOWNSEND.
MIXER.

APPLICATION FILED SEPT. 12, 1910.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

989,733.

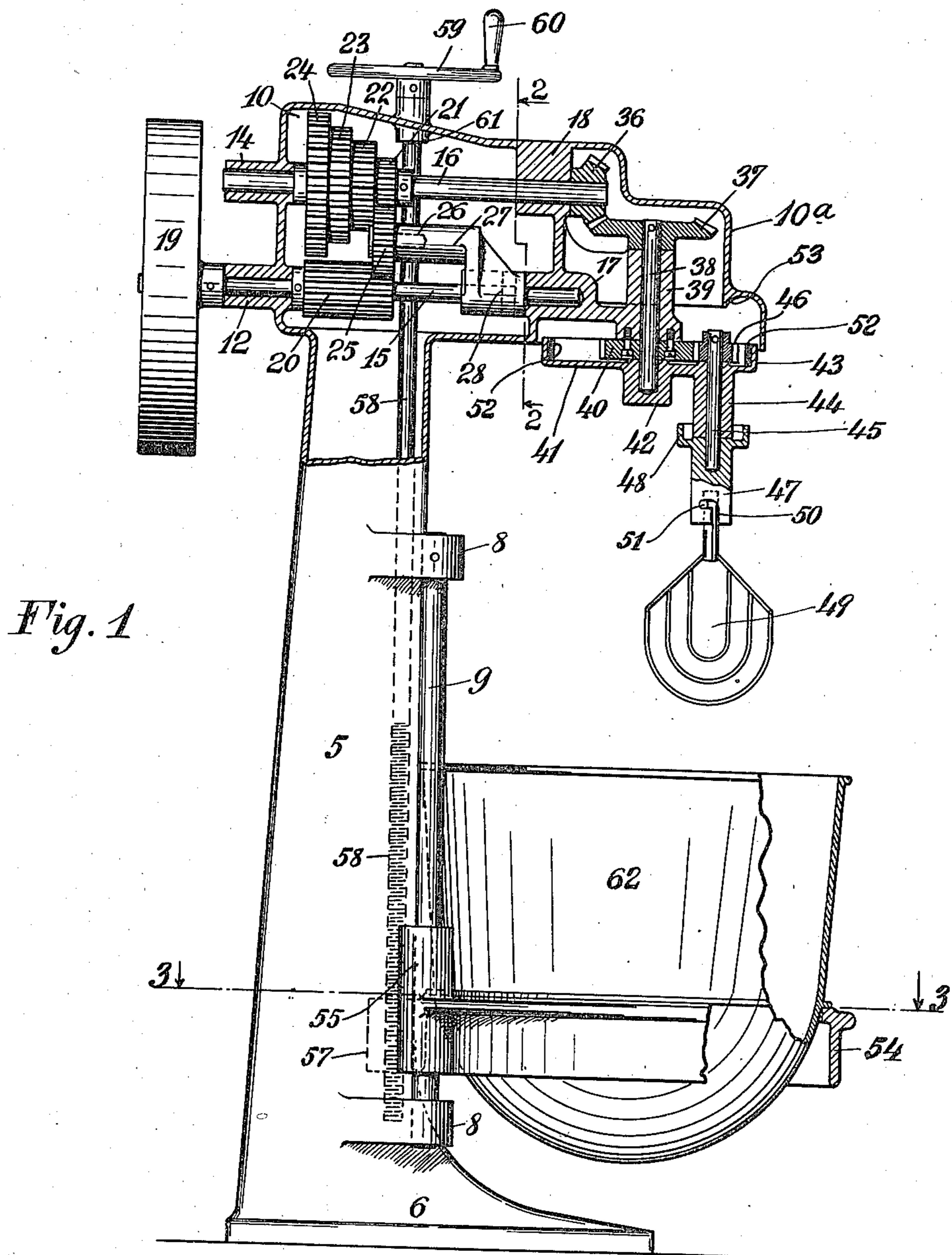


Fig. 1

Witnesses:
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Florence Hummel

Inventor
Harry E. Townsend
By his Attorney A. H. N. Merrill

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Fig. 2

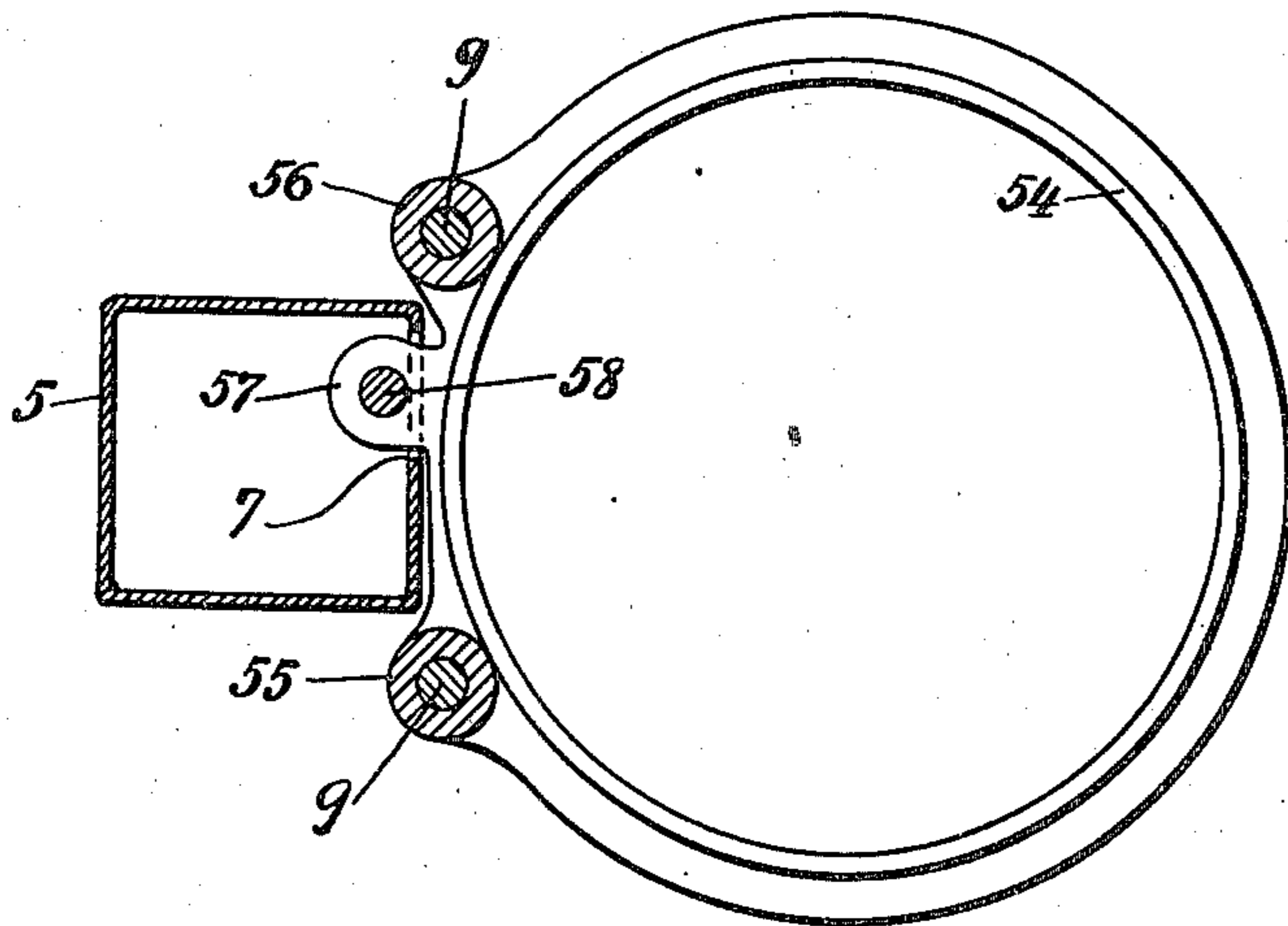
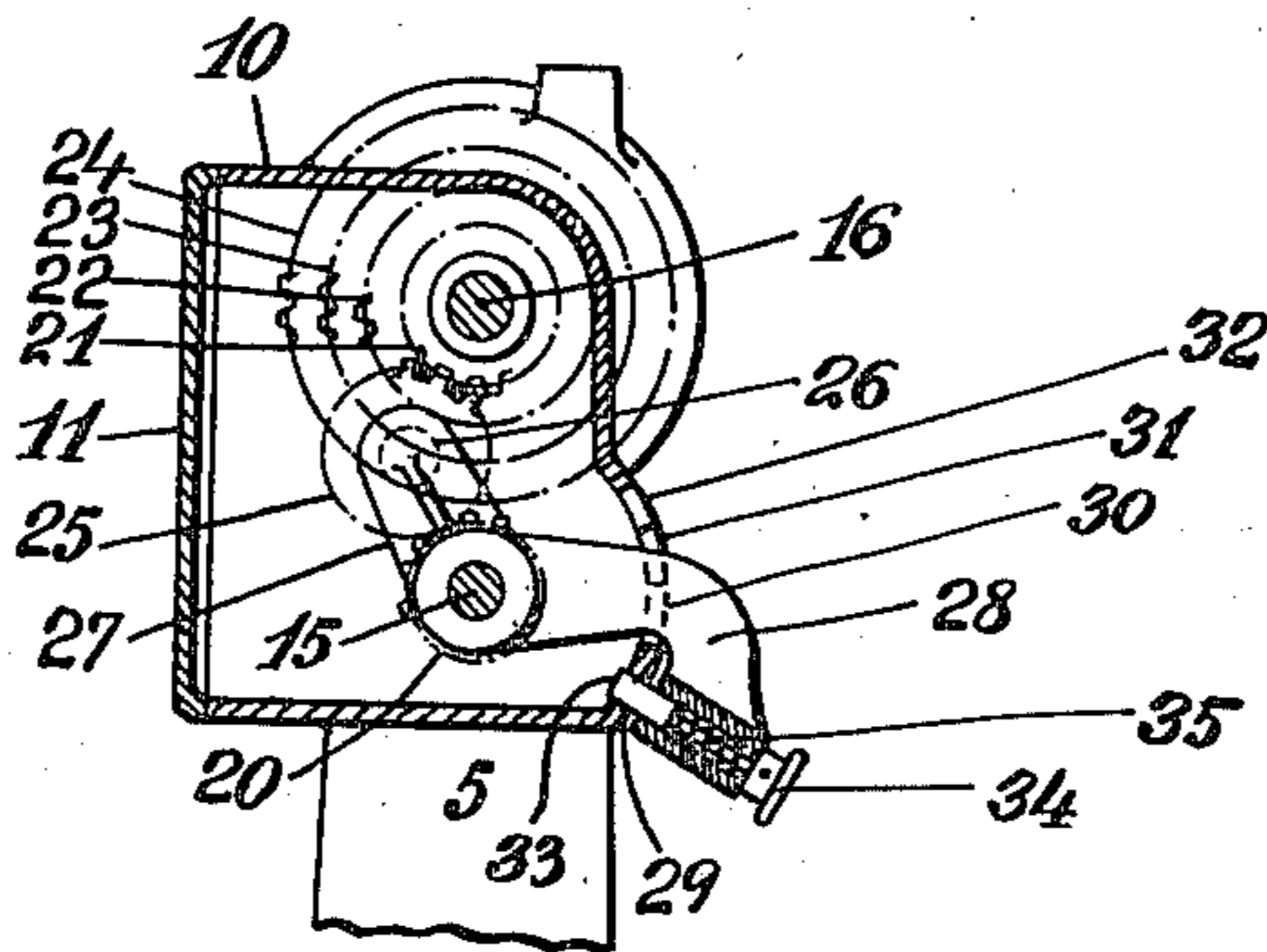


Fig. 3

Witnesses:
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UNITED STATES PATENT OFFICE.

HARRY E. TOWNSEND, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE FIRM OF JABURG
BROS., OF NEW YORK, N. Y.

MIXER.

989,733.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed September 12, 1910. Serial No. 581,681.

To all whom it may concern:

Be it known that I, HARRY E. TOWNSEND, a citizen of the United States of America, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Mixers, of which the following is a specification.

My invention relates to mixing or beating or stirring machines, and it consists in combinations particularly pointed out in the claims.

Figure 1 of the drawings, is a side view of a machine embodying my invention, partly in full lines and partly in section. Fig. 2 is a sectional view, on line 2—2 of Fig. 1. Fig. 3 is a sectional view, on line 3—3 of Fig. 1.

This machine consists of a standard 5, of sufficient height to accommodate the other parts—say about 4 feet,—and preferably, of a weight which will enable it to hold its position, though that may be, and for power machines, generally is accomplished by bolting it to the floor or other support, the foot 6, presenting ample space for effecting that object. This standard is preferably in the form of a hollow column, as shown in cross section in Fig. 3. On what may be called the front, this column is slotted, as seen at 7, Fig. 3, for a distance of about a foot, from a point about 8 inches above the base line, though the dimensions thus given are not intended for limitations. Projecting from the sides and toward the front are lugs 8, in which I seat guide rods 9.

The head 10 is a casting of a form to accommodate the driving machinery about to be described, and to practically entirely inclose such machinery. On the proximate side, I provide a door 11, which gives access to the interior of the head casing. This head carries two bosses 12 and 14, at the rear, perforated to form bearings for shafts 15 and 16, the other ends of which are supported in bearings 17 and 18 formed in a division of the head casting, constructed for that purpose. The bearing 17 is preferably made as a blind socket into which shaft 15 projects, that form being devised to further one of my main objects, that is, to so construct the machine that the possibility of the escape of lubricating oil to any point where it would be liable to drop or be thrown into the material being mixed, shall be prevented. At its outer end, shaft 15 carries a pulley wheel for

applying power, 19 or, if preferred, a crank and handle, and between its ends it carries a long gear wheel 20, firmly secured to it so as to partake of its motion. The shaft 16 carries, preferably, 4 gear wheels 21, 22, 23, 24, of different diameters, to permit of four speeds, the aggregate thickness of the four being preferably such as to equal the length of gear 20.

Between the gears of shaft 16 and that of shaft 15, I mount an intermediate gear 25, supported on a short shaft 26, which threads into an L shaped lug 27, which is sleeved upon shaft 15, and provided with an operating lever 28, extending out through the casing of the head, as shown plainly in Fig. 2. The casing, where lever 28 projects, is slotted to accommodate it, and the wall of the casing is notched or perforated as seen at 29, 30, 31, 32, in Fig. 2. Then the end of lever 28 is pierced and provided with a bolt or latch 33, having a thumb piece or head 34, and surrounded by a spring 35, which is seated in the hole in the end of the lever, one end bearing against a shoulder on the bolt 33, and the other against a cap or cover (over the hole in the lever) which forms a second shoulder for the spring, but is perforated to permit the entrance of the bolt 33. It is thus manifest that the changing from one speed to another is very simple. If the gears are set as shown, then power applied to the pulley 19 turns shaft 15 and gear 20, which in turn rotates gear 25, (in mesh with it) and 25 rotates gear 21, in mesh with it, whereby motion is communicated to the shaft 16. If less speed is desired, the operator seizes the head 34, of bolt 33, and draws it out of the notch or recess it occupies, lifts the lever 28 and pushes it toward the back of the machine; the sleeved arm 27 slides along on shaft 15 (carrying gear 25 with it) till gear 25 registers with that one of the gears on shaft 16, which represents the desired speed; then the lever is tilted to engage gear 25 with the desired gear on shaft 16, the bolt 33, is permitted to drop into the proximate notch or recess and the machine is ready to operate at the new rate.

On the shaft 16, beyond the bearing 18, I mount a bevel gear 36 which meshes with another bevel gear 37, secured to a shaft 38, which is mounted in a sleeve 39, forming part of or secured to the head casing. At the lower end, the sleeve 39, is enlarged and

to its lower face, arranged horizontally, I rigidly secure a gear wheel 40, preferably with screws as shown, the gear being concentric with shaft 38, and on the lower end of shaft 38, I secure a cup shaped casting 41, (in action, a crank disk) having a recessed boss 42 to receive and hold the end of shaft 38, an upwardly extending flange 43, at its periphery, which is circular, and a downwardly extending sleeve 44, to receive, hold and support a further shaft 45, provided at its upper end with a gear 46, arranged to mesh with the gear 40, secured to sleeve 39. Shaft 45, extends into and supports a beater holder or carrier 47, secured firmly to it and provided with a cup 48, surrounding the lower end of sleeve 44. The lower end of carrier 47, is recessed to receive the beater or mixer 49, and provided with a bayonet joint groove 50, for making the requisite connection therewith, which is done by inserting the end of the beater 49 into the recess in the holder, taking care to enter its lug 51, in the groove 50. Then by raising the beater till the lug registers with the horizontal part of groove 50, and turning it into that part, the beater will be secured. The motion of the parts is such as to keep a stress upon the beater toward turning it in the direction to engage as described and therefore it will remain firmly secured during the operation of the machine, though very easily removed when that is desired. The cup shaped casting 41 is, preferably, provided with a felt or absorbent pad 52.

The casing 10, as already noted, follows the form of the inclosed parts and the downwardly extending wall 10^a beyond gear 37, as it approaches the location of gear 46, is projected downward in the form of a rim, or lip 53, lower than the adjacent wall of the part which extends farther outward over gear 46, in order that any oil which might be thrown against the wall, by the movement of the various gears, shall fall back again into the cup shaped piece 41—43, where it will be absorbed and held by the inclosed pad or packing, 52, instead of following down the extended wall as it would be without the lip 53, and dropping into the material being mixed.

54 is the support for the container or bowl 62. The support 54 is preferably in the form of a ring, as shown in Fig. 3, with three lugs 55, 56, 57. These lugs are pierced to form sleeves, two of which 55 and 56 slide up and down, on the guide rods 9, the third 57 extends into the slot 7, in the frame 5, and is threaded to receive a threaded rod 58, which passes through lug 57, is extended through the case and, there journaled in a boss 61, formed in the head casing, and provided at its outer end with a wheel 59, and a handle 60. Then by simply turning the wheel 59 to the left or right, the ring or

support 54 will be raised or lowered to the proper height, either with or without the bowl 62.

The operation of the device is as follows: The bowl is charged with the ingredients to be mixed, the proper beater is set in the holder 47, the bowl placed in the support or ring 54 and the wheel 59 manipulated to bring the bowl up to such a level as will cause the beater to reach substantially to the bottom of the bowl 62. Then the wheel 19 is started, the speed gears having been first adjusted to the speed desired. Movement is communicated, as already noted, from wheel 19 to shaft 15, gears 20, 25 and 21, 22, 23, or 24, shaft 16, bevel gears 36 and 37, shaft 38 and the cup shaped casting or crank disk 41, and the sleeve 44, which it carries, as well as the shaft 45, supported in said sleeve 44, which, if there were no further gears, would simply revolve around shaft 38, with the rotation of the crank disk 41, and push the beater 49, through the material in the bowl, in a circle, but the shaft 45 carries a gear 46, in mesh with the gear 40 rigidly secured to sleeve 39, and, in consequence, as the shaft 45 carrying the holder 47 and beater 49, traverses the circle of its orbit, the shaft 45 is also rotated by the engagement of gears 40 and 46 and the beater 49, has a rotary as well as a revolutionary movement, which results in thoroughly stirring, beating and mixing the ingredients of the mass within the bowl 62, which is the object sought.

Notwithstanding the fact that for lessening friction and insuring ease of movement, the parts need and receive ample lubrication, to reduce the amount of power required to operate the machine and to avoid undue wear of the parts, it will be found that none of the oil (or other lubricating substance) will be thrown or dropped into the material in the bowl. The bevel gear 37 is particularly liable to throw off particles of the lubricating medium, as also is the gear 46, the centrifugal force developed by rapid motion tending directly to that end, but such particles from the bevel gear 37, strike against the inclosing wall 10^a, of the casing, and flow down to the rim or lip 53, whence they drop harmlessly into the cup piece 41—43. Those from the gears 40, 46, fall back into said cup or are thrown against and absorbed by the pad 52, while such as escape from the lower end of sleeve 44, are there received and held by the cup 48, for it will be noticed, that the lower ends of shafts 38, and 45, each extend into blind recesses or pockets, from which, as explained, there is no escape except at the top.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. In a machine for mixing edible material, the combination, of a casing, a sleeve supported over an opening through said cas-

ing, a shaft supported in said sleeve and carrying a disk extending substantially across the opening in the casing and provided with a recess, closed entirely at the sides and bottom, but adapted to receive and hold the lower end of said shaft, a sleeve-like extension projecting downward from said disk, a gear wheel secured to the lower end of the first mentioned sleeve and surrounding the first mentioned shaft, a shaft extending through the said sleeve-like extension of the disk and provided with a gear wheel, secured to its upper end and in gear with the gear wheel on the first sleeve, and a tool holder secured to its lower end, together with means for operating the first mentioned shaft, all substantially as set forth.

2. In a machine for mixing edible material, the combination of a casing provided with an opening in the under side, a disk extending substantially across and substantially closing said opening, being mounted on a vertical rotary shaft and provided with an extension sleeve, a rotary shaft extending through said extension sleeve, and pocketed in a closed recess in a tool holder whose upper end is in the form of a cup extending above the line of contact between the sleeve and the holder and whose lower end is adapted to receive and hold a mixing tool, together with means for operating the first mentioned shaft and intermeshing gears secured respectively, one to the fixed portion of the machine and one to the shaft in the extension sleeve, all substantially as set forth.

3. In a mixing machine, the combination of gears inclosed in a casing, a portion of the casing toward the front being open at the bottom, a shaft mounted in said casing and extending downward to a point below the bottom of the casing a cup shaped disk secured to said shaft and substantially closing the said opening in the casing, a gear secured to said shaft, a wall of said casing extending downward beyond the line of said gear, to a line as low as the level of the upper edge of the said cup shaped disk, and outward to a line beyond the inner upper edge of said disk, and provided with a lip, above the level of said disk and extending inward from the casing wall to a point within the line of said disk, its lower edge being below that part of the casing wall to which it is attached, all substantially as set forth.

4. In a mixing machine, the combination of gears inclosed in a casing, a portion of the casing, toward the front, being open at the bottom, a shaft mounted in said casing and extending downward to a point below the bottom of the casing, a cup shaped disk secured to said shaft and substantially closing the said opening in the casing, a gear secured to said shaft, a wall of said casing extending downward beyond the line of said

gear, but within the line of the said disk, for a portion of the length of said shaft then extending outward to a line beyond the edge of said disk and then again downward to a line as low as the level of the upper edge of the said cup shaped disk, and provided with a lip, at the lower extremity of the downwardly extending portion of the wall within the line of the disk, but extending therefrom to a line below the level of the adjacent outwardly extending wall of the casing, all substantially as set forth.

5. In a machine for mixing edible material, the combination of a casing provided with an opening in the under side, a cup like disk extending substantially across and substantially closing said opening and mounted on a vertical rotary shaft, an absorbent pad extending about the interior of the side wall of said disk, the vertical rotary shaft and a fixed gear wheel concentric with the said shaft which shaft is pocketed in a recess in the disk, closed at the bottom and sides, a sleeve projecting downward from said disk, a rotary shaft supported in said last mentioned sleeve, and provided with a gear wheel at one end, in gear with the fixed gear wheel, and provided at the other end with a mixing tool holder adapted to receive and hold a mixing tool, together with means for operating the first mentioned shaft.

6. In a mixing machine, a standard, provided with a slot extending through its front wall, a casing supported by said standard, guide rods mounted in said standard, a bowl support, provided with sleeves, embracing said guide rods, and an apertured and threaded lug extending into the slot in the standard, and an operating rod, journaled in and extending down through the casing, the standard and the lug of the bowl support, and provided with a thread engaging the thread of said lug, inside of the line of the front wall of the standard, and a handle beyond the casing, all substantially as set forth.

7. In a machine for mixing edible material, a standard, a bowl support, mounted thereon and adapted to support a bowl in a given position, laterally constant, a casing projecting over the intended position of the bowl, and provided with an opening in its under face above said intended position of the bowl, a vertical rotary shaft supported within said casing with its axis extending in a line vertically over the center of the intended position of the bowl, a fixed gear wheel concentric with said shaft, a cup like disk supported on said shaft, which shaft is pocketed in a recess in the disk, closed at the bottom and sides, a sleeve projecting downward from and at one side of the center of said disk, a rotary shaft supported in said last mentioned sleeve, and provided

with a gear wheel at one end, in gear with the fixed gear wheel, and provided at the other end with a mixing tool holder adapted to receive and hold a mixing tool, together
5 with means for operating the first mentioned shaft.

In testimony whereof, I have signed my

name to this specification in the presence of two subscribing witnesses, this 6th day of September 1910.

HARRY E. TOWNSEND.

Witnesses:

P. A. HATTING,

A. G. N. VERMILYA.