H. L. GLAZE.

MATERIAL MIXER.

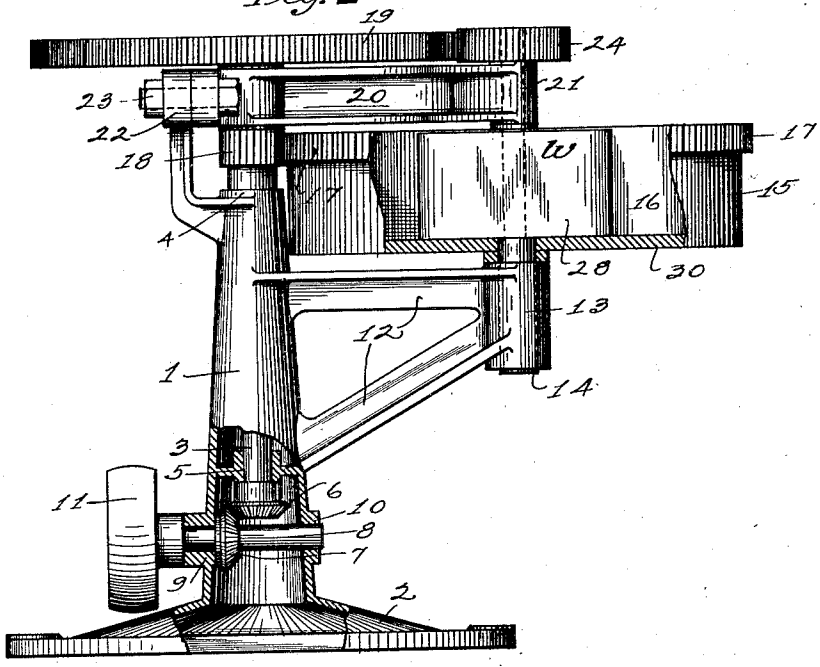
APPLICATION FILED JULY 7, 1919.

1,366,646.

Patented Jan. 25, 1921.

2 SHEETS—SHEET 1.

Fig. 2



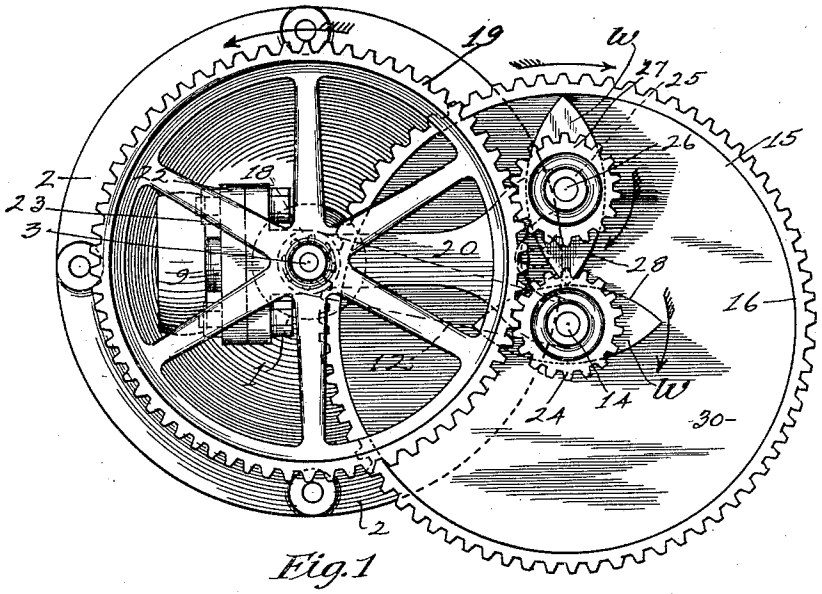


Fig. 1

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2 SHEETS—SHEET 2.

Fig. 7

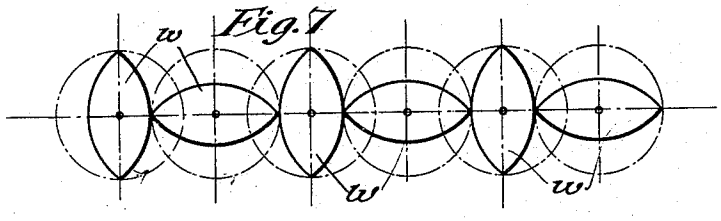
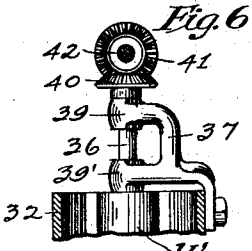


Fig. 6



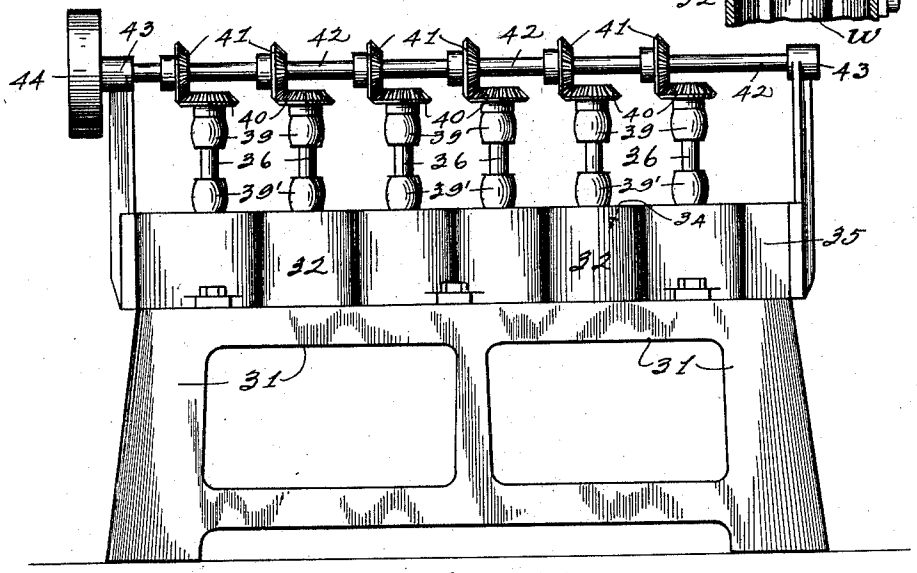


Fig. 5

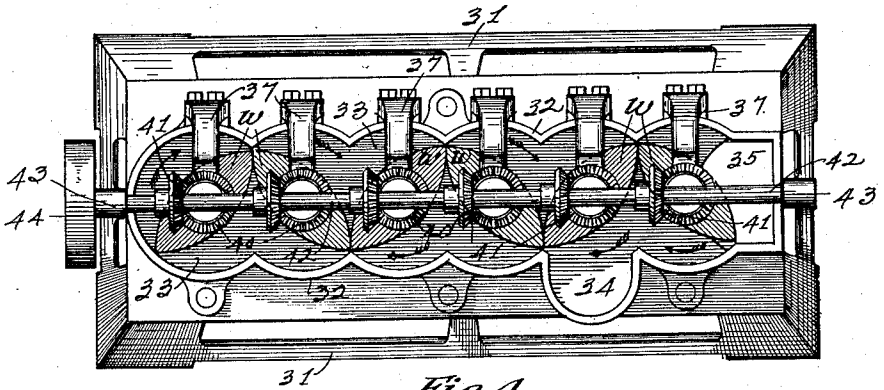
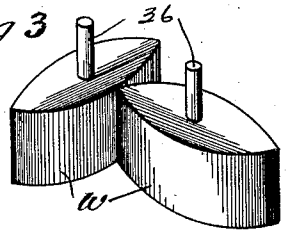


Fig. 4

Fig 3



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UNITED STATES PATENT OFFICE.

HERBERT L. GLAZE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO PLASTOID PRODUCTS, INCORPORATED, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

MATERIAL-MIXER.

1,366,646. Specification of Letters Patent. Patented Jan. 25, 1921.

Application filed July 7, 1919. Serial No. 310,839.

To all whom it may concern:

Be it known that I, HERBERT L. GLAZE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Material-Mixers, of which the following is a specification.

My invention relates to means for mixing both wet and dry materials and particularly to a form of device which may be applied for domestic and industrial use, the main object being to provide means adapted to be operated in a bowl, cylinder, housing or any form of container, whereby the materials may be thoroughly mixed and the surfaces of the container and of the mixers proper are thoroughly scraped and kept clean during the mixing operation.

I have discovered that a plurality of like wiping members rotating in the same direction and composed of prisms generated by the longitudinal movement of identical plane figures will remain in perpetual contact peripherally, some point on the periphery of one of said elements being always in contact with some point on the periphery of the other element, each element or plane figure consisting of two segments of circles with coincident chords, said figures rotating around chord centers, the distance between which centers is equal to the square root of one half the square of the chord and the radius of each segment being equal to the center distance.

It is an object, therefore, to provide in a device of the character referred to, a mixing machine having a plurality of wiping elements each composed of two segments with a common chord, having spaced axes of rotation and intersecting arcs and adapted to be rotated in a single direction, for the purpose stated.

I accomplish the above and other objects by means of the mechanism illustrated in the accompanying drawings, forming a part of this application, in which similar characters of reference are employed for indicating the same and like parts.

In said drawings I have illustrated two separate and distinct applications showing two practical embodiments of my invention which may be adaptable to domestic or industrial uses as desired, any modification thereof depending upon the character of the work desired to be accomplished.

Figure 1 is a plan view of one form of mixing machine adapted for use domestically and industrially, in which a single pair of wipers are provided.

Fig. 2 is a side elevation, partly in section of the same,

Fig. 3 is a perspective view of a pair of the wipers in operative relation,

Fig. 4 is a plan of the multiple mixing machine in which the principle shown in Figs. 1 to 3, is employed and enlarged upon,

Fig. 5 is a side elevation of the same,

Fig. 6 is a fragmentary sectional elevation of the same, and

Fig. 7 is a diagram of the wipers shown in Fig. 4, showing different relative positions of the individual wipers.

Referring first to Figs. 1 and 2, a suitable standard 1 is provided with a base 2. A vertical shaft 3 is housed in the standard 1 and has bearings at 4 and 5, in the standard, a bevel gear 6 being carried on the lower end of said shaft which meshes with and is adapted to be driven by a similar gear 7 on a horizontal shaft 8.

Shaft 8 has bearings at 9 and 10 in the standard and carries a pulley 11 on its outer end by means of which the machine may be operated from any suitable source of power.

A bracket 12 is provided on the standard 1, and has a bearing 13 on the outer end thereof in which a vertical shaft 14 is journaled. A bowl, or container 15, is loosely held on shaft 14 against the upper end of bearing 13, and has a cylindrical interior chamber 16 and an exterior spur gear 17 thereon which is adapted to mesh with a pinion 18 carried on shaft 3 above the main bearing 4.

The extreme upper end of main shaft 3 has a large gear 19 thereon, which is spaced from pinion 18 by means of a bracket 20, which is extended outwardly from the standard 1 and serves as a support for the upper end of shaft 14, a bearing 21, being provided on said bracket for said shaft. Bracket 20 is attached to an arm 22 of the standard 1 by means of bolts 23, 23, and is thus held stationary during the operation of the gears.

Shaft 14 has a gear 24 on the upper end thereof, which meshes with and is driven by the large gear 19, and bracket 20 has another bearing 25 which is radially alined with the axis of shaft 14 and has a shaft 26

held therein. A gear 27 of like size and character as gear 24, on shaft 14 is provided on shaft 26 and this gear is also meshed with and is driven by the large gear 19. Thus shafts 14 and 26 are rotated in the same direction and at equal speed through the medium of the connections described.

The lower end of the shaft 26 and the central portion of shaft 14 are each provided with a wiping element W, each of said elements being composed of a pair of like peripheral portions 28, which are true segments of a circle of an equal radius and the chords of whose arcs are coincident. Thus, the major diameter, or the chord of one of the segments plus one half the minor diameter of one of the elements, or the height of one of the arcs, will equal the radius of the interior of the bowl 15, the spacing of the axes of shafts 14 and 26 being the same as the radius of one of the segments of the wiping elements.

From Fig. 2, it will be observed that the bowl 15 will rotate at a slow speed, while the wipers will rotate at a relatively high speed, and the peripheries of the wipers will always be in contact, while the bottoms thereof will contact with and serve to wipe the bottom 30 of the bowl. The top of the bowl may be open as shown, or a suitable cover may be provided. It will be seen that material placed in the bowl will be continuously stirred up and moved about. A complete mixture of the ingredients results, the surfaces of the contributing mixing elements being at the same time wiped and scraped free from any surplus quantities of the mixture, thus obviating the frequent cleaning of the machine.

Now, referring particularly to Figs. 4 to 8, in which a multiple machine is shown, 31 is a frame upon which an elongated container 32 is mounted and which has a plurality of mixing compartments 33, 33, etc., a feed chamber or inlet 34, and an outlet chamber 35. Each chamber 33 has a vertical shaft 36, journaled in the bottom thereof and extended at the top and journaled in an arm 37, provided with a pair of bearings 39 and 39′, the said arms being attached to one side of the container 32. Each of the shafts 36 has a bevel gear 40 on the upper end thereof, which is driven by a similar gear 41, on a longitudinal shaft 42, extending above the container 32, and supported near its ends in bearings 43, 43, shaft 42 may be rotated or driven from any suitable source of power by means of a belt pulley 44, or otherwise. Two shafts 36, have the wipers W on the lower portions thereof and are of the character and form previously described, the bottoms of the wipers scraping the floor of the container 32, and the points thereof scraping the arcuate walls of the container. It will be observed that the spacing of the battery of wipers in this form of machine is the same as in the other form, the distance between centers being equal to the radius of the sides.

In this form of device, the materials to be mixed may be fed into the feed chamber 34, from whence the materials will be moved the full length of the container along one side and returned along the other side by the action of the wipers, after which the mixture will be discharged at the outlet 35. This form of machine may also be used as a conveyer, as the rotation of the wipers in like direction serves to move the body of the mixture lengthwise of the container, and by applying heat to the container, material may be dried therein while in motion. The uses for my device are many and I have sought only to illustrate two applications of a principle which I believe to be new, namely, that of employing a pair or more of wipers of the form described, rotating in one direction, thus insuring a continuous peripheral engagement of the wipers. It will be obvious that the wipers will not produce the same result when operated in opposite directions.

What I claim is:

1. A mechanical movement embodying a plurality of arcuate elements rotatable in like directions, whereby their peripheries may be maintained in continuous contact.

2. A mechanical movement embodying a plurality of elements, the opposite peripheral portions of said elements being arcuate and having equal radii, said elements being rotatable in like directions, whereby to maintain their peripheral contact.

3. A mechanical movement including a pair of rotatable elements having two segmental portions with common chords and spaced at a distance equal to the radius of the segments.

4. A mechanical movement including a plurality of rotatable elements each having two segmental portions with common chords, and their axes of rotation being spaced at a distance equal to the radius of the segments.

5. A mechanical movement including a plurality of continuously contacting rotatable elements having two segmental portions with common chords and spaced apart, the center distances being equal to the square root of one half the square of the chords.

6. A mechanical movement including a plurality of continuously contacting rotatable elements having spaced axes and rotatable in like direction, said elements having two segmental portions with common chords and the distance between their axes being equal to the square root of one half the square of the chords and also equal to the radius of each segment.

7. A device of the character described,

comprising a plurality of elements rotatable in a single direction and spaced at an equal distance apart, a rotor on each of said elements having a major and a minor diameter and the peripheral portions on each side of the diametrical line thereof being arcuate and of equal radius, the major points on said elements operating in intersecting arcs and the center distances between said elements being equal to the radius of each of said arcuate portions.

8. A device of the character described, comprising a container, means for rotating said container, a rotor concentrically mounted in said container, and a rotor eccentrically mounted in said container and adapted to continuously contact with said concentric rotor.

9. A device of the character described comprising a rotatable container, and a pair of relatively concentric and eccentric wipers mounted therewithin, the peripheries of said wipers being continuously in contact and the bottoms of said wipers being in contact with the bottom of said container.

10. A device of the character described comprising a container, a plurality of relative concentric and eccentric rotatable elements therein, means for rotating said elements, and means for rotating said container, as set forth.

11. A device of the character described comprising a container, a plurality of equally spaced rotatable elements mounted in said container, means for rotating said elements in a single direction, said elements being formed in such a manner as to maintain continuous peripheral contact during their operation.

12. A device of the character described, comprising a container having a plurality of communicating chambers with arcuate walls, a rotatable element in each of said chambers, all of said elements being equally spaced apart, means for rotating all of said elements in like direction, said elements being formed so as to have continuous peripheral contact.

Signed at Los Angeles, Los Angeles county, and State of California, this 5th day of June, 1919.

HERBERT L. GLAZE.

In presence of:
LUTHER L. MACK,
H. M. BRUNDAGE.