

Jan. 21, 1958

S. BOLLING

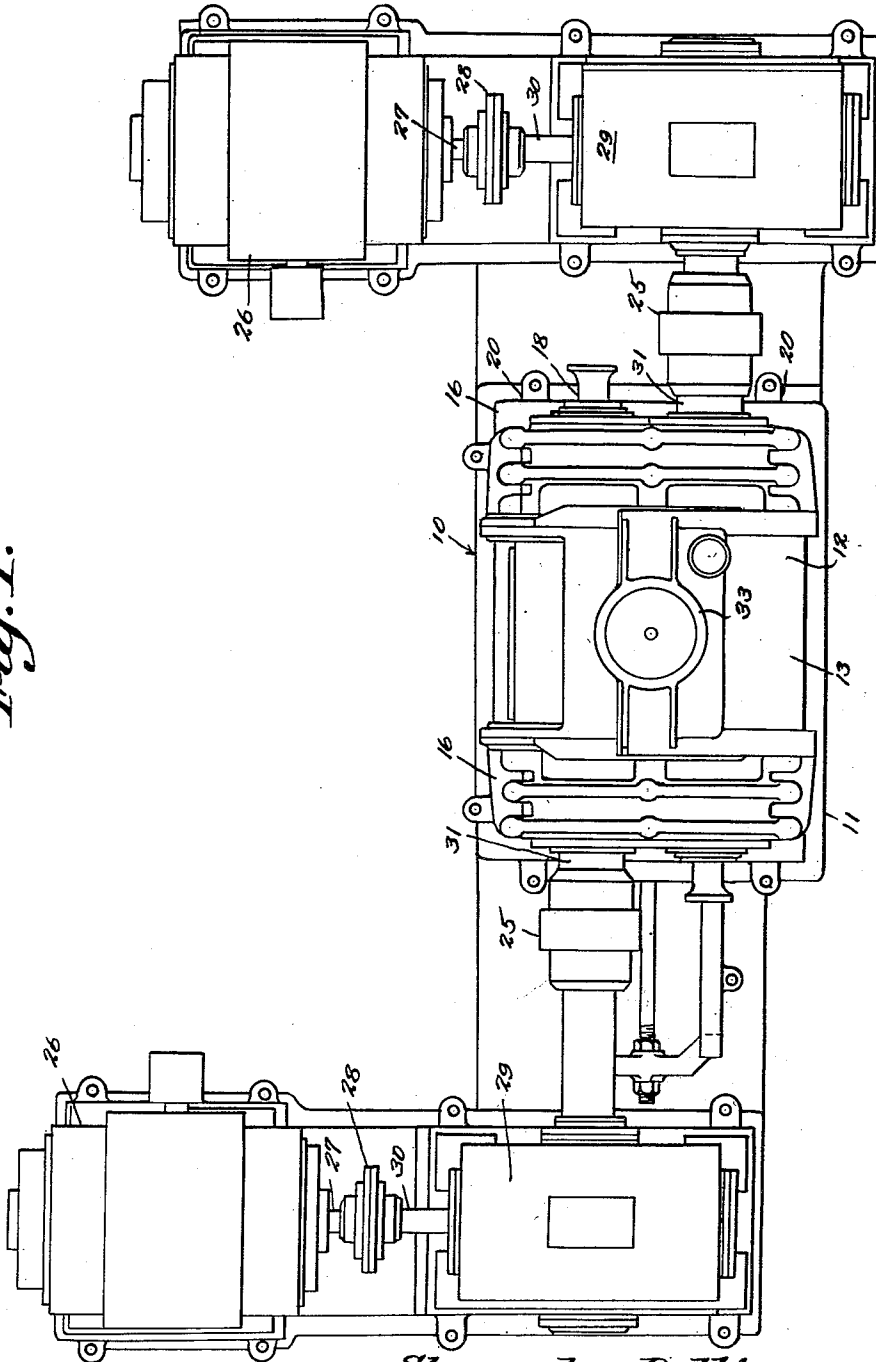
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INTERCHANGEABLE ROTORS FOR A MASTIC MIXER

Filed Feb. 23, 1954

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Fig. 1.



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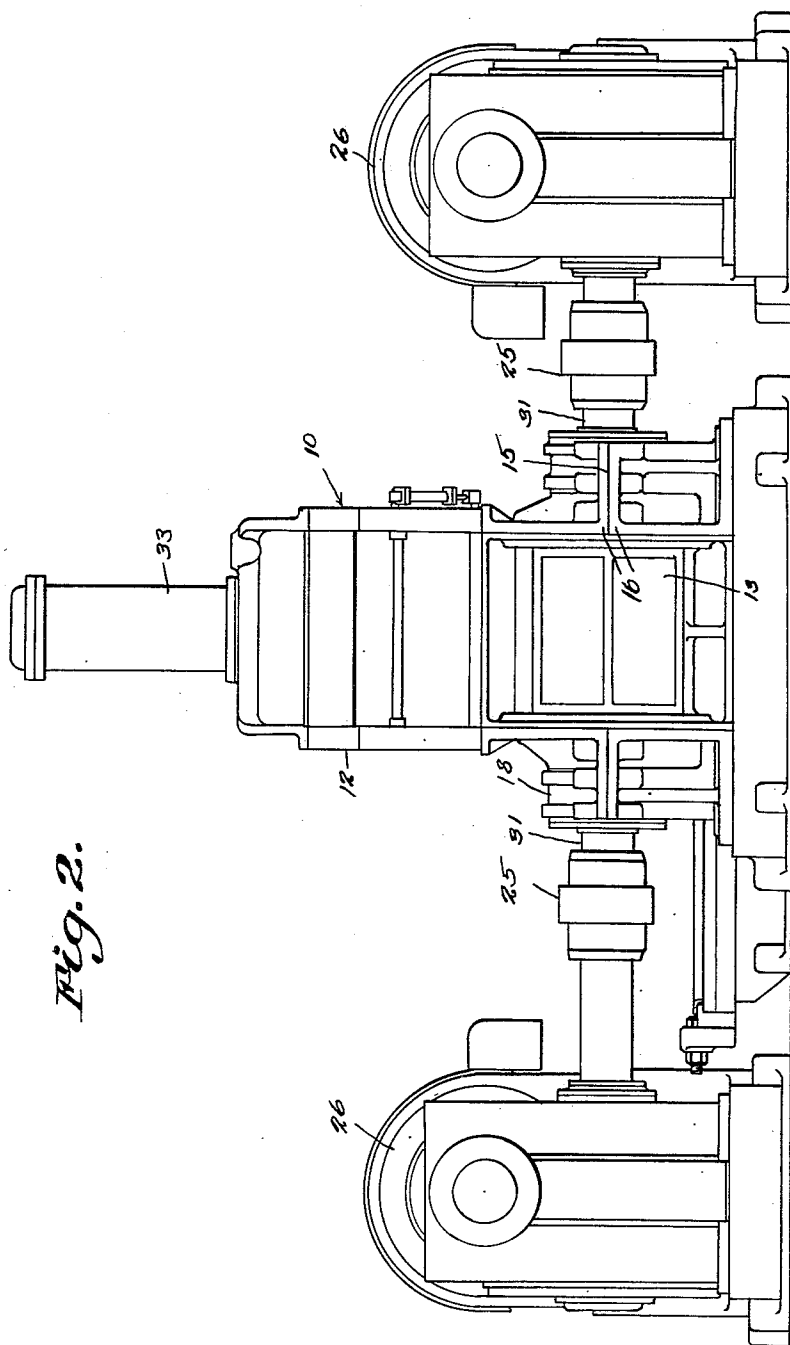


Fig. 2.

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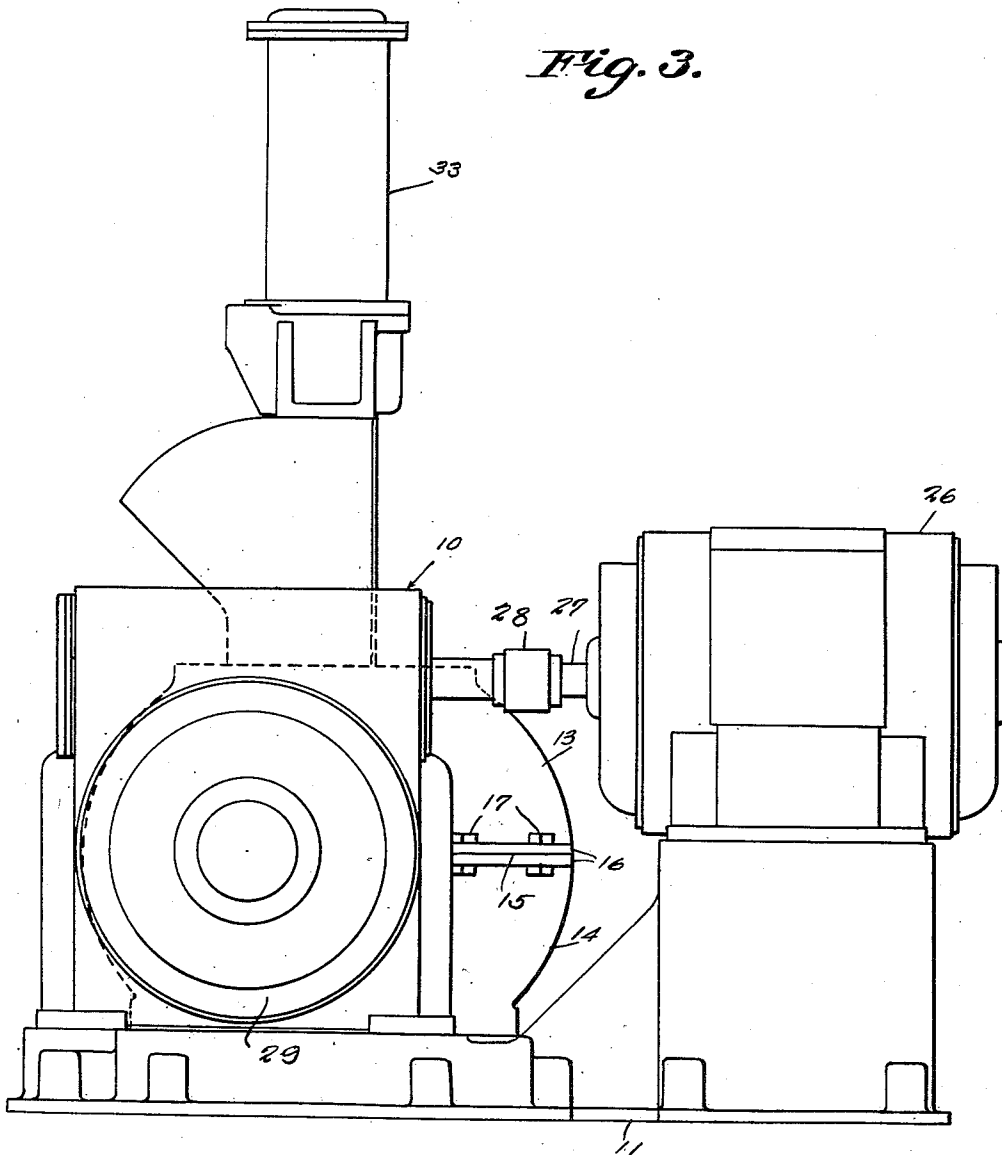
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Fig. 3.



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INTERCHANGEABLE ROTORS FOR A MASTIC MIXER

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Application February 23, 1954, Serial No. 411,690

1 Claim. (Cl. 259—104)

This invention relates to a mastic mixing machine and more particularly to a mixing machine for rubber, plastic or other similar mastic material having a pair of power driven rotors so constructed and arranged whereby a single spare rotor may be used to replace either one of the rotors in use in the machine if and when replacement of a rotor becomes necessary.

It is another object of this invention to provide an easily replaceable and/or interchangeable rotor of the kind to be more particularly described hereinafter for use in a mixing machine or a mill.

A further object of this invention is to provide a rotor of this kind as a practical conversion of a mixer having a long and a short rotor to a mixer having two rotors of the same length with both rotors so similar that a single rotor may be used for either one of the two rotors.

Yet a still further object of this invention is to provide a rotor for a mixer or mill having two rotors operating at different speeds of rotation with a separate motor for each rotor and a separate gear box for each rotor and motor whereby the use of a common gear box, as customarily in use, may be easily and readily avoided and the same practical use of the different speeds of the rotors will be maintained.

A still further object of this invention is to provide two separate rotors and separate gear boxes for each rotor whereby with the continual increase in power the large and expensive gear box for the differential motion connecting gears may be readily avoided and the same practical use and operation adhered to.

Other and further objects and advantages of the invention will be hereinafter described and the novel features thereof defined in the appended claim.

In the drawings:

Fig. 1 is a top plan view of a mixer constructed according to an embodiment of my invention.

Fig. 2 is a side elevation of the mixer.

Fig. 3 is an end elevation of the mixer.

Fig. 4 is a diagrammatic top plan view, partly broken away, of the mixer.

Heretofore on mixers of this kind two rollers have been required for the mill or mixer and it is a purpose of this invention to provide interchangeable rotors or rolls both and either being useable in the present arrangement of a long roller in the back and a shorter roller in the front part of the device. At the present time all of the power to drive both of the rotors is transmitted through one neck and due to conditions of working surfaces, rotors and rolls are cast and not forged. Each of the rollers is provided with a flute or helix which is cast with the roller. Due to the irregular shape of the present day rotors as well as the rotors of this invention, the rotors will also be cast rather than being forged.

To overcome the objection of the added torsional strain for driving both of the rotors, in place of the large and expensive gear box used in the present mills smaller

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and separate gear boxes and motors will be used for each of the rotors.

The mixer 10, constructed according to an embodiment of this invention is provided with a base 11 which supports a mixer body or housing 12 and the various motors connected thereto.

The mixer body 12 is formed with a top body section 13 and a lower or bottom body section 14 which is separable therefrom. A separation line 15 denotes the line of separation between the body sections of the mixer body 12. Each of the body sections 13 and 14 is provided with an outwardly extending flange 16 thereon through which the bolts 17 may be engaged for securing the body sections together to form a separable mixer body as shown clearly in the drawings.

Each of the rotors is initially formed for rotation in the mixer body 12 between the top and bottom body sections.

The base 11, to which the bottom body section 14 is secured, is provided with a plurality of sockets for fastening bolts therein which bolts may be attached to a fixed supporting base, not shown in the drawings.

Outwardly extending ears 20 are formed on the flange of each of the body sections whereby the body sections may be detachably secured together to form the mixer body 12.

According to the teachings of the industry a pair of rotors as the front rotor 22 and the rear rotor 21 are positioned within the mixer body and rotatable therein with one end of each of the rotors extending outwardly beyond the side walls of the mixer body. The outwardly extending end of each of the rotors may extend in the same direction or in opposite directions, as clearly shown in the drawings, there being a separate motor for each of the rotors.

Each of the rotors is provided with at least one flange 23 intermediate the length thereof which flange is adapted to flushly engage with the inner surface of the inside of the mixer body 12, there being shown in the drawings a flange 23 adjacent each end of the rotors.

As the rotors are cast at one time, a pair of helixes 24 or fragmentary helixes are also cast on each of the rotors for operative engagement with the material in the mixer body with which the mixer 10 is to be used. The helixes of one rotor are oppositely pitched from the helixes of the other rotor and the helixes are arranged as a long helix 24^a and a short helix 24^b. The long helix 24^a of one rotor is disposed opposite the short helix 24^b of the other rotor and the inner ends of the long helixes overlap each other. The maximum diameter end of the long helix of one rotor is positioned to overlap a lesser diameter portion of the long helix of the opposite rotor. This arrangement of the opposite pitching of the helixes, with the opposite arrangement of the long and short helixes of one rotor relative to the other rotor, and the overlapping of the long helixes provides for the thorough mixing of the mastic material and the elimination of any pockets. This arrangement of the helixes provides continuous back and forth movement of the material together with the transfer of the material from one rotor to the other.

Each helix of each rotor extends from its point of minimum diameter at the side of the housing to its point of maximum diameter inwardly toward the center of the housing so that the points of maximum diameter of the long and short helix of each rotor are juxtaposed at an intermediate point in the housing.

One end of each of the rotors is provided with an outwardly extending coupling member 25 which is adapted to be coupled with a shaft of a motor also adjacent to the mixer body 12 on the base 11.

A motor 26 is attached to the base 11 outwardly of the

mixer body 12, the motor 26 having a motor shaft 27 rotatable therein and extending outwardly therefrom engageable with a coupling member 28 on one end of a gear box 29. The gears in the gear box may be of any selected type, not shown in the drawings, whereby the outwardly extending shaft 30 of the gear box may be coupled with the motor shaft 27 so that the gears in the gear box will be actuated by their respective motors at the same or different speeds.

One of the gear shafts, as the gear shaft 30, is adapted to be coupled with a motor while gear shaft 31 is adapted to be coupled with the rotor with which it is to be drivingly engaged in the mixer 10.

A coupling member 25 is adapted to couple the gears in the gear box 29, through the drive shaft or gear shaft 31, to its respective rotor.

In place of the long and short rotors with their connecting differential gearing connected to the rotors from a single gear box, the rotors of the present invention are designed to be used whereby the separately driven rotors, with their individual motors and driving gears, may easily and economically replace the older long and short rotors.

While the specific details of one embodiment of this invention have been herein shown and described, the invention is not confined thereto as changes and alterations may be made without departing from the spirit and scope thereof as defined in the appended claim.

I claim:

A mixer comprising a housing, a pair of parallel rotors rotatably disposed in said housing, each rotor being formed of fragmentary helixes including a long helix and a short helix, the pitch of the helixes of one rotor being oppositely disposed with respect to the pitch of the helixes of the other rotor, and the helixes being arranged with the long helix of one rotor being disposed opposite the short helix of the other rotor, the maximum diameter of the long and short helixes on each rotor being juxtaposed at an intermediate point in said housing, maximum diameter ends of the long helix of one rotor overlapping a lesser diameter portion of the long helix of the opposite rotor.

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