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FEED MIXER

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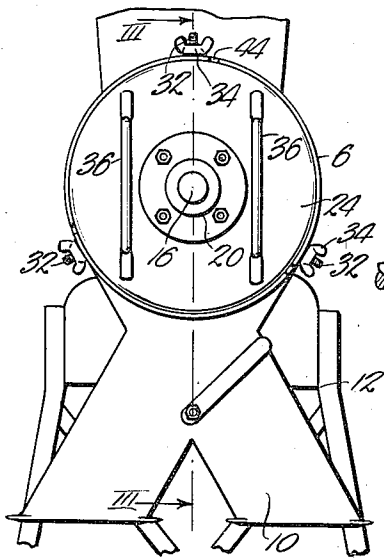


Fig. 1.

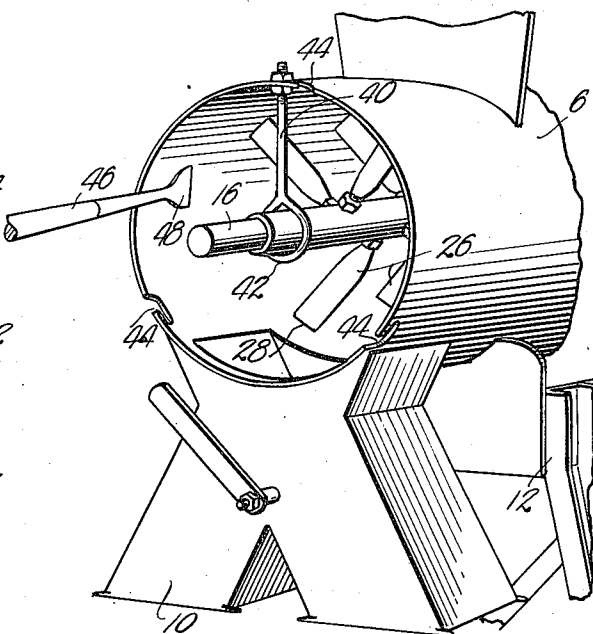


Fig. 2.

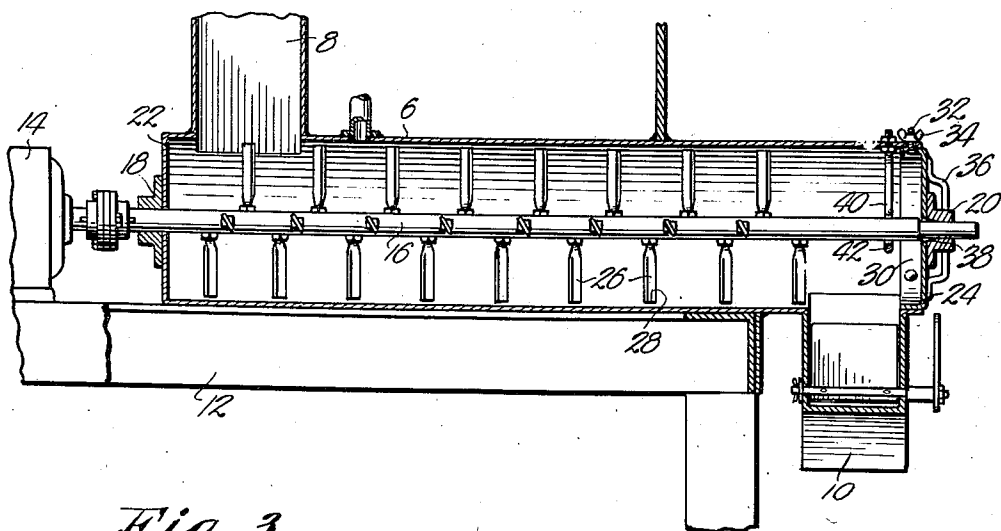


Fig. 3.

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FEED MIXER

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6 Claims. (Cl. 259—9)

This invention relates to apparatus for mixing feeds and particularly equipment wherein ground feed is mixed with molasses through the employment of a series of beaters mounted within a drum, the inner surface of which becomes coated with collected material during the operation of the machine.

The important object of this invention is to provide a feed mixer with means for supporting the shaft and beaters with the latter completely spaced from the inner face of the wall of the mixing drum while the drum is being cleaned.

A yet further object of the present invention is to provide a feed mixer with a demountable end plate which has a guide face formed thereon for the purpose of directing one end of the shaft of the mixer into operative relation with the bearing that is mounted upon said demountable plate.

Still further aims of the present invention is the provision of a feed mixer having an auxiliary support for one end of the shaft which support is so formed as to remain entirely out of engagement with the shaft when the latter is in the normal operative position but which will carry the weight of the shaft and maintain the free ends of the beaters in spaced relation to the inner face of the wall of the mixer drum after the specially made demountable end on the drum has been removed for the purpose of permitting the operator to scrape collected matter from the inner surface of the drum.

Further objects of the invention will appear during the course of the following specification, referring to the accompanying drawing, wherein:

Figure 1 is an end elevational view of a feed mixer made in accordance with the present invention.

Fig. 2 is a perspective, fragmentary, end view of the feed mixer showing the demountable end plate entirely removed, and

Fig. 3 is a longitudinal, central sectional view through the feed mixer taken on line III—III of Fig. 1.

One of the greatest objections to molasses and feed mixers lies in the inability of the operator to properly clean the inner face of the wall of the mixing drum when incrustation occurs. This cleaning operation should be performed after the mixer has been used and when it is desired to allow the same to remain idle for a period of time.

Heretofore many ways have been attempted to properly cleanse the inside of the mixing drum but difficulties prevailed and therefore, the cleaning operation is never completely successful so far as entirely removing all of the collected matter

from within the drum is concerned. The foregoing objects therefore, are not only for the purpose of providing a machine that is efficient in operation but that will allow the operator to quickly and thoroughly clean the drum without dismantling the machine and without passing therethrough objectionable elements such as water, cleaning compounds and the like.

In the drawing the numeral 6 designates the conventional type mixing drum, the inside diameter of which is substantially uniform throughout the length of the drum from the material intake shoot 8 to the outlet ducts 10.

It is customary to mount the drum and associated apparatus upon frame 12 and to employ an electric motor 14 to rotate shaft 16 which is carried in bearings 18 and 20 respectively mounted upon the two end plates 22 and 24 of the mixing drum 6.

A plurality of beaters 26 extend radially from shaft 16 and in practice the free ends 28 of the beaters 26 must be maintained in spaced relation with the inner face of the drum. End plate 24 has a continuous annular laterally extending flange 30 which carries a number of radially projecting bolts 32, each of which is provided with a thumb nut 34; handles 36 securely supported by the outer face of demountable end plate 24 afford the operator convenient and effective means for gripping and turning the demountable end plate 24 when it is desired to remove the same to clean drum 6. End plate 24 and bearing 20 are formed to present an inclined guide face 38 for the purpose of directing the end of shaft 16 into bearing 20 as the plate 24 is moved to position. An auxiliary support 40 is mounted on the drum 6 and provided with a ring 42 which circumscribes shaft 6 adjacent to that end held by bearing 20.

Drum 6 also is provided with a number of bayonet slots 44, one of which receives a bolt 32 when demountable end plate 24 is in a position to close the end of drum 6.

Auxiliary support 40 is so arranged that when plate 24 is removed from the end of drum 6, it will carry shaft 16 and beaters 26 with the ends of the latter spaced from the inner surface of drum 6. When end plate 24 is removed as illustrated in Fig. 2 therefore the cleaning tool 46 may have the blade 48 thereof slid along the inner face of drum 6 from one end to the other without being stopped by the free ends 28 of beaters 26 being in direct engagement with the said inner face of the drum. When end plate 24 is removed, shaft 16 will lower slightly and therefore the distance between the lowermost part of ring 42 and the lower surface

of shaft 16 must be less than the distance between the free ends 28 of beaters 26 and the inner face of the drum. This distance must also be such as to preclude the end of shaft 16 from dropping too low so that it will be outside the confines of inclined guide face 38 when end plate 24 is moved to place.

From the foregoing it will be obvious to one skilled in the art that as guide plate 24 is moved to position and the end of shaft 16 guided into bearing 20, the said shaft will be lifted from engagement with ring 42 of auxiliary support 40. When bolts 32 enter slots 44 a slight turn is all that is necessary to lock the end plate in position after which nuts 34 are tightened and the machine is ready again for operation.

Auxiliary support 40 is formed of thin material sufficiently strong to support the weight of shaft 16 and beaters 26 but yet not bulky enough to be objectionable as it hangs within drum 6.

The advantages realized from a feed mixer made in accordance with this invention becomes obvious to one skilled in the art and while one embodiment of the invention has been illustrated and described, it is desired to be limited only by the spirit of the invention and scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a feed mixer of the character described, a drum of substantially uniform inside diameter throughout its length; a longitudinally disposed shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of said beaters in spaced relation to the inner face of the drum; bearings for the shaft carried by the ends of the drum to hold the shaft and the beaters in said position; an auxiliary shaft support in the drum adjacent to one end of the latter normally positioned in spaced relation to said shaft; and means for demountably securing said one end of the drum in place, said support serving to hold the shaft in place with the ends of the beaters spaced from the inner face of the drum when said one end and the bearing thereon is removed from operative position whereby the inner face of the drum may be scraped to clean collected matter therefrom.

2. In a feed mixer of the character described, a drum of substantially uniform inside diameter throughout its length; a longitudinally disposed shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of said beaters in spaced relation to the inner face of the drum; bearings for the shaft carried by the ends of the drum to hold the shaft and the beaters in said position; an auxiliary shaft support in the drum adjacent to one end of the latter; and means for demountably securing said one end of the drum in place, said support serving to hold the shaft in place with the ends of the beaters spaced from the inner face of the drum when said one end and the bearing thereon is removed from operative position, said support being adapted to remain out of engagement with the shaft when the latter is held in the operative position by the bearings.

3. In a feed mixer of the character described, a drum of substantially uniform inside diameter throughout its length; a longitudinally disposed shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of said beaters in spaced relation to the inner face of the drum; bearings for the shaft carried

by the ends of the drum to hold the shaft and the beaters in said position; an auxiliary shaft support in the drum adjacent to one end of the latter normally out of engagement with said shaft; and means for demountably securing one end of the drum in place, said support serving to hold the shaft in place with the ends of the beaters spaced from the inner face of the drum when said one end and the bearing thereon is removed from operative position, said demountable end having a guide face formed thereon to direct the end of said shaft into the bearing on that end as the same is moved to place on the drum.

4. In a feed mixer of the character described, a drum of substantially uniform inside diameter throughout its length; a longitudinally disposed shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of said beaters in spaced relation to the inner face of the drum; bearings for the shaft carried by the ends of the drum to hold the shaft and the beaters in said position; an auxiliary shaft support comprising a ring supported on a single arm positioned in the drum adjacent to one end of the latter; and means for demountably securing said one end of the drum in place, said support serving to hold the shaft in place with the ends of the beaters spaced from the inner face of the drum when said one end and the bearing thereon is removed from operative position whereby the inner face of the drum may be scraped to clean collected matter therefrom, said support being adapted to remain out of engagement with the shaft when the latter is held by the bearings, said demountable end having a guide face formed thereon to direct the end of said shaft into the bearing on that end as the same is moved to place on the drum, said guide face being arranged to draw the shaft out of engagement with the auxiliary support as the shaft enters the bearing on the said demountable end.

5. In a feed mixer of the character described, a drum of substantially uniform inside diameter throughout its length; a longitudinally disposed shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of said beaters in spaced relation to the inner face of the drum; bearings for the shaft carried by the ends of the drum to hold the shaft and the beaters in said position; an auxiliary support for the shaft adjacent to one end of the drum and normally out of contact with said shaft; means for demountably securing said one end of the drum in place; and a guide way formed on the said one end to direct the end of the shaft into the bearing carried by that end when the said one end is moved to place on the drum, the space between the ends of said beaters and the inner face of the drum being great enough to allow the shaft to drop into engagement with the auxiliary support when the demountable end of the drum is removed from place, said bearing on the demountable end of the drum being positioned to hold the shaft out of engagement with the auxiliary support and the free ends of the beaters out of engagement with the inner face of the drum.

6. In a feed mixer of the character described, a drum; a shaft, provided with radially extending beaters, rotatably mounted in the drum with the free ends of the beaters in spaced relation to the inner face of the drum; a demountable end plate closing one end of the drum; a bearing on the demountable end plate for receiving one end of the shaft; an auxiliary support for the shaft

adjacent to the demountable end plate comprising a ring portion mounted on the lower end of a single supporting rod and circumscribing the shaft in spaced relation thereto when the shaft is in the bearing on the end plate and in engagement with the shaft to hold the ends of the beaters in spaced relation to the inner face of the

drum; and means on the end plate to lift the shaft out of engagement with the auxiliary support as the shaft enters the bearing during the movement of the demountable end plate toward its operative position.

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