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F. A. SCHLETZ

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MIXING MACHINE

Original Filed Feb. 2, 1933

Fig. 2

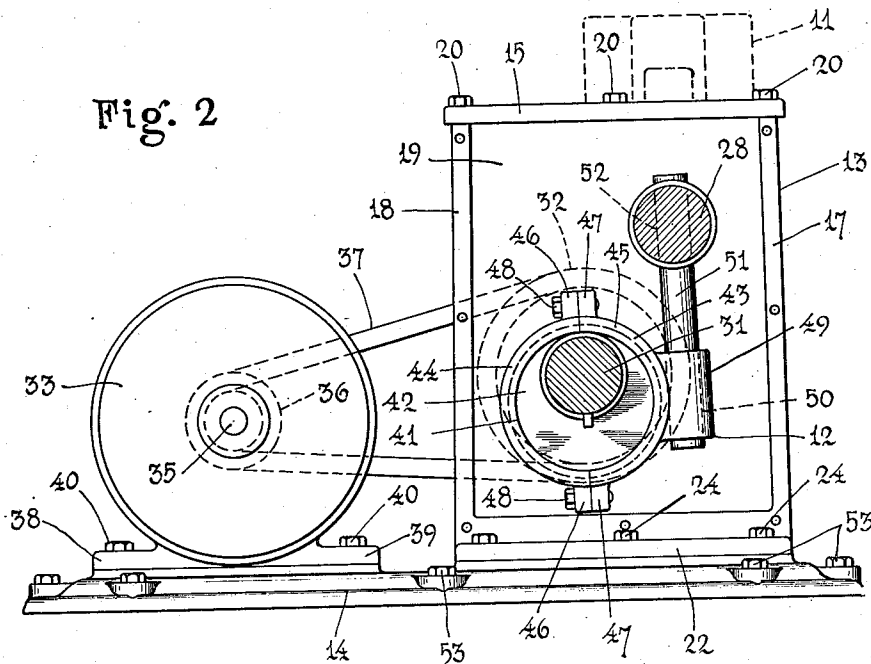
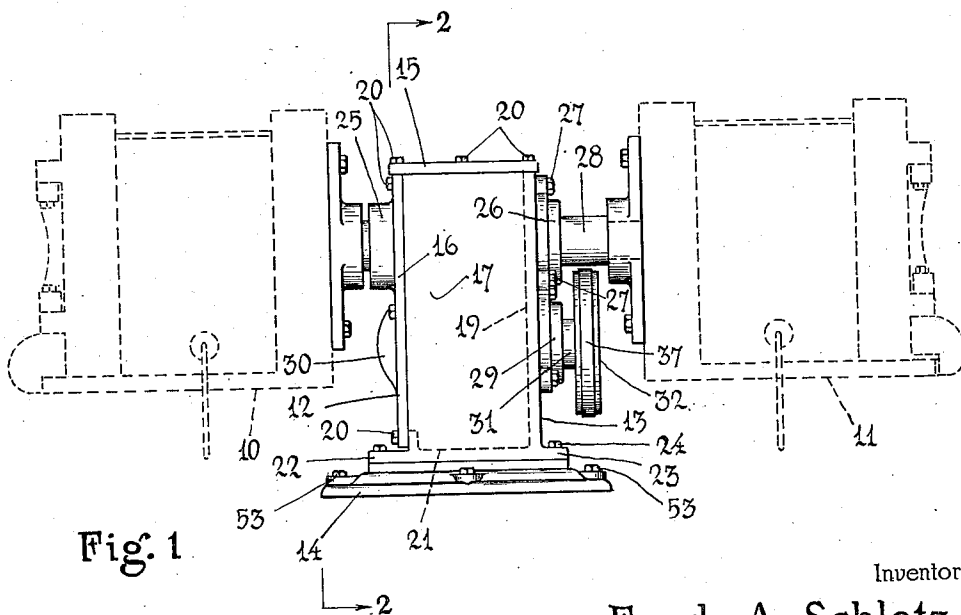


Fig. 1



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MIXING MACHINE

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Original application February 2, 1933, Serial No.
654,874. Divided and this application November 8, 1935, Serial No. 48,862

7 Claims. (Cl. 259—56)

My invention relates to mixing machines for mixing in cans, pails, drums or barrels or other closed receptacles the contents thereof, and has for an object to provide a simple, durable and efficient machine for the purpose.

Another object of the invention resides in providing a rock shaft or other oscillatory member having one or more receptacle holders attached thereto and in further providing mechanism for imparting to the rock shaft a peculiar movement particularly effective in producing rapid and thorough mixing of the contents of the receptacle.

An object of the invention resides in constructing the mechanism with a crank adapted to impart to the rock shaft an irregular oscillatory motion attended with a quick throw in one direction and a relatively slow return.

Another object of the invention resides in providing a member pivoted to the crank and a connecting rod acting between said pivoted member and the oscillatory member and in further providing a sliding connection between said connecting rod and one of said members, the connecting rod being fixed relative to the other member.

A still further object of the invention resides in providing the oscillatory member and pivoted member with aligning bores, the connecting rod being slidable in one bore and fixed within the other bore.

A feature of the invention resides in using an eccentric as the crank and in forming the guide on the eccentric strap, said guide being substantially tangent to the eccentric.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawing:

Fig. 1 is a side elevational view of a mixing machine illustrating an embodiment of my invention.

Fig. 2 is a transverse sectional view of the machine with the end plate removed and taken on line 2—2 of Fig. 1.

This application for patent is a division of my copending application for patent for mixing machine filed February 2, 1933, under Serial Number 654,874, and renewed June 28, 1935, now Patent No. 2,022,526, dated Nov. 26, 1935.

The illustrated form of my invention comprises two receptacle holders 10 and 11 mounted on a rock shaft 28 adapted to be violently rocked through a transmission mechanism indicated at its entirety by the numeral 12. The mechanism

12 includes certain mechanical movements for imparting a peculiar oscillatory movement to the rock shaft 28 whereby rapid and thorough mixing of the contents of the receptacles is procured. The mechanism 12 is contained within a case 13 which is secured to a base 14 and said mechanism is operated by a motor 33 also secured to said base. Base 14 is adapted to be bolted to a table, counter or other horizontal surface on which the machine is to be mounted by means of bolts or lag screws 53 which pass through said base.

Inasmuch as the form or construction of the holders 10 and 11 does not constitute a feature of the present invention, these holders will not be described in detail, but may be constructed as shown and described in my copending application for patent, Serial Number 654,874 above referred to, or any other type of holder suitable for the purpose may be used in place thereof.

The case 13 includes sides 17 and 18, an end 19 and a bottom 21, being open at the top and one end. The open top of the case is closed by a cover 15 and the open end is closed by an end plate 16. These parts may be bolted in place by means of bolts or cap screws 20 which extend through said cover and end plate and which are threaded into the case proper. In continuation of the bottom 21 of the case are formed two flanges 22 and 23 which project outwardly from the ends of the case and which rest upon the base 14. The case 13 is secured to base 14 by means of cap screws 24 which pass through said flanges and are screwed into the base.

On the exterior of the end plate 16 is formed a bearing 25. A similar bearing 26 detachable from the case is bolted to the end wall 19 thereof by means of bolts 27 as best shown in Fig. 1. These two bearings are in alignment and journal the rock shaft 28 previously referred to, which carries the two receptacle holders 10 and 11.

The transmission mechanism 12 includes an eccentric shaft 31 which is journaled in the following manner: Secured to the end wall 19 of case 13 is another bearing 29 similar to bearing 26 and formed upon the interior of the end plate 16 is a bearing 30 disposed in alignment with the bearing 29. These bearings journal the eccentric shaft 31 which is parallel to shaft 28. Shaft 31 projects outwardly through the case and has attached to its protruding end a pulley 32. The electric motor 33 is constructed with flanges 38 and 39 which form a base therefor and is attached to the base 14 by means of bolts or cap screws 40 which pass through these flanges

and are screwed into said base. This motor has attached to its armature shaft 35 a pulley 36. A belt 37 passes about both the pulleys 36 and 32 and drives the eccentric shaft 31.

5 Within the interior of case 13 and upon the shaft 31 is mounted an eccentric indicated in its entirety by the reference numeral 41. This eccentric includes an eccentric disk 42 which is keyed to the shaft 31. An eccentric strap 43 encircles said disk. The strap 43 is formed in two parts 44 and 45 having flanges 46 and 47 adapted to be bolted together by means of bolts 48. The part 45 of eccentric strap 43 is formed with an elongated boss 49 which is bored at 50 to provide 15 a bearing or guide which slidably receives a cylindrical connecting rod 51. In the rock shaft 31 is formed a transverse bore 52 which is in alignment with bore 50. The connecting rod 51 extends through both of these bores being fixed in the bore 52 and being slidable in bore 50. Bore 50 is substantially tangent to the eccentric disk 42 or strap 43 so that the said rod passes completely through the boss 49 and may reciprocate freely within the bore 50 therein.

25 The connecting rod 51 functions as a lever which operates to twist or oscillate the shaft 28, the force operating said lever being applied through the boss 49 and eccentric 41. Due to the fact that the rod 51 slides in the guide formed by bore 50 the leverage changes as the shaft 31 rotates and as the eccentric strap 43 and boss 49 move toward and from the shaft 28. When the eccentric disk 42 is disposed as illustrated in Fig. 2, the lever arm is longest and when it has rotated 180 degrees the lever arm is shortest. This produces a rocking or oscillating movement of the shaft 28, which is relatively fast in one direction and slower in the other direction, whereby a rapid throw followed by a relatively slow return motion is imparted to the holders 10 and 11. In other words, different rates of acceleration and deceleration are procured as the shaft rocks to and fro. Such motion I have found produces excellent results in the mixing of paints and other similar substances at low speeds and is much more effective than the regular oscillatory motions in the ordinary machines operating at higher speeds.

My invention is highly advantageous in that a machine is provided in which thorough mixing is rapidly procured, and in far less time than is the case with similar machines now in common use. With my invention the mechanism can be operated at a lower speed, thus reducing vibration of the machine and support. The device hence requires less power and the wear and tear on the moving parts is appreciably reduced. My invention does not require the excessive weight and rigidity necessary with other machines and the cost is hence considerably less.

60 Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

65 Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In a mixing machine, a rock shaft, a driving shaft, an eccentric disc operated by said driving shaft, an eccentric strap encircling said eccentric disc, a guide formed in said eccentric strap, a connecting rod slidable in said guide and secured to said rock shaft, and a holder attached to said rock shaft.

2. In a mixing machine, a rock shaft, a driving shaft, an eccentric disc operated by said driving shaft, an eccentric strap encircling said eccentric

disc, a guide formed in said eccentric strap, said guide being substantially tangent to said eccentric strap, a connecting rod slidable in said guide and secured to said rock shaft, said rod extending completely through said guide and past the tangent point thereof when the driving shaft is in one of its positions, and a holder attached to said rock shaft.

3. In a mixing machine, a support, a drive shaft journaled in said support, a rock shaft also journaled in said support, receptacle holding means carried by the rock shaft, power transmission means interposed between the drive shaft and rock shaft for imparting an irregular oscillatory motion to said holding means through said rock shaft, said transmission means comprising an eccentric on the drive shaft, a rocker rod projecting from the rock shaft, and an eccentric strap on said eccentric, said strap having a bearing thereon slidably embracing said rocker rod.

4. An actuating device for a mixing machine for mixing substances in closed containers, said device comprising a support, a bearing in said support, a rock shaft journaled in said bearing, a second bearing in said support, a driving shaft journaled in said second named bearing, an eccentric disc carried by said driving shaft, an eccentric strap encircling said disc, a guide formed in said eccentric strap, said guide being substantially tangent to said eccentric strap, a connecting rod slidable in said guide and secured to said rock shaft, said rod extending completely through said guide and past the tangent point thereof when the driving shaft is in one of its positions, and means on said rock shaft for supporting a container holder.

5. In a machine of the character described, a rock shaft, a holder attached thereto and adapted to receive a closed receptacle containing material to be mixed, a driving shaft, an eccentric disc operated thereby, an eccentric strap encircling said disc, a rocker rod disposed substantially tangentially with respect to said strap, said rod connecting said eccentric strap and rock shaft and slidable relative to one thereof, said rock shaft being turned by said rocker rod in one direction from one extreme to the other in less than a one-half turn of the driving shaft, thus imparting an irregular oscillatory motion to the receptacle in said holder, such motion being attended with a quick throw one way and a relatively slow return, whereby the contents of the oscillating receptacle is caused to circulate in said receptacle.

6. In a machine for mixing paint or other material in closed cans, a rock shaft, a holder attached thereto and rockable therewith, said holder being adapted to receive a closed can containing material to be mixed and to hold said can more or less uprightly disposed with the axis of the rock shaft passing therethrough substantially at the center thereof, a crank, means connecting said crank with said rock shaft for rocking the latter, the relative disposition of said crank and rock shaft being such that said means causes the rock shaft to be turned in one direction from one extreme to the other in materially less than a one-half turn of said crank, thus imparting an irregular oscillatory motion to the can in said holder, such motion being attended with a quick throw one way and a materially slower return, whereby a definite circulatory movement of the contents of the can is set up therein from end to end thereof about said axis of said rock shaft.

7. In a machine of the character described, a rock shaft, a holder attached thereto and rockable therewith, said holder being adapted to receive a closed receptacle containing material to be mixed and to hold said receptacle in all positions thereof with the axis of said rock shaft passing therethrough, a crank, means connecting said crank with said rock shaft for rocking the latter, the relative disposition of said crank and rock shaft being such that said means causes the rock shaft to be turned in one direction from one extreme to the other in materially less than a one-half turn of said crank, thus imparting an irregular oscillatory motion to the receptacle in said holder, such motion being attended with a quick throw one way and a materially slower return, whereby the contents of the oscillating receptacle is caused to circulate in said receptacle and about said axis of said rock shaft.

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