Oct. 29, 1940. T. JONES 2,219,706

PORTABLE MIXING MACHINE

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Fig. 1.

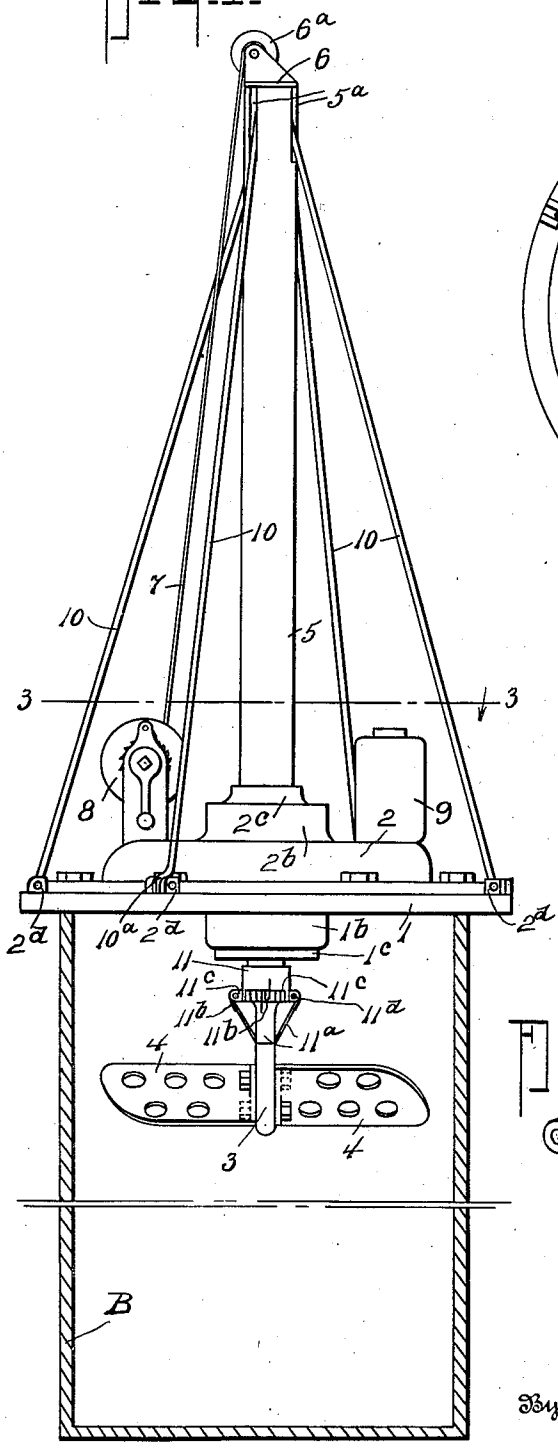


Fig. 3.

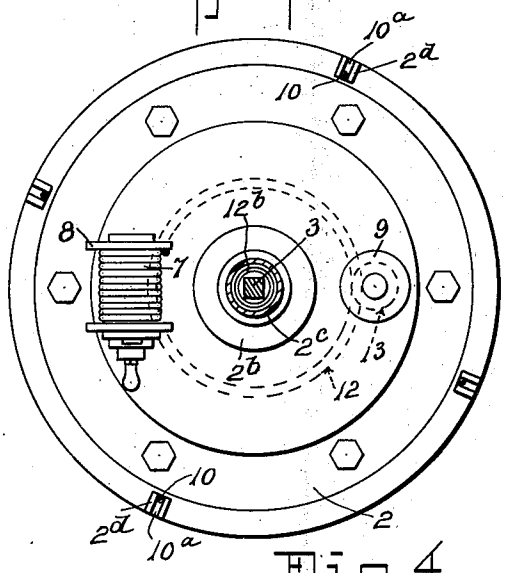


Fig. 4.

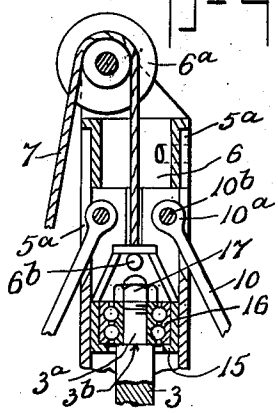


Fig. 5.

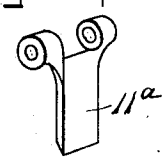
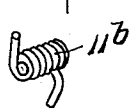


Fig. 6.



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Fig. 2.

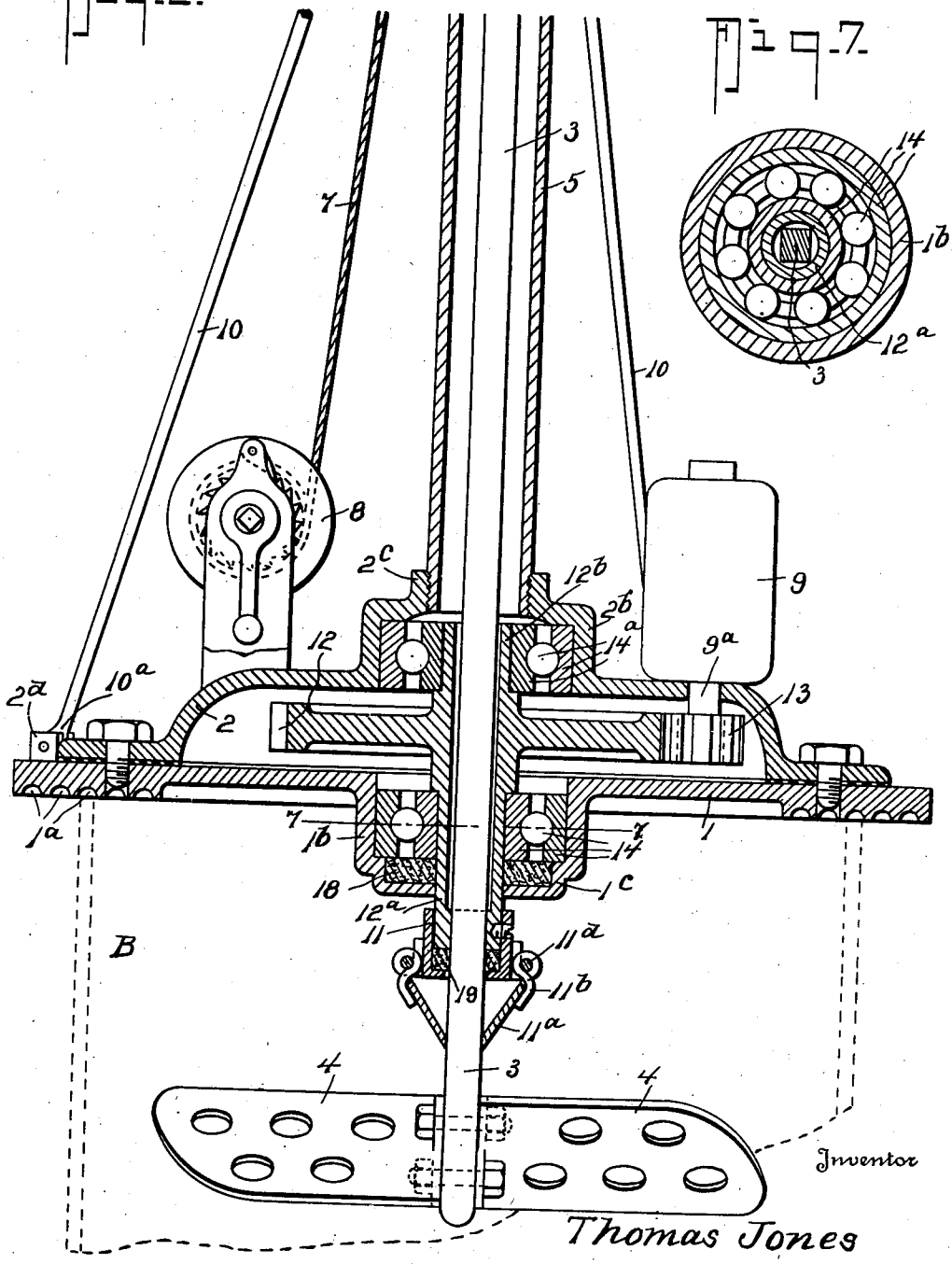


Fig. 7.

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UNITED STATES PATENT OFFICE

2,219,706

PORTABLE MIXING MACHINE

Thomas Jones, Vancouver, British Columbia, Canada

Application May 31, 1939, Serial No. 276,743

6 Claims. (Cl. 259—108)

My invention relates to machines for mixing liquids, particularly paints and the like.

The invention has for its objects: to provide a machine for the purpose stated having a reasonably light weight, one that is portable, one that can be used for reducing a heavy-bodied paste paint (to which has been added the proper thinning medium) to a working consistency, and one that can be used when tinting or toning paint to a different shade or color.

Another object is to provide a machine that will be useful in mixing dry colors with the proper vehicle, such as in the making of shingle varnishes and stains, where it is not necessary to grind the pigments.

Again, it is an object of the invention to provide an efficient machine which can be set on paint drums, barrels, or other open-top receptacles of different sizes or diameters.

Other objects will in part be obvious and will in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention still further resides in the novel features of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description and will then be particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Fig. 1 is a side elevation of my machine, set on an open-top receptacle, the receptacle being shown in section.

Fig. 2 is an enlarged central vertical longitudinal section of a portion of the machine.

Fig. 3 is a horizontal section on line 3—3 of Fig. 1.

Fig. 4 is a detail vertical section of the top part of the machine.

Fig. 5 is a detail perspective view of one of the scrapers.

Fig. 6 is a detail perspective view of one of the scraper springs.

Fig. 7 is a detail section on line 7—7 of Fig. 2.

In the drawings, in which like numbers and letters of reference designate like parts in all the figures, 1 represents the base of the machine, which is recessed at 1^b to receive and retain the lower main bearing 14 of the machine and is further recessed at 1^c to receive and retain a packing 18 of felt or other suitable material.

The base 1, on its under side, is provided with a series of concentric grooves or ridges 1^a to act as a self-centering agent when the machine is placed on a barrel, drum, or other open-top receptacle B of various size.

Secured to the top side of the base 1, in any suitable way, is the gear-housing, upper main bearing housing and motor mount 2. The element 2 has a recessed portion 2^b to receive and retain the upper main bearing 14^a. It also has a threaded collar 2^c into which the lower end of a paddle shaft guide column 5 is threaded.

The paddle shaft 3 passes through the base 1, the member 2, and into the column 5. At its lower end it is provided with paddles 4, preferably foraminous, while its upper end is reduced and threaded as at 3^a, forming a shoulder 3^b to receive the inner member of a ball bearing 16 and the swivel cup 15 which contains the bearing. The bearing and cup are held in place by a nut 17.

Fitted into the top end of the column 5 is the column cap 6 which carries a pulley 6^a over which a flexible cable 7 passes and has one end projected into the column 5 where it is secured at 6^b to the cup 15. The other end of the cable 7 is connected to a winch 8 mounted on the member 2. The upper end of the column 5 is slotted at 5^a to permit the insertion of the eye ends 10^a of the braces 10, which ends carry cross pins 10^b to hold the eyes in place. The lower ends of the braces 10 also have eyes 10^a through which the braces are pinned to the lugs 2^d on the base 1.

12 is a spur gear with an extended hub 12^a—12^b, the upper extension 12^b of which projects into the recessed portion 2^b and carries the upper main ball bearing 14^a, while the lower extension 12^a passes through the recessed portion 1^b and 1^c and projects below the portion 1^c. Fitted on this lower projected end of the extension 12^a is a cup-like member 11 carrying a packing 19 of felt or other suitable material, and having lugs 11^c to which are hinged the scraper blades 11^a by means of pins 11^d, on which, also, are springs 11^b which serve to maintain scraping contact between the lower ends of the scraper blades 11^a and the paddle shaft 3.

As shown, the spur gear 12 is driven by an electric motor 9 which is securely mounted on the member 2 and whose shaft 9^a carries a pinion 13 to mesh with gear 12. Any suitable motive power, however, or even a hand-drive, may be used or applied to rotate the paddle shaft 3.

The packing 18 fits the shaft 3 and cup 11 snugly so as thoroughly to wipe the shaft after it has been scraped by the blades 11^a while the shaft is being withdrawn into the guide column 5, while the packing 18 fits the shaft 3 and the recessed portion 1^c snugly so as to prevent oil or grease from leaking out of the base.

The gear 12 is slidably mounted on said shaft

3, but turns with it. The bearing assembly 16 has a sliding fit in column 5.

The paste paint or other material, together with the proper thinning medium (or the various colors necessary to produce the desired finished color of paint) are placed in the drum, barrel, or other open-top receptacle B; the machine is placed with one of the grooves 1a resting on the top rim of the receptacle (to prevent the machine from sliding and so that it is self-centered). The paddles 4 at this time are close to the base of the machine and out of the material to be mixed.

The machine is now started by the available motive power. This rotates the paddle shaft 3 and the paddles 4; then the pawl is disengaged from the ratchet on the winch 8, which allows cable 7 to unwind and lets the paddles into the material to be mixed while they are still rotating. The speed with which the paddles are let into the material is governed by the heaviness of body or thickness of the material.

After the mixing is finished, the paddles are raised out of the material, while the machine is still in position, by reeling in the cable 7 which is connected to the paddle shaft by a suspension assembly. This suspension assembly does not rotate but has a sliding fit inside of the guide column 5.

The paint which gets on the paddle shaft when the mixing operation is being carried on is automatically removed while the paddles are being raised out of the material by means of scraper blades 11a. The shaft is further cleansed by the felt packing 19 so that no paint is allowed to get into the guide column.

The motive power is now stopped and the machine is removed.

From the foregoing description, taken in connection with the accompanying drawings, it is though that the construction, operation and advantages of the invention will be clear to those skilled in the art to which it relates.

What I claim is:

1. In a portable mixer, a base having means to locate it on the rim of an open-top receptacle, a hollow-hub gear mounted in bearings on said base, a paddle shaft movable freely up and down through said hub, means to cause said hub and shaft to turn together, a motor on the base and connected to said gear to turn the same, a tubular column mounted on said base and surrounding and extending above said shaft, diagonal brace rods whose upper ends are connected to said column and whose lower ends are anchored to said base, a swivel bearing on the upper end of said shaft and slidable up and down in said column, a cable connected to said swivel bearing, a sheave on the top of the column over which said cable passes, a winch on said base to which the cable also connects, and paddle blades secured to the lower end of said shaft.

2. In a mixer of the character described, a base, a paddle shaft vertically movable through and rotatably mounted on said base, means to rotate said shaft, means to effect the lowering and raising of said shaft, and means rotatable with said shaft to remove the material from that portion of the shaft below the base as the shaft is being raised, said material removing means comprising spring pressed scrapers.

3. In a mixer of the character described, a base, a paddle shaft vertically movable through and rotatably mounted on said base, means to rotate said shaft, means to effect the lowering and raising of said shaft, and means rotatable with said shaft to remove the material from that portion of the shaft below the base as the shaft is being raised, said material removing means comprising springed pressed scrapers, and means to hold the scrapers against up and down movement with the shaft.

4. In a mixer of the character described, a base, a paddle shaft movable through and rotatably mounted on said base, means on said base to apply power to rotate said shaft, means to effect the lowering and raising of said shaft, and means rotatable with the shaft to remove any material clinging to that portion of the shaft below said base as the shaft is being raised, said last-named means including spring pressed scraper blades rotatable with and contacting said shaft.

5. In a mixer of the character described, a base, a paddle shaft movable through and rotatably mounted on said base, means on said base to apply power to rotate said shaft, means to effect the lowering and raising of said shaft, and means rotatable with the shaft to remove any material clinging to that portion of the shaft below said base as the shaft is being raised, said last-named means including spring pressed scraper blades rotatable with and contacting said shaft, and a packing means between said shaft and said base and located above the scraper blades.

6. In a portable mixer, a base, a hollow-hub gear mounted in bearings on said base, a paddle shaft movable freely up and down through said hub, means to cause said hub and shaft to turn together, a motor on the base and connected to said gear to turn the same, a tubular column mounted on said base and surrounding and extending above said shaft, diagonal brace rods whose upper ends are connected to said column and whose lower ends are anchored to said base, a swivel bearing on the upper end of said shaft and slidable up and down in said column, a cable connected to said swivel bearing, a sheave on the top of the column over which said cable passes, a winch on said base to which the cable also connects, a stuffing box on said base through which the lower end of said hollow hub passes, and means on said shaft below the stuffing box for removing the material being worked from said shaft.

THOMAS JONES.