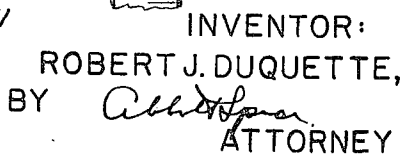


R. J. DUQUETTE

COMBINATION PAINT MIXING AND CAN CLOSING DEVICES

3 Sheets-Sheet 1



Nov. 8, 1966

R. J. DUQUETTE

3,284,057

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Filed July 7, 1965

3 Sheets-Sheet 2

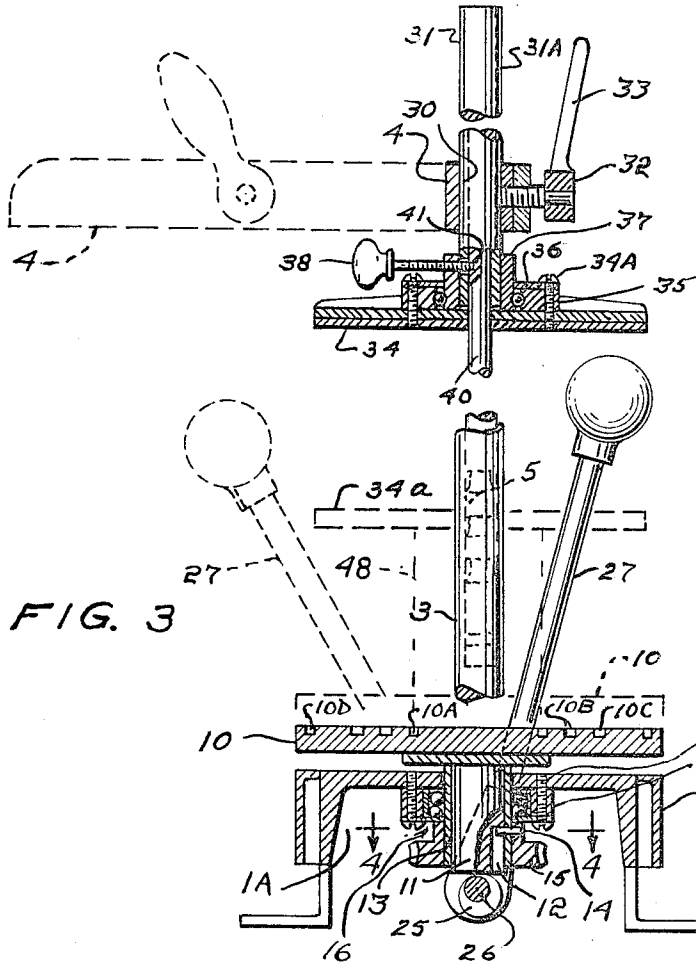


FIG. 3

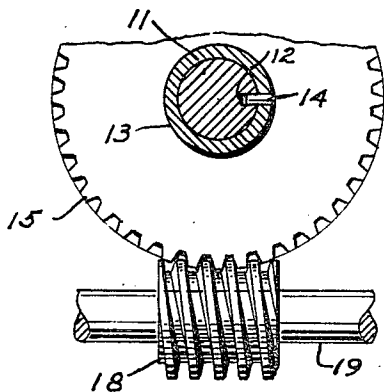


FIG. 4

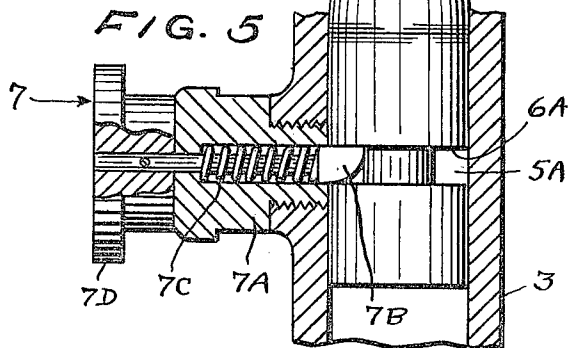


FIG. 5

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3,284,057

COMBINATION PAINT MIXING AND CAN CLOSING DEVICES

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Filed July 7, 1965, Ser. No. 470,298

15 Claims. (Cl. 259-88)

The present invention relates to devices for use in mixing paints in open containers and reseating their covers thereon.

Since pigments settle from their vehicle, paints must be thoroughly mixed before use to ensure the quality of the coat to be applied. The practice of opening a can of paint and manually stirring its contents just prior to its use is not satisfactory because it is time consuming and usually is not done for a long enough interval to result in all the pigment being suspended in the vehicle.

As a consequence, many establishments retailing paints have installed devices that shake a can thereby to effect a mixing of the pigment and its vehicle as a convenience to the purchaser. Can shakers are objectionable because of the noise and vibrations attendant their operation and because their use usually results in air being entrained in the paint even if the paint is thoroughly mixed. Particularly in the case of lacquers and varnishes, entrained air results in bubbles that are objectionable in their use.

The general objective of the present invention is to provide paint mixers that will ensure thorough mixing by a stirring action without the objectionable feature above referred to as characteristic of mixing by shaking the paint containers.

The general objective of the present invention is to provide paint mixers that will ensure thorough mixing by stirring action without the objectionable feature above referred to as characteristic of mixing by shaking the paint containers.

In accordance with the invention this objective is attained by providing a device having a base rotatably supporting a turntable on which an opened can is to be placed. The turntable is provided with means to rotate it. The device also includes a can-closing, rotatable disc attached to the base above and concentric with the turntable and a detachable stationary stirring element depending therefrom for entry into the can on the turntable when the disc is seated on the open mouth thereof. The disc is vertically adjustable into a fixed, can-closing position appropriate for the can whose contents are being stirred. In addition, the device includes means to effect relative vertical movement between the turntable and the disc so that after the stirring element has been removed and the disc returned to its fixed can-closing position with the cover set in place on its can, the can is resealed by effecting such relative motion.

Another objective of the invention is to provide a paint mixing device in which any one of a range of can sizes may be accommodated.

Yet another objective of the invention is to provide disc supporting means that will facilitate the positioning of the cover-closing disc both during the stirring and cover-pressing operation and while the stirring element is being attached or removed for cleaning.

In the accompanying drawings, there is shown an illustrative embodiment of the invention from which these

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and other of its objectives, novel features, and advantages will be readily apparent.

In the drawings:

FIGURE 1 is a section taken approximately along the indicated lines 1-1 of FIGURE 2,

FIGURE 2 is a partly sectioned, side elevation of a paint mixer in accordance with the invention, adjusted for use with a one gallon paint can,

FIGURE 3 is a fragmentary section taken approximately along the indicated lines 3-3 of FIGURE 2,

FIGURE 4 is a fragmentary section, on an increased scale, taken approximately along the indicated lines 4-4 of FIGURE 3,

FIGURE 5 is a fragmentary view, on an increased scale of a lock for use in adjusting the height of the pivot rod,

FIGURE 6 is a fragmentary view, generally similar to FIGURE 2, but showing the relationship of the can-closing disc to the turntable when a one pint can is supported thereby, and

FIGURE 7 is a view similar to FIGURE 5 illustrating the use of the device with a one quart can.

The paint mixer illustrated by the drawings has a base 1 having a chamber 1A. Mounted on the base 1 are uprights 2 and 3, by which the cross piece or head 4 is supported.

The upright 3 is tubular to slidably receive the depending pivot rod 5 fixed to the cross piece 4 and provided with vertically spaced annular recesses 5A, 5B, 5C and 5D establishing shoulders 6A, 6B, 6C and 6D. The upright 3 is provided with a locking device, generally indicated at 7, comprising a base 7A on the upright 3 slidably supporting a latch 7B for movement into and out of a position engaging a desired one of the shoulders 6A, 6B, 6C and 6D. The latch 7B is yieldably held in its locking position by a spring 7C and is provided with a knob 7D enabling the latch 7B to be released. While the latch 7B holds the pivot rod 5 against downward movement relative to the upright 3 unless manually released, it will be apparent that the latch 7B is forced into its inoperative position when the cross piece 4 is manually lifted, except the latch is in engagement with the shoulder 6A, because of the camming action of the surfaces of the recesses 5B, 5C and 5D below their shoulders.

The cross piece 4 has sockets 4A and 4B to receive the upper ends of the uprights 2 and 3, respectively, and the pivot rod 5. The cross piece 4 is also provided with locking devices generally indicated at 8 and 9, the locking device 8 being for detachably connecting the cross piece 4 to the upright 2 within the socket 4A and the locking device 9 being for detachably connecting the cross piece 4 to the upright 3 within the socket 4B. As the locking devices 8 and 9 may be of the same type as the locking device 7, their description is not detailed.

A can-supporting turntable 10 is mounted on a vertical shaft 11 having a keyway 12 within a sleeve 13 having a pin 14 entrant of the keyway 12 and provided with a worm gear 15. The sleeve 13 is the inner race of a ball bearing unit 16 within the base chamber 1A with its outer race 17 attached to the base 1 as by screws 17A. A worm 18 on the shaft 19 meshes with the worm gear 15 and the shaft 19 is journaled in the base 1 transversely thereof. The shaft 19 has a pulley 19A about which is trained a belt 20 also trained about the

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drive pulley 21 of a motor 22 whose control switch is indicated at 23 with the circuit controlled thereby being indicated by the cord 24.

By this arrangement, the shaft 11 and, accordingly the turntable 10, may be rotated while, at the same time, the turntable 10 may be raised upwardly relative to the sleeve 13. Such upward movement is effected by means of a cam 25 fast on a shaft 26 adapted to be turned by the handle 27. The shaft 26 is suitably journaled in supports 28 and is provided with a collar 26A. As will be apparent from FIGURE 3, the handle 27 may be turned from its solid line position, in which the turntable is held by the sleeve 13 in its lowermost position, into its dotted line position, in which the turntable 10 is raised to the maximum extent permitted by the cam 25.

The upper surface of the turntable 10 is shown as having concentric grooves 10A, 10B, 10C and 10D, for the rims at the bottom of half pints, pints, quarts, and gallon paint cans respectively. The grooves 10C and 10D are shown as provided with cleats 29 engageable by the bottom can rims to prevent slippage between the larger cans and the turntable 10. Such cleats are not necessary in the case of the smaller cans but may, of course, be provided in their grooves, if desired.

The cross piece 4 has a central vertical bore 30 slidably supporting the hollow post 31 with its axis coaxial with the axis of the turntable 10 and having a keyway 31A into which a set screw 32 extends, the set screw being threaded through the cross piece 4 and provided with an operating arm 33 to enable the post to be easily and securely locked in a desired position or freed to move upwardly or downwardly relative to the turntable 10 as required by the size of the paint can seated thereon.

The apparatus includes a cover disc 34 of sufficient size to close the mouth of the largest container that can be accommodated by the device, a gallon can in the case of the device being detailed. The disc 34 is connected by screws 34A to the outer race 35 by a ball bearing unit 36 whose inner race is in the form of an upwardly extending sleeve 37 which receives the lower end of the post 31. The sleeve 37 is detachably locked to the post 31 as by a set screw 38 also operative to engage with and lock the upper end of the stem of one of the stirring elements, the element for the gallon can being generally indicated at 39 in FIGURE 2.

As the stirring elements are substantially identical except for their size, only the element 39 is shown, see FIGURE 2. The element 39 includes a stem 40 dimensioned to fit in the socket provided by the lower end of the post 31. The stem 40 is provided with a socket 41, see FIGURE 3, to receive the set screw 38 thereby to ensure that the stem 40 and accordingly the element 39 is held against rotation and in a correct position relative to the interior of a can positioned on the turntable 10. Fixed on the stem are vertically spaced, radial blades 42, 43 and 44, each slightly pitched.

In the use of a paint mixer in accordance with the invention, an opened can is placed on the turntable 10. A gallon can is indicated at 45 in FIGURE 2, a quart can at 46 in FIGURE 7, a pint can at 47 in FIGURE 6, and a half pint at 48 in FIGURE 3. It will be assumed that the cover disc 34 has had the appropriate stirring element, the stirring element 39 in FIGURE 2, attached thereto and that the vertical position of the post 31 has been adjusted to bring and hold the disc 34 against the open mouth of the paint can with the stirring element 39 within the can 45. The switch 23 is then closed so that the turntable 10 is positively rotated and the can supported thereby is turned relative to the stationary stirring blades 42, 43 and 44 for a length of time to ensure that the paint is thoroughly mixed. In practice, turntable speeds in the neighborhood of 150 r.p.m. are most satisfactory.

The switch 23 is then opened and, when the turntable has stopped, the locking devices 8 and 9 are released to disconnect the cross piece 4 from the uprights 2 and 3.

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The cross piece 4 may then be lifted upwardly into a position in which the stirring element in use is out of its can. The pivot rod 5 will then be rotatably supported by an appropriate one of the shoulders 6A, 6B, 6C or 6D, the shoulder 6A in the case of a gallon can 45, the shoulder 6B in the case of a quart can 46, the shoulder 6C in the case of a pint can 47 and the shoulder 6D in the case of a half pint can 48. The cross piece 4 may then be swung into a position in which the agitator element is above a container indicated at 49 in FIGURE 2 provided with a mount 50 attached to the base 1 by a post 41 located adjacent the upright 3 and held against contact with turntable 10 by engagement of the mount 50 with the upright 3. The used stirring element 39 may be allowed to drip into the container 49 until it can be handled or the set screw 38 may be turned to release the stirring element 39 so that it may be deposited therein. The cover is replaced on the can 45 and the cross piece 4 is then swung back into position and the locking device 7 again actuated to release the pivot post so that the cross piece 4 again becomes locked to the upright 2 by means of the locking device. The handle 27 is now actuated and the can is raised to forcibly seat the cover thereon against the cover disc 34 which serves as a backing element.

It will thus be apparent that a paint mixing device in accordance with the invention is well adapted to meet a wide range of requirements ensuring thorough stirring with maximum ease and convenience in use.

I claim:

1. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, means to rotate said turntable, a support on said base, a disc dimensioned to close the can seated on said turntable and rotatably carried by said support above and coaxial with said turntable, a stirring element detachably connected to said support and depending axially relative to said disc for entry into a can seated on said turntable, said disc and said element being movable relative to said base from a fixed position in which said can is closed upwardly at least into a position in which said element may be removed from the can, and means operable to effect relative vertical movement between said turntable and said disc, one towards the other, whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place on its can, and the disc reseated thereon, said relative movement may be effected to reseal the cover.

2. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, means to rotate said turntable, a support on said base, a disc dimensioned to close the can seated on said turntable and rotatably carried by said support above and coaxial with said turntable in a fixed position, a stirring element detachably connected to said support and depending axially relative to said disc for entry into a can seated on said turntable, said disc and said element being movable relative to said base from a fixed position in which said can is closed upwardly at least into a position in which said element is above the can, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place and the disc returned to said position, the turntable may be raised to reseal the cover against said disc.

3. The paint mixer of claim 2 in which the turntable rotating means includes a vertical sleeve rotatably supported by the base and a shaft within the sleeve and slidably splined thereto, the shaft being connected axially to and supporting the turntable with its lower end protruding below the lower end of the sleeve, and the turntable raising means includes a transverse shaft rotatably supported by the base and provided with an arm by which it may be turned, said transverse shaft extending under the lower

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end of the turntable supporting shaft and including a cam engageable therewith as the arm is turned thereby to raise the turntable supporting shaft relative to the sleeve.

4. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, means to rotate said turntable, a pair of uprights attached to said base, a cross piece carried by said uprights, a member attached to said cross piece for vertical sliding movement relative thereto and with its axis in registry with the axis of the turntable, a disc dimensioned to close the mouth of a can and rotatably supported by said member above said turntable, and means to lock said member to said cross piece when said disc is in a position to close the mouth of a container seated on said turntable, a fixed stirring element detachably connected to said member and depending below said disc for entry into a can seated on said turntable, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place, the disc reseated thereon and its position fixed by said locking means, the turntable may be raised to reseal the cover against said disc.

5. The paint mixer of claim 4 in which the lower end of the member has an axial socket extending upwardly above the disc, the stirring element includes a part slidably entrant of the socket, and the locking means is a set screw carried by the member above the disc and engageable with the stirring element part when seated in the socket and the stirring element part has a bore for the set screw thereby to hold the element against rotation and in a fixed position relative to the disc.

6. The paint mixer of claim 4 in which the lower end of the member has an axial socket extending upwardly above the disc, the stirring element includes a part slidably entrant of the socket, and the locking means is a set screw carried by the member above the disc and engageable with the stirring element part when seated in the socket.

7. The paint mixer of claim 6 in which the rotatable disc includes a bracing unit whose inner race is a sleeve extending upwardly of the disc, the lower end of the member has an axial socket extending upwardly above the disc, the stirring element includes a part slidably entrant of the socket, and the locking means is a set screw threaded through the sleeve and the member and engageable with the stirring element part when seated in the socket.

8. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, means to rotate said turntable, a pair of uprights attached to said base, a cross piece detachably connected to at least one upright and including a vertically slidable and rotatable connection with the other upright, a member attached to said cross piece for vertical sliding movement relative thereto and with its axis in registry with the axis of said turntable, a disc dimensioned to close the mouth of a can and rotatably supported by said member above said turntable and means to lock said member to said cross piece when said disc is in a position to close the mouth of a container seated on said turntable, a fixed stirring element detachably connected to said member and depending below said disc for entry into a can seated on said turntable, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place, the disc replaced and its position fixed by said locking means, the turntable may be raised to reseal the cover against said disc.

9. The paint mixer of claim 8 in which the cross piece is detachable from both uprights.

10. The paint mixer of claim 8 in which the cross piece is detachably attached to one upright, the other upright includes an upwardly opening socket, and the cross piece includes a pivot member extending downwardly into the

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socket and of sufficient length to provide a pivot for the cross piece when the member has been so raised as to lift the element from the can.

11. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, said turntable having a series of concentric grooves, one for each of a predetermined one of a series of can sizes, means to rotate said turntable, a rotatable disc dimensioned to close the mouth of the can of the largest size of said series when seated on said turntable and supported by said base above said turntable, a stirring element for the size of the particular can seated on said turntable depending from said disc for entry into said can, said disc being movable relative to said base from a mouth closing position selected for said can upwardly into a position in which said element is above said can, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place and the disc replaced, the turntable may be raised to reseal the cover against said disc.

12. The paint mixer of claim 11 in which at least the groove in the turntable for the largest size can has a plurality of cleats therein engageable with the bottom rim of the can.

13. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a can-supporting turntable rotatably mounted on said base, means to rotate said turntable, a pair of uprights attached to said base, a cross piece detachably connected to one upright and including a vertically slidable and rotatable connection with the other upright, a member attached to said cross piece for vertical sliding movement relative thereto and with its axis in registry with the axis of said turntable, a disc dimensioned to close the mouth of a can and rotatably supported by said member above said turntable and means to lock said member to said cross piece when said disc is in a position to close the mouth of a container seated on said turntable, a fixed stirring element detachably connected to said member and depending below said disc for entry into a can seated on said turntable, and a container detachably attached to said base in a position in the path of said stirring element when said cross piece is detached from said one upright and raised to lift said element from said can and pivoted relative to said other upright, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place, the disc replaced and its position fixed by said locking means, the turntable may be raised to reseal the cover against said disc.

14. In a paint mixer for mixing paint in a can after the cover thereof has been removed, a base, a turntable rotatably mounted on said base for supporting any can of a predetermined size range, means to rotate said turntable, a pair of uprights attached to said base, a cross piece, said cross piece being detachably locked at one end to one upright and including a depending pivot at the other end including a series of vertically spaced annular seats providing shoulders, said other upright being tubular to slidably and rotatably receive said pivot, said tubular upright including a lock engageable with any one of said shoulders, a member attached to said cross piece for vertical sliding movement relative thereto and with its axis in registry with the axis of the turntable, a disc dimensioned to close the mouth of a can and rotatably supported by said member above said turntable, and means to lock said member to said cross piece when said disc is in a position to close the mouth of a container seated on said turntable, a fixed stirring element detachably connected to said member and depending below said disc for entry into a can seated on said turntable, said shoulders being located for different sized cans and each establish-

ing a position of the cross piece wherein the element for the appropriate can size is above but out of the can, and means operable to raise said turntable whereby, after stirring and after the disc and element have been lifted from the can and the element detached, the can cover set in place, the disc reseated thereon and its position fixed by said locking means, the turntable may be raised to reseal the cover against said disc.

15. The device of claim 14 in which the lock is yieldable on upward movement of the pivot relative to the tubular upright.

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