Nov. 24, 1936. J. W. BUMPUS 2,061,547

PAINT MIXER

Filed Oct. 8, 1935

Fig. 1.

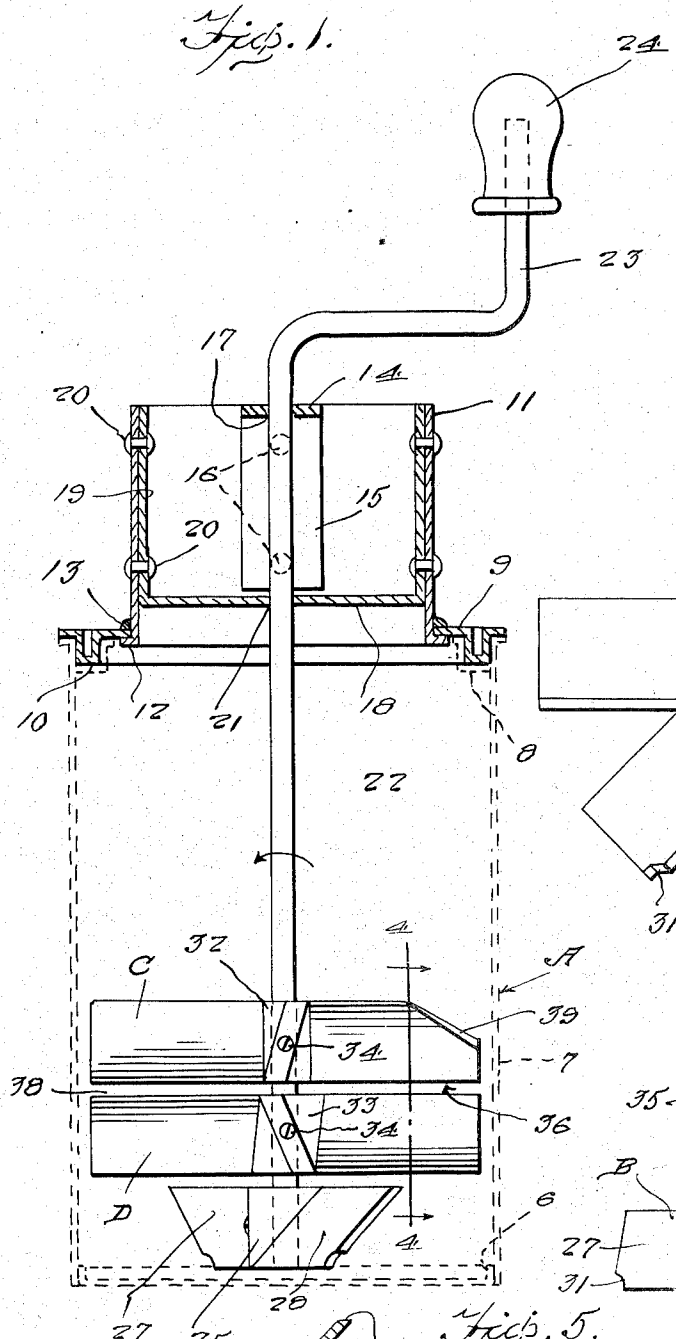


Fig. 2.

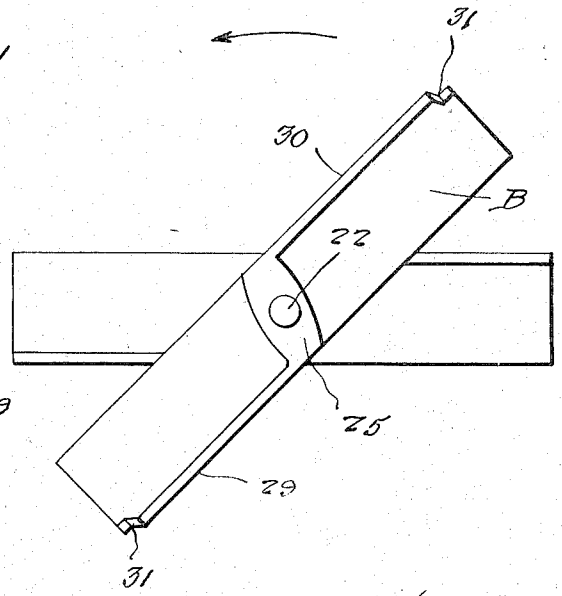


Fig. 3.

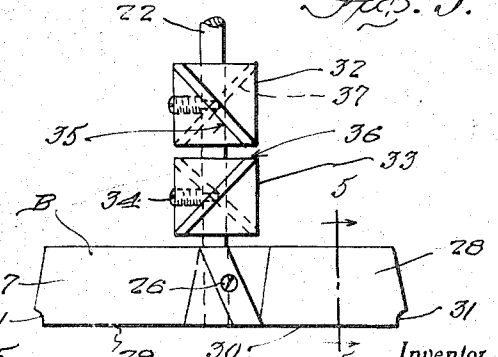


Fig. 4.

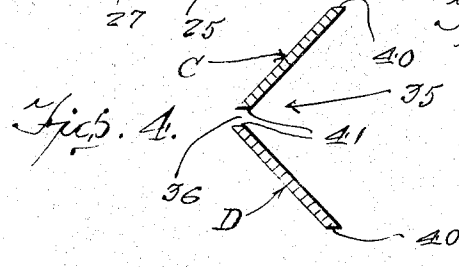
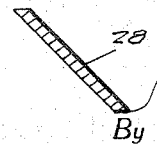


Fig. 5.



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PAINT MIXER

Jesse W. Bumpus, Memphis, Tenn.

Application October 8, 1935, Serial No. 44,121

2 Claims. (Cl. 259—107)

This invention relates to paint mixers.

The primary object of the present invention is to provide a mixer designed to fit directly on the conventional paint cans in pint, quart, or gallon sizes whereby the paint may be mixed directly in the original container.

Another feature of the present invention is to provide a scraping blade on the inner end of the manually operated shaft to scrape the paint free of the bottom and sides of the container and cause the heavier parts of the paint to be elevated by the scraping blade in the path of companion blades which latter are arranged to cause a thorough mixing of the paint that has been elevated by the scraping blade.

Another feature of the present invention is to arrange the mixing blades to provide a mixing chamber on each side of the axis of the shaft to thoroughly mix the paint.

Further objects of the invention are to provide a device of the character referred to, that is strong, compact and durable, thoroughly reliable for its intended purpose, very simple to manipulate, and that may be very economically manufactured.

With the foregoing and other objects in view the invention consists of a novel construction, combination and arrangement of parts as will be hereinafter more specifically described and illustrated in the accompanying drawing wherein is disclosed an embodiment of the invention, but it is to be understood that changes, variations, and modifications may be resorted to without departing from the spirit of the claims hereunto appended.

In the drawing wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a detailed vertical section through the mixer of the present invention shown assembled on a paint can which latter is shown in dotted lines.

Figure 2 is a bottom plan view of the mixing device removed from the can.

Figure 3 is a side elevation of the lower portion of the operating shaft showing the arrangement of the scraping blade and mixing paddles.

Figure 4 is a vertical section taken substantially on line 4—4 of Figure 1 and looking in the direction of the arrows.

Figure 5 is a vertical section taken substantially on the line 5—5 of Figure 3 and looking in the direction of the arrows.

Referring to the drawing in detail A indicates a conventional paint can constructed in accordance with the conventional paint cans on the market and showing an adaptation therewith of the mixer in accordance with the present invention. In the conventional paint cans there is customarily formed a horizontal shoulder 6 around the bottom thereof where the bottom is soldered to the side walls 7 of the can. Furthermore, the conventional can is formed with a relatively large opening in the top wall thereof and around the opening in the margin of the top wall is a circular channel indicated generally at 8. When the paint cans are shipped from the factory full of paint there is a cover carried by the top wall formed with a tongue or lip which frictionally seats in the channel 8 in the top wall.

I have constructed the mixer of the present invention to be attached directly to the individual can wall whereby the paint may be mixed in the can without pouring the same into a separate container. In carrying out the spirit of the invention I form a ring cover 9 formed with a depending tongue 10 around the margin thereof which tongue is adapted to frictionally seat in the channel 8 of the paint can. When it is desired to mix the paint the original cover is removed and the ring 9 inserted in the place of the cover.

To form a support for the shaft I make an upstanding sleeve 11 with a flange 12 about the lower end thereof which fits against the inside of the ring 9 within the opening in the ring. Around the outside of the ring 9 I solder the sleeve as at 13 to the ring 9 with the flange on the inside overlapping the margin of the ring. The inside of sleeve 11 is open and registers with the opening in the ring 9.

The crown 14 of an inverted U-shaped bearing bracket extends across the top of the sleeve 11 flush with the upper edges thereof. This bracket is formed of a relatively narrow metal bar. Depending legs 15 are riveted as at 16 to the inside wall of the sleeve 11 and in the center of the crown 14 is a bearing opening 17. The crown 18 of an other U-shaped bracket extends across the inside of the sleeve 11 and the upstanding legs 19 thereof are riveted as at 20 to the side walls of the sleeve. In the center of the crown is a bearing opening 21. The bearing opening 21 and the bearing opening 17 are in alinement with each other and located along the axis of the sleeve 11. The lower bearing bracket is formed of a metal bar of substantially the same width as the metal bar in the upper bearing bracket. The crown 18 of the lower bearing bracket and the crown 14 of the upper bearing bracket are

spaced vertically from each other but they extend in diametrically opposite directions.

An intermediate portion of the manually operated shaft 22 extends through the alined bearing openings 17 and 21 and is free to slide vertically therein. The end of shaft 22 extending above the crown of the upper bracket is formed with a crank 23 on the end of which is a handle 24 to be grasped in the hand when the mixing operation is carried on. On the inner end of the shaft 22 that extends into the can A is mounted a scraping blade B. This blade is formed with a central hub 25 formed with an opening therein to receive the end of the shaft and the blade is fixed to the shaft by means of a set screw 26 in the hub. The leading faces 27, 28 of the mixing blade on the opposite sides of the shaft 22 incline upwardly in opposite directions from the leading edges 29, 30 thereof. By having the leading faces 27, 28 inclining upwardly the thick portions of the paint such as the pigments that settle to the bottom of the can are scraped free of the bottom and directed upwardly by the faces when the shaft 22 is rotated in a clockwise direction as shown in Figure 1 of the drawing. The leading edges 29, 30 are on the bottom of the blade and they are sharp. The ends of the scraping blade B are substantially straight and terminate inwardly in a slight spaced relation to the side walls 7 of the can when it is inserted therein. On the lower corners the scraping blade B has recesses 31 that overhang the shoulder 6 on the bottom wall of conventional can structure.

A pair of mixing paddles C, D, are fixed to the vertical portion of the shaft 22 inwardly of the scraping blade 25 in slight spaced relation to this scraping blade. The upper mixing paddle C is formed with an apertured central hub 32 and the lower paddle D is likewise formed with an apertured hub 33. An intermediate portion at the lower end of shaft 22 extends through the apertures in these hubs 32, 33 and the blades are fixed to the shaft by means of set screws 34 extending through the hub and bearing on the shaft. The portions of the mixing paddles C, D on one side of the shaft 22 are inclined at a right angle with respect to each other, while the portions of the mixing paddles C, D, on the other side of the shaft 22 incline at a right angle with respect to each other, but the latter incline in opposite directions. The angular arrangement of the mixing paddles C, D on one side of the axis of the shaft forms a mixing chamber indicated generally at 35 which is angular in configuration having a relatively wide mouth between the leading edges of these portions of the blades and a relatively narrow space 36 between the trailing edges of the blades, which narrow space is at the apex end of the angular chamber. On the other side the blades C, D, likewise form a mixing chamber indicated generally at 37 and this mixing chamber is oppositely disposed with respect to the mixing chamber 35. The mixing chamber 37 has the wide opening on the leading side and a relatively narrow space 38 on the trailing side of the chamber and at the apex of the angularly disposed blades. The spaces 36 and 38 are formed by spacing the blades C, D one above the other. The outer ends of mixing chambers 35 and 37 are open, while the inner ends of the same chambers are closed by the hubs 32, 33 on the respective blades. The length of the paddles C, D from end to end extend substantially from one side wall of the can to the diametrically opposite side and so that the device may be inserted and removed from the can. I cut the upper, outer corner of the upper mixing paddle C on a bias as at 39 to permit the device to be tilted on an angle for insertion and removal thereof. The leading edges of the mixing paddle C, D at the wide mouth of each chamber 35, 37 are sharpened into knife edges 40, while the trailing edges at the narrow spaces 36, 38 of the respective chambers are sharp at the trailing portion and blunt on the leading portion of the edge as shown at 41 in Figure 4 of the drawing.

When paint, enamel, and lacquers are allowed to stand for any considerable time, the pigments therein settle to the bottoms of the cans. With the mixing device of the present invention the shaft 22 is not only journalled in the opening in the brackets, but slidable vertically therein. When the ring 9 is attached to the can to be mixed the scraping blade B is free to sink in the can to the point where the pigment needs some scraping action. As the handle 24 is rotated in a clockwise direction the scraping blade will cause the heavier pigment portions to rise up the inclined faces 27, 28 of the mixing blade during the rotation thereof and enter the wide mouths of the mixing chambers 35, 37. As the mixing chambers rotate the pigment will be thoroughly mixed with the vehicle by contacting with the angular walls of the chamber and discharged through the relatively narrow spaces 36 and 38 on the trailing ends of the chambers. As the scraping blade B scrapes various layers of the heavier pigment at the bottom of the can the entire device will sink through the coagulated pigment portion until the lower edge of the scraping blade bears upon the bottom of the can. In this latter position further rotation of the scraping blade and mixing paddles will cause a thorough mixing between the pigment and vehicle of the paint, enamel or lacquer.

The paint mixer of the present invention can be made to fit cans and containers up to five gallon capacity. Any kind of a container lid or ring 9 to fit the specific can structure may be secured on the sleeve 11 of the mixer. The container lid or ring 9 as shown is only used on the type of container illustrated.

The narrow metal bars of the U-shaped brackets in the sleeve serve three different purposes, namely, a reinforcement for the sleeve 11; they keep the scraping blade and paddles in line so that they will not hang or bear on the seam of the can or container; and they allow the raising and lowering of the paddles and mixing blade in the container.

The sleeve 11 can be used for pouring thinners or reducers into a full can of material. By pressing the ring 9 down tight the sleeve 11 may be filled nearly full of thinners or reducers for cutting the material and making it of the proper consistency. After mixing thoroughly the excess mixed liquid in the sleeve may be poured into another container. The sleeve also acts as a pouring spout as well as an additional part of the container.

The bottom paddle or scraping blade sits slightly in front of the two mixing paddles. For this reason mixing material with heavy pigment that has settled in the container so as to pass under the lower mixing paddle in big lumps so it will not clog the spaces between the upper and lower mixing paddles. The upper and lower mixing paddles will catch the small floating lumps. The bottom scraping blade will keep throwing the big lumps through the space between the

scraping blade and lower mixing paddles until they are small enough to float where they will be caught in the upper and lower mixing paddles and the mixing chambers between them. The paddles must be as close to the container seam in the side wall thereof as they can be, with a space of approximately one-sixteenth of an inch. The bottom scraping blade will have a notch or notches 31 so as to fit each kind of a container, so that the same will scrape all of the pigments and settlings of the paint, and that this may be finally completely mixed with the paint vehicle.

In the usual and customary way that paint is mixed today, we cannot mix the pigments thoroughly and have to strain the pigments out of the liquid which is an injury to the paint and lessens the color often-times resulting in leaving off-color blends from the original color intended, loses some of its richness in coloring and is not very uniform.

Having described the invention, what I claim is:

1. A paint mixer comprising a vertically disposed rotary shaft adapted for axial movement in its supporting bearing, a scraping blade fixed at its center to the lower end of the shaft, the parts of the scraping blade on each side of the shaft arranged at an angle to the radius with the leading faces thereof inclined upwardly from the leading to the trailing edge, a pair of radially arranged mixing paddles fixed at their centers to the shaft one spaced upwardly of the other and both being spaced upwardly of and in the wake of the scraping blade, said mixing paddles being disposed at an angle with respect to each other to provide angular mixing chambers one on each side of the axis of the shaft, and said mixing chambers having a wide mouth on the leading side and a relatively narrow discharge space on the trailing side of the paddles.

2. In a paint mixer, the combination with a paint receptacle formed with an opening and a circular channel in the top wall of a cover for the receptacle formed with a peripheral tongue frictionally seatable in the channel and an opening about the tongue, an upstanding sleeve carried by the cover and registering with the opening therein, a pair of U-shaped bearing brackets arranged in cruciform relation with one bracket being inverted with respect to the other and having their legs secured to the inside of the sleeve and their crowns in spaced relation, a rotary shaft journalled for axial movement in the spaced crowns of the brackets, a radially extending scraping blade mounted on the inner end of the shaft, and radially extending mixing paddles mounted on the shaft outwardly of the scraping blade.

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