Feb. 7, 1939. J. H. INGRAHAM 2,146,372

AGITATOR

Filed July 9, 1936

Fig. 1.

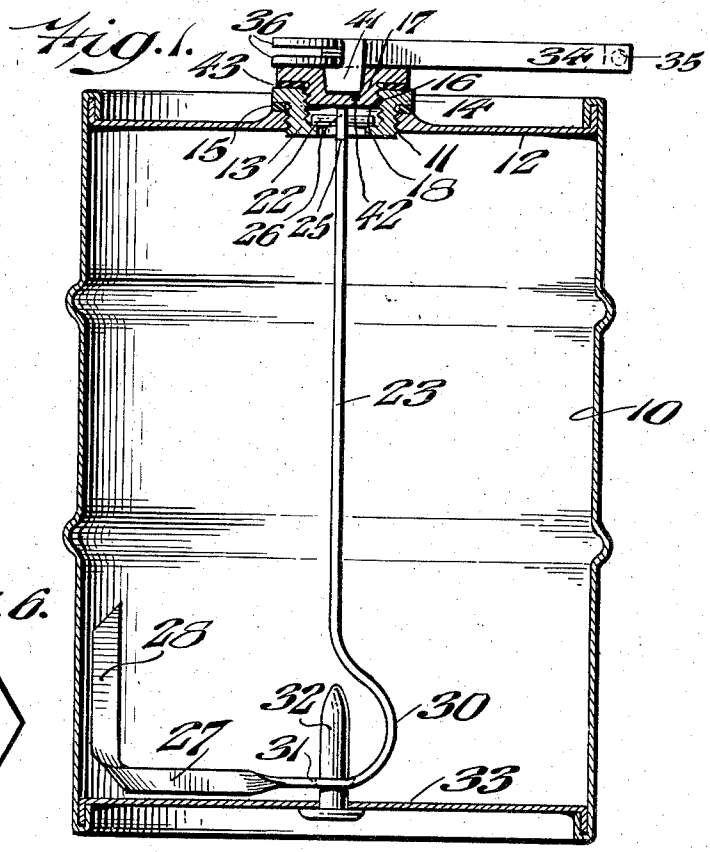


Fig. 6.

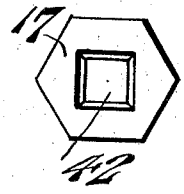


Fig. 2.

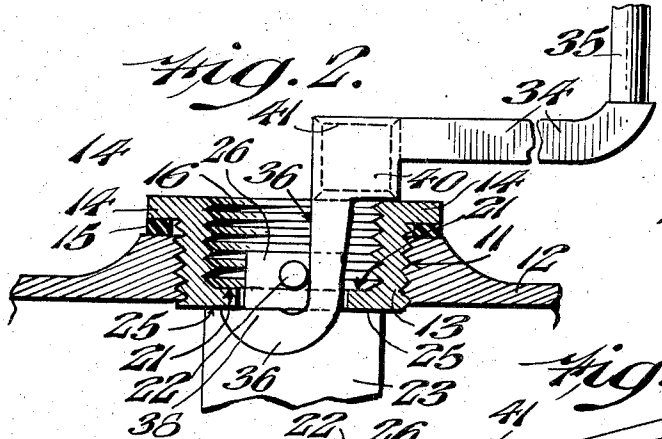


Fig. 4.

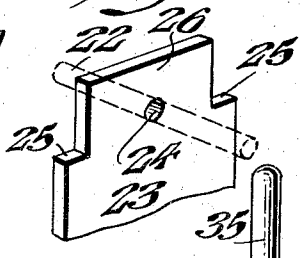


Fig. 5.

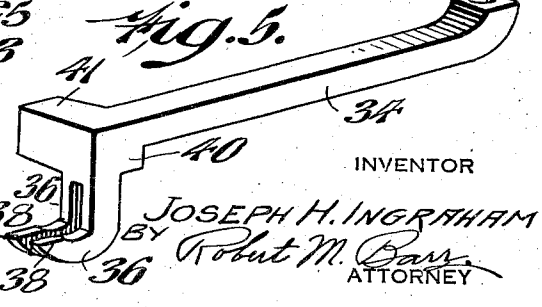
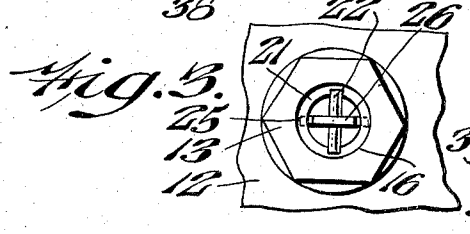


Fig. 3.



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Patented Feb. 7, 1939

2,146,372

UNITED STATES PATENT OFFICE

2,146,372

AGITATOR

Joseph Holt Ingraham, Wayne, Pa.

Application July 9, 1936, Serial No. 89,753

4 Claims. (Cl. 259—108)

The present invention relates to mixing apparatus and more particularly to what is known as an agitator for stirring and mixing paint or other products shipped or handled in drums or other containers.

In agitators as heretofore constructed and which are assembled in a drum by insertion through a bung hole great difficulty has been experienced in attaching a handle to the rotatable agitator and thereafter easily rotating the agitator. Also it has been a problem of how to prevent the agitator from becoming displaced during the stirring operation. Furthermore the handle assembly has been expensive and entirely out of proportion in comparison with the agitator proper.

Some of the objects of the present invention are to provide an improved mounting means for an agitator of the type assembled by insertion through the bung hole of a container; to provide a bearing for one end of an agitator which prevents axial movement of the agitator while operating; to provide a cheap and efficient operating mechanism for an agitator; to provide a novel handle assembly for an agitator; and to provide other improvements as will hereinafter appear.

In the accompanying drawing Fig. 1 represents a sectional elevation of a drum equipped with an agitator embodying one form of the present invention; Fig. 2 represents a detail of the handle end of the drum showing one form of handle of the present invention in position for rotating the agitator; Fig. 3 represents a detail in plan of the bung hole fitting in place; Fig. 4 represents a detailed perspective of the upper end of the agitator bar; Fig. 5 represents a perspective of one form of operating handle; and Fig. 6 represents a plan of the bung.

Referring to the drawing one form of the present invention is shown assembled in a drum 10 for paint of the type having a bung hole 11 in one head 12. In the present instance the bung hole 11 is threaded to receive an annular threaded fitting 13 so that the flange 14 thereof can be clamped against a packing washer 15 to prevent leakage. In accordance with the present invention the bore of the fitting 13 is one having two diameters, one 16 being relatively large and threaded to receive the threaded portion of the bung or closure 17, while the other 18 is of circular contour. The encircling wall 20 of the bore 18 forms a circular ledge 21 which serves as a bearing support for a pin 22 from which the agitator bar 23 is suspended. Thus in assembled condition the pin 22 passes through a hole 24 in the bar 23, while its end seats on the ledge 21.

In order to prevent axial movement of the bar 23 in operation its upper end is cut away at opposite sides providing two oppositely disposed shoulders 25, lying in the same horizontal plane, and a tongue 26. The width of the bar 23 including the shoulders 25 is greater than the diameter of the bore 18 and consequently any attempt of the bar 23 to move towards the bung hole is prevented by the engagement of the shoulders 25 with the adjacent face of the fitting 13. The width of the tongue 26 is such as to enter the bore 18 with a relatively snug fit so that while there is sufficient clearance for it to turn relative to the fitting 13, there is no binding of one part on the other as will interfere with the free rotation of the bar 23 about its axis.

While the agitator bar 23 may be of any suitable shape for efficiently stirring the contents of the drum 10, the preferred form is a straight axially disposed bar 23 of rectangular section having its lower end bent at right angles thereto to form a radially disposed arm 27 which terminates in an agitating blade 28 extending towards the middle of the drum and generally parallel to the axis thereof. The axial portion of the bar 23 joins the arm 27 by an offset 30 which serves to properly locate the bearing hole 31 in the arm 27 in co-axial relation with the main part of the bar 23. This hole 31 receives a pivot pin 32 which is welded in proper axial position in the head 33 of the drum 10.

In order to rotate the bar 23 within the drum 10, a novel handle 34 is provided having an angularly disposed hand grip 35 at one end and an ingenious bar engaging assembly at the other end. This assembly, as here shown, consists of a downwardly disposed bifurcated gripping implement forming two hook members 36 so spaced apart as to receive and straddle the reduced end of the bar 23. Each of the members 36 is provided with bearing faces 38 to coact with the inner face of the fitting 13 and thus maintain the handle in proper horizontal position for operating purposes. This bracing of the handle under the fitting is assisted by a lug 40 formed at the required place on the handle to rest upon the upper face of the fitting 13 when the handle is in operating position. A key 41 is also formed on the handle 34 of the shape necessary to fit a shaped recess 42 in the bung 17, for the purpose of turning the bung to or from its closed position in the fitting 13. Preferably a washer 43 is interposed between the fitting 13 and the

bung 17 to prevent leakage during shipment or otherwise.

From the foregoing it will be apparent that once assembled in a drum the bar 23 is prevented, at all times and under all conditions, from riding vertically upward to become displaced. This is made possible in the present construction by the notched bar end whereby a tongue 26 can only enter the fitting 13 while the shoulders 25 act as stops against the inner face of the fitting. Displacement of the bar 23 in the opposite direction is prevented because it is suspended by the fixed pin 22 which rides upon the ledge 21. Thus in one direction of axial movement the bar 23 is restrained by means formed upon the bar, while in the opposite direction of axial movement the bar 23 is restrained by the ledge 21 of the fitting 13 coacting with a part on the bar 23.

When it is desired to stir the contents of the drum 10, the drum is placed in an upright position (such as shown in Fig. 1) and the handle 34 is then placed with the key 41 inserted in the recess 42. By rotating the handle 34 in the proper direction the bung 17 can be unscrewed from the fitting to permit access to the accessible stirring bar 23. With the bung 17 removed the handle 34 is brought to a position where the torque producing implement can be lowered into the fitting bore 16 to straddle the tongue 26 with its ends under the pin 22, being there held by upward thrust of the bifurcations against the lower face of the fitting 13 and the downward thrust of the lug 40 on the upper face of the fitting 13. By turning the handle 34 in a plane parallel to the head 12, the bar 23 and its agitating elements will be caused to travel around and around within the drum for complete and efficient mixing of the product.

While only a single form is shown in which this invention may be embodied, it is to be understood that the invention is not limited to any specific construction, but might be applied to various forms without departing from the spirit of the invention or the scope of the appended claims.

Having thus described my invention, I claim:—

1. In a device of the character stated, a fitting arranged to fit the bung hole of a container, said fitting having a bore therethrough, a bung for closing one end of said fitting, an agitator bar in said drum having one end located in said bore, means carried by said bar to coact with said fitting to prevent downward movement of said bar, and means carried by said bar to coact with the inner face of said fitting to prevent upward movement of said bar, and handle means arranged to cooperate with said bar to turn the latter when said bung is removed.

2. In a device of the character stated, the combination of a fitting arranged to fit the bung hole of a container, said fitting having a bore opening into said container, an agitator bar having a tongue to enter said bore and a shoulder to limit the movement of said tongue within said bore, means to suspend said bar from said fitting, and a handlle for engaging said bar for turning movement.

3. In a device of the character stated, the combination of a fitting arranged to be mounted in the bung hole of a container, said fitting having a bore opening into said container and a ledge encircling said bore, an agitator bar having a reduced end forming a tongue to enter said bore and shoulders to abut said fitting to limit movement of said bar in one direction, a pin traversing said tongue to seat on said ledge to suspend said bar in operative position, and a handle for rotating said bar.

4. In a device of the character stated, the combination of a fitting arranged to be mounted in the bung hole of a container, said fitting having a bore opening into said container and a ledge encircling said bore, an agitator bar having a reduced end forming a tongue to enter said bore and shoulders to abut said fitting to limit movement of said bar in one direction, a pin traversing said tongue to seat on said ledge to suspend said bar in operative position, a handle, and a bifurcated implement on said handle to enter said bore and straddle said bar whereby turning of said handle rotates said bar.

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