May 12, 1964 F. J. PUCHALSKI 3,132,850

ARTICULATED STIRRING OR MIXING DEVICE

Filed April 16, 1962

2 Sheets-Sheet 1

FIG. 1

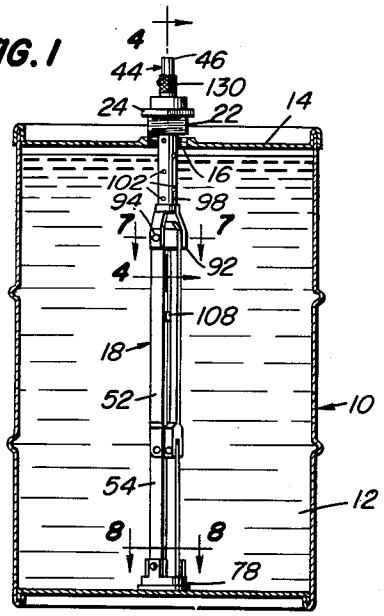


FIG. 2

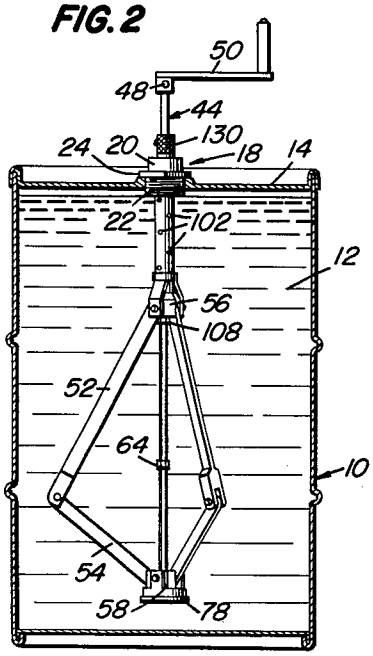
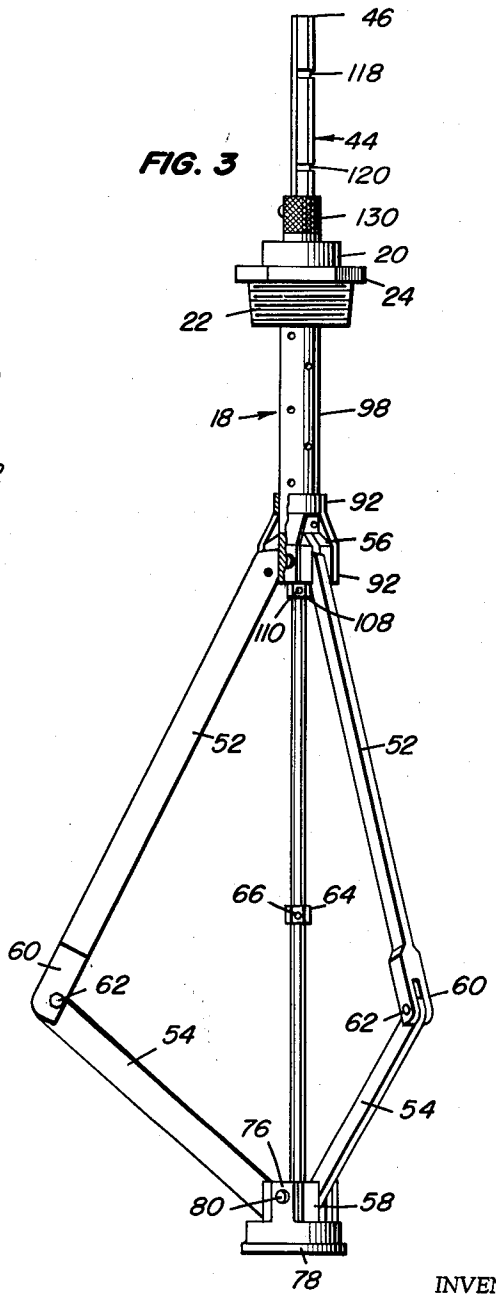


FIG. 3



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May 12, 1964 F. J. PUCHALSKI 3,132,850

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2 Sheets-Sheet 2

FIG. 4

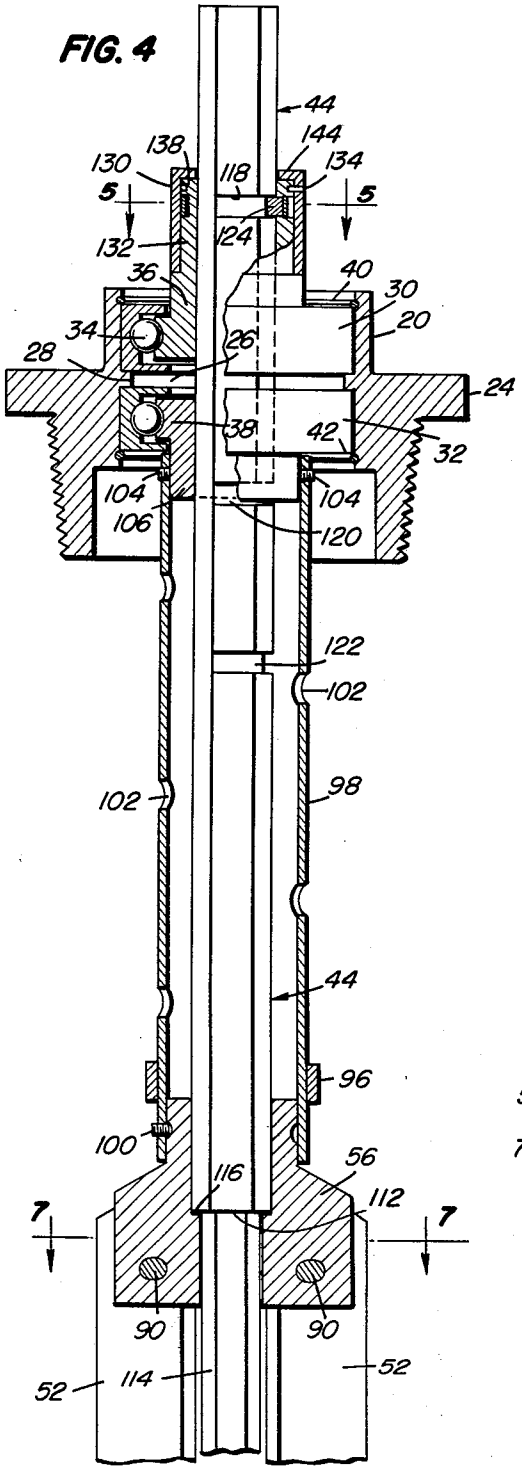


FIG. 5

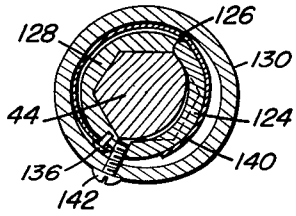


FIG. 6

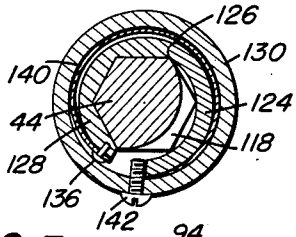


FIG. 7

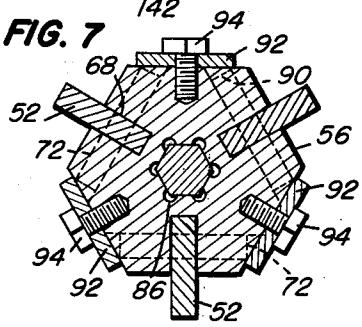
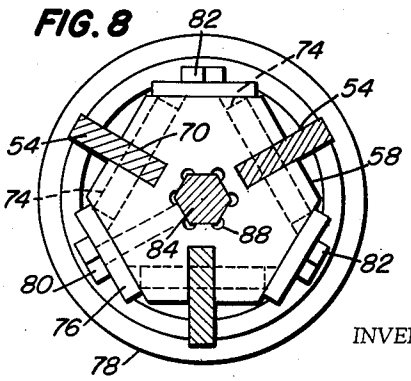


FIG. 8



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3,132,850

ARTICULATED STIRRING OR MIXING DEVICE

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Filed Apr. 16, 1962, Ser. No. 187,889
14 Claims. (Cl. 259—108)

This invention relates to readily insertable and removable articulated stirring device for filled containers such as barrels and conventional fifty-five gallon drums in which paint or similar products having suspended solids are shipped and stored, and which must be mixed or stirred before the product can be entirely removed from the container.

It is a further object of this invention to provide a stirring device for a container which may be readily inserted and removed from a filled container of paint or similar products, and which thereby makes it possible to ship and store such product in conventional containers such as are used for shipping and storing purely liquid products, without the necessity of providing special containers in which a stirring device must be pre-installed before the container is filled and which must be shipped and stored in the container until used, making it liable to be damaged during shipping before use.

A further object of this invention is to provide a stirring device for containers filled with products carrying suspended solids which may be readily inserted and removed from such a container, and which may be used at the destination in a plurality of containers of the same product, and then, when cleaned, may be readily inserted, used and removed from a series of containers containing a somewhat different product, such as a different type or color of paint, for instance.

Still a further object of this invention is to provide a stirring device having articulated stirring arms which may be collapsed to a position to enter a container through its bunghole and then be readily expanded to a stirring position within the container, and, when the stirring is completed, may be readily removed for insertion in another container filled with the same product, and furthermore, may be either manually or power operated.

With the foregoing and other objects in view, as will hereinafter become apparent, this invention comprises the combinations, constructions, and arrangements of parts as hereinafter set forth, disclosed, claimed, and illustrated in the accompanying drawings, wherein:

FIG. 1 is an elevational view of the readily insertable and removable articulated stirring device of this invention for filled containers having a bunghole therein, in minimum diameter collapsed position, within the container.

FIG. 2 is a similar view in maximum diameter position.

FIG. 3 is a partially broken elevational view on a large scale.

FIG. 4 is a partly sectional view, on a still larger scale, on line 4—4 of FIG. 1.

FIG. 5 is a sectional view on line 5—5 of FIG. 4, showing the locking bolt in locked position.

FIG. 6 is a similar sectional view showing the locking bolt in unlocked position.

FIG. 7 is a sectional view on lines 7—7 of FIGS. 1 and 4.

FIG. 8 is a sectional view on line 8—8 of FIG. 1.

There is shown at 10 a container such as a conventional barrel or drum used in shipping and storing ordinary liquids, which is here used for the type of liquid, such as paints, which contains solid particles in suspension which normally settle to the bottom and tend to solidify, making it extremely difficult to remove all the liquid with the solids in proper suspension dispersed through the liquid. Such containers may be of any size, but are conventionally of a fifty-five gallon size. As shown, the container 10 is filled with a liquid 12 and has a head 14

provided with a standard bunghole 16 through which the liquid 12 is inserted into or removed from the container 10. In some cases, the container 10 may be an open top container, in which case, a temporary head having a conventional bunghole may be secured across the open end thereof for cooperation with the liquid stirring, agitating or mixing device 18 of this invention.

This stirring device 18 includes a plug 20 provided with a tapered thread 22 for removably cooperating with the conventional tapered thread of the conventional bunghole 16. A wrench cooperating flange 24, usually hexagonal in outline, provides for ready insertion and removal of the plug 20 in the bunghole 16. The plug 20 is provided with an axially extending aperture 26 from the wall of which there extends an internally extending flange 28 intermediate its ends. Fitted into this axial aperture 26 against opposite sides of this internal flange 28 is a bearing means consisting of a pair of outer upper and lower race member 30 and 32, bearing balls 34 and cooperating upper and lower race members 36 and 38. Spring retaining rings 40 and 42 and cooperating annular grooves in the wall of plug aperture 26 hold the outer races 30 and 32 in position.

Axially slidable through complementarily contoured apertures in the inner races 36 and 38 is a hexagonally shaped drive shaft 44, the outer end 46, outside of the container 10 and the plug 20 having removably secured thereon, as by a stud screw 48, any suitable shaft rotation means, here shown as a crank handle 50 for manual operation, it being obvious that any conventional type of power means, such as an electric motor or air powered motor may be substituted therefor when convenient.

Mounted for operation by the drive shaft 44 are a plurality of articulated stirring arms consisting of long arms 52 and short arms 54 pivotally linking a first linkage block 56 to a second linkage block 58, the second linkage block 58 being also secured to the inner end 84 of the drive shaft 44, while the first linkage block 56 is secured to the inner race 38 of the bearing means. The long arms 52 have bifurcated fingers 60 in between which the joining ends of the short arms 54 extend and are pivoted thereto by pins 62. The pivot apertures for these pins 62, and the pivot apertures at the other ends of both sets of arms are off center of the axes of the arms toward the side that is nearer to axis of the drive shaft 44. As a result, axial extending movement of the drive shaft 44, particularly when the arms 52 and 54 are in the substantially parallel position shown in FIG. 1 in contact with the abutment collar 64 suitably secured by a set screw 66 on the drive shaft 44, will always result in the arms 52 and 54 articulating outwardly toward a maximum diameter stirring position. This prevents any dead center alignment of the arms to prevent proper articulation of the arms.

Both linkage blocks 56 and 58 are provided with axially aligned slots 68 and 70 into which the ends of the arms 52 and 54 extend and are pivoted on pivot pins 72 and 74 extending transversely therethrough in pin apertures which extend through the sides of the blocks 56 and 58. In the case of the second linkage block 58, the pins 74 are held in their apertures by fingers extending upwardly from a stabilizer guard ring 78 and secured in place by studs bolts 80 and 82, it being noted that stud bolt 80 also extends into securing contact with the lower end 84 of the drive shaft 44, thus securing both the second linkage block 58 and the stabilizer guard ring 78 to the drive shaft 44. The ring 78 thus guards the stirring device 10 against damage should it be stood on or dropped on its lower end, and also stabilizes the device in operation, the maximum diameter of the ring 78, the articulated arms 54 and 56 when collapsed to substantially parallel position, the linkage blocks 56 and 58 and its

means securing it to the bearing means, all being less than the minimum diameter of the bunghole 16 into and through which the plug 20 is removably secured.

The first linkage block 56 is axially apertured complementary to the contour of the drive shaft 44, and the second linkage block 58 is similarly apertured to receive the drive shaft end 84 therein, and to permit circulation of the particles in the liquid 12 and thus prevent them from interfering with the axial movement of the drive shaft through the first linkage block, the corners at the angles are completely recessed at 86, the angles in the second linkage block 58 being similarly recessed at 88.

The pivot pins 90 of the first linkage block 56 are held in place by fingers 92 embracing their aperture ends and secured to the blocks by stud bolts 94, the fingers 92 depending integrally from a collar 96 secured as by welding to the lower end of a hollow shaft 98. To insure proper placing the first linkage block 56 in the lower end of the hollow shaft 98, it may first be secured thereto by an Allen set screw 100. The hollow shaft 98 is foraminated by a series of perforations 102 to permit free circulation of the liquid 12 and its particles therethrough.

The upper end of hollow shaft 98 is secured by a sufficient plurality of Allen set screws 104 to hold it securely to a neck 106 depending integrally from the inner race 38, although, in addition, spot welding may also be used, if desired, should ready separation be unnecessary.

A second collar 108 is secured by a set screw 110 on drive shaft 44 in a position to serve as a stop limiting the extending movement of the drive shaft axially through the first linkage block 56, thus limiting the maximum diameter of the articulating arms 52 and 54, as shown in FIG. 2 and FIG. 3. Stop means limiting the inward movement of the drive shaft 44, when collapsing the articulating arms 52 and 54 to substantially parallel position are provided by reducing the diameter of the drive shaft 44 at a shoulder 112, thus making the inner portion 114 of the shaft 44 of a smaller diameter as shown, the contour of such inner portion 114 being preferably similar to that of the outer portion. The walls of the axial aperture through first linkage block 56 are each provided with a complementary shoulder 116.

It will be noted that the set screw 66 and 110 on the drive shaft collars 64 and 108 are set against the same plane face of the drive shaft 44 as the shaft end engaging stud bolt 80, thus readily distinguishing the stud bolt 80 from the other stud bolts 82 should it be desirable in servicing this device.

Locking means are provided controllable externally of the plug 20 and consists of a plurality of locking grooves or recesses 118, 120 and 122, here shown as three in number, one recess 122 for a maximum articulated position, as shown in FIGS. 2 and 3, one recess 118 for a collapsed position, as shown in FIGS. 1 and 4, and one recess 120 for an intermediate articulated position (not shown). Cooperating with a selected lock recess is an arcuate lever locking bolt 124 fulcrumed at 126 against one end of a fulcrum member 128 slidably but non-rotatably positioned about the drive shaft 44 and held in position by a knurled collar 130 rotatably mounted on an upwardly extending neck 132 of the upper inner race 36 by a plurality of pins 134 extending from the collar 130 into an annular groove 138 in the race neck 132.

An arcuate leaf spring 140 secured at 136 to fulcrum member 128 normally urges lever locking bolt 124 toward the drive shaft 44 and into any available locking recess therein. Extending into abutting relation with the free end of the lever locking bolt 124 is an abutment screw 142 secured through the knurled collar 130, the collar 130 also having a cap flange 144. Manually rotating knurled collar 130 counter-clockwise as viewed in FIGS. 5 and 6 retracts the locking lever bolt 124 and holds it in retracted position, as shown in FIG. 6, until the collar is manually released, whereupon the pressure of the spring 140 will move the locking bolt into the first available locking recess as the drive shaft is axially moved thereby through the plug in either direction.

In operation, this stirring device may be made for a barrel or drum of any particular size, but the size for the fifty-five gallon drum will probably be the most popular. The container 10, of conventional rather than special construction, is shipped or stored with its liquid 12, such as paint, already therein, but without any preinstalled mixer or agitator. When the contents 12 are to be removed, it is first stirred, mixed, or agitated by the stirring device 18 of this invention. The conventional plug of the container 10 is unthreaded and removed and the plug 20 of this stirring device 18 is substituted and inserted therethrough after first collapsing arms 52 and 54 to the position shown in FIGS. 1 and 4 by extending the drive shaft 44 through the plug while rotating the knurled collar to hold the locking bolt 124 in unlocked position.

The entire stirring part of the device, being of less diameter than the minimum diameter of the bunghole 16, may then be inserted through hte bunghole 16 until the guard and stabilizer ring 78 rests on the bottom of the container 10 as shown in FIG. 1, with the plug 20 supported slightly above the thread of the bunghole 16. The crank handle 50 may be already secured in position to assist in manipulating the stirring device through the open bunghole, if desired. The knurled collar 130 is then rotated to unlock the shaft for retracting axial movement relative to the plug 20, permitting the plug 20 to be threaded into bunghole 16 as the ring 78 is lifted above the container bottom toward the position shown in FIG. 2. The arms are articulated, as desired, to either the maximum diameter position shown in FIG. 2 or the intermediate position, and by releasing the knurled collar 130, it will automatically lock in the desired position.

The crank handle 50 is then rotated as long as desired until the contents 12 are thoroughly mixed or stirred. Obviously, any available power rotating means may be attached instead of the crank handle 50. When the stirring operation is completed, the knurled collar 130 is rotated to unlock the drive shaft 44 for extension through the plug, permitting the guard ring to drop to the bottom of the container 10. The plug 20 is then unthreaded, rising up and out of the bunghole as this is done, and then lifted up, whereupon the locking bolt 124 will automatically lock into upper locking recess 118 to hold the articulated arms 52 and 54 in the minimum diameter position, permitting the device to be removed and used similarly on as many more containers as may be available, and then be cleaned and stored until the next time it is needed.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the

minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, and external means cooperating with said drive shaft and said bearing means for locking said drive shaft to said bearing means against axial movement in any one of a plurality of selectable positions, said locking means comprising a lock bolt, said drive shaft having a plurality of axially spaced locking recesses, spring means normally urging said lock bolt against said shaft and into a selected locking recess, and means for manually retracting said lock bolt from the selected recess, said lock bolt comprising an arcuate lever, a fulcrum member at one end of said arcuate lever slidably but non-rotatably mounted about said drive shaft, said manual retracting means comprising a collar rotatably mounted about said arcuate lever and said fulcrum member, and abutment means secured to said collar and contacting the free end of said arcuate lever to urge said arcuate lever against said abutment member and out of a selected recess on rotation of said collar.

2. The device of claim 1, and means for rotatably securing said collar to said inner race means comprising cooperating pin and annular slot means in said collar and said inner race means.

3. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, said means for securing said first linkage block to said inner race means comprising a hollow shaft coaxial with said drive shaft, said hollow shaft being secured to said inner race means at one end and to said first linkage block at its other end, said shaft being foraminated.

4. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum

diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, said plug having a flange extending inwardly from the wall of said axial aperture therethrough intermediate the ends thereof, said bearing means also including a pair of outer races fitted into said plug axial aperture against opposite sides of said flange, said inner race means comprising inner races cooperating with said outer races and bearings therebetween.

5. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, said drive shaft being of polygonal contour in cross section, said inner race means being apertured complementary to said drive shaft contour, said linkage blocks being also apertured complementary to said drive shaft, each angle corner of said first linkage block aperture being recessed to permit circulation of the contents of the container therethrough.

6. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, said first linkage block having a hollow shaftway therethrough through which said drive shaft

slidably extends, and complementary shoulder means in said hollow shaftway and on said drive shaft providing a stop limiting the inward movement of said drive shaft through said hollow shaftway when collapsing said articulated stirring arms to a minimum diameter less than the diameter of said plug.

7. The device of claim 6, and a collar fixed on said drive shaft inwardly of said first linkage block providing a stop limiting the outward movement of said drive shaft through said hollow shaftway when opening said articulated stirring arms to a maximum diameter stirring position.

8. The device of claim 7, and a second collar fixed on said drive shaft between said first mentioned collar and said second linkage block providing an abutment for said articulated stirring arms when collapsed.

9. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms, said articulated stirring arms comprising long stirring arms pivotally linked at one end to said first linkage block, short stirring arms pivotally linked at one end to said second linkage block, said long stirring arms terminating at their other end in bifurcated fingers, said short stirring arms having their other ends pivotally secured between said bifurcated fingers off center of their longitudinal axes on their sides nearer the collapsed position.

10. The device of claim 9, each said linkage blocks having axially extending slots receiving the ends of said stirring arms therein, pivot pins removably extending into pivot apertures in said blocks transversely of said slots, the pivot apertures on the ends of said stirring arms being also off center of their longitudinal axes nearer the collapsed position, and means for preventing removal of said pivot pins in assembled position.

11. The device of claim 10, said pin removal preventing means for said first linkage block being part of said means securing said first linkage block to said inner race means and comprising depending fingers embracing said first linkage block over the ends of said pivot apertures, and stud bolt means securing said fingers to said first linkage block.

12. The device of claim 10, said pin removal preventing means for said second linkage block comprising a stabilizer guard ring secured to and extending below said second linkage block by fingers extending from said ring and embracing said second linkage block over the ends of said pivot apertures, stud bolt means securing said fingers to said second linkage block, at least one of said last mentioned stud bolt means also extending through said second linkage block into securing contact with said inner end of said drive shaft and providing the said means securing said drive shaft to said second linkage block.

13. An insertable and removable articulated stirring device for filled containers having a bunghole therein, said device comprising a plug removably securable in and through the container bunghole, said plug having an axial aperture therethrough, bearing means, including inner bearing race means, mounted in said plug axial aperture, a first linkage block, means securing said first linkage block to said inner race means, a second linkage block, a plurality of articulated stirring arms pivotally linking said second linkage block to said first linkage block, a drive shaft slidably mounted axially through said inner race means and said first linkage block, means securing the inner end of said drive shaft to said second linkage block, said drive shaft being retractable to articulate said stirring arms to a maximum diameter stirring position and extendable to articulate said stirring arms to a minimum diameter collapsed position substantially parallel thereto, the maximum diameter of said linkage blocks and said stirring arms when in collapsed position being less than the minimum diameter of the container bunghole through which said plug is secured, thereby permitting ready insertion of said stirring arms to operative position and ready removal thereof through the bunghole of a filled container, said plug providing the sole support for said articulated stirring arms when being rotated, said plug having a flange extending inwardly from the wall of said axial aperture therethrough intermediate the ends thereof, said bearing means also including a pair of outer races fitted into said plug axial aperture against opposite sides of said flange, said inner race means comprising inner races cooperating with said outer races and bearings therebetween, said drive shaft being of hexagonal contour in cross section, said inner race means being apertured complementary to said drive shaft contour, said linkage blocks being also apertured complementary to said drive shaft, each angle corner of said first linkage block aperture being recessed to permit circulation of the contents of the container therethrough, said means for securing said first linkage block to said inner race means comprising a hollow shaft coaxial with said drive shaft, said hollow shaft being secured to said inner race means at one end and to said first linkage block at its other end, said first linkage block having a hollow shaftway therethrough through which said drive shaft slidably extends, complementary shoulder means in said hollow shaftway and on said drive shaft providing a stop limiting the inward movement of said drive shaft through said hollow shaftway when collapsing said articulated stirring arms to a minimum diameter less than the diameter of said plug, a collar fixed on said drive shaft inwardly of said first linkage block providing a stop limiting the outward movement of said drive shaft through said hollow shaftway when opening said articulated stirring arms to a maximum diameter stirring position, a second collar fixed on said drive shaft between said first mentioned collar and said second linkage block providing an abutment for said articulated stirring arms when collapsed, said articulated stirring arms comprising long stirring arms pivotally linked at one end to said first linkage block, short stirring arms pivotally linked at one end to said second linkage block, said long stirring arms terminating at their other end in bifurcated fingers, said short stirring arms having their other ends pivotally secured between said bifurcated fingers off center of their longitudinal axes on their sides nearer the collapsed position, each said linkage blocks having axially extending slots receiving the ends of said stirring arms therein, pivot pins removably extending into pivot apertures in said blocks transversely of said slots, the pivot apertures on the ends of said stirring arms being also off center of their longitudinal axes nearer the collapsed position, and means for preventing removal of said pivot pins in assembled position, said pin removal preventing means for said first linkage block being part of said means securing said first link-

age block to said inner race means and comprising depending fingers embracing said first linkage block over the ends of said pivot apertures, and stud bolt means securing said fingers to said first linkage block, said pin removal preventing means for said second linkage block comprising a stabilizer guard ring secured to and extending below said second linkage block by fingers extending from said ring and embracing said second linkage block over the ends of said pivot apertures, stud bolt means securing said ring fingers to said second linkage block, at least one of said last mentioned stud bolt means also extending through said second linkage block into securing contact with said inner end of said drive shaft and providing the said means securing drive shaft to said second linkage block, and drive shaft rotating means secured to the outer end of said drive shaft outside the container for operating said stirring arms.

14. The device of claim 13, and external means cooperating with said drive shaft and said bearing means for locking said drive shaft to said bearing means against axial movement in any one of a plurality of selectable positions, said locking means comprising a lock bolt, said drive shaft having a plurality of axially spaced locking recesses, spring means normally urging said lock bolt

against said shaft and into a selected locking recess, means for manually retracting said lock bolt from the selected recess, said lock bolt comprising an arcuate lever, a fulcrum member at one end of said arcuate lever slidably but non-rotatably mounted about said drive shaft, said manual retracting means comprising a collar rotatably mounted about said arcuate lever and said fulcrum member, abutment means secured to said collar and contacting the free end of said arcuate lever to urge said arcuate lever against said abutment member and out of a selected recess on rotation of said collar, and means for rotatably securing said collar to said inner race means comprising cooperating pin and annular slot means in said collar and said inner race means.

References Cited in the file of this patent

UNITED STATES PATENTS

697,579	Wehmeier et al.	Apr. 15, 1902
1,214,010	Conner	Jan. 30, 1917
1,218,623	Brillhart	Mar. 13, 1917
1,447,653	Fish	Mar. 6, 1923

FOREIGN PATENTS

142,752	Austria	Sept. 10, 1935