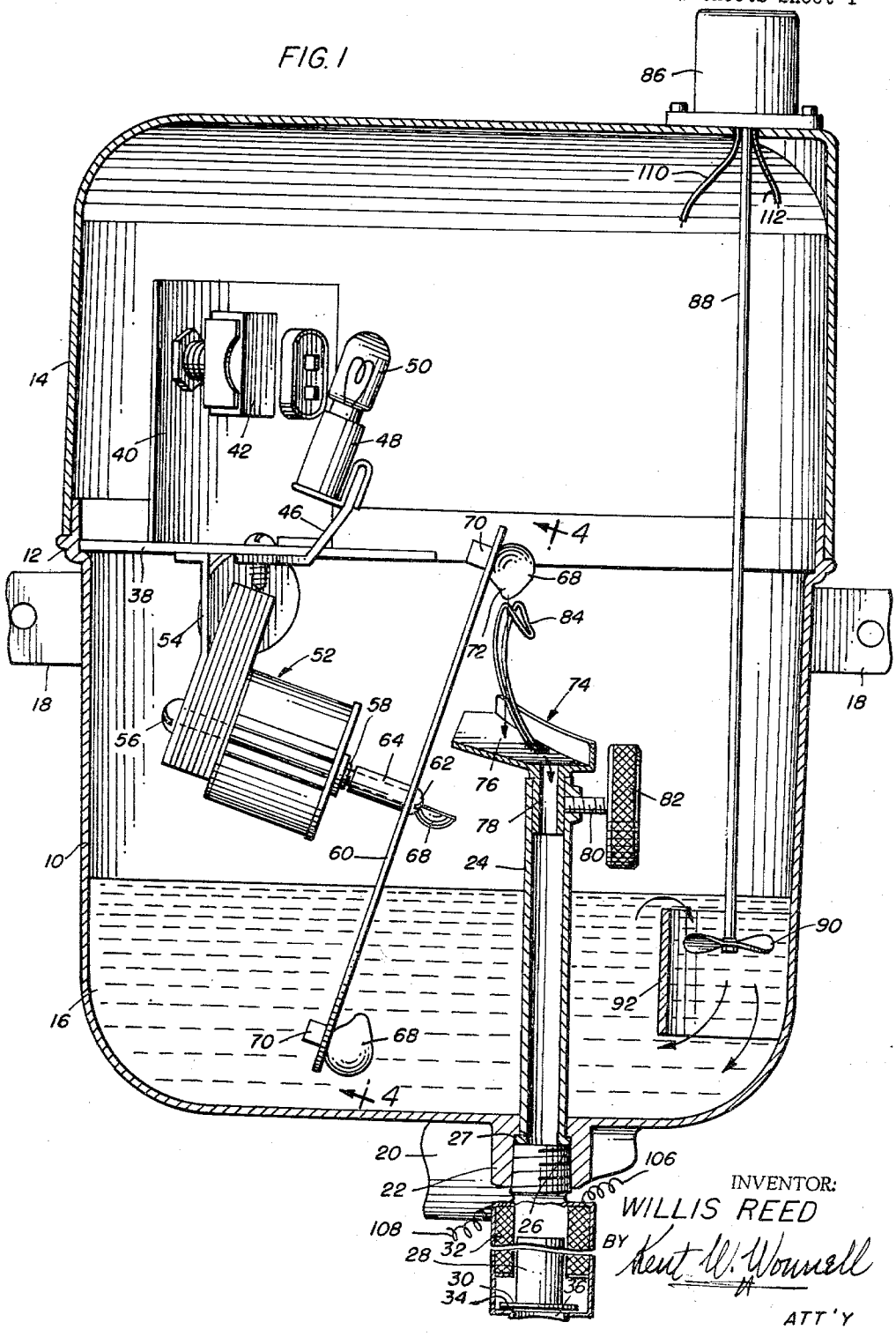
March 2, 1965 W. E. REED 3,171,570

DISPENSER

Filed Oct. 16, 1961

2 Sheets-Sheet 1

FIG. 1



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FIG. 2

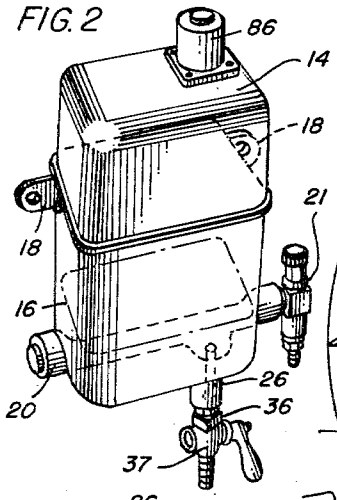


FIG. 4

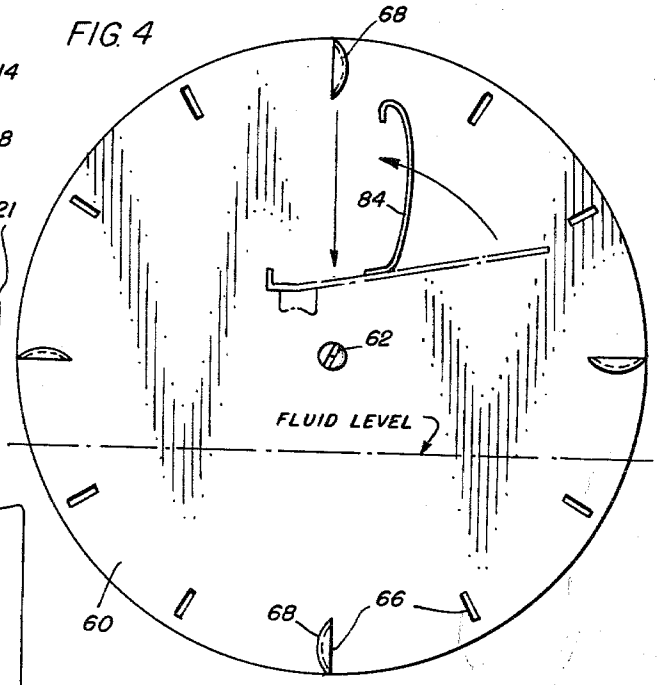


FIG. 3

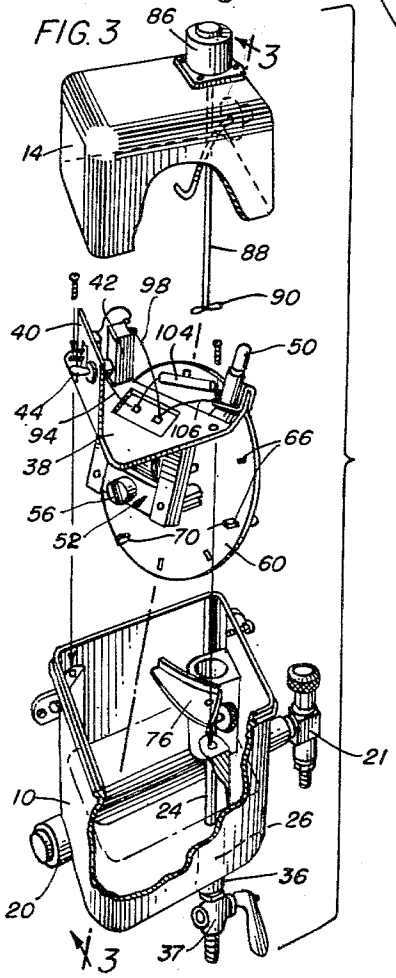


FIG. 5

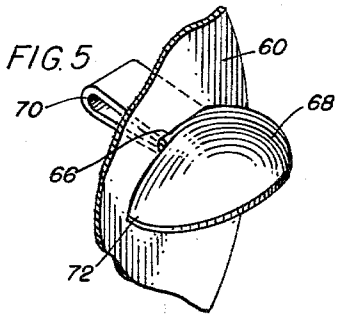
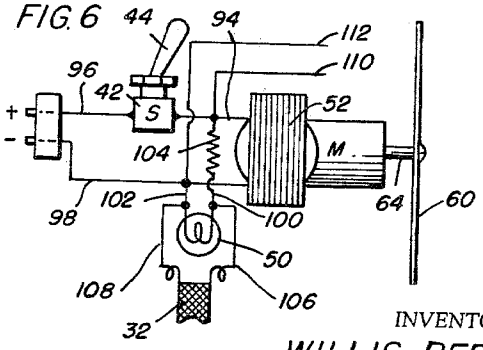


FIG. 6



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DISPENSER

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2 Claims. (Cl. 222—23)

This invention relates in general to a dispenser for liquids and compounds, but more particularly to the feeding of small amounts and at infrequent intervals.

Heretofore, liquid compounds have been manually applied regularly or periodically by a brush or wiper by flowing or dripping through an open valve; and by an oiler which must be vibrated. The present invention differs from these methods by feeding a small amount of compound at slowly spaced intervals, or in small amounts or both, and by regularly feeding the compound by means of a continuously driven motor which raises the material in an inclined plane and allows it to drip into a receptacle or upon some particular part as slowly and as rapidly as desired.

An important object of the invention is to provide a compound dispenser which is motor driven and dispenses a small amount of material in drops from a raised portion of a rotating member which dips at the bottom in the material it is to feed, and is variable in speed for feeding a small amount of material at regular intervals.

A further object of the invention is to provide a motor dispenser in which no vibration is required to maintain the feeding operation, but still maintaining absolute control over any quantity that is fed.

Still a further object of the invention is to provide a feeder in which there are no small orifices through which the material is fed, in which the material tends to become clogged because of the smallness of the passage.

Still a further object of the inveniton is to prevent loss or wastage of precious compounds such as diamond, sapphire or metal dust from being wasted by a forgetful operator.

Other and further objects of the invention are to prevent abrasive or corrosive compounds from contaminating the electric motor and its driving connection because of the inclined drive; to provide an electric solenoid valve which is automatically operated when the machine is started; by adding or removing ladles and by engaging or disengaging wipers from the feeding disc for varying the quantities dispensed; and to utilize standard motors and other equipment for feeding quantities as low as one drop per hour.

Other objects of the invention will appear in the specification and will be apparent from the accompanying drawings in which,

FIG. 1 is a sectional view of a closed receptacle with a dispenser in accordance with this invention operable therein;

FIG. 2 is a perspective view of the outside of the receptacle shown in FIG. 1;

FIG. 3 is an exploded view of the mechanism and receptacle shown in FIG. 1;

FIG. 4 is a face view of a feeding disc as shown in connection with the construction of FIG. 1;

FIG. 5 is a perspective view of one of the ladles or dippers as attached to a disc as shown in FIG. 4; and

FIG. 6 is a somewhat diagrammatic view of the electrical connections for controlling the driving motor, the signal lamp, and the solenoid valve.

It sometimes becomes difficult to feed a small measured quantity of a liquid such as oil or a compound containing a liquid and some dust of a precious metal such as diamond dust or gold dust and to regularly feed a very small quantity of this material without clogging the receiving line or the discharging line.

The present invention overcomes all of these difficulties

by providing a feeder continuously driven by a slow speed electric motor, the feeder comprising an inclined rotatable disc which dips at the bottom in the compound to be fed and discharges the material by means of a small container or in a drop as the inclined disc is rotated. Other safety features may be employed such, for example, as a solenoid valve which is opened when the dispensing motor is operated with a signal lamp to indicate when the device is in operation and the casing having a propeller which keeps the liquid in an agitated condition so that it is maintained uniform in quality.

Referring now more particularly to the drawings, a receptacle **10** has a shouldered flange **12** at the top upon which a lid or cover **14** is adapted to be seated and in the bottom of the receptacle is a liquid **16** which is contained in the lower part of the receptacle. At the back of the receptacle are perforated ears **18** by which it may be secured to a support in upright position.

A feed pipe **20** is usually provided at the bottom of the recepatcle for periodically replenishing the liquid **16** which may be contained in the bottom of the receptacle, and at one end of the pipe **20** is a discharge faucet **21**.

In the bottom of the receptacle is a threaded discharge fitting **22** into which a discharge pipe **24** is inserted and extends above the height of the liquid **16** at the bottom of the receptacle. Into the fitting, a plug **26** may be threaded for engaging a flange **27** at the bottom of the pipe **24** for holding it in place. The plug also contains a magnetic plunger **28** which carries a valve seat **30** as its bottom. Surrounding the magnetic plunger is a winding **32** which, when energized, attracts the plunger, raising it and its valve seat from the valve head **34** so that liquid passing downwardly through the pipe **24** will pass freely through the valve into the discharge pipe **36**, which has a drip faucet **37**.

Mounted on a plate **38** supported by the flange **12** at the top of the receptacle **10** which has a support **40** on top of the plate is a switch **42** which has an operating handle **44** extending through the support for making an electrical connection through the switch. Also supported on top of the plate **38** is a bracket **46** for supporting a light receptacle **48** in which an electric signal light bulb **50** is carried.

At the under side of the plate, an electric motor **52** is mounted by means of a bracket **54** which is bent at the lower end and a fastening screw **56** is inserted at a downward angle to mount the electric motor so that its shaft **58** will be at the same downward inclination.

At the bottom of the motor shaft **58**, a rotary disc **60** is secured to the motor shaft by means of a screw **62** inserted through the center of the disc and through a spacing sleeve **64** which offsets the disc at an angle with the motor, the lower end of the disc dipping and rotating in the liquid **16** which does not extend to the height of the motor and therefore does not interfere with the motor operation. Near the periphery thereof are slots or holes **66** in which small buckets or dippers **68** are mounted. Each dipper edge fits against the outermost side of the disc **60** and has a bendable projection **70**, adapted to be inserted through one of the perforations **66** in the disc and to be bent over and against the inner face of the disc to hold the dipper in place. The projections and dippers are of bendable material preferably of light metal so that the amount of liquid engaged, raised and discharged by the dipper as the disc is rotated in the liquid **60** may be varied by the inclination of the dipper. One end **72** of the dipper may be more-or-less pointed to direct the liquid more accurately and tending to discharge the liquid therefrom in a drop or drops.

The discharge pipe **24** is arranged in the receptacle below the top of the disc as it rotates, but located near

the disc so that a drip receiver **74** may be located at the top of the pipe with a trough extension **76** leaving from a hollow sleeve **78** and adapted to be inserted in the top of the pipe. A screw **80** extends to the top of the pipe and engages the hollow sleeve for placing the drip receiver in any desired position preferably in a vertical line with the dippers **68** when in their raised or uppermost positions. The screw **80** has a knurled adjustment nut **82** attached to the outer end thereof to facilitate adjustment of this drip receiver.

The drip receiver is also preferably provided with a bandable contact wire **84** which is secured to the drip receiver by soldering or otherwise attaching it in place. The drip receiver is preferably bendable into the path of the liquid which is discharged from the dippers and if a small quantity of liquid is to be fed, the wire may even be bent to contact with the dippers or drop of liquid discharged therefrom.

The object of this construction is to more accurately direct and feed a small quantity of liquid from the rotating disc **60**. It is not necessary that each hole **66** in the disc be provided with a dipper and the motor **52** may be of any standard construction, preferably a slow speed type such as used for a telechrone electric clock.

An agitator may be employed in connection with this device comprising a small electric motor **86** preferably mounted upon the outside of the cover **14** opposite the other motor mounting and having a shaft extension **88** which projects through the cover and downwardly into the receptacle **10** when the cover is placed thereon. At the lower end of the shaft extension is a propeller **90** located above the bottom of the receptacle **10** and preferably within a partititon **92** so that the rotation of the propeller will induce a flow of the liquid inwardly over the top of the partition and downwardly from the bottom thereof so that the liquid in which the disc **60** is mounted will be well mixed and substantially uniform in composition if necessary. In operation, as diagrammatically represented in FIG. 6, the motor **52** is connected by conductors **94** and **96** through the switch **42** to one source of current and through a conductor **98** to the other source of current so that whenever the handle **44** is turned to the ON position, the motor will receive current, and the disc **60** will be rotated. At the same time, the bulb **50** will be illuminated because of its connection by conductors **100** and **102** to the respective conductors **94** and **98**, the former of which contains a resistance **104** for reducing the current which passes through the bulb **50**.

Conductors **106** and **108** may be connected to the lamp conductors **100** and **102** respectively to energize the solenoid winding **32** for raising the valve seat **34** and allowing a free drip connection from the pipe **24** whenever the motor **52** is in operation.

With this construction, the dispenser is completely operable, the driving motor **52** is located at an angle so that it does not receive any of the liquid contents upon it and all of the liquid is fed through the inclined rotating disc by means of the paddles or dippers which may be located thereon. The speed of this motor may be as large or as small as desired, the dippers may be increased or decreased in number within the limits of the holes **66** in the disc, and the dippers may be varied in size to receive more or less of the liquid **16** from the receptacle as the disc is rotated. The dippers themselves receive a thorough cleansing by pasing through the liquid and may drip their entire contents upon the drip receiver **74** at each elevation of a dipper by the disc or only a drop of the liquid may pass along the bent wire in contact therewith. The drip receiver may itself be moved out of the direct path from the uppermost dipper leaving only the bent wire **84** to direct drops of liquid from the dippers to the receiver, and thence through the discharge pipe **24**. To know whether the dispenser is in operation, it is necessary only to view the operating

lamp **50**, by removing the cover **14** or by providing a slight aperture (not shown) therethrough, the liquid **16** in the receptacle is replenished through the pipe **20** and the liquid is agitated and kept uniform by the mixer motor **86** which may have a separate electric connection or connected in parallel with the motor **52**, by conductors **110** and **112** connected respectively to the main motor conductors **94** and **98** respectively. This electric motor **86** is also of a standard and well known type which may be mounted and connected if desired, depending upon the character of the liquid **16** which is to be fed.

With this dispenser, small and even minute quantities of oil, liquid material containing valuable dust particles or other materials may be fed continuously and uniformly without danger of clogging the transmission pipes and without manual or other special attention to the continued feeding thereof.

While I have thus described this invention in some detail, it should be regarded as an illustration or example rather than as a limitation or restriction of the invention, since various changes in the construction, combination and arrangement of the parts may be made without departing from the spirit and scope of the invention.

I claim:

1. In a liquid compound dispenser, a receptacle open at the top for compound in the bottom thereof having a removable cover at the top of the receptacle, a plate at the top of the receptacle with a support extending upwardly, an electric lamp and operating switch mounted on the upward support, a bracket extending downwardly from the plate having an inclined portion at the bottom, an electric motor mounted on said portion with its axis extending downwardly in the inclined portion above the surface of said liquid compound, a circular feeding disc mounted on the electric motor shaft on the inclined portion and adapted to dip into a liquid compound at its bottom as rotated by the motor and having dippers at the periphery to receive and to raise the compound and discharge it from the top thereof when the disc is rotated, a discharge tube extending through the receptacle and having its upper termination below the top of the disc, a discharge tray means adjustable at the top of the tube to receive said compound spilled by gravity from the upper edge of the dipper mounted on the disc, the dippers each removably secured near the periphery at the relatively under side of the disc and rotating by and inclined with the disc from the bottom position to the top discharging position, means mounted on the tray and movable into the path of the liquid compound dispensed by the dippers to guide it into the tray at the upper portion of the path on the disc, a magnetic valve located in the line of the discharge tube and electrically connected and operated to open when the motor is energized, a second motor mounted upon the cover and having a long shaft with a propeller thereon extending into a liquid compound at the bottom of the receptacle, means adjacent the propeller for limiting the flow induced thereby to a certain direction in the container, the lamp, magnetic valve and the second motor being electrically connected to receive current at the same time as the disc rotating motor and the lamp being visible to indicate that the last named motor is in operation, the valve is opened, and to operate the said second motor when the cover is applied to the upper edge of the lower receptacle.

2. A liquid compound dispenser comprising a receptacle having a space at the bottom for said compound, a feeding disc rotatable in said receptacle and disposed uprightly but at an inclination to the vertical with the lower portion extending into the compound in the receptacle, said disc having slots regularly spaced about the periphery, open dippers each having integral holding means insertable through said slots and bendable over against the inner face of the disc to position each dipper at a fixed angle, motor means supported adjacent the upper side of said disc by the receptacle and extending angularly above

the liquid compound to prevent contamination of said motor means by upward flow of the compound, for rotating said disc and dippers to pick up said compound at the bottom of the disc path and to discharge same at the top thereof, and a discharge feeding pipe terminating above the compound in the receptacle and below the inclined upper edge of said disc substantially in the path of and to receive compound from the dippers when near the top of their path and to direct the compound through the pipe for continued use thereafter, said motor means comprising a first electric motor, a magnetic valve for opening said discharge feeding pipe when energized and closing said pipe when de-energized, a closing cover for said receptacle, said cover having a second electric motor mounted thereon, said second electric motor being electrically connected with said first electric motor, said second electric motor having a propeller secured thereto by a long shaft, said propeller dipping into the liquid compound when said cover is on said receptacle for agitating said compound, a single signal lamp on said receptacle, said lamp being connected with said first named motor

to indicate when said first named motor is energized, an electrical switch on said receptacle, and an electrical system for simultaneously supplying current to said first and second electric motors, said signal lamp, and said magnetic valve whereby said switch controls current to said system.

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