

April 8, 1958

L. OSROW ET AL
DISPENSER APPARATUS

2,829,922

Filed Sept. 2, 1955

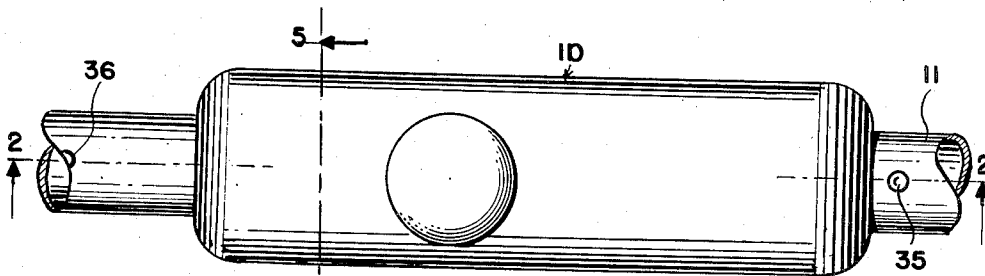


FIG. 1.

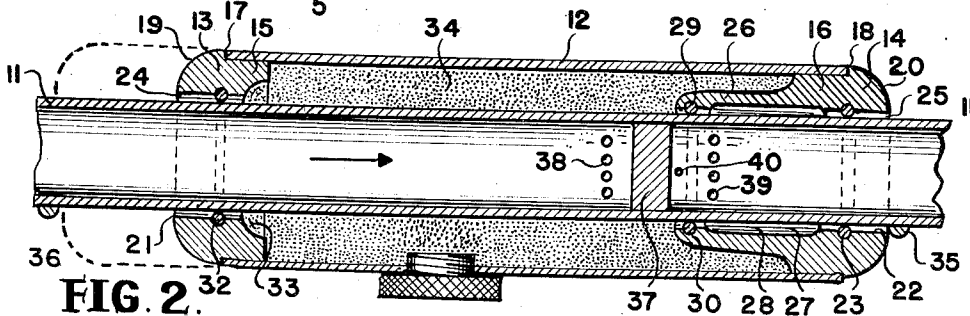


FIG. 2.

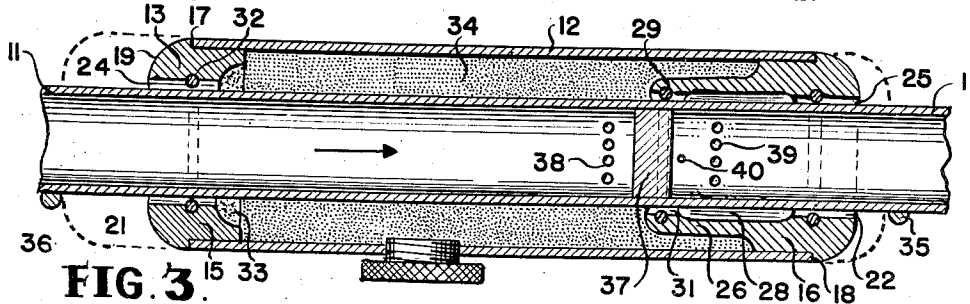


FIG. 3.

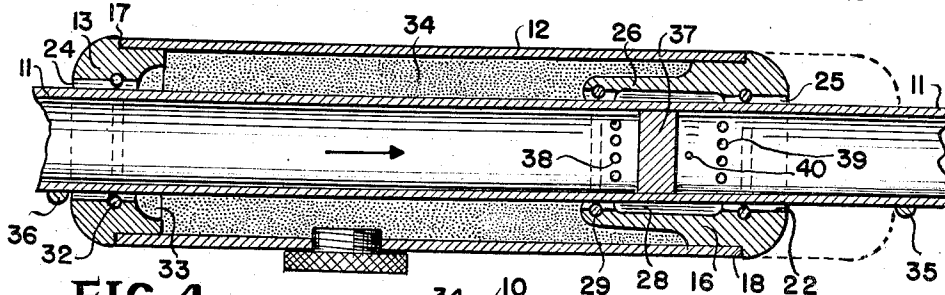


FIG. 4.

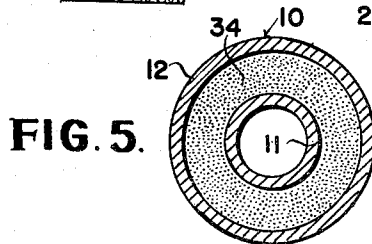


FIG. 5.

LEONARD OSROW
HAROLD OSROW
INVENTORS.

BY *Abraham Friedman*
Att'y.

1

2,829,922

DISPENSER APPARATUS

Leonard Osrow and Harold Osrow, Queens Village, N. Y.

Application September 2, 1955, Serial No. 532,333

5 Claims. (Cl. 299-84)

This invention relates to a dispensing unit adapted for convenient connection in a fluid line for the purposes of injecting detergents, insecticides, or other dispensable substances into the fluid line.

For such purposes there have been developed dispensing units which are not regarded as providing a practical solution to the problem. In general the known dispensers comprise a chamber filled with the dispensable substance mounted on the fluid line. The substance has access to the fluid line by the transverse actuation of a valve normally retained in the closed position by springs or the like. The actuating stem for the valve projects transversely through the chamber and fluid line walls. A satisfactory operation of such a dispensing unit depends upon, the proper formation of a valve seat in the fluid line walls, adequate packing for the valve stem and an adequate means for retaining the valve in the closed position.

In certain applications the dispensing unit should be capable of providing streams of concentrated dispensable materials, dilutions thereof with the fluid in the pipe line, pipe line fluid having no dispensable material therein and complete shut-off of all flow through the fluid line. Moreover these flow variations should be attainable without resorting to expensive, complicated or otherwise impractical devices.

Consequently it is the general object of this invention to provide a dispensing unit adapted for rapid fluid line connection having an improved valvular means of simple and inexpensive structure for varying the concentration of dispensable substance into the fluid stream whereby concentration of the dispensable substance can be injected into the fluid stream, shut-off therefrom or the flow in the line be completely blocked as required by the operator.

A more specific inventive object is the provision of a dispensing unit comprising a dispensing chamber mounted reciprocally on a fluid line and movable to positions resulting in the emission of concentrated streams of dispensable substance, the emission of fluid streams having no dispensable substance or a position wherein all flow through the unit is shut-off.

A further object of this invention is the provision of a dispensing unit of simple and inexpensive construction adapted for rapid fluid line installation including a dispensing chamber reciprocally mounted on a pipe whereby such reciprocation causes a concentrated dose of dispensable substance to enter the fluid stream, no dispensable substance to enter the fluid stream, or the complete stoppage of flow in the fluid line.

A further object of this invention is the provision of a dispensing unit of simple and inexpensive construction adapted for rapid fluid line installation including a dispensing chamber reciprocally mounted on a pipe having an internal flow obstruction whereby the chamber is axially reciprocable to positions permitting the flow through the pipe to bypass the obstruction with a concentrated dose of the dispensable substance, no flow of

2

such substance at all, or to a position where the obstruction stops all flow through the pipe line.

Further objects and inventive details will become more apparent from the following detailed description when read in conjunction with the attached drawings in which:

Figure 1 is a top plan view of the dispensing unit;

Figure 2 is a longitudinal section thereof through plane 2-2 of Figure 1 showing one operative position;

Figure 3 is also a longitudinal section through plane 2-2 of Figure 1 showing another operative position;

Figure 4 is still another longitudinal section through plane 2-2 of Figure 1 showing a third operative position; and

Figure 5 is a transverse section through plane 5-5 of Figure 1.

Referring now to Figures 1 through 5 the device is seen to comprise an outer jacket assembly 10 which is reciprocally mounted upon a pipe 11 having the conventional coupling means (not shown) for installation in a fluid pipe line. The jacket assembly 10 comprises an outer tubular shell 12 secured at each end to the stoppers 13 and 14 provided with the opposing cylindrical projections 15 and 16 which fit snugly and sealingly in the ends of the shell 12. Annular shoulders 17 and 18 extend laterally from the projections 15 and 16 providing an abutment for the shell ends. Longitudinally tapering annular ends 19 and 20 extend outwardly from the shoulders 17 and 18 to intersect the axial bores 21 and 22 of slightly larger diameter than the outside pipe diameter.

Stopper 14 is provided with an O type sealing ring 23 secured within an annular recess in the internal surface of the bore 22. The O ring 23 projects sufficiently into the bore 22 to slidably and sealingly engage the external surface of the pipe 10. Due to the clearance between the pipe 10 and the internal surface of the stoppers, narrow annular spaces 24 and 25 are provided therebetween. An annular extension 26 of reduced outer diameter projects axially inwardly of the shell 12 and is provided with a bore 27 of larger diameter than the bore 22 providing thereby an annular space 28 of larger transverse dimension. A second O type sealing ring 29 is secured within the walls of a thickened inner end 30 of the extension 26 and includes a bore 31 of the same diameter as bore 22. Thus the annular space 28 is sealed at both ends by the axially spaced O rings 23 and 30.

Stopper 13 is similarly provided with a single O ring 32 secured within the bore 21 to sealingly and slidably engage the peripheral surface of pipe 10. An axially tapered annular bore enlargement 33 is provided adjacent the inner end of the stopper 13. Included between the axially spaced stoppers is a dispensing chamber 34 filled with the substance to be dispensed.

The axial reciprocation of the jacket assembly 10 is restricted by the provision of spaced external bosses 35 and 36 formed on the pipe exterior indicating predetermined operative positions of the jacket relative to the pipe as will be described.

An internal wall 37 in the flow passage of pipe 10 is provided more adjacent to the stopper 14 for the purposes of completely blocking off flow therein. For bypassing purposes there are also provided the spaced perforations 38 and 39 on either side of the wall 37. Another opening 40 having an area much smaller than the area provided by perforation 39 is formed between perforations 39 and the wall 37.

To obtain the desired flow through the dispensing unit the jacket assembly 10 is slid axially along the pipe between the bosses 35 and 36. In Figure 2 the outer edge of stopper 14 abuts the boss 35. When so positioned O ring 29 falls axially between the opening 40 and the perforations 38 and the chamber 34 is in communication

with the perforations 38 and the opening 40. Direct communication between perforations 39 and chamber 34 is prevented by the O ring 29 whereby the pressure differential across the wall 37 forces the dispensing substance in chamber 34 to spurt through the opening 40 and into the pipe interior on the downstream side of wall 37. Sealing ring 23 prevents leakage flow from space 28 to the exterior of the dispensing unit. Thus it is seen that a concentrated solution of dispensing substance is carried to the outlet of the pipe for the particular purpose involved. For example in washing an object such as a vehicle, a concentrated solution of detergent can be deposited upon the vehicle to initiate the cleansing operation.

When in the position shown in Figure 4, the outer edge of stopper 13 abuts boss 36 resulting in only the flow of the fluid medium through the device; the dispensing substance being sealed off completely from the pipe line interior. When so positioned the annular space 28 spans axially across the wall 37 to encompass all of the said perforations providing a bypass for the fluid in the pipe 10. O ring 29 is just upstream of perforations 38 thereby preventing entry of the dispensing substance into the fluid stream. In a car washing function, this latter position can be used to effect a rinse after having applied a concentration of detergent using the position of Figure 2.

In Figure 3 is shown the closed position wherein the jacket is between the bosses 35 and 36 contacting neither. To accurately ascertain this position indicating marks may be inscribed on the pipe periphery for alignment with a mark on the jacket. When in the closed position, the O ring 29 is axially between the perforations 38 and the hole 40 thereby sealing off the bypass and preventing all flow through the pipe.

Conventional materials such as plastic, aluminum, copper, brass, sheet metal, rubber, wood, etc. are all adaptable for the fabrication of the various components disclosed herein involving minimal expenses and time consumption. There are no complicated mechanisms involved herein and the operation is of maximum simplicity requiring no significant manual effort. All of the parts are replaceable and the assembled device is compact.

Consequently the disclosed device in attaining the recited objects provides a marked improvement in the class of dispensing units involved.

Although a preferred embodiment is shown herein, it should be apparent that this invention is not limited to this embodiment in that many changes, additions, and modifications can be effected in connection therewith without departing from the spirit and scope of the invention as herein disclosed and hereinafter claimed.

It should be further noted that the device is not limited to the dispensing of any particular dispensable substance but can be used generally in connection with any dispensable substance such as detergents, insecticides, fertilizers, perfumes, etc.

Having thus described the nature of the invention what is claimed as new is as follows:

1. A dispensing unit comprising a pipe adapted for rapid installation in a fluid line and a jacket reciprocally mounted thereon, said jacket including a reservoir filled with a dispensable substance in contact with the pipe exterior, including a wall in the pipe preventing flow therethrough and a means bypassing the said wall, said jacket including means preventing flow through said bypassing means whereby jacket reciprocation routes flow in the bypass through the reservoir in one position, routes flow only through the bypass in another position, and shuts off flow through the bypass in another position.

2. A dispensing unit comprising a pipe adapted for rapid installation in a fluid line and a jacket reciprocally mounted thereon, said jacket including a reservoir filled with a dispensable substance in contact with the pipe exterior, including an internal wall in the pipe blocking flow therethrough, in combination with a bypass, said

reservoir forming a portion of said bypass when the jacket is in one relative position, in further combination with a space separated from the reservoir and included in the jacket, said space forming a portion of the bypass in another relative jacket position, including means preventing bypass flow when the jacket is in still another position, said means preventing flow through the reservoir when the space forms a portion of the bypass whereby a concentrated solution of dispensable substance flows through the bypass in the first said position, no dispensable substance flows through the bypass in the second said position and all flow ceases in the third said position including means indicating the various positions.

3. A dispensing unit comprising a pipe adapted for rapid installation in a pipe line and a jacket reciprocally mounted thereon, said jacket including a sealed reservoir filled with a dispensable substance in contact with the pipe exterior including an internal wall in the pipe obstructing flow therethrough, in combination with perforations on either side of the wall, said jacket further comprising a space surrounding a portion of the pipe surface and spaced from the reservoir by a partition, said partition being in fluid tight contact with the pipe exterior whereby reciprocation of the jacket to one position places the reservoir in communication with perforations on both sides of the wall, reciprocation to a second position places only the space in communication with perforations on both sides of the wall and reciprocation to a third position places the partition axially between the perforations on both sides of the wall thereby shutting off all flow through the unit.

4. A dispensing unit comprising a pipe adapted for rapid installation in a fluid line and a jacket reciprocally mounted thereon, said jacket comprising a cylindrical shell spaced from and concentric with the pipe having end closures sealingly and slidably engaging the pipe periphery providing therein a reservoir for a dispensable substance, one of said closures including an annular space encompassing the pipe and spaced axially from the reservoir by a partition in fluid tight contact with the pipe periphery, said pipe including an internal wall stopping flow therethrough and holes on either side of the wall providing a bypass therefor whereby movement of the jacket to one position places the reservoir in communication with holes on both sides of the wall, movement to another position places only the space in communication with all of the holes, the partition being upstream of the upstream holes, and movement to another position places the partition axially between the holes upstream of the wall and the holes downstream of the hole, the downstream holes being axially spaced, into two groups, the group closest the wall having less area than the group furthest from the wall, wherein jacket movement to the first position places the reservoir in communication only with the first group with the partition between the two groups whereby a concentrated spurt of dispensable substance is emitted from the first group, and when in the second position both downstream groups of holes are in communication with the space.

5. A dispensing unit comprising a pipe adapted for rapid installation in a fluid line and a jacket reciprocally mounted thereon, said jacket comprising a cylindrical shell spaced from and concentric with the pipe having end closures sealingly and slidably engaging the pipe periphery providing therein a reservoir for a dispensable substance, one of said closures including an annular space encompassing the pipe and spaced axially from the reservoir by a partition in fluid tight contact with the pipe periphery, said pipe including an internal wall stopping flow therethrough and holes on either side of the wall providing a bypass therefor whereby movement of the jacket to one position places the reservoir in communication with holes on both sides of the wall, movement to another position places only the space in communication with all of the holes, the partition being upstream of the

5

upstream holes, and movement to another position places the partition axially between the holes upstream of the wall and the holes downstream of the hole, the downstream holes being axially spaced into two groups; the group closest the wall having less area than the group furthest from the wall, wherein jacket movement to the first position places the reservoir in communication only with the first group with the partition between the two groups whereby a concentrated spurt of dispensable substance is emitted from the first group and when in the 10

6

second said position both groups communicate with the space, the movement of the jacket being axial and the pipe exterior including abutments restricting the jacket movement between the first and second positions.

References Cited in the file of this patent

UNITED STATES PATENTS

1,242,905	Atkinson	Oct. 16, 1917
2,717,176	Osrow et al.	Sept. 6, 1955