June 23, 1925. 1,543,178

J. MEILI

FLUID SPRINKLING DEVICE

Filed Oct. 23, 1923

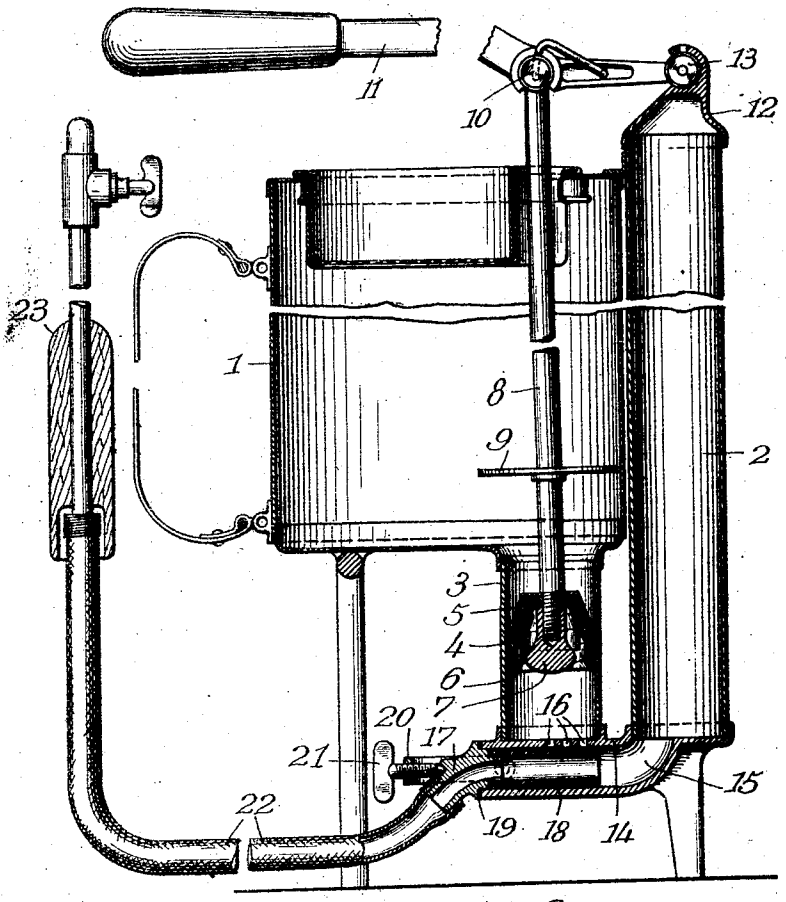


Fig. 1

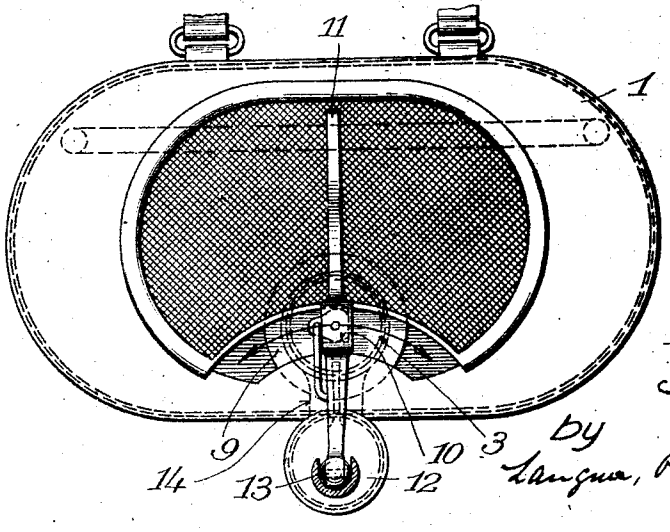


Fig. 2

Inventor:
J. Meili

by Langner, Parry, Card & Langner
Attys.

Patented June 23, 1925. 1,543,178

UNITED STATES PATENT OFFICE.

JEAN MEILI, OF VELTHEIM, NEAR WINTERTHUR, SWITZERLAND, ASSIGNOR TO ADOLF KAUF, OF ZURICH, SWITZERLAND.

FLUID-SPRINKLING DEVICE.

Application filed October 23, 1923. Serial No. 670,345.

To all whom it may concern:

Be it known that I, JEAN MEILI, a citizen of the Republic of Switzerland, residing at Veltheim, near Winterthur, Switzerland, have invented certain new and useful Improvements in Fluid-Sprinkling Devices, of which the following is a specification.

Portable fluid sprinkling devices which are carried by means of shoulder straps by the operator and which are extensively used for sprinkling plants are already known. Such devices comprise generally a receptacle for holding the liquid to be sprinkled and an air vessel attached to the receptacle, further a plunger pump arranged in the lower part of the apparatus, the cylinder of which pump is filled with the liquid when the piston is raised by means of a hand lever linked to the piston rod, the pressure space onto which the flexible hose directed by hand joins being situated below the cylinder.

These apparatus present the disadvantage that the pressure valves with which the cylinder of the pump is provided and for which purpose disc-valves, flap-valves or ball-valves have been hitherto used, cause constant trouble when they are not very frequently inspected and cleaned as some of the fluids to be sprinkled over plants have a high viscosity and a tendency to thicken, as is for instance the case with lime. The frequent cleaning operations which necessitate dismantling and assembling of the pump are tedious, require much time and special tools.

These drawbacks are overcome by the apparatus according to the present invention, in which the coupling by which the hose is connected to the pressure space is provided with an elastic sleeve bearing against the wall of the pressure space, that sleeve closing openings connecting the pressure space with the cylinder of the pump when the piston of the latter performs the suction stroke, whereas the sleeve is compressed by the liquid discharged during the downward or pressure stroke of the pump piston whereby the liquid is permitted to enter into the pressure space. The latter is preferably shaped as a channel of circular cross-section the upper part of its wall forming also the bottom of the cylinder, and in this case the elastic sleeve may consist of a rubber tube fixed to a nipple.

The nipple is advantageously fixed to the end of the pressure channel without being screwed into the latter, i. e. it is held in position by means of a hinged stirrup.

Owing to the afore mentioned improvements all the hitherto utilized valves are dispensed with. A cleaning of the pressure chamber can be carried out very quickly, simply and without using complicated tools as the hinged stirrup which holds the nipple, to which the hose is connected, in position has to be turned in the upward direction to free the nipple.

A constructional example of the subject matter of the present invention is illustrated on the accompanying drawing, in which:

Fig. 1 is a vertical section with the middle portion broken away and

Fig. 2 is a plan view of the sprinkling device.

In the drawing, 1 denotes the container for the liquid, an air vessel 2 being rigidly connected to the container and the latter being provided with shoulder straps and with supporting feet. Below the receptacle 1 there is arranged the piston pump, the cylinder 3 of which is directly connected to the bottom of the receptacle. The pump piston comprises an elastic cup 4 arranged between an outer and an inner metal cup 5 and 6 respectively and fixed by means of a nut 7 to the lower end of the piston rod 8 so that the lower edge of the cup is free to move. The piston rod 8 which is provided with a disc 9 for stirring up the liquid projects with its upper end beyond the receptacle and is coupled, by means of an articulation permitting of a lateral movement, to the hand lever 11, the rear end of which is mounted by means of a spherical joint 13 in a bracket 12 fixed to the air vessel 2, the spherical joint permitting the hand lever to be moved in the verti-

cal as well as in the horizontal direction. The cylinder 3 is connected to the air vessel 2 by means of a cast iron body 14 provided with a supporting leg, the body 14 forming the bottom of the cylinder and enclosing the pressure space 15 which is of circular cross-section; the part of the wall of the pressure space 15 forming the bottom of the cylinder is provided with apertures 16. In the outer end of the pressure space 15 a fitting 17 is inserted. To the outer end of the fitting a flexible hose 22 is fixed and to the inner end of the fitting an elastic rubber tube 18 is secured, the length of the latter being sufficient to cover the apertures 16. The fitting 17 is provided with a collar which is pressed against a packing ring 19 inserted between the end of the pressure space and the collar by means of the pressure screw 21 mounted in a stirrup 20 hinged to the sides of the body 14. When the screw 21 is unscrewed the stirrup 20 may be turned in the upward direction so that the nipple with the tube 18 can be removed from the pressure space. The hose 22 fixed to the fitting is provided with the usual pipe and handle 23 for manually directing the liquid jet.

The operation of the above described sprinkling device is as follows:

When the liquid contained in the receptacle has to be sprinkled, for instance over plants, the piston of the pump is at first raised by means of the hand lever whereby the liquid flows from the receptacle 1 past the compressed elastic piston into the cylinder 3. If now the piston be pressed in the downward direction the liquid contained in the cylinder acts upon the elastic rubber tube 18 through the apertures 16 and compresses the tube which previously has been lying snugly against the wall of the pressure space; the liquid can now be forced from the cylinder into the pressure space from where it is discharged through the hose 22 and the pipe and handle 23. As soon as the piston is again moved in the upward direction the rubber tube takes up its original shape and lies snugly against the wall of the chamber, the suction action of the pump and the pressure in the air vessel pressing the tube tightly against said wall during the suction stroke of the pump. In order to clean the pressure chamber the wing screw 21 is unscrewed and the stirrup 20 is turned in the upward direction whereupon the fitting together with the rubber tube can be removed.

In order to prevent the person handling the device from getting overtired during the sprinkling the hand lever can be alternately actuated with the left and the right hand by turning the lever in the direction of the arrows indicated in Fig. 1, the spherical fulcrum joint 12, 13 and the articulation between the hand lever 11 and the piston rod 8 permitting of such turning movement of the hand lever.

I claim:

1. A portable fluid sprinkling device comprising in combination a receptacle adapted to hold the fluid, an air vessel connected to said receptacle, a piston pump arranged below said receptacle, the cylinder of said pump being in open connection with the said receptacle and the piston having a flexible cup, a hand lever operatively connected to said piston, a member enclosing a pressure space, the wall of said member being provided with apertures adapted to connect said pressure space to said cylinder, a nipple projecting into the pressure space of said member, a flexible hose fixed to the outer end of said nipple, and an elastic part fixed to the inner end of said nipple and adapted to lie snugly against the walls of said pressure space and forming the organ controlling said apertures between the cylinder and the pressure space, a stirrup hinged to said member, and means carried by said stirrup and cooperating with said nipple to press the latter against said member to thus produce a fluid tight joint between the nipple and said member.

2. A portable fluid sprinkling device comprising in combination, a receptacle adapted to hold the fluid, an air vessel connected to said receptacle, a piston pump having a cylinder in open connection with the bottom of the receptacle and a piston provided with a flexible cup, a hand lever operatively connected to said piston, a member enclosing a pressure space of a circular cross-section in open connection with said air vessel, part of the wall surrounding said pressure space forming also the bottom of said cylinder and being provided with apertures for connecting said pressure space to said cylinder, a nipple fixed to said member, a flexible hose fixed to the outer end of said nipple, and an elastic tube fixed to the inner end of said nipple and adapted to lie snugly against the walls of said pressure space and forming the organ controlling said apertures, a stirrup hinged to said member, and means carried by said stirrup and cooperating with said nipple to press the latter against said member to thus produce a fluid tight joint between the nipple and said member.

3. A portable fluid sprinkling device comprising in combination, a receptacle adapted to hold the fluid, an air vessel connected to said receptacle, a piston pump having a cylinder in open connection with the bottom of the receptacle and a piston provided with a flexible cup, a hand lever operatively connected to said piston, a member enclosing a pressure space of a circular cross-section in open connection with said air ves-

sel, part of the wall surrounding said pressure space forming also the bottom of said cylinder and being provided with apertures for connecting said pressure space to said cylinder, a nipple fixed to said member, a flexible hose fixed to the outer end of said nipple, a rubber tube fixed to the inner end of said nipple and adapted to lie snugly against the walls of said pressure space and forming the organ controlling said apertures, a stirrup hinged to said member, and a pressure screw provided in said stirrup and co-operating with said nipple to press the latter against said member and cause thus a fluid tight joint.

In testimony whereof I affix my signature.

JEAN MEILI.