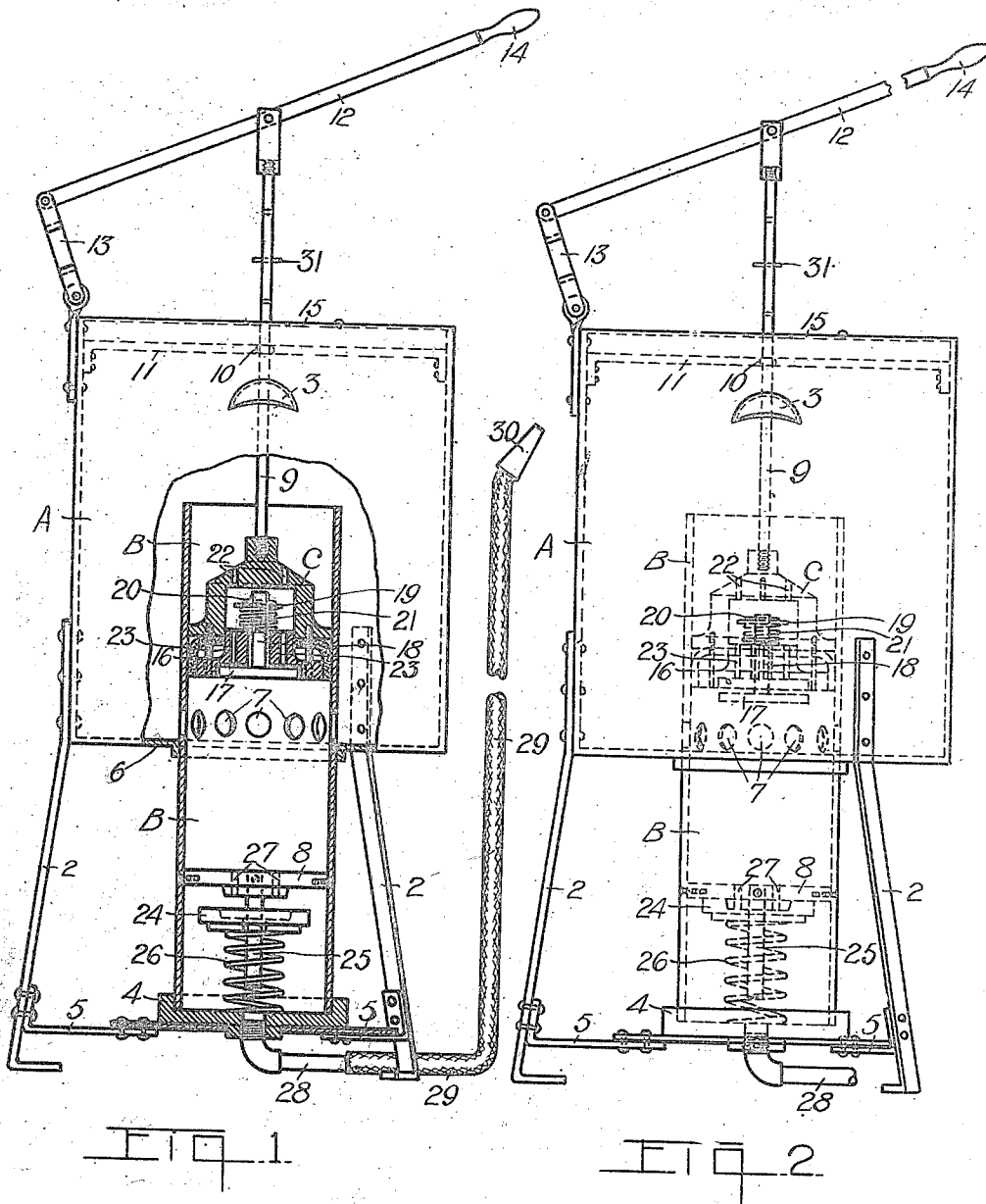


H. W. LIVINGSTON,
LIQUID DISPENSING DEVICE.
APPLICATION FILED APR. 9, 1918.

1,282,890.

Patented Oct. 29, 1918.



INVENTOR

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LIQUID-DISPENSING DEVICE.

1,282,890.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT W. LIVINGSTON, a subject of the King of Great Britain, residing at Hamilton, in the county of Wentworth and Province of Ontario, Canada, have invented certain new and useful Improvements in Liquid-Dispensing Devices, of which the following is a specification.

My invention relates to improvements in liquid dispensing devices, and more particularly to devices for dispensing heavy oils and filling motor vehicle gear cases and differentials, and consists essentially of a bulk container provided with a vertically disposed cylinder which extends through and to within a suitable distance above the bottom of the container and having a plurality of annularly arranged ports above the bottom of the container, a piston or plunger operative in the cylinder and means for manually operating the same, together with check valves in the plunger and lower part of the cylinder.

The invention has for its object the provision of a device to be used for dispensing oil and filling gear cases, differentials and the like, and automatically measuring the oil while it is being pumped.

A further object is to provide such a device which will be adapted to expeditiously pump the heavy oil which is generally utilized for the above specified purpose, without it being necessary to exert the exhaustive energy requisite in the use of hand pumps of prior design.

A still further object is to provide a device of the class specified which will be simple, durable, efficient in operation and inexpensive to manufacture.

These together with other objects may be attained by the construction, combination and arrangement of the parts as will be hereinafter more fully described, illustrated in the accompanying drawing, and pointed out in the claims hereunto appended.

Reference being had to the drawing, Figure 1 is a side elevation of the entire apparatus showing the principal mechanism in section, the plunger being on its down or active stroke; and Fig. 2 is a side elevation showing the plunger upon its up or inactive stroke. In these two views, the valves are shown in operation according to the stroke of the plunger illustrated.

Similar reference characters refer to similar parts throughout the several views.

A indicates the bulk container which is supported by legs 2, and is provided with suitable handles 3 for lifting and carrying purposes.

A cylinder B extends vertically from a base 4 connected to the legs 2 by straps 5, through a corresponding concentric opening in the floor 6 of the container, and to a substantial distance above said floor. The said cylinder is open at the top, and is provided with a plurality of annularly arranged alined ports 7 which are arranged at an elevation to permit the lower portion of the cylinder, above a rigid horizontal diaphragm 8, to fill with the liquid within the container, at the time the plunger C is at its highest elevation in the cylinder.

The plunger C is fitted with a plunger rod 9 extending through a guide eye 10 in a strap 11, or other suitable device rigid with the container, and through an orifice in the top of the container, and pivoted to a lever 12 which is connected by a double link 13 at its fulcrum end to the body portion of the container. The opposite end of the said lever is provided with a handle 14.

The container is filled through a suitable filling cap 15 in the top thereof.

The plunger C is fitted with a sealing washer 16 and provided with a valve for the purpose of admitting liquid into the cylinder during the up stroke and preventing formation of vacuum therein. This valve comprises a plate 17 rigid with a stem 18 sleeved in a lower portion of the plunger, and provided at its upper end part with a disk 19 held in position by a pin 20 passed through said stem. A spiral expansion spring 21 is inserted between the said disk and said lower portion of the plunger, and tends to retain the valve in closed position.

Liquid is admitted to the cylinder through ducts 22 in the upper portion of the plunger and ducts 23 in the lower portion during the up stroke thereof, the ducts 23 being closed by the plate 17 during the down stroke.

The space within the cylinder between the diaphragm 8 and the lower level of the alined ports 7 which is also the floor line of the container, is adapted to contain a determined quantity of the liquid, say a quart, which pours in through said ports when the plunger is at upper center or at any point above the ports.

A check valve is provided in the lower end part of the cylinder, which opens upon

the down stroke of the plunger by pressure effected by the liquor under pressure of the plunger; and closes upon the up stroke of the plunger to prevent the return of the liquid by suction. This valve comprises a plate 24 vertically slidable upon a stem 25 rigid with the diaphragm 8. A spiral expansion spring 26 is inserted between the plate 24 and the base 4, and tends to retain the plate 24 in contact with the diaphragm 8 and seal the passages 27 therein, during the up stroke of the plunger.

The lower end of the cylinder communicates with a pipe 28 which is provided with a hose 29 equipped with a suitable nozzle 30 to be inserted in the place in which the liquid is to be injected.

In case it be desired to measure off a quantity of liquid less than the measure contains, the connecting rod 9 is provided with a number of holes in which may be inserted a pin 31 adapted to contact with the strap 11 and prevent the plunger from forcing the entire amount of liquid out of the measure portion of the cylinder. The position of said pin holes is graduated to measure proportionate quantities of the liquid.

Having now fully described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

1. In a device of the class described, the combination with a liquid bulk container having supporting legs, of a vertically disposed cylinder supported by a base secured at the lower end part of the legs, and extending through the flooring of the container to a substantial distance above said flooring, a plunger operative within said cylinder, means for manually actuating the plunger from above the container, a diaphragm dividing the cylinder and located therein below the flooring of the container, a check valve in said diaphragm, a check valve in said plunger, said cylinder having a plurality of annularly arranged alined ports above said flooring, and an exit for the liquid at the lower end of the cylinder, substantially as set forth.

2. In a device of the class described, the combination with a liquid bulk container having supporting legs, of a vertically disposed cylinder supported by a base secured at the lower end part of the legs, and extending through the flooring of the container to a substantial distance above said flooring, a plunger operative within said cylinder, means for manually actuating the plunger, a diaphragm dividing the cylinder and located therein below the flooring of the container, said cylinder having a plurality of

annularly arranged alined ports above said flooring, the space within said cylinder between said diaphragm and the lower level of said alined ports measuring a set quantity of liquid, a check valve in said diaphragm, a check valve in said plunger, and an exit for the liquid at the lower end of the cylinder.

3. In a device of the class described, the combination with a liquid bulk container having supporting legs, of a vertically disposed cylinder supported by a base secured at the lower end part of the legs, and extending through the flooring of the container to a substantial distance above said flooring, a plunger operative within said cylinder, means for manually actuating the plunger, a diaphragm dividing the cylinder and located therein below the flooring of the container, said cylinder having a plurality of annularly arranged alined ports above said flooring, the space within said cylinder between said diaphragm and the lower level of said alined ports measuring a set quantity of liquid, a check valve in said diaphragm, a check valve in said plunger, and a hose communicating with the space within the cylinder between the base and said diaphragm.

4. In a device of the class described, the combination with a liquid bulk container having supporting legs, of a vertically disposed cylinder supported by a base secured at the lower end part of the legs, and extending through the flooring of the container to a substantial distance above said flooring, a plunger operative within the cylinder, a diaphragm dividing the cylinder and located therein below the flooring of the container, a check valve in said diaphragm, a check valve in said plunger, said cylinder having a plurality of annularly arranged alined ports above said flooring, an exit for the liquid at the lower end of said cylinder, a plunger rod fitted to said plunger, passing through a guide eye in a rigid portion of the container, and pivoted to a lever above the container, a link connecting the fulcrum end of said lever to a part rigid with the container, said plunger rod having a plurality of spaced holes to receive a pin to contact with the rigid portion of the cylinder having the guide eye, and to regulate the travel of the plunger, substantially as set forth.

In testimony whereof I have affixed my signature.

HERBERT W. LIVINGSTON.

Witness:

H. G. HENDRY.