Mar. 3, 1925. 1,528,022

A. J. KEISER

LIQUID DISPENSING APPARATUS

Filed Jan. 2, 1920

Fig. 1

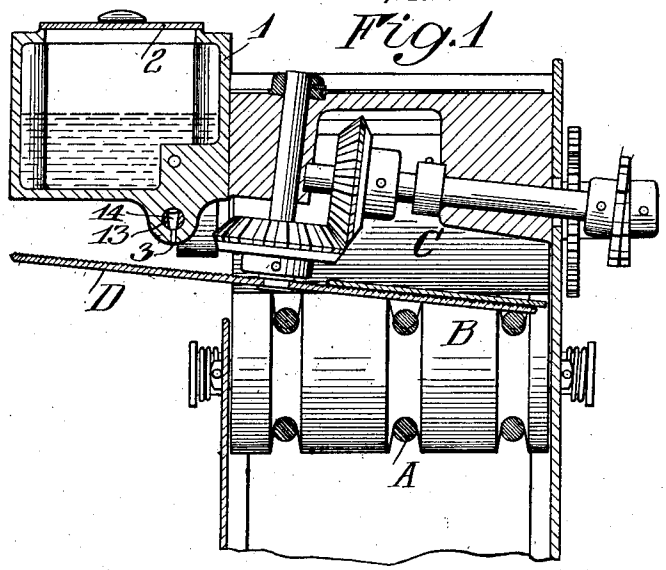



Fig. 2

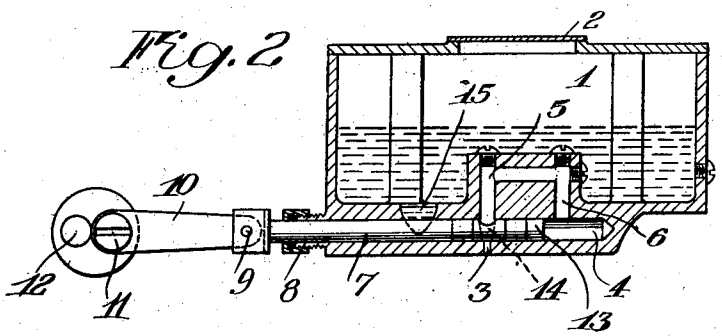
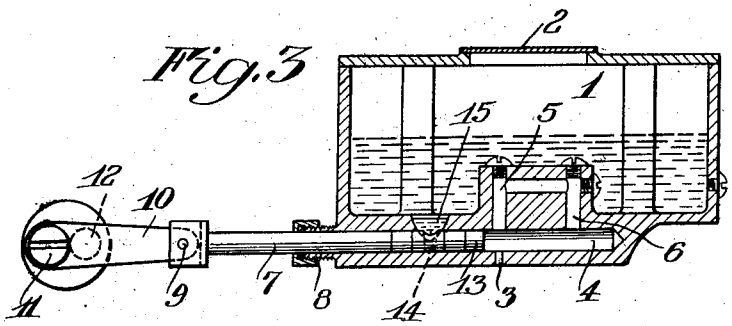



Fig. 3




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# UNITED STATES PATENT OFFICE.

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## LIQUID-DISPENSING APPARATUS.

Application filed January 2, 1920. Serial No. 348,945.

*To all whom it may concern:*

Be it known that I, ARTHUR J. KEISER, a citizen of the United States, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Liquid-Dispensing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification and to the reference numerals marked thereon.

My present invention relates to liquid dispensing and it has for its object to provide a simple and durable compact machine for delivering intermittently a measured quantity of liquid at a desired point and the improvements are directed in part toward providing for an instantaneous delivery or projection of the liquid to prevent dribbling or dripping and to make the machine applicable where the delivery must be timed with relation to a rapidly moving part and projected against the intended surface at the desired point while the latter is in motion. To these and other ends the invention resides in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claims at the end of the specification.

In the drawings:

Figure 1 is a transverse sectional view through an envelope sealing machine and through a liquid dispensing device constructed in accordance with and illustrating one embodiment of my invention and applied to such machines;

Figure 2 is a longitudinal section through the device in the plane of the axis of the plunger showing the latter in the discharging position, and

Figure 3 is a similar view showing the plunger in the filling position.

Similar reference numerals throughout the several views indicate the same parts.

Referring first to Figure 1, I have illustrated my invention as above indicated as embodied in a device applied to an envelope sealing machine shown in my pending application, Serial No. 348,944 for the purpose of deliverig water in the amount and at the time required to the moistening mechanism of such machine. Very briefly described, the latter comprises envelope carrying belts A running over one of two sealing rollers B and C to convey an envelope beneath an inclined disc D that rotates between the envelope and its flap with its upper surface against the under gummed surface of the flap. The function of my present invention as so applied is to maintain a film of water evenly distributed on the upper surface of such moistening disc and for this purpose, I affix to the frame of the machine a reservoir 1 having a filling opening 2 and a discharge port 3 arranged above the disc D.

The discharge port 3 in the bottom of the reservoir communicates with and extends transversely from the cylinder 4 of an air compressor which cylinder is provided, in the present instance, by casting the container with a heavy bottom and boring the latter. The said port 3 is also in alinement with a passageway or air duct 5 leading from the base of the cylinder 4 at 6 so that the said duct and port form a substantially continuous passage intersecting the cylinder. Reciprocating in the latter is a plunger rod 7 working through a stuffing box or gland 8 and connected by a wrist pin 9 to a connecting rod 10 on a crank pin 11 carried by a shaft 12 which shaft, in the illustrated application of the invention, rotates in timed relation to the moistening disc D. The discharge port 3 is common to both the air compressor and the reservoir 1 and the joint delivery of the compressed air and water with the former giving velocity to the latter, is brought about in the following manner:

The head 13 of the plunger rod 7 acts both as a piston for compressing air in the cylinder 4 and as a valve controlling the port 3 and air duct 5, opening and closing the latter two substantially simultaneously. It uncovers them on the out stroke, as shown in Figure 3, allowing air at atmospheric pressure to enter the cylinder 4. On the inward stroke, it compresses this air progressively after the face of the piston has passed and closed the port until a transverse opening 14 extending entirely through the plunger and adapted to register simultaneously with both the ducts 5 and the port 3 comes into such registry, as shown in Figure 2, at which point the compressed contents of the cylinder and duct are violently expelled through the port after which instantaneous projection the plunger starts on its return stroke and the cycle is repeated. But the plunger

has a third function which is to measure off and carry to the discharge port 3 a body of liquid from the reservoir 1. For this purpose, the latter is provided with a depression or cup 15 in its bottom that intersects the bore of the cylinder 4 and the path of the plunger rod and when the latter reaches the peak of its out stroke, the opening 14 therein comes into register with such depression 15 and becomes filled with water for which purpose it becomes a pocket in which a specific quantity is removed. Such measured body of liquid is thereafter carried intact to the port 3 where it is instantly exposed to the escaping air by which it is promptly expelled through the port.

The driving power of the air is such that it removes every vestige of the liquid and there is no subsequent drip from the port.

I claim as my invention:

1. In a device of the class described, a liquid holding tank provided with a cylinder in its lower wall, the tank having a discharge passage leading to the cylinder and provided with an air duct in said wall, both ends of which communicate with the cylinder, and also having a common air intake and liquid outlet port, a piston within the cylinder having a transverse opening adapted in one position of the piston to register with said discharge passage, and also adapted in another position to register with said air intake and liquid outlet port to permit air to enter said duct through the cylinder, said piston during its forward stroke being adapted to compress air within said duct and at the same time moving to a position to place said transverse opening in registry with one end of the air duct, and also in registry with said port to permit the air compressed in the duct to force the liquid from the transverse opening through said port, and means for operating the piston.

2. In a device of the class described, a liquid holding tank having a cylinder formed in its lower wall substantially parallel with the bottom of the tank, and also having an air duct formed in said wall with both ends thereof in communication with the cylinder, said wall also having a discharge passage leading from the tank to the cylinder, and a port adapted to place the cylinder in communication with the atmosphere, a piston within the cylinder having a transverse opening adapted in one position of the piston to register with said tank discharge passage, and also adapted in another position to register with said port, said piston during its forward stroke being adapted to compress air within said duct and at the same time moving to a position to place said transverse opening in registry both with the air duct and with said port to permit the air compressed in said duct to force the liquid from said opening through said port, and means for operating the piston.

ARTHUR J. KEISER.