

(No Model.)

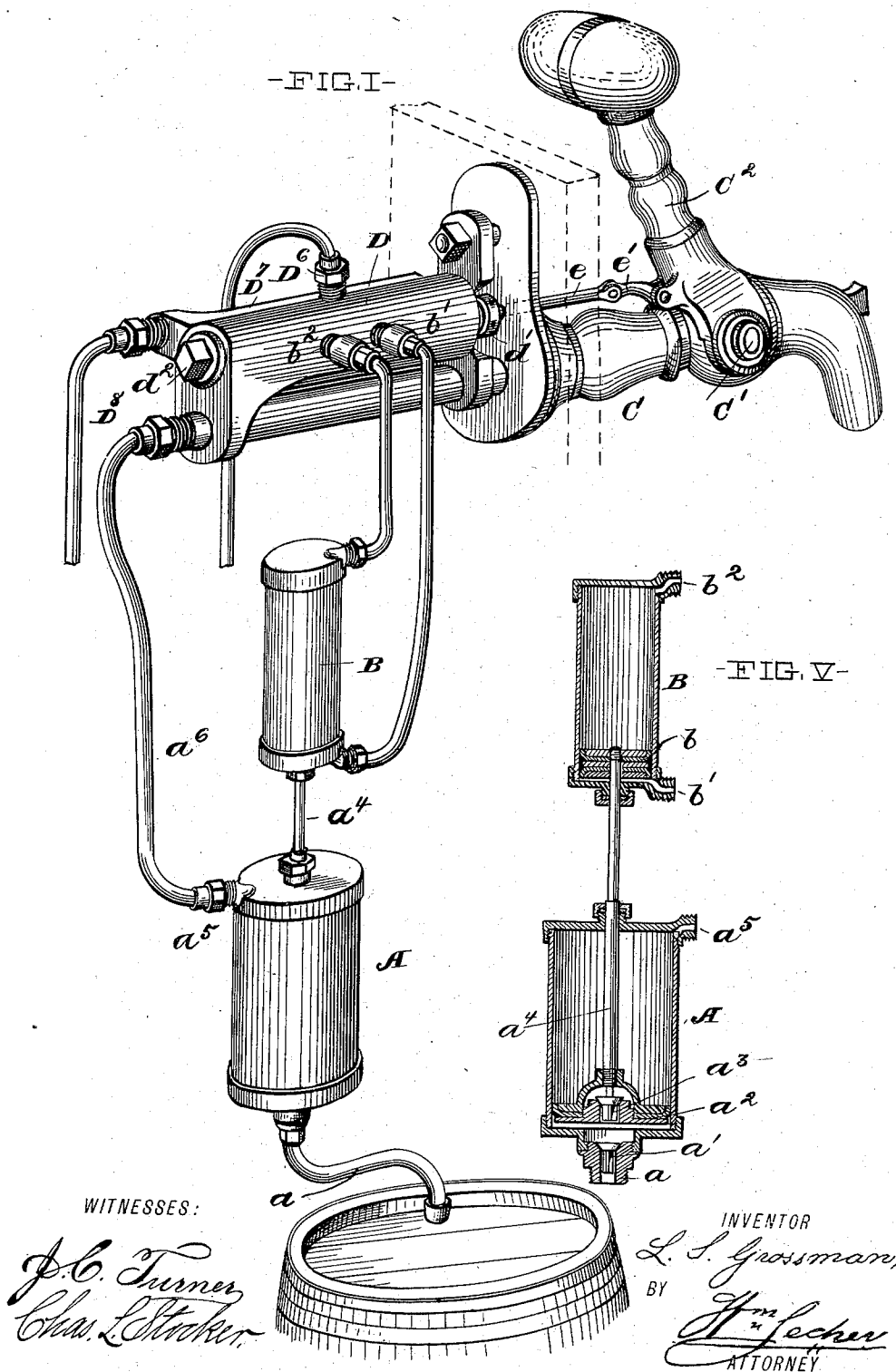
2 Sheets—Sheet 1.

L. S. GROSSMAN.

APPARATUS FOR PUMPING LIQUIDS BY FLUID PRESSURE.

No. 565,615.

Patented Aug. 11, 1896.



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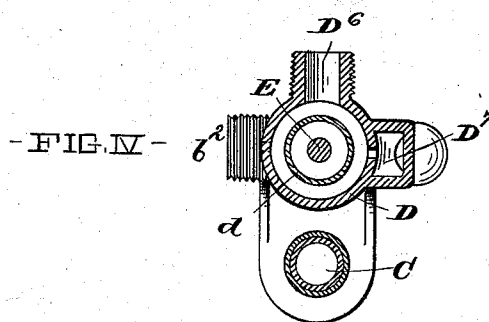
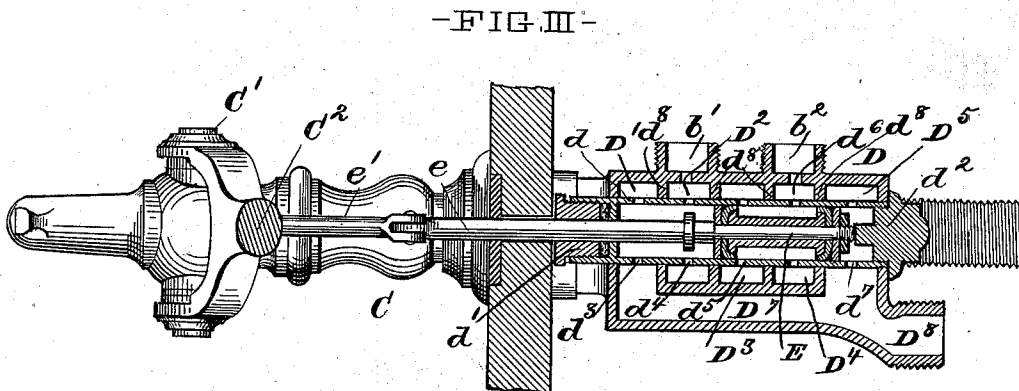
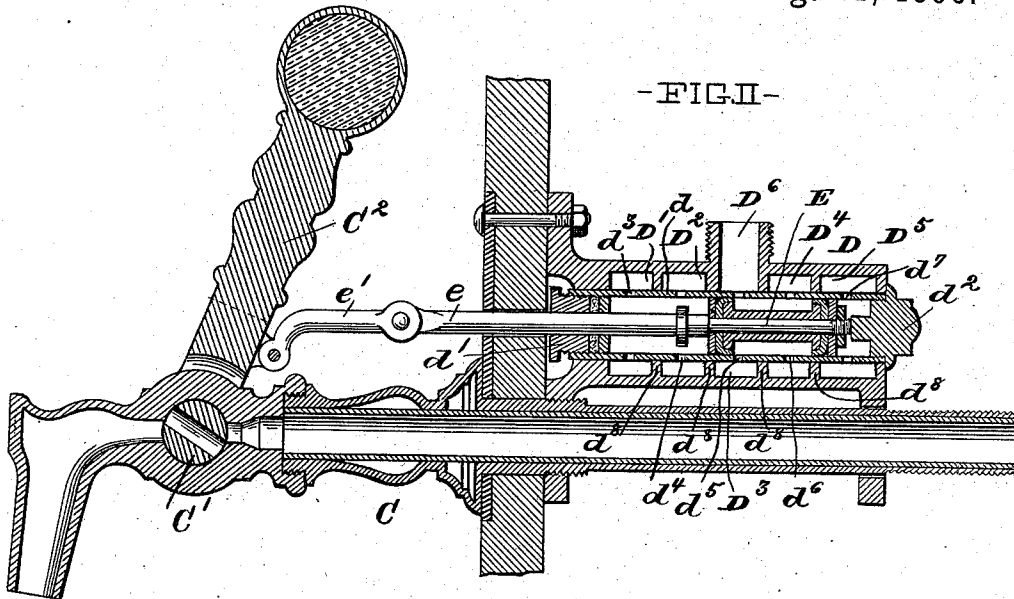
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WITNESSES:

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Chas. L. Stoker

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UNITED STATES PATENT OFFICE.

LORENZ S. GROSSMAN, OF CLEVELAND, OHIO, ASSIGNOR TO THE BERNER-MAYER COMPANY, OF SAME PLACE.

APPARATUS FOR PUMPING LIQUIDS BY FLUID-PRESSURE.

SPECIFICATION forming part of Letters Patent No. 565,615, dated August 11, 1896.

Application filed May 18, 1896. Serial No. 591,930. (No model.)

To all whom it may concern:

Be it known that I, LORENZ S. GROSSMAN, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Apparatus for Pumping Liquids by Fluid-Pressure, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a perspective view of my improved pumping apparatus, illustrating the application of the same; Fig. II, a vertical section of the faucet and valve mechanism; Fig. III, a horizontal section of the valve mechanism; Fig. IV, a transverse section of the faucet and valve mechanism, and Fig. V an axial section of the motor-cylinder and the pump-cylinder.

The apparatus forming the subject-matter of this application is principally designed for pumping liquids by suction, and by means of fluid-pressure, from a receptacle and out through a faucet.

A pump-cylinder A is provided with a suction-tube *a*, entering the cask or other liquid-receptacle, from which the liquid is to be drawn. The inlet into the cylinder from the suction-tube is controlled by an upwardly-opening valve *a'*. A piston *a*² reciprocates within the pump-cylinder, and has an upwardly-opening valve *a*³. The piston-rod *a*⁴ passes out through a stuffing-box in the head of the pump-cylinder and enters a motor-cylinder B through a stuffing-box in the head of the latter. The pump-cylinder has an outlet *a*⁵, from which a tube *a*⁶ leads to a faucet C, which will be referred to later. The piston-rod is secured to a solid piston *b*, within the motor-cylinder, so that the pump-piston may be reciprocated by reciprocating the motor-piston, which is accomplished by alternately admitting and exhausting water

or other fluid under pressure at the two ends of the motor-cylinder. The faucet is secured to and passed through the wall of a refrigerator, ice-box, or any other support, and the faucet has a transverse plug C', to which a handle C² is secured by a yoke which straddles the faucet. A valve-casing D is secured to the inner side of the wall or support and to the faucet-shank, and said valve-casing has a tube *d* longitudinally secured in its interior. The forward end of said tube is closed by a stuffing-box *d'*, and the rear end is closed by a plug *d*². The tube has five annular ports, formed by annular rows of perforations *d*³, *d*⁴, *d*⁵, *d*⁶, and *d*⁷, which communicate with five annular chambers D', D², D³, D⁴, and D⁵, formed in the valve-casing by four partitions *d*⁸, which support the tube. The tube forms a cylindrical valve-chamber, in which a two-piston valve E reciprocates. The valve-casing has a water-inlet D⁶, which communicates with the middle annular chamber and port, and which is connected to a source of water or other fluid under pressure. The distributing chambers and ports, at either side of the middle chamber and port, are connected by tubes *b'* and *b*² to the ends of the motor-cylinder, and the end chambers and ports are connected by a channel D⁷ to a water-outlet D⁸. The two-piston valve in the water-chamber has a rod *e*, which slides through the stuffing-box at the end of the valve chamber, and is connected to the faucet-plug handle by a link *e*.

The faucet-plug is illustrated in the drawings as closed, with the handle tilted back, and the distributing slide-valve consequently moved back. This will place the rear distributing-port, which leads to the upper end of the motor-cylinder, in connection with the water-inlet, and will cause the pistons to be depressed, so that the liquid which on the upstroke was drawn into the pump-cylinder below the piston will be forced through the pump-piston into the upper portion of the pump-cylinder.

The forward distributing-port, which leads to the lower portion of the motor-cylinder, is connected to the forward waste-port, and water can thus pass from the lower portion of the cylinder to the waste. As both valve-

pistons have at all times their outer faces exposed to the waste and their inner faces to the pressure of the actuating-water, the distributing-valve will be balanced in its forward or rear position. When it is desired to draw liquid, the faucet-handle is tilted forward, opening the faucet-plug and drawing the distributing-valve forward. This will place the forward distributing-port and the lower end of the motor-cylinder in communication with the inlet-port and will uncover the rear distributing-port and the upper end of the motor-cylinder to the waste. The pistons in the motor and pump cylinder may thus move upward and the liquid above the pump-piston will be forced through the faucet, while liquid will be drawn into the portion of the pump-cylinder below the pump-piston. By means of this pumping apparatus liquid may be slowly and quietly drawn from a receptacle and out through a faucet. This is an advantageous apparatus for drawing ale or similar liquids which cannot be properly kept or drawn under pressure. Any desired quantity of liquid less than the capacity of the space in the pump-cylinder between the extremities of the piston stroke may be drawn at one move of the faucet-handle, as the flow may be stopped at any time by tilting the handle back, and greater quantities may be pumped by alternately rocking the handle at the ends of the piston strokes.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth, respectively, in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In apparatus for pumping liquids by fluid-pressure, the combination with a pump-cylinder and a motor-cylinder, a piston in each of said cylinders and connected to reciprocate one with the other, and distributing-passages for admitting and exhausting the actuating fluid to reciprocate said pistons, of a faucet connected to the pump-cyl-

inder and provided with a controlling-plug having a handle, a valve-casing formed with inlet and waste passages and having the fluid-distributing passages entering it, and a valve in said casing and connected to the plug to be actuated by the same and constructed to connect the distributing-passages to the inlet or waste passages, substantially as set forth.

2. In apparatus for pumping liquids by fluid-pressure, the combination with a pump-cylinder, a motor-cylinder having a distributing-passage at each end, and a piston in each of said cylinders and connected to reciprocate one with the other, of a faucet connected to the pump-cylinder and provided with a controlling-plug having a handle, a valve-casing having fluid inlet and waste and having the distributing-passages entering it, and a valve in said casing and connected to the plug to be actuated by the same and constructed to alternately connect each distributing-passage to the inlet and waste, substantially as set forth.

3. In apparatus for pumping liquids by fluid-pressure, the combination with a pump-cylinder, a motor-cylinder having a distributing-passage at each end, and a piston in each of said cylinders and connected to reciprocate one with the other, of a faucet connected to the pump-cylinder and provided with a controlling-plug having a handle, a valve-casing formed with an inlet-port at its middle and waste-ports at its ends and having the distributing-passages entering ports, one at each side of the inlet-port, and a valve sliding in the valve-casing and shaped to alternately connect the inlet-port with one distributing-port and to uncover the other distributing-port to the waste and connected to the plug-handle to be actuated by the same, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 5th day of May, A. D. 1896.

LORENZ S. GROSSMAN.

Witnesses:

CHARLES L. STOCKER,
WM. SECHER.