

No. 677,083.

W. HOLLAMBY.
PUMP.

Patented June 25, 1901.

(No Model.)

(Application filed Mar. 11, 1901.)

2 Sheets—Sheet 1.

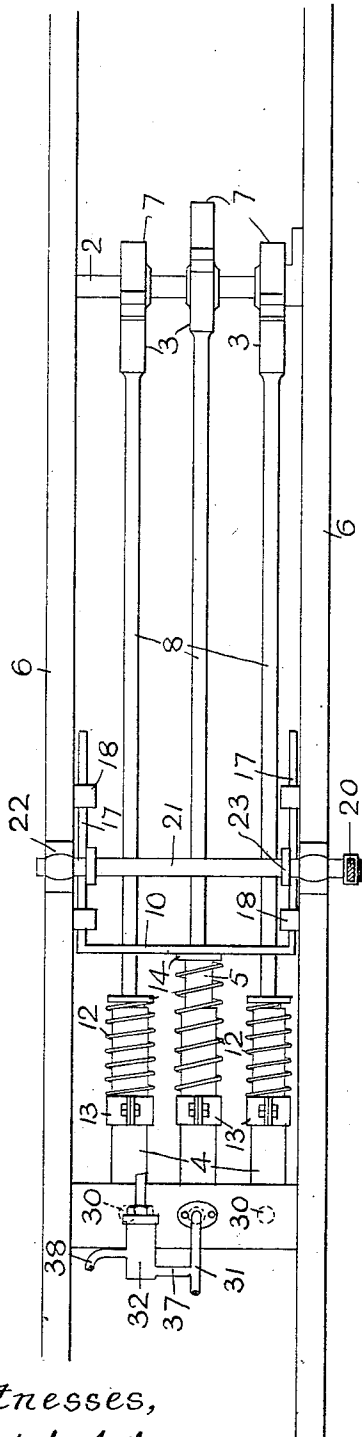


FIG. I.

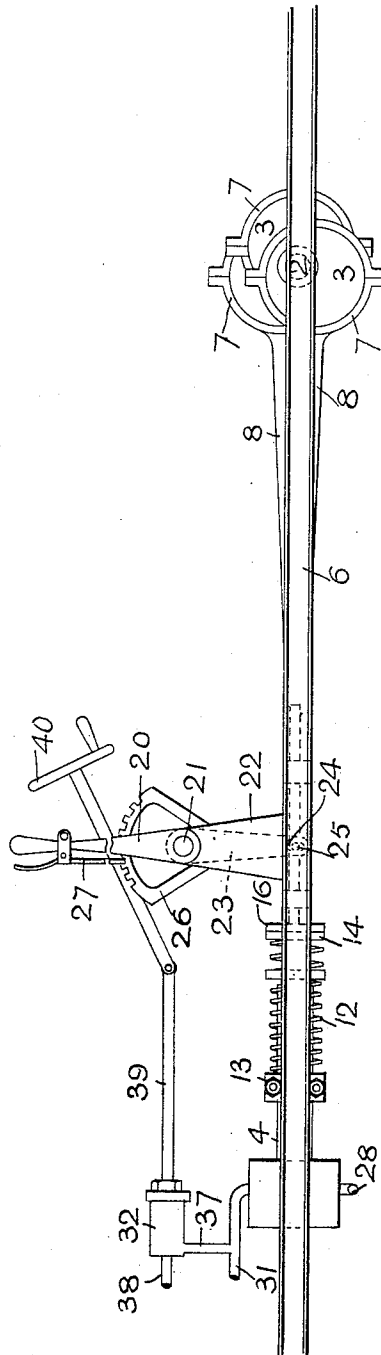


FIG. II.

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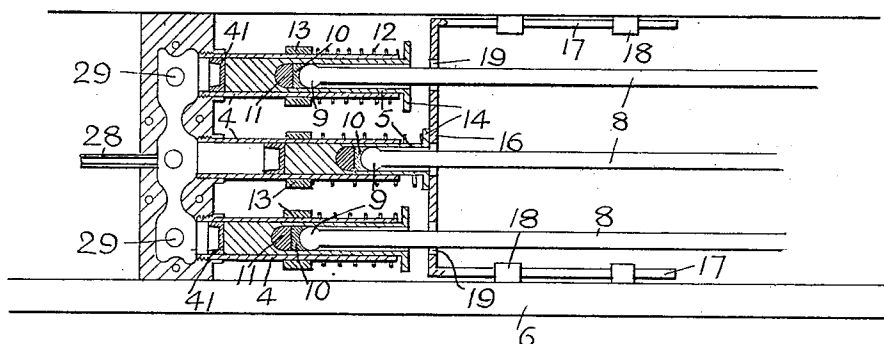


FIG. III.

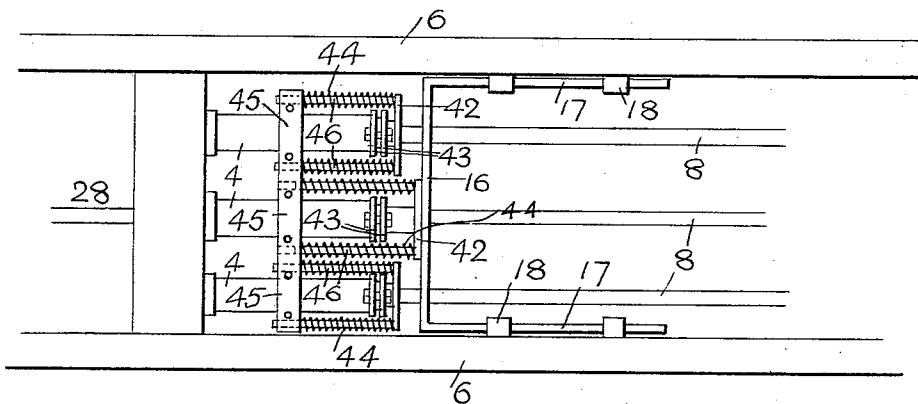


FIG. IV.

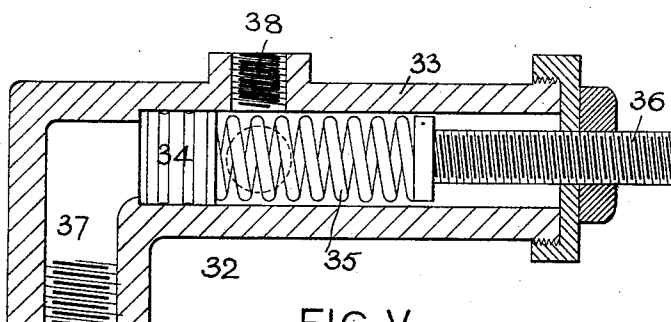


FIG. V.

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UNITED STATES PATENT OFFICE.

WILLIAM HOLLAMBY, OF LONDON, ENGLAND.

PUMP.

SPECIFICATION forming part of Letters Patent No. 677,083, dated June 25, 1901.

Application filed March 11, 1901. Serial No. 50,734. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOLLAMBY, a subject of the King of Great Britain, residing at London, England, have invented certain Improvements Relating to Pumps, of which the following is a specification.

My invention has for its object to provide a pump the discharge of which can be easily regulated by the movements of a single lever; and it consists in a pump the plungers of which are moved on their inward stroke only by means of connecting-rods, the outward stroke being effected by springs surrounding the barrels of the pump within limits prescribed by a movable sliding plate operated by a lever, as hereinafter set forth, and defined by the claims.

In order that my invention may be properly understood, I will describe the same with the aid of the accompanying drawings.

Figure I is a plan of the pump. Fig. II is a side elevation of the same. Fig. III is a sectional plan through the barrels. Fig. IV is a similar view showing a modification. Fig. V is a sectional plan of the relief-valve.

Like numerals refer to like parts throughout the drawings.

On a shaft 2 I mount three eccentrics or cranks 3, the lines of eccentricity being at one hundred and twenty degrees to each other. In line with the respective eccentrics I mount three barrels 4. The eccentrics are provided with straps 7 and with connecting-rods 8, springing from such straps. The ends 9 of the connecting-rods are made of spheroidal form and are adapted to enter the respective plungers 5 and drive them a certain distance into their respective cylinders, but are not positively connected thereto. The said plungers are bored somewhat deeper than the length of the stroke of the eccentrics 3 will allow the connecting-rods 8 to follow up under extreme circumstances. In order to prevent knock at high speeds on short stroke, I prefer to bore the said plungers deep enough to receive loose blocks 10, backed up with rubber buffers 11 or other suitable springs, so as to cushion the transmission of the motion from the rods 8 to the plungers 5. The outward stroke of the plungers is effected by springs, such as the spiral springs 12, compressed between adjustable stops 13, clipped on the barrels in

one direction, and outwardly-directed flanges 14 on the open ends of the plungers in the other direction. Thus the plungers 5 are moved on their suction-strokes by the springs 12 and on their discharge-strokes by the connecting-rods 8 of the eccentrics 3.

The quantity of the discharge is varied by varying the stroke of the plungers 5, and this I accomplish by providing an adjustable stop which may be set so as to control the outward movement of the plungers between zero and a reasonable limit. The stop shown consists of a plate 16, carried by bars 17, sliding parallel to the plungers 5 in brackets 18, mounted on the frame 6. The plate is provided with apertures 19 for the passage of the connecting-rods 8 and may be adjusted by a hand-lever 20, fixed on a way-shaft 21, carried in brackets 22 on the frame. Arms 23 on the way-shaft engage with the sliding bars 17—e. g., by the slots 24 and studs 25—so that movements of the hand-lever are transmitted to the stop 16, which may be retained in any desired position by a rack 26 and finger-catch 27 or other suitable means. The quantity of the discharge may thus be varied from zero to the maximum by adjusting the position of the stop 16, the various adjustments all being effected by the one hand-lever 20.

The liquid is drawn into the pump through the suction-pipe 28 and the non-return valve 29 and is discharged through the non-return valves 30 and the pipe 31.

An adjustable relief-valve, such as 32, is fitted on a branch 37 from the pipe 31 and consists of a hollow cylindrical body 33, opening into the branch 37 and having at a suitable distance from its mouth a waste-pipe 38. A piston 34 normally closes the mouth of the body, being held down by a spring 35, the power of which is regulated by a screw 36, operating on the top thereof. When the pressure of the liquid is sufficient to raise the piston 34 so far as to uncover the branch 38, the fluid will escape through the said branch until the pressure is relieved enough to allow the piston 34 to re-cover the said branch 38. The valve may be regulated as to the pressure at which it will relieve by turning the screw 36 either directly or through suitable connections, such as the universally-jointed rod 39 and wheel-handle 40. The

said relief-valve also operates to a certain extent as an accumulator.

Instead of employing plungers 5 with cup-leathers 41, as shown in Figs. I and III, I
5 may dispense with the cup-leathers and employ packed glands, as shown in Fig. IV. In this case the flanges 42 on the plungers are made wider than the flanges 43 of the glands, or the flanges 42 43 may be longer than they
10 are wide and be arranged at right angles to each other. Each plunger is pushed out by two springs 44, acting between the flanges 42 and the adjustable stops 45. Guide-rods 46, secured to the flange 42 and sliding through
15 ways in the stops 45, serve to prevent the plungers rotating on their axes.

I do not confine myself strictly to the above description, but hold myself at liberty to make such modifications as fairly fall within
20 the scope of my invention.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a pump, the combination with the barrels, of plungers adapted to reciprocate in the
25 said barrels, connecting-rods, means for reciprocating the said connecting-rods, a driving connection between the said connecting-

rods and the said plungers, springs adapted to return the said plungers, fixed brackets, 30 bars sliding in the said brackets, a plate carried by said bars, apertures in the said plate, a way-shaft, an operating-lever fixed to the said way-shaft, arms on the said way-shaft, stud-and-slot connections between the said 35 arms and the said bars, and means for retaining the said lever and plate where set, substantially as and for the purpose set forth.

2. In a pump, the combination with the barrels, of plungers adapted to reciprocate in the 40 said barrels, connecting-rods, means for reciprocating the said connecting-rods, a driving connection between the said connecting-rods and the said plungers, adjustable stops on the said barrels, flanges on the said plungers, and springs surrounding the said barrels and plungers and compressed between the said stops and the said flanges, substantially as and for the purpose set forth.

In testimony whereof I have signed my 50 name to this specification in the presence of two subscribing witnesses.

WILLIAM HOLLAMBY.

Witnesses:

GEORGE ISAAC BRIDGES,
HERBERT ARTHUR MARSHALL.