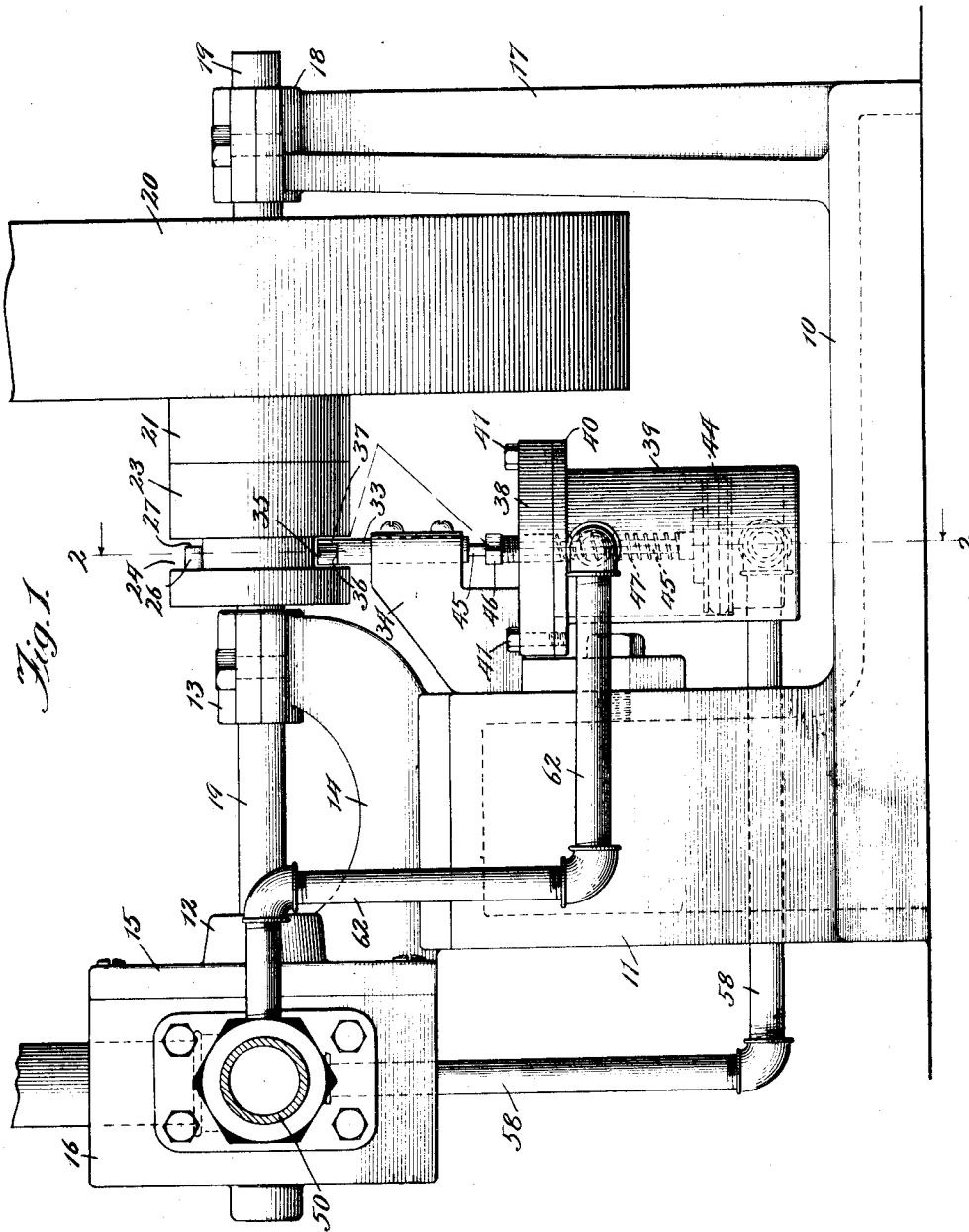


A. A. BOWSER.
 AUTOMATIC CUT-OFF FOR POWER PUMPS.
 APPLICATION FILED MAR. 1, 1909.

1,049,332.

Patented Jan. 7, 1913.

3 SHEETS-SHEET 1.



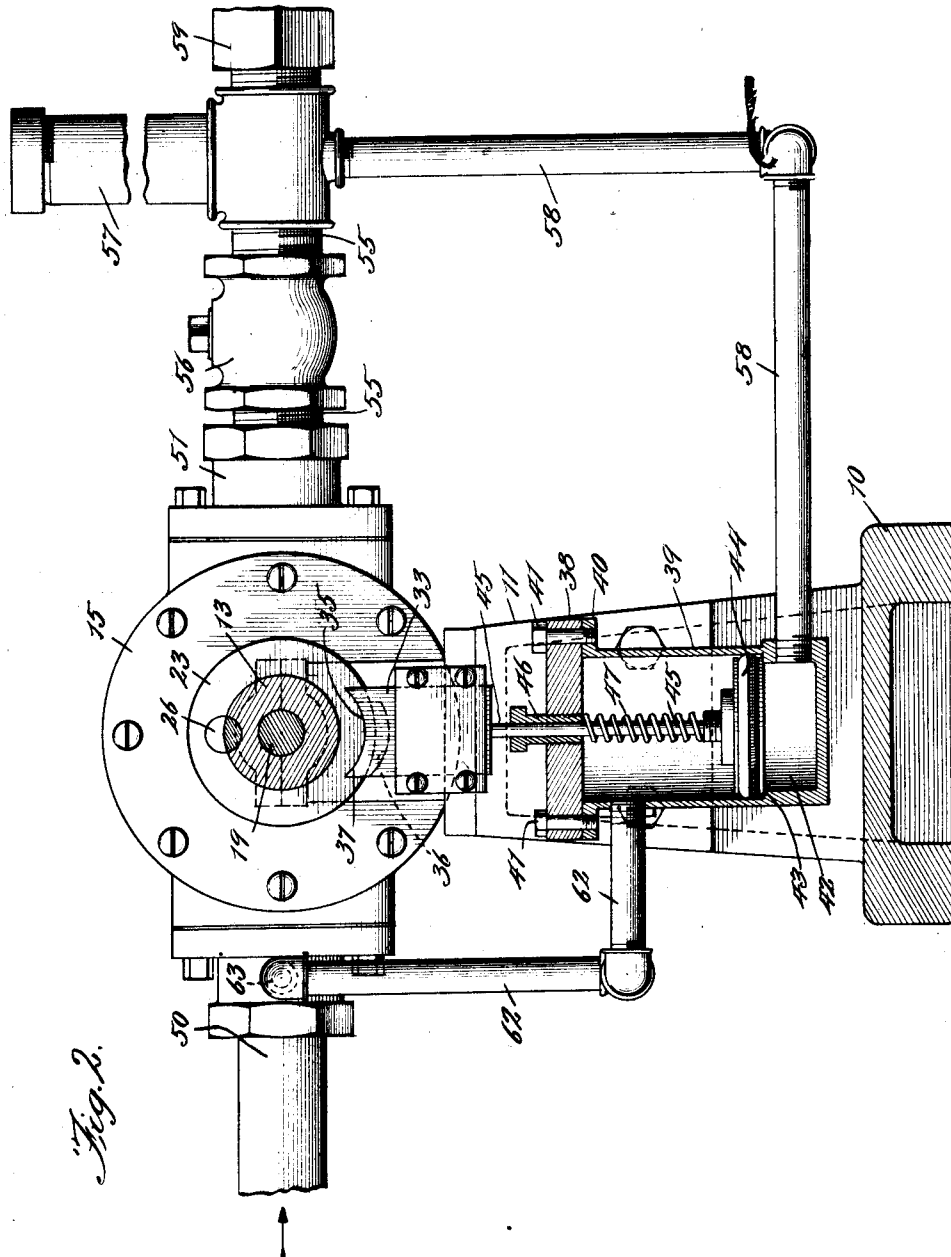
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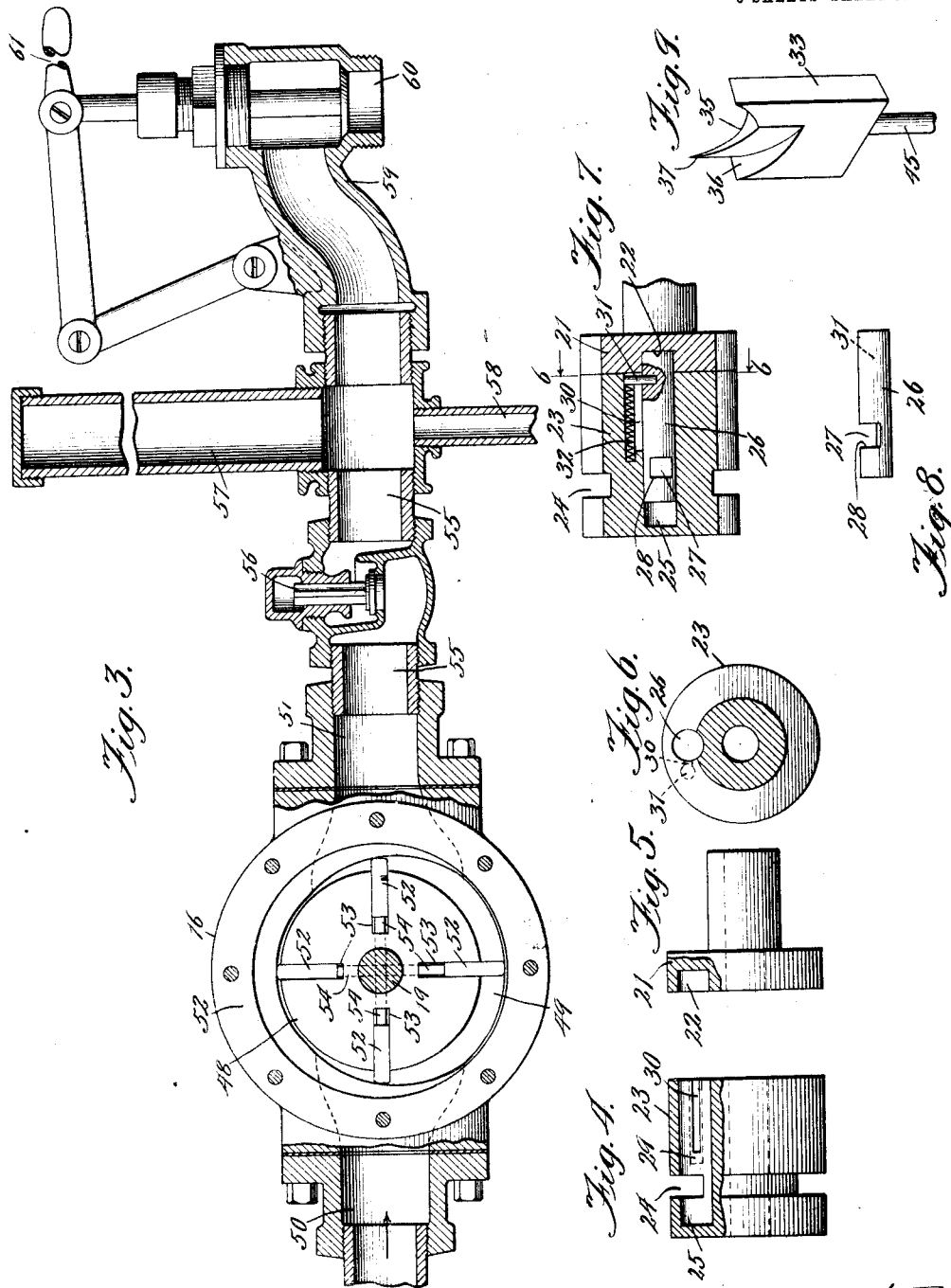
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UNITED STATES PATENT OFFICE.

ALLEN A. BOWSER, OF FORT WAYNE, INDIANA, ASSIGNOR TO S. F. BOWSER & CO.,
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AUTOMATIC CUT-OFF FOR POWER-PUMPS.

1,049,332.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed March 1, 1909. Serial No. 480,524.

To all whom it may concern:

Be it known that I, ALLEN A. BOWSER, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Automatic Cut-Offs for Power-Pumps, of which the following is a specification.

This invention relates to improvements in automatic cut-offs for power pumps and the primary object of the invention is to provide improved means for automatically cutting off the power from the pump or throwing the pump out of action when the discharge of liquid from the pump is cut off.

A further object is to provide improved means whereby the action of the pressure created upon the liquid when the discharge of the liquid is cut off will automatically throw the pump out of action, and improved means for automatically coupling the pump and power mechanism when the discharge outlet from the pump is open.

A further object is to provide improved mechanism of this character which will be simple, durable, cheap and compact in construction, and effective and efficient in operation.

To the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawings, illustrating an embodiment of the invention, and in which—

Figure 1 is a side elevation of the improved mechanism of this character constructed in accordance with the principles of this invention. Fig. 2 is a sectional view taken on line 2—2. Fig. 3 is an enlarged detail sectional view through the pump and the discharge outlet of the pump. Fig. 4 is a view, partly in section, of one of the clutch members. Fig. 5 is a view similar to Fig. 7 of the other clutch member. Fig. 6 is a detail sectional view on line 6—6 of Fig. 7. Fig. 7 is a view partly in section of the two clutch members assembled and the locking means for securing these parts to rotate together. Fig. 8 is a detail view of the clutch locking bolt. Fig. 9 is an enlarged detail perspective view of the wedge

or member for releasing or unlocking the clutch members.

Referring more particularly to the drawings and in the present exemplification of the invention, the numeral 10 designates a suitable supporting base, arranged at one end of which is an upright 11, supported upon which are spaced bearings 12, 13, which latter are connected by means of a strengthening or reinforcing web 14. The bearing 12 is provided with an enlarged face 15 for supporting the pump designated generally by the reference numeral 16. The base 10 is provided with another upright 17, which is spaced from the upright 11 and is provided with a bearing 18, which latter aligns with the bearings 12 and 13. Journaled in the aligned bearings is a shaft 19 and mounted for rotation upon the shaft between the bearings 13 and 18 is a pulley 20, to which is secured one member 21 of a clutch, which member is provided with a recess or aperture 22 in the face thereof, as shown more clearly in Fig. 5. A second clutch member 23 is secured to the shaft 19 for rotation therewith and this member is provided with a circumferential groove 24 and a longitudinal aperture or recess 25 (see Fig. 4) which extends across and communicates with the circumferential groove 24. Slidingly mounted in the recess or aperture 25 is a locking pin or bolt 26, which is provided adjacent one end with an open notch or recessed portion 27, one edge of which is slightly inclined or beveled as at 28, shown more clearly in Fig. 7 of the drawings. This pin or bolt 26 is of such a length that it may be entirely seated within the aperture or recess 25. The clutch member 23 is also provided with an aperture or recess 29, preferably smaller in diameter than the diameter of the aperture or recess 25 and said aperture or recess 29 is arranged parallel with the aperture or recess 25 and has communication therewith by means of a slot 30, shown more clearly in Figs. 4 and 7. Projecting laterally from the pin or bolt 26 is a lug or pin 31, which projects through the connecting slot 30 and into the aperture or recess 25, the free end of the pin or lug being adapted to reciprocate in the recess or slot 30 when the pin or bolt 26 is reciprocated in the manner to be set forth. Disposed within the aperture or recess 29 and between the

bottom thereof and the pin or lug 31 is a suitable yielding member 32, such as a coil spring or the like and this member is adapted to exert its tension upon the pin 31 to normally project the free end of the pin or bolt 26 beyond the face of the clutch member 23 so that said projecting end will enter the recess 22 in the face of the clutch member 21, when the recess 22 is in a position to receive said end, to lock the clutch members together so that the rotation of the pulley 20 will be imparted to the shaft 19. A member 33 is mounted for sliding movement in a suitable support 34 such as a bracket, which is preferably secured to the upright 11 and the free end of the member 33 is cut-away as at 35 to form a semi-circular recessed portion, for a purpose to be set forth. A portion of the upper end of the member 33 is cut away or reduced, as at 36, to form a wedge-shaped portion 37. This member 33 is mounted in such a relation with respect to the clutch member 23 that the free extremity thereof will enter the circumferential groove 24 and the semi-circular portion will surround the bottom of the circumferential groove 24. The specific construction of this clutch and its operating mechanism, however, forms no part of the present invention.

The bracket 34 is provided with a laterally projecting portion 38 which forms a closure for a cylinder or chamber 39, which latter may be of any desired diameter and length, and is provided with a circumferential projecting flange 40 which is adapted to rest against the lower face of the projecting portion 38 of the bracket 34, to be closed thereby, and the cylinder may be held against displacement in any desired or suitable manner, such as by means of cap screws or bolts 41, which pass through the portion 38 of the bracket 34 and the flange 40. The cylinder 39 is preferably of a length less than the length of the space between the lower face of the projecting portion 38 of the bracket 34 and the upper face of the base 10 so that when the cylinder is secured in position, it will be supported by the projecting portion 38 and above the base 10, to permit the cylinder to be readily placed in position and as readily removed when desired without dismantling the bracket 34.

The cylinder is preferably provided with a reduced portion 42 adjacent its bottom to form a circumferential shoulder 43, which acts as a stop for the piston 44 to hold the piston above the bottom of the cylinder. The piston 44 is provided with a piston rod 45, which extends through a suitable adjustable bushing 46 in the top of the cylinder formed by the projecting portion 38 of the bracket and the free extremity of the piston rod is secured to the member 33, preferably to the base of said member so that when the

piston 44 is reciprocated in the cylinder, the member 33 will be correspondingly reciprocated to be moved into and out of engagement with the locking pin or bolt 26 of the clutch members.

A suitable elastic member, such as a coil spring 47 or the like, surrounds the piston rod 45 within the cylinder so that one extremity will rest against the piston head, and the other extremity against the end of the adjustable bushing 46, whereby the tension of the spring 47 may be varied by adjusting the bushing.

The pump 16 may be of any desired construction but preferably comprises a casing within which is rotatably mounted a hub or drum 48. This hub or drum is secured to the shaft 19 which projects into the pump casing and is preferably mounted at one side or eccentric to the center of the casing, thereby providing a communicating liquid passage 49 between the inlet opening 50 and the discharge outlet opening 51 of the pump casing. The pump is preferably provided with a plurality of oppositely disposed blades 52, preferably four in number, which are arranged diametrically opposite each other so as to move in oppositely disposed slots 53. These blades are adapted to be projected beyond the periphery of the drum 48 as the shaft and drum rotate, and between the oppositely disposed blades there is provided a member 54 which is of a length to engage the inner edges of the blades, so that as the drum rotates one of the blades of each pair will engage the adjacent wall of the pump casing to be forced within the respective slot 53 in the drum to move the diametrically opposite blade out of its respective slot and in engagement with the diametrically opposite portion of the wall of the pump casing or barrel so as to form a wing projecting across the space 49 within the pump casing and between the inner wall thereof and the periphery of the drum, which wing engages the liquid to advance the same and to force it through the discharge outlet 51 of the pump casing. At the same time the rotation of the drum 48 and the wings or blades 52 will create a suction to draw the liquid into the inlet end 50 of the pump casing.

Connected to the outlet 51 of the pump casing is a discharge pipe 55 within which and preferably adjacent the pump casing is an ordinary check valve 56, which will permit the liquid to flow through the pipe 55 in one direction and prevent it from flowing back through the pipe in the opposite direction. Supported by and communicating with the outlet pipe 55 is a casing or chamber 57, which preferably extends for some distance beyond the pipe and an outlet pipe 58 also has communication with the pipe 55. Arranged beyond the outlet pipe 58 and

communicating with the discharge outlet pipe 55 is a discharge faucet 59, the outlet of which is controlled by a valve 60 adapted to be operated by a suitable handle 61. Obviously any form of mechanism may be provided for controlling the discharge outlet of the pipe 55 and the specific construction of this mechanism forms no part of the present application.

The outlet pipe 58 which leads from the discharge outlet pipe 55 has communication with the bottom of the cylinder 39 below the circumferential shoulder 43. The cylinder 39 is provided with an outlet opening on the other side of the piston 44 and preferably adjacent the top of the cylinder. Leading from this outlet opening is a pipe 62, which discharges into the inlet opening 50, as at 63.

The normal tendency of the elastic member or spring 47 is to move the piston toward the circumferential shoulder 43 so as to move the member 33 out of operative position with relation to the locking pin or bolt 26 of the clutch members to permit the clutch members to be normally locked for operation. The tension of the spring or elastic member 47 is such that it will resist any suction created by the pump 16 through the inlet opening 50 of the casing.

In operation, power being applied to the pulley 20 and the clutch members being locked for rotation, the shaft 19 will rotate, the discharge faucet 59 being first opened to permit the liquid to be discharged therefrom. So long as the outlet faucet 59 is open the liquid will flow through the pump past the check valve 56 and out through the faucet. When the desired quantity of liquid has been discharged the operator closes the outlet end of the discharge pipe 55 by adjusting the valve 60. The flow of liquid in the outlet pipe being thus checked, the liquid will accumulate in the pipe between the check valve 56 and the faucet. As the liquid accumulates, it will flow through the outlet 58 and also into the chamber 57. The increased pressure thus exerted upon the liquid will cause the liquid to flow through the pipe 58 and into the cylinder 39 below the piston 44 and this pressure, acting upon the piston 44, will move the latter against the tension of the elastic member 47 to shift the member 33 into operative position with respect to the clutch locking pin 26 so that as the clutch members rotate, the wedge-shaped portion 37 of the member 33 will withdraw the locking pin or bolt 26 out of engagement with the clutch member 21 to release the pulley 20 and thereby permit the latter to rotate upon the shaft 19. The member 33 will be held in its shifted position to retain the clutch members unlocked until the discharge outlet end of the pipe 55 is opened. The chamber 57 is provided to accommodate

the excess amount of liquid above the amount necessary to shift the piston 44, in the event that the member 33 should be shifted just as one of the blades of the pump is approaching the inlet end thereof, which would force an extra amount of liquid through the outlet end before the clutch members are released. When the outlet end of the discharge pipe 55 is again opened, the tension of the elastic member 47 will move the piston 44 in the opposite direction to force the liquid out of the cylinder and also the amount of liquid accumulated in the pipe 55.

In the event that any leakage should occur in the cylinder 39 so that a portion of the liquid will work its way past the piston and to the opposite side thereof in the cylinder, it will be discharged through the outlet pipe 62 and into the inlet end 50 of the pump casing 16.

The check valve 56 is provided in order to prevent the pressure created upon the liquid in the discharge pipe, after the outlet thereof has been closed, from forcing the liquid back through the pump casing and through the pipe 62 into the cylinder 39.

In order that the invention might be fully understood, the details of the foregoing embodiment thereof have been thus specifically described, but

What is claimed as new is—

1. In a device of the character described, the combination of a dispensing pump provided with an inlet and an outlet, means for closing the outlet, a check valve in the outlet, means for operating the pump including clutch mechanism, a cylinder, a piston reciprocable in the cylinder, clutch controlling means operatively connected with the piston, means tending normally to move the piston in a direction to render the clutch active and the said controlling means inactive, a pipe communicating with the cylinder on one side of the piston and also having communication with the outlet of the pump at a point between the first said means and the said valve so that liquid which has been discharged by the pump will enter the pipe after it passes the said valve and when the outlet is closed and whereby pressure created upon the liquid in the cylinder and pipe by the pump will move the piston against the tension of the fourth recited means, to shift the said controlling means to render the clutch inactive, and means connected with the cylinder on the other side of the piston and with the inlet side of the pump for draining that side of the cylinder.

2. In a device of the character described, the combination of a dispensing pump provided with an inlet and an outlet, means for closing the outlet, a check valve in the outlet, means for operating the pump including clutch mechanism, a cylinder, a piston reciprocable in the cylinder, clutch controlling

means operatively connected with the piston, means tending normally to move the piston in a direction to render the clutch active and the said controlling means inactive, 5 a pipe communicating with the cylinder on one side of the piston and also having communication with the outlet of the pump at a point between the first said means and the said valve so that liquid which has been discharged by the pump will enter the pipe 10 after it passes the said valve and when the outlet is closed and whereby pressure created upon the liquid in the cylinder and pipe by the pump will move the piston 15 against the tension of the fourth recited means, to shift the said controlling means to

render the clutch inactive, and means connected with the cylinder on the other side of the piston and with the inlet side of the pump for draining that side of the cylinder, 20 all of the said parts, with the exception of the outlet closing means and the said valve, being separate from and exterior of the pump casing.

In testimony whereof I have signed my 25 name to this specification, in the presence of two subscribing witnesses, on this 23rd day of February, A. D. 1909.

ALLEN A. BOWSER.

Witnesses:

H. M. BOWSER,
S. B. BECHTEL.