

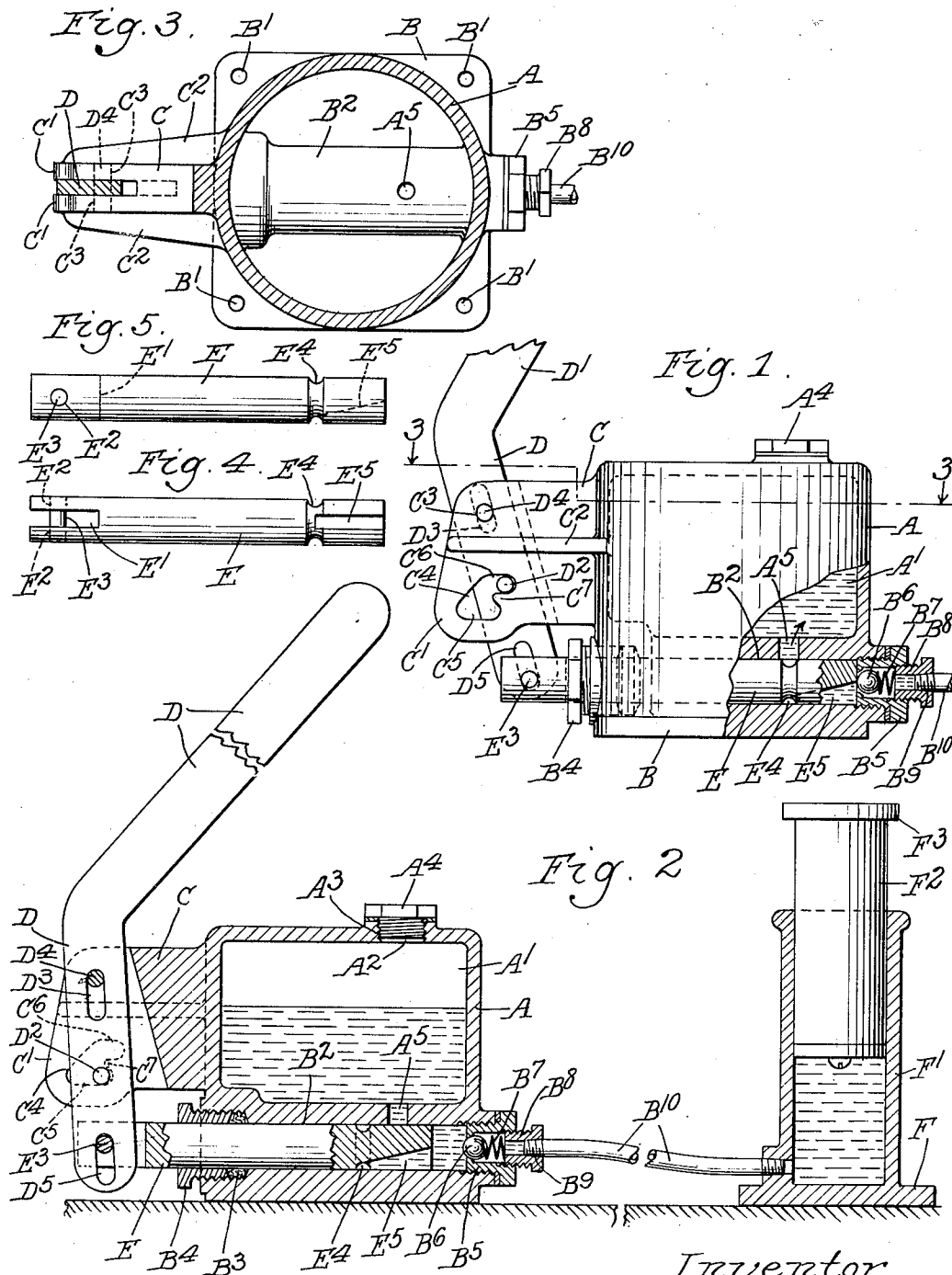
June 16, 1936.

W. C. ANTHONY

2,044,044

PUMP

Filed Dec. 10, 1932



Inventor
William C. Anthony
by Parker & Carter.
Attorneys.

UNITED STATES PATENT OFFICE

2,044,044

PUMP

William C. Anthony, Streator, Ill., assignor to
Anthony Development Company, Streator, Ill.,
a syndicate

Application December 10, 1932, Serial No. 646,568

4 Claims. (Cl. 103—38)

This invention relates to means for creating pressure and in one form it is embodied in a hydraulic pump.

It has for one object to provide means for producing hydraulic pressure with a minimum of apparatus. Another object is to provide means for operating and controlling a pressure developing and applying system with a minimum of parts. Another object is to provide a remote control and operating mechanism for developing and utilizing pressure.

Other objects will appear from time to time in the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawing, wherein—

Figure 1 is a side elevation of one form of the device, with parts in section;

Figure 2 is a transverse vertical cross section, with parts omitted;

Figure 3 is a horizontal sectional view, taken at line 3—3 of Figure 1;

Figure 4 is a detail showing the pump plunger;

Figure 5 is a view showing the plunger taken at an angle of 90° with respect to the view of Figure 4.

Like parts are designated by like characters throughout the specification and drawing.

A is a housing member forming a main chamber A¹, provided with an entrance port A² which may be interiorly threaded as at A³ and carrying a closing or sealing plug A⁴. In its bottom the chamber A¹ is provided with a discharge or outlet opening A⁵.

Formed preferably integrally with the housing A is a base portion B provided with perforated ears B¹ or other points for attachment to a base. Formed in the base portion B is a pumping cylinder portion B². The port A⁵ communicates with the cylinder B². At one end a packing B³ is provided which is adjustably held in place by a gland B⁴. At its opposite or discharge end the cylinder B² has seated within it a valve cage B⁵ within which is positioned a ball valve B⁶ normally held closed by a spring B⁷. A seating and connecting member B⁸ is positioned in the outer end of the valve cage B⁵. This serves to hold the spring and the ball in position and may be adjusted to vary the compression of the spring. It also is threaded interiorly as at B⁹ or provided with some other form of attachment whereby a pressure line B¹⁰ may be fastened to it and fluid under pressure from the cylinder may be forced past the valve through the line B¹⁰ to any suitable device such for example as a jack or any other mechanism or apparatus where pressure is desired.

An operating lever support may be provided on the housing A and may be made integrally with it; although this is not essential, it is done in the

particular form of the invention shown herewith. In the form shown this support comprises a web C, bifurcated to provide arms C¹ C¹ and provided also with reinforcing or stiffening web members C² C². Each of the portions C¹ is provided with a perforation C³ to receive a bearing member and below the perforation C³ it is provided with an irregularly shaped opening or perforation C⁴. At its bottom the perforation C⁴ is provided with a relatively elongated and flattened section C⁵. At its top it is provided with a shortened portion C⁶ and between the two an inwardly projecting nose C⁷ is formed.

D is a handle which may be provided with a forwardly bent portion D¹. It carries a pin D² adapted to be positioned within the openings or perforations C⁴ in the bifurcations C¹. It is slotted as at D³ and through this slot is positioned a pin D⁴ which lies within the perforations C³. Adjacent its lower end the handle D is slotted as at D⁵ for engagement with the pump piston or plunger.

E is a pump plunger or piston. It is slotted as at E¹ at one end and is perforated at that end as at E². A pin E³ is fixed in the perforations and extends across the slot. The slot embraces the lower end of the handle D and the pin E³ extends through the slot D⁵ so that the movement of the handle will move the piston. The piston is provided with an annular groove or depression E⁴, preferably adjacent one end. E⁵ is an inclined groove formed in one end of the piston E, extending from the end to the annular groove E⁴.

There is also shown in Figure 2 one form of apparatus in connection with which the pump may be used. As indicated it is a hydraulic jack or lift. F is a base. F¹ is a cylinder to which the pressure line B¹⁰ is arranged to supply pressure. F² is a piston member which may have an upper surface member F³.

It will be realized that whereas I have herewith shown and described a practical operative device, nevertheless many changes might be made in the size, shape, number and disposition of parts without departing from the spirit of the invention and I wish, therefore, that the showing be taken as in a sense diagrammatic.

The use and operation of my invention are as follows:

The invention comprises in one sense a pressure pump and is applicable as means of developing pressure wherever it is useable or necessary. It may for example be used to operate a jack, as indicated in Figure 2. It may be used to move a valve to operate a control element. In short, to do anything which may be conveniently done by pressure and in particular it is useful for operating parts which require considerable force or

pressure and which must be operated at a distance from the operator and from the pump.

In the form shown for example in Figure 2, when the operator wishes to raise the jack, he manipulates the handle so that the pin D² is moved into the portion C⁵ of the opening C⁴ and then the handle is worked back and forth, the stroke being limited by the length of the portion C⁵. The proportions of the parts are such that in this movement the annular groove E⁴ does not come into register with the passage or port C⁵ and with each reciprocation a certain amount of fluid within the chamber A¹ is drawn into the port A⁵ and forced outwardly through the valve B⁶ and the pressure line B¹⁰ and into the chamber F¹, thus gradually building up fluid under pressure within that chamber and raising the member F² and whatever may be upon it. Obviously this member may be adapted merely to raise a weight, to operate a control or to carry out any one of an almost infinite number of operations. When a sufficient amount of fluid under pressure has been forced into the cylinder F¹ the reciprocation is stopped and the parts will remain stationary. When the operator desires to lower the member F² or in any way to reduce the pressure within the cylinder F¹, he raises the handle so that the pin D² lies within the portion C⁶. If it is moved to the right of that portion as shown in Figure 1, the pin and the handle will be prevented from falling into the portion C⁵ by the nose C⁷. With the pin in the position C⁶ and resting upon the nose C⁷, the upper end of the handle is moved to the left from the position shown in Figure 2, and the piston is carried to the right until the annular groove E⁴ comes in register with the port A⁵. At about this time the end of the piston strikes the ball valve B⁶ and unseats it, thus permitting fluid under pressure to run back along the pressure line B¹⁰ through the valve B⁶, through the groove E⁵, in the piston, about the groove E⁴ and through the port A⁵ back into the chamber A¹. As long as there is pressure within the pressure line B¹⁰ and as long as the passage back to the chamber A¹ is held open by retaining the piston in the position indicated, the pressure will be forced back into the chamber A¹. This movement may be stopped at any time by moving the piston in reverse, which moves it out of contact with the ball valve B⁶ and so permits pressure to seat the valve and prevent further escape. In this manner, of course, the release of pressure from the pressure line back into the chamber A¹ is controllable absolutely by the operation of the piston through the operation of the handle and all of the pressure or any part of it may be released.

I claim:

1. In combination in a pump, a housing providing a reservoir and a cylinder, a piston controlled port between the two, a piston mounted for reciprocation within said cylinder to control said port and to move liquid, an outwardly opening discharge valve for said cylinder, an attaching part on the outer end of said piston, a fulcrum part fixed with respect to said housing, a plurality of stops fixed at different distances with respect to said housing, a handle provided with means engaging said fulcrum part, and means for engaging said piston part, the fulcrum engaging means being shaped to permit relative adjustment of the handle with respect to said parts, a stop on said handle adapted to contact one or another of the first mentioned stops to control the length of stroke of said piston.

2. In combination in a pump, a housing providing a reservoir and a cylinder, a piston controlled port between the two, a piston mounted for reciprocation within said cylinder to control said port and to move liquid, an outwardly opening discharge valve for said cylinder, an attaching pin on the outer end of said piston, a fulcrum pin fixed with respect to said housing, a plurality of stops fixed at different distances with respect to said housing, a handle provided with a pair of slots, one engaging said fulcrum pin, the other engaging said piston pin, the slots being larger than the pins to permit relative adjustment of the handle with respect to said pins, a stop on said handle adapted to contact one or another of the first mentioned stops to control the length of stroke of said piston.

3. In combination in a pump, a housing providing a reservoir and a cylinder, a piston controlled port between the two, a piston mounted for reciprocation within said cylinder to control said port and to move liquid, an outwardly opening discharge valve for said cylinder, an attaching pin on the outer end of said piston, a fulcrum pin fixed with respect to said housing, a plurality of stops fixed at different distances with respect to said housing, a handle provided with a pair of slots, one engaging said fulcrum pin, the other engaging said piston pin, the slots being larger than the pins to permit relative adjustment of the handle with respect to said pins, a stop on said handle, adapted to contact one or another of the first mentioned stops to control the length of stroke of said piston, the piston provided with an encircling exterior groove positioned away from its end and with an additional external groove in communication with and extending from said encircling groove to the end of the piston, the two providing in one position a passage for the flow of fluid between the cylinder and the reservoir through the port between them, the piston, when in position to provide said passage for flow of fluid between the cylinder and the reservoir, holding said outwardly opening discharge valve open.

4. In combination in a pump, a housing providing a reservoir and a cylinder, a piston controlled port between the two, a piston mounted for reciprocation within said cylinder to control said port and to move liquid, an outwardly opening discharge check valve for said cylinder, an attaching pin on the outer end of said piston, a fulcrum pin fixed with respect to said housing, a plurality of stops fixed at different distances with respect to said housing, a handle provided with a pair of slots, one engaging said fulcrum pin, the other engaging said piston pin, the slots being larger than the pins to permit ready relative adjustment of the handle with respect to said pins, a stop on said handle adapted to contact one or another of the first mentioned stops to control the length of stroke of said piston, the piston contacting and opening the check valve upon its longer stroke, the piston provided with an encircling exterior groove positioned away from its end and with an additional groove extending from said encircling groove to the end of the piston, the two providing in one position a passage for the flow of fluid between the cylinder and the reservoir through the port between them, the piston, when in position to provide said passage for flow of fluid between the cylinder and the reservoir, holding said outwardly opening discharge valve open.

WILLIAM C. ANTHONY. 75