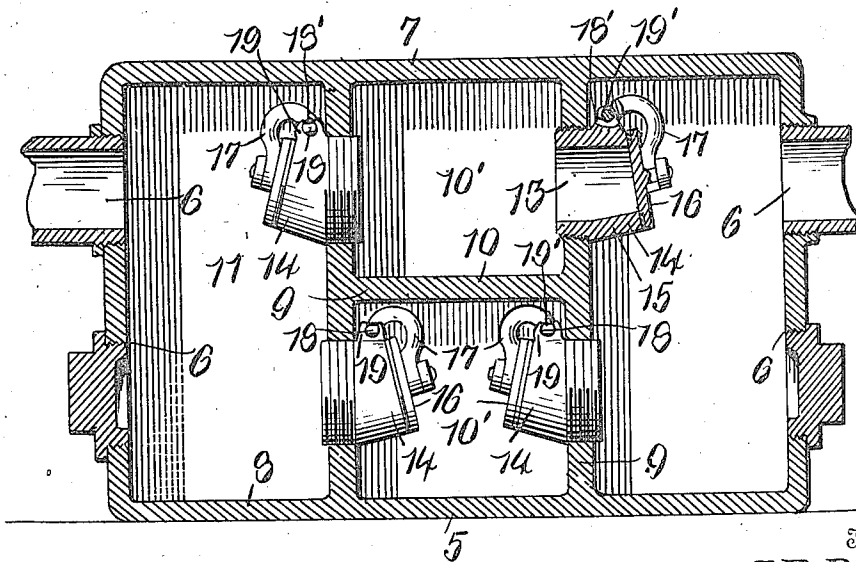
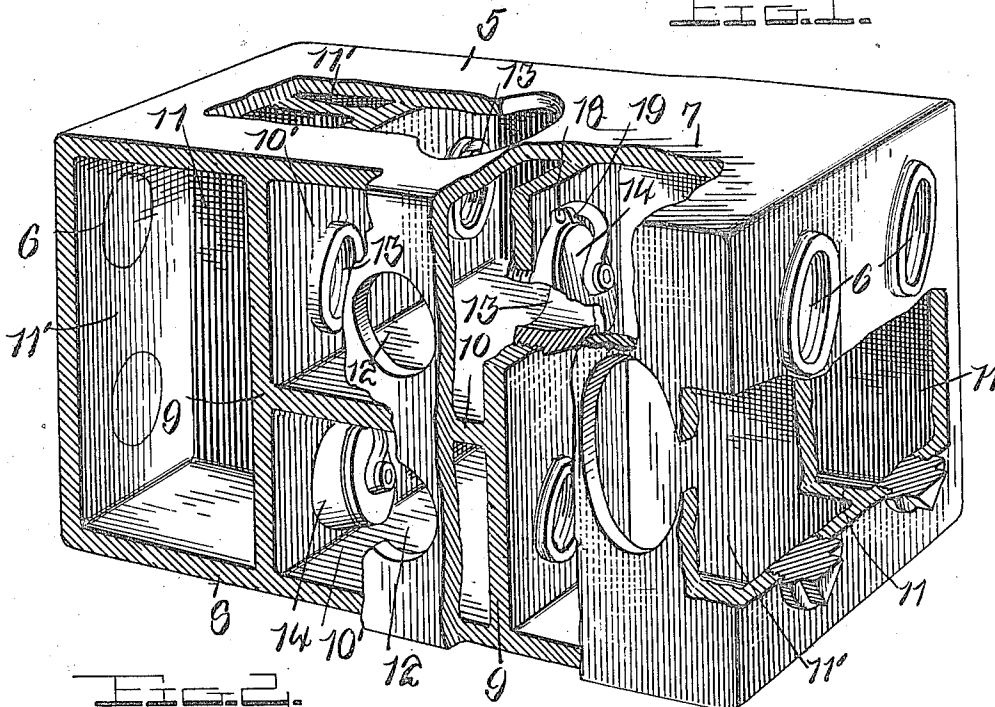


J. R. BUTLER.
PUMP VALVE.
APPLICATION FILED APR. 7, 1910.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 1.

1,060,160.



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Witnesses
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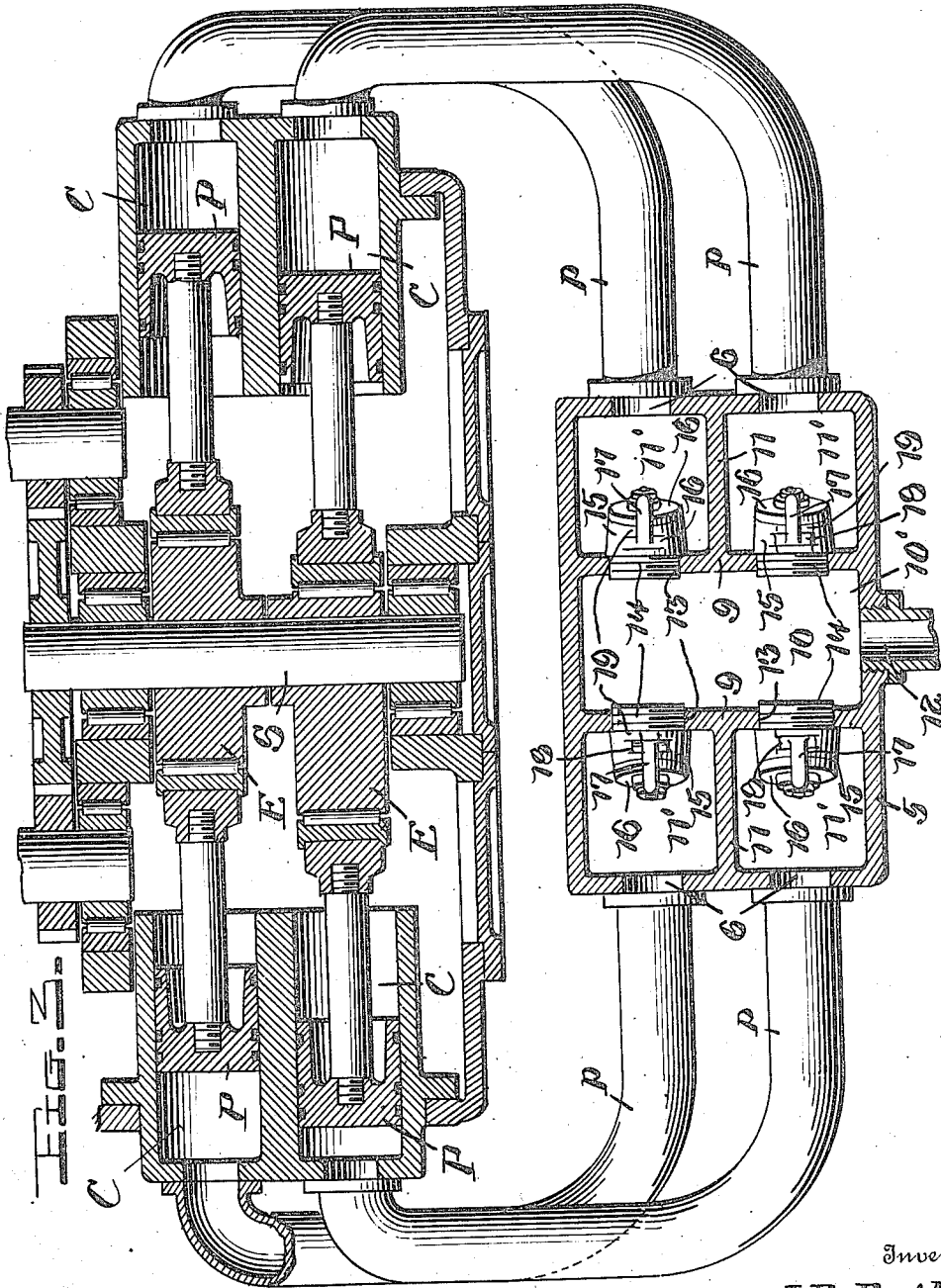
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UNITED STATES PATENT OFFICE.

JOHN R. BUTLER, OF DURANGO, COLORADO, ASSIGNOR OF ONE-THIRD TO JACOB FRITZ
AND ONE-THIRD TO DAVID ATTEBURY, BOTH OF DURANGO, COLORADO.

PUMP-VALVE.

1,060,160.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed April 7, 1910. Serial No. 553,922.

To all whom it may concern:

Be it known that I, JOHN R. BUTLER, a citizen of the United States, residing at Durango, in the county of La Plata and State of Colorado, have invented certain new and useful Improvements in Pump-Valves, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain new and useful improvements in pump valves and has for its primary object to provide a new valve of this character which will obviate the liability of sand or dirty water being drawn into the pump cylinder thus causing undue wear upon the piston cylinder.

Another object is to improve and simplify the construction of valves of this character whereby the pumping of water and other liquids will be materially facilitated.

With these and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the device, the valve box or casing being partly broken away to disclose the interior construction, and Fig. 2 is a vertical longitudinal section; Fig. 3 is a horizontal section showing my improved valve connected to the cylinders of a current pump.

Referring more particularly to the drawing 5 indicates the valve box or casing in each end of which the openings 6 are formed. It will be noted that four of such openings are provided in each end of the casing. Two of these openings, however, are plugged while two of the pump cylinders are connected to the other pair of openings. The plugged openings are provided for the purpose of allowing easy access to the end chambers so that they may be cleaned to permit of making repairs to the valves which connect said chambers with the lower central chamber, as will be hereinafter more fully described. The drawing discloses a valve which is adapted for use in connection with a four cylinder pump engine, two of the pump cylinders being connected to each end of the valve casing.

The top and bottom of the casing 7 and 8 respectively are connected by the integral walls 9. These walls divide the interior of

the casing into 3 compartments and are equally spaced from each other and from the ends of the casing. The walls 9 are in turn centrally connected by a horizontal wall 10 which provides the upper and lower chambers 10'. The walls 9 are also centrally connected to the ends of the casing by a vertical wall 11 which divides each of the end compartments into two separate chambers 11'. Thus it will be seen that six separate chambers are formed each of the same capacity, the end chambers having their greatest dimension vertically positioned while the central chambers are disposed at right angles to the end chambers and have their greatest dimension transversely positioned. Openings 12 are formed through one side of the casing 5 and communicate with the central chambers 10'. To the upper opening 12 the inlet pipe is adapted to be connected while a suitable discharge pipe is connected to the lowermost opening. Ports 13 are formed in the walls 9 and afford communication between the central chambers and the end chambers. These ports are normally closed by the check valves 14.

The check valves each comprise a cylindrical casing or wall 15 and a valve plate 16. This valve plate carries an arm 17 upon the end of which transverse trunnions 18 are formed. These trunnions are each formed with a flattened surface 18' whereby they may be inserted into the slots or recesses 19' of the ears 19 which are formed upon the top of the casing 15 as clearly shown in Fig. 1. The valves which open communication between the upper central chamber and the end chambers are outwardly positioned or in other words they protrude into the end chambers. The remaining valves, however, which afford communications between the end chambers and the lower central chamber are positioned entirely within the latter and the valve plates thereof open inwardly. There are four of these valves which open communication between each of the end chambers and each of the central chambers, thus necessitating the employment of eight separate valves.

In Fig. 3 of the drawings I have illustrated my improved valve connected to the cylinders of a current pump. This pump forms no part of the present invention as its construction comprises the subject matter of

a prior application for patent filed by me May 8, 1909, Serial No. 494,872. It will be understood, however, that my invention is not limited in its application to this specific construction of pump and is illustrated merely for the purpose of disclosing the manner in which the valve is connected to the pump cylinders. Broadly, the engine comprises the pump cylinders C which are mounted and supported in any suitable manner and have arranged therein the reciprocating pistons B. These pistons are actuated through the medium of the eccentrics E fixed upon the shaft S which is driven from any suitable source of power supply. Pipes *p* are connected to the upper openings 6 in the end of the valve casing and to the piston cylinders C. The water, in the action of the engine is constantly moved back and forth through the pipes *p*, in the reciprocation of the engine pistons P, between the end chambers of the valve and the pump cylinders.

In the operation of the device, clear water is poured into the pump cylinders before the engine is started. Upon the reciprocation of the pump pistons, the water being pumped will be drawn into the upper or inlet chamber, and will impinge upon the valve plates 16 of the upper check valves 15 and open them outwardly, the water flowing into each of the end chambers 11'. From these chambers the water discharges into the lowermost chamber 10', opening the valve plates of the lower valves inwardly. From this chamber the water is finally discharged through the outlet pipe which is communicating therewith through the opening in the side wall of the casing 5. By providing the pump cylinders with clear water, upon the operation of the pistons this water will be moved backward and forward between the cylinders and the valve following the movement of the pistons. The greater part of the sediment contained in the water is deposited in the various chambers of the valve case in its passage through the same, and the clear water in the pump cylinders is adapted to be periodically renewed so that the sand, gravel and other sedimentary matter which finds its way into the pump cylinders will be insignificant.

By the use of my improved valve, the period of use of the pump cylinders is greatly prolonged and a high percentage of efficiency constantly maintained.

The casing 5 is provided with a number of hand holes 20 in the sides and top and

bottom thereof, so that ready access may be had to the various chambers for cleaning purposes and also to allow of adjustments or repairs to the valves. If desired suitable closures may be provided for these openings.

From the above it is believed that the construction and operation of my improved valve will be readily understood without necessitating a more extended description.

The device is simple, may be manufactured at a minimum cost and is very reliable, efficient and durable in use.

While I have shown and specifically set forth the preferred form of my invention, it will of course be understood that the same is susceptible of numerous minor modifications without departing from the essential features or sacrificing any of the advantages thereof.

Having thus described the invention what is claimed is:—

The combination with a current pump including cylinders arranged in pairs and each having a reciprocatory piston therein, of a valve comprising a rectangular casing, vertical transverse walls arranged in spaced relation to the ends of the casing, longitudinal walls connecting the ends of the casing to said vertical walls and dividing each end of the casing into separate chambers, a horizontal wall integrally connecting said vertical transverse walls and the opposite side walls of the case to provide upper and lower central chambers, one of the side walls of the casing having inlet and discharge ports communicating with said upper and lower chambers respectively, said vertical transverse walls having openings therein affording communication of each of the central chambers with each of the end chambers, valves mounted upon said walls and normally closing communication between the upper central chamber and the end chambers, a second set of valves normally closing communication between the lower central chamber and the end chambers, and pipes connecting each pair of pump cylinders to one end of the valve casing adjacent to the top thereof and opposite the first mentioned set of valves, said pipes affording communication between the respective end chambers and the pump cylinders.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN R. BUTLER.

Witnesses:

GRANT MORRIS,

A. REX MOLLETTE.