

G. HORVATH.

PUMP.

APPLICATION FILED JAN. 22, 1916.

Patented Sept. 18, 1917.

2 SHEETS—SHEET 1.

1,240,211.

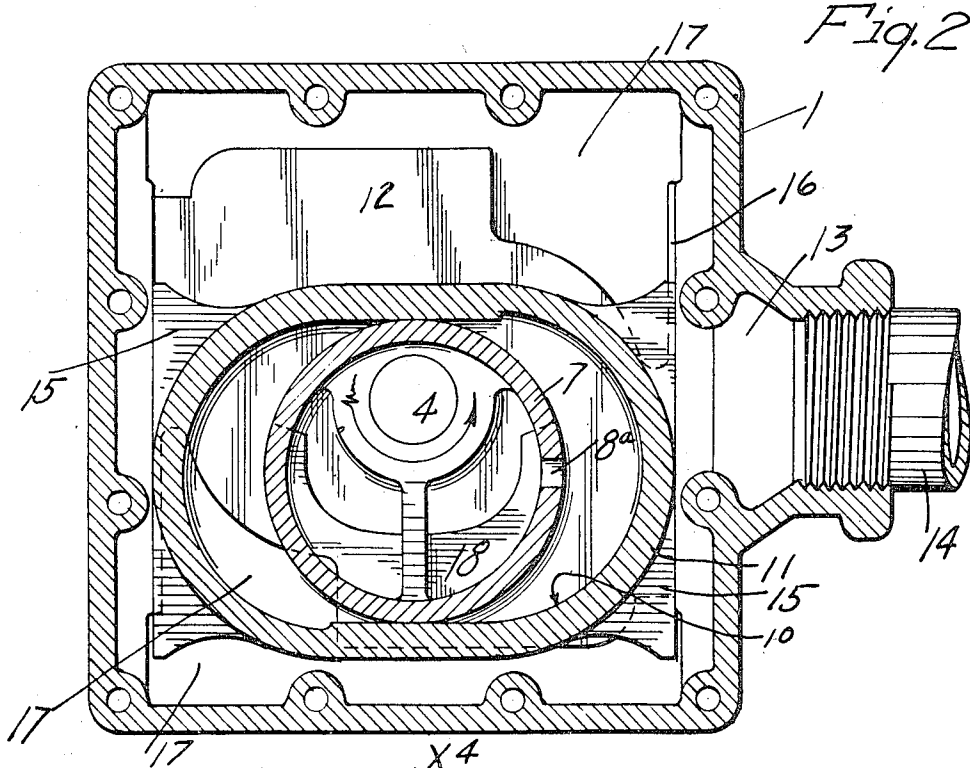
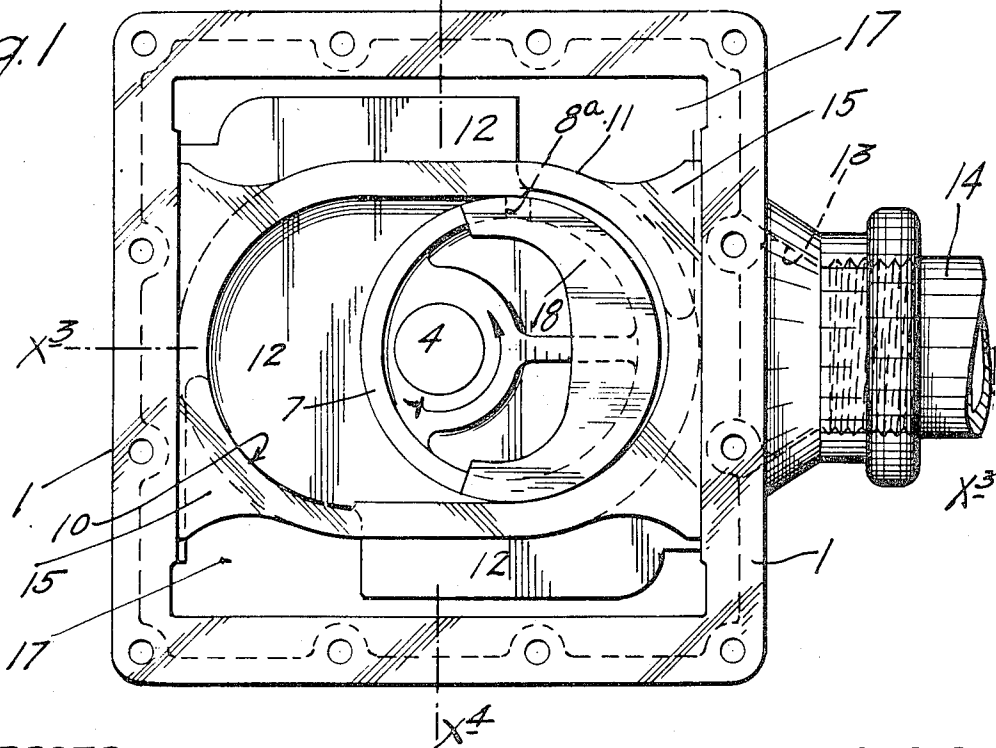


Fig. 1



WITNESSES

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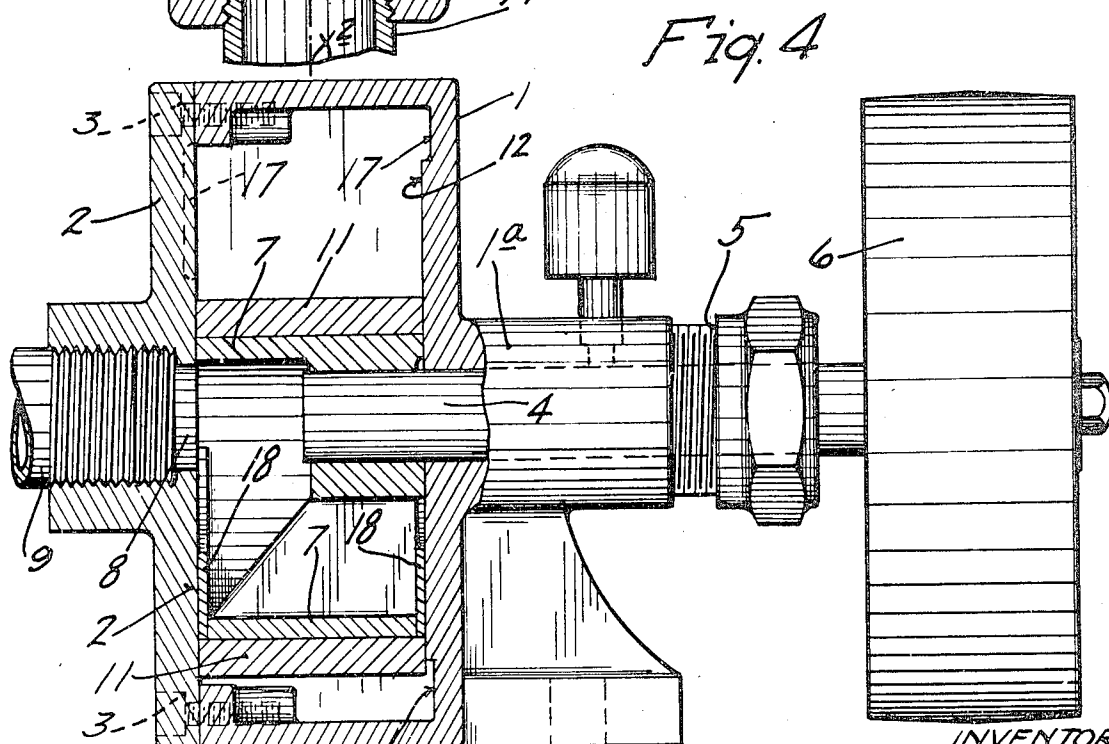
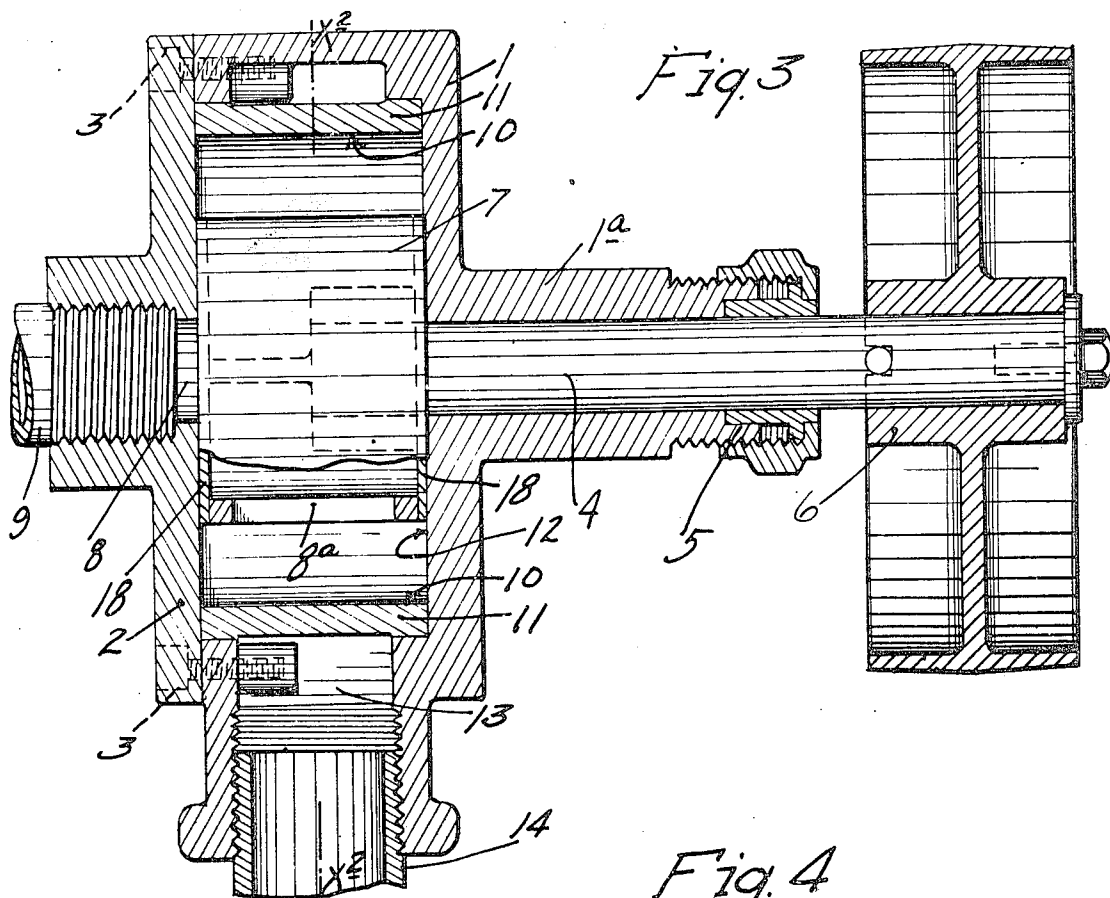
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UNITED STATES PATENT OFFICE.

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PUMP.

1,240,211.

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To all whom it may concern:

Be it known that I, GEZA HORVATH, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an extremely simple and highly efficient pump for pumping water, oil and other liquids; and to such ends, generally stated, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

This improved pump involves but three elements, namely, a pump casing, an eccentric and a cross head. The novel arrangement by which these three elements are caused to perform the function of a pump, under rotation of the eccentric and resulting reciprocation of the cross head will be made clear by reference to the accompanying drawings which illustrate the preferred form of the pump and wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Figure 1 is a side elevation of the pump with one of the head plates of the casing removed so as to expose to view the interior of the casing, the cross head and the eccentric;

Fig. 2 is a vertical section taken through the pump approximately on the line $x^2 x^2$ of Fig. 3;

Fig. 3 is a horizontal section taken through the pump on the line $x^3 x^3$ of Fig. 1, some parts being shown in full; and

Fig. 4 is a vertical section taken through the pump on the line $x^4 x^4$ of Fig. 1.

The pump casing is preferably in the form of a box-like rectangular casting 1 having a detachable head plate 2 secured thereto with a liquid-tight joint, by a multiplicity of screws 3, or other suitable devices.

The fixed head plate of the casting 1 has a hub 1^a in which is journaled a shaft 4 that projects through a stuffing box 5 on the outer end of the said hub and it is provided at its outer end with a pulley 6, or other device through which rotary motion may be imparted to the said shaft. At its

inner end, the shaft 4 has a rigidly secured eccentric 7 that is hollow, but open preferably at both sides, and the interior of which is in constant communication with a discharge passage 8 formed in a hub on the detachable head plate 2 and, as shown, in communication with a discharge or delivery pipe 9. The shell of this eccentric has a port 8^a located at one side of and midway between the line of the greatest eccentricity of said eccentric, or, in other words, midway between the peripheral points of said eccentric intersected by a line drawn through the axis of the eccentric and the axis of the shaft 4.

The eccentric 7 works in close contact with the flat parallel surfaces of an elongated eccentric seat 10 that is formed in the cross head 11. The eccentric seat 10 is open at both sides, and both the side surfaces of said cross head and the side surface of the said eccentric work with very close engagement against accurately machined surfaces 12 formed on the inner face of the fixed and detachable head plates of the pump casing. At one side, or at some suitable point, the casing 1 is provided with an intake neck 13 that is tapped by a supply pipe 14. At the sides of its end portions, the cross head 11 is formed with guide flanges 15 that work against machined guide ledges 16 on the interior of the casing 1, to guide the cross head for true straight line reciprocating movements, under the rotary action of the eccentric. At diagonally opposite corners, both the fixed and detachable head plates of the casing are formed with admission ports 17 that are in constant communication with the supply neck 3 through suitable clearance passages formed within the casing around the cross head. Under rotation of the eccentric 7, the cross head will be reciprocated so as to alternately move the right hand extremity of the eccentric seat 10 into communication with the right hand or upper inlet port 17, and the left hand extremity of said eccentric seat, into communication with the left hand or lower inlet ports 17. The relation of these ports, eccentric seats and eccentric to each other will more fully appear in the description of the operation.

At its sides which engage with the wearing surfaces 12, the eccentric is preferably provided with segmental wearing plates 18, that extend along the most eccentric portions thereof, and prevent the interior cavity of

said eccentric from being thrown, at any time, into direct communication with either of the inlet ports 17.

As an appropriate place to begin the consideration of the operation of the pump, attention is first called to the position of the eccentric and cross head shown in Fig. 1, and it should be assumed that the eccentric is constantly rotated in the direction of the arrow marked thereon in said Fig. 1. In this position of the eccentric, the right hand portion of the eccentric seat 10 is nearly filled or closed by the eccentric, while the left hand portion of said eccentric seat is cleared to the greatest possible extent by the said eccentric, and hence, at this time, will contain its maximum charge of liquid. At this time, also, the peripheral port 8^a of the eccentric is closed, but is at such point that continued rotation of the eccentric in the direction stated will immediately open the said port so that the said port then becomes the only available passage for the escape of water from the left hand end of said eccentric seat, and consequently, during the next 180 degrees of movement of the eccentric in the direction stated, the liquid from the left hand end of said eccentric seat will be positively forced through the said port 8^a into the interior of said eccentric, and from thence, out through the discharge passage 8 and delivery pipe 9. During the above noted 180 degree movement of the eccentric, the cross head will be raised above the position shown in Fig. 1, and the left hand extremity of the eccentric seat will be out of communication with its cooperating intake port 17, but the right hand extremity of said eccentric seat will be in communication with its cooperating intake port 17 so that the liquid, during that time, will be drawn into the right hand extremity of the said piston seat. Consequently, when the eccentric makes the second 180 degree travel of its complete rotation, the pumping action above described will be repeated, except that the liquid will be drawn into the left hand end of the eccentric seat and will be discharged from the right hand extremity thereof. Fig. 2 shows the position of the eccentric and cross head when the eccentric has made three-fourths of its rotation from the position shown in Fig. 1, at which time, it will be noted, the left hand extremity of the eccentric seat is still in communication with its intake port 17 while the right hand extremity thereof is still cut off from its cooperating intake port. It will thus be seen that the pumping action is continuous in that it is always being thrown into one extremity of the eccentric seat and forced from the other.

The above described direction of rotation of the eccentric is that which is considered advisable and is giving the best results, nev-

ertheless, the pump will work efficiently when the eccentric is rotated in the opposite direction, but in that event, the so-called outlet port 8 will become the inlet port and the so-called inlet ports 17 will become outlet ports, so that the water will be drawn in through the pipe 9 and discharged through the pipe 14.

The pump described has been put into actual use and found efficient for the purposes had in view. It not only has powerful steady pumping action, but is free from all trappy valves, and has no parts that easily get out of order.

What I claim is:

1. A pump comprising a casing having inlet and outlet ports, a hollow eccentric working within said casing with its interior cavity in constant communication with one of said ports and itself provided with a peripheral port, and a cross head mounted to reciprocate within said casing, and having an elongated seat in which said eccentric works, the said eccentric, under rotation, serving to reciprocate said cross head and move the eccentric seat thereof, alternately into communication with certain of the ports of said casing.

2. In a pump, the combination with a casing having laterally spaced wearing surfaces and obliquely opposed ports, of a hollow eccentric arranged to rotate within said casing and itself having a peripheral port located at one side of the line of greatest eccentricity thereof, and the said casing having a port in constant communication with the interior cavity of said eccentric, and a cross head arranged to reciprocate within said casing between the wearing surface thereof, and provided with an elongated eccentric seat, which, under rotation of said eccentric, is moved alternately into communication with the obliquely opposite ports of said casing.

3. In a pump, the combination with a casing having laterally spaced wearing surfaces and obliquely opposed intake ports arranged in laterally spaced pairs and all connected to a common intake conduit, of a hollow eccentric arranged to rotate within said casing and itself having a peripheral port located at one side of the line of its greatest eccentricity, and the said casing having an outlet port in constant communication with the interior of said eccentric, and a cross head arranged to reciprocate within said casing, said cross head and eccentric working in close engagement with the laterally spaced wearing surfaces of said casing, the said cross head having an elongated eccentric seat which, under rotation of said eccentric, is moved alternately into communication with the obliquely opposite intake ports of said casing.

4. In a pump, the combination with a cas-

ing having laterally spaced wearing surfaces and obliquely opposed intake ports arranged in laterally spaced pairs and all connected to a common intake conduit, of
5 a hollow eccentric arranged to rotate within said casing and itself having a peripheral port located approximately ninety degrees from the line of its greatest eccentricity, and the said casing having an outlet port in constant communication with the interior of
10 said eccentric, and a cross head arranged to reciprocate within said casing, said cross head and eccentric working in close engagement with the laterally spaced wearing surfaces of said casing, the said cross head hav-
15 ing an elongated eccentric seat which, under rotation of said eccentric, is moved alternately into communication with the obliquely opposite intake ports of said casing, and the said eccentric having a shaft extended through and journaled in one head plate of said casing, the other head plate of said casing being detachable.

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

GEZA HORVATH.

Witnesses:

T. J. ROSTAT,

T. RAYMOND LYONS.