

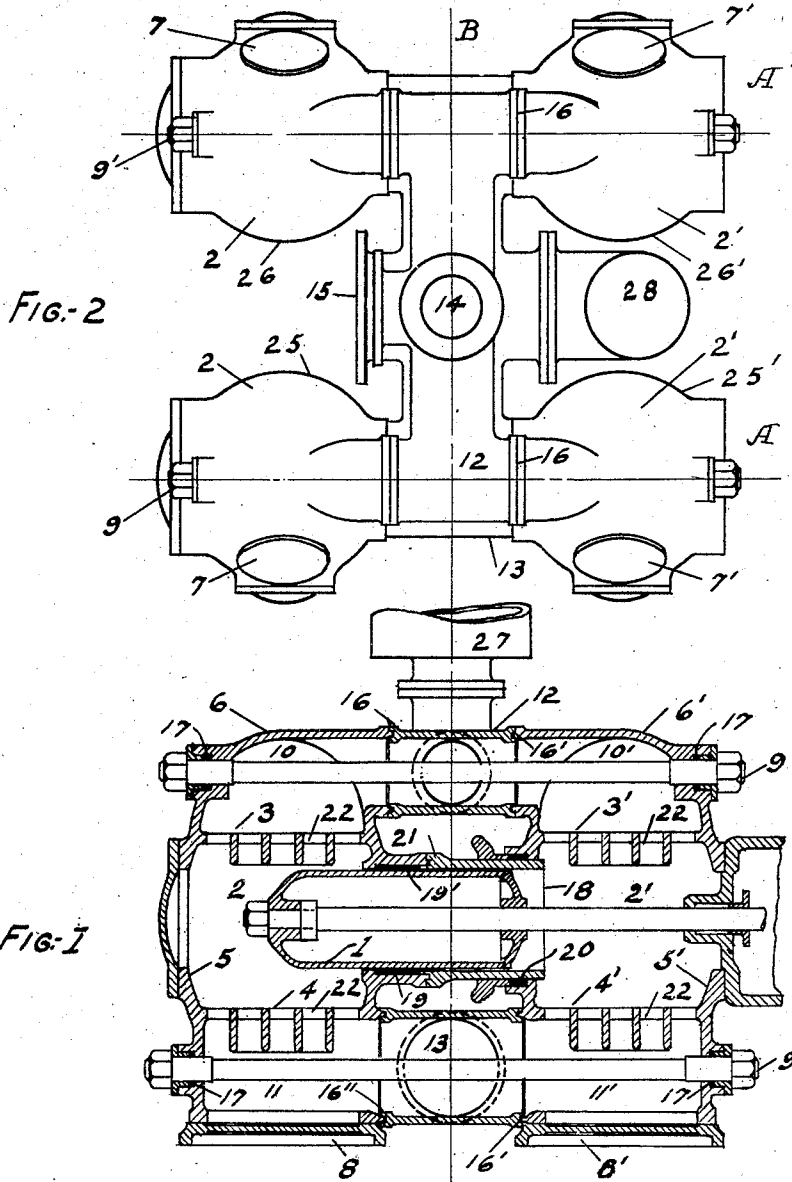
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PUMP.

APPLICATION FILED MAR. 4, 1907.

Patented Oct. 25, 1910.

3 SHEETS—SHEET 1.

974,061.



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3 SHEETS-SHEET 2.

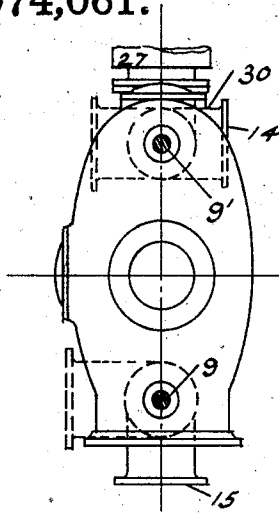


FIG. 6.

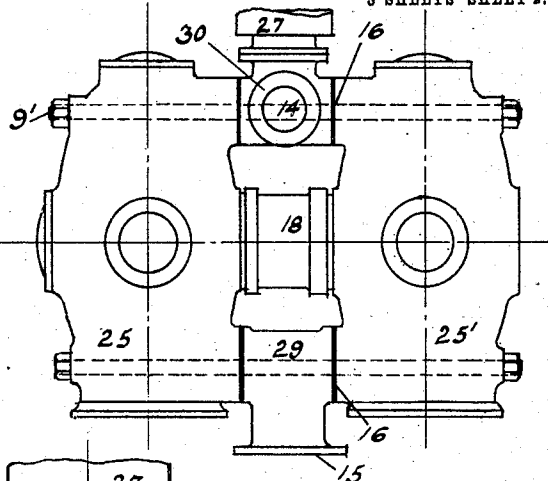


FIG. 7.

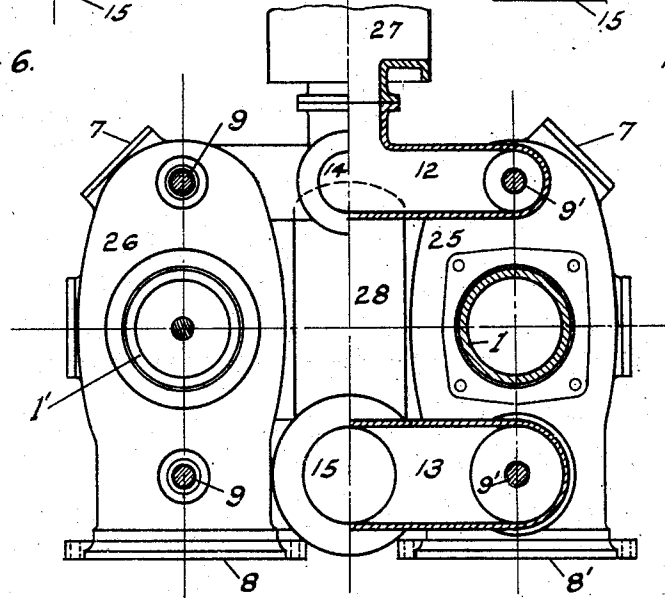


FIG. 3.

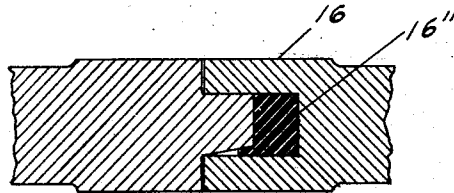


FIG. 8.

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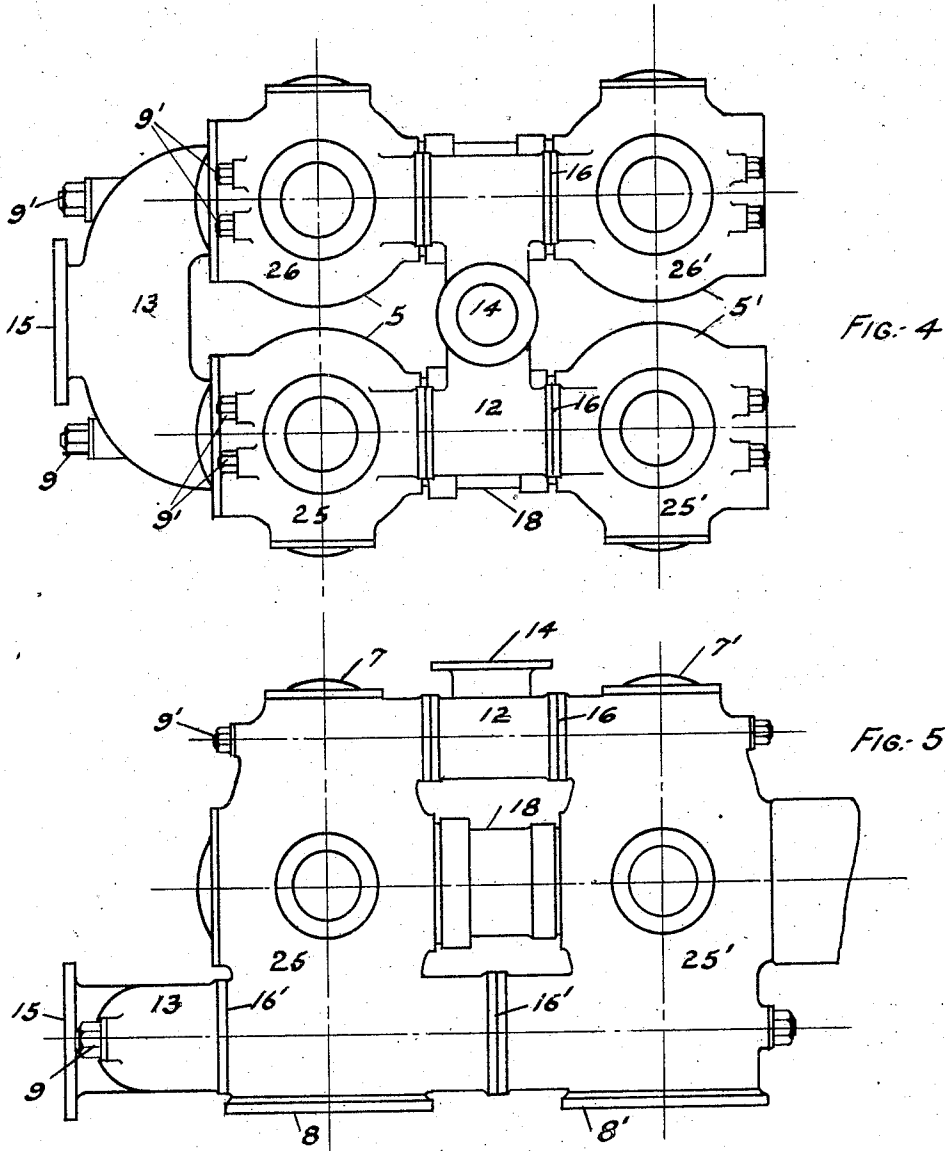
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3 SHEETS-SHEET 3.

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974,061.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES L. HEISLER, a citizen of the United States, residing at St. Marys, in the State of Ohio, and whose post-office address is St. Marys, Ohio, have invented certain new and useful Improvements in Pumps, particularly relating to the type known as a horizontal duplex outside-packed plunger-pump.

The object of my invention is to provide a simpler and more substantial method of fastening together the several principal parts of the pump, and to avoid the use of many small flange bolts and the usual form of flange gaskets, which very frequently blow out when subjected to severe shocks or water hammer common to pumps.

In the drawings accompanying these specifications, Figure 1— is a longitudinal cross sectional view of one of the pumps. Fig. 2— shows a top view of the pair of connected or duplex pumps. Fig. 3— shows an end view thereof. Figs. 4 and 5— show another arrangement of the suction connecting T's. Figs. 6 and 7 show the application of the device to a single pump. Fig. 8— shows a detail of the tongue and groove joints.

The pump may be either single as shown in Figs. 6 and 7, or duplex as shown in the other figures. The casing or casings consists each of two outer sections containing pulsating chambers and having between them a cylinder within which works a reciprocating plunger and intermediate sections which are clamped between the outer sections, one of the intermediate sections having an inlet neck and the other an outlet neck, and one or both of said sections being held rotatably in position so that it may be turned to bring the neck in any required position before the parts are permanently clamped together.

As shown each plunger 1 or 1' is arranged between the two valve or pulsating chambers 2, 2'. These pulsating chambers are formed by discharge and suction valve decks 3, 3', 4 and 4' which are inclosed by spheroidal exterior walls 5 and 5' of the outer sections of the casing. These walls continue from the discharge box 10 to the suction box 11 and also form domes 6 and 6' over the respective valve decks 3 and 3' and give maximum strength for a minimum weight of material. Hand holes and covers 7 and 7' are formed in the domes for convenience in getting access to the discharge valves arranged in the decks 3 and 3'. For a like

purpose hand holes are formed in the end walls of the casings containing the pulsating chambers 2 and 2'. For convenience in boring the valve seat holes in the decks 3 and 3' and 4 and 4' cover plates of large diameter 8 and 8' are bolted to the bases of the continuous spheroidal shells, and below the suction decks 4 and 4' to permit the insertion of a boring bar or other tool to machine both the upper and lower valve seat holes 22. The usual practice is to place the covers on top of the pumps, where they are exposed to the discharge pressure. By placing the covers 8 and 8', as shown, it is evident that the partial vacuum of the suction will tend to seat them more firmly rather than to displace them and blow out the gaskets, as in older constructions, where they are placed on the top of the pump. The covers 8 and 8' also form the base for the pumps.

Arranged parallel with each plunger are tie bolts 9 and 9', which pass through the discharge and suction boxes 10 and 10' and 11 and 11' of the pump as shown for the purpose of rigidly securing together the outer and intermediate parts of the casing. The connecting T's 12 and 13 are likewise secured at their opposite ends between the other outer sections, thereby forming a simple duplex pump, which can be actuated by any reciprocating power, as by a pair of steam cylinders or cranks connected to a shaft and fly wheels in the usual manner. Any convenient outlet neck 14 and inlet neck 15 can be arranged upon the T connections. Instead of the usual flat gaskets, a packing 16'', Fig. 8, is placed in the tongue and groove joints 16 and 16', which are arranged between the T's and the spheroidal shells. A suitable packing 17 is arranged as shown at the end of each tie bolt to prevent leakage from the pumps.

On each pump arranged between pulsating chambers, the parallel tie bolts and T connections, is a long stuffer sleeve 18, a main plunger stuffing box 19 filled with packing 19', and an auxiliary sleeve stuffing box 20, also a seal 21 is formed between the stuffer sleeve and the main stuffing box to prevent leakage to or from the main stuffing box 19. This arrangement provides an accessible plunger packing 19', and an air and water tight connection between the pulsating chambers 2 and 2' in which the plunger reciprocates. The tie bolts are shown to pass through the suction and discharge

chambers and connecting T's; evidently they can be arranged exterior thereto when desired. The tie bolts compress the packing 20 and thus adjust and permit a ready removal of the stuffer sleeve 18, which otherwise could not be inserted between the pulsating chambers. Air casings 27, 28 containing air chambers are attached to the connecting T's for the purpose of giving the necessary air cushion.

In Fig. 4 the connecting suction T 13 with an inlet neck 15 is arranged at the rear of the pump to permit the pair of pumps being placed nearer together.

The intermediate upper section which extends between the two different main sections of the pump and composes part of each is clamped between the same and serves as a substantial connecting member and has the necessary necks for connection with other parts, and the lower intermediate section or T of each member of the pump is also clamped between the two outer sections of said member, but so that it can be set with its neck at any desired angle for proper connection to a suitable conducting pipe. In the construction shown in Figs. 6 and 7 where there is but a single casing each of the intermediate sections is rotatably clamped between the outer sections so that it may be turned to the different positions indicated by dotted lines in Fig. 6.

What I claim is:—

1. The combination in a pump, of a casing having end sections containing pulsating chambers, valve decks in said sections, a cylinder extending between said chambers, a plunger reciprocating in said cylinder, intermediate sections located between the end sections and above and below said cylinder, said intermediate sections being provided with inlet and outlet necks, and tie bolts extending through the intermediate and end sections and above and below said valve decks for clamping said sections and cylinder together.

2. The combination in a pump, of a casing having end sections containing pulsating chambers, valve decks in said sections, a cylinder having a part connected to one of said end sections and cooperating with the other end section, a plunger reciprocating in said cylinder, intermediate sections located between the end sections and above and below said cylinder, said intermediate sections being provided with inlet and outlet necks, and tie bolts extending through the intermediate and end sections and above and below said valve decks for clamping said sections and cylinder together.

3. The combination in a pump, of a casing having end sections containing pulsating chambers, valve decks in said sections, a cylinder having a part connected to one of said end sections and adjustably connected

with the other end section, a plunger reciprocating in said cylinder, intermediate sections located between the end sections and above and below said cylinder, said intermediate sections being provided with inlet and outlet necks, and tie bolts extending through the intermediate and end sections and above and below said valve decks for clamping said sections and cylinder together.

4. The combination in a pump, of a casing having end sections containing pulsating chambers, valve decks in said sections, a cylinder having a part cast integral with one of said end sections and cooperating with the other section, a plunger reciprocating in said cylinder, intermediate sections located between the end sections and above and below said cylinder, said intermediate sections being provided with inlet and outlet necks, and tie bolts extending through the intermediate and end sections and above and below said valve decks for clamping said sections and cylinder together.

5. The combination in a pump, of a casing having end sections containing pulsating chambers, valves in said sections, a cylinder having a part cast integral with one of the sections and cooperating with a part on the other section, a plunger working in the cylinder, separate intermediate sections provided with inlet and outlet necks respectively, and tie bolts for clamping all of said parts together.

6. The combination in a pump of a casing having end sections containing pulsating chambers, valves in said sections, a cylinder having a part cast integral with one of the sections and a cooperating part adjustably connected to the other section, a plunger working in the cylinder and pulsating chambers, separate intermediate sections provided with inlet and outlet necks respectively, and tie bolts for clamping all of said parts together.

7. The combination in a pump of a casing having sections provided with integral domes clamped together and containing pulsating chambers, decks provided with valve seats arranged one above the other, and openings in the casings below the valve seats and provided with detachable covers for the purpose specified.

8. The combination in a pump, of a casing having a pulsating chamber, inlet and discharge valve decks in the casing, an integral dome above the discharge valve deck, and a detachable cover below the inlet valve deck.

9. The combination in a pump, of a casing having a pulsating chamber, inlet and discharge valve decks in the casing, a dome above the discharge valve deck, said structure being cast in one piece, and a detachable cover below the inlet valve deck.

10. The combination in a pump, of a cas-

ing having end sections containing pulsating chambers, valve decks in said sections, a cylinder extending between said chambers, a plunger reciprocating in said cylinder, intermediate sections located between the end sections and above and below said cylinder, said intermediate sections being provided with inlet and outlet necks, and tie bolts extending through the intermediate and end sections and above and below said valve decks for clamping said sections and cylinder together, with the necks in any desired angular position.

11. In a duplex pump, the combination with casings each comprising end sections having valve decks therein, a cylinder extending between said sections, and an intermediate section having a neck, of means connecting the necks together, means whereby said intermediate sections may be adjust-

ed angularly, and means for clamping said sections and cylinder together.

12. In a duplex pump, the combination with casings each comprising end sections having valve decks therein, a cylinder extending between said sections, and intermediate sections located above and below said cylinder and having inlet and discharge necks, of means for connecting said inlet necks to a common inlet and means for connecting said discharge necks to a common outlet, means whereby said intermediate sections may be adjusted angularly, and tie bolts for clamping said sections and cylinder together.

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