

Aug. 11, 1925.

1,549,608

C. R. RAYNES

PRESSURE PUMP

Filed Feb. 19, 1923

2 Sheets-Sheet 1

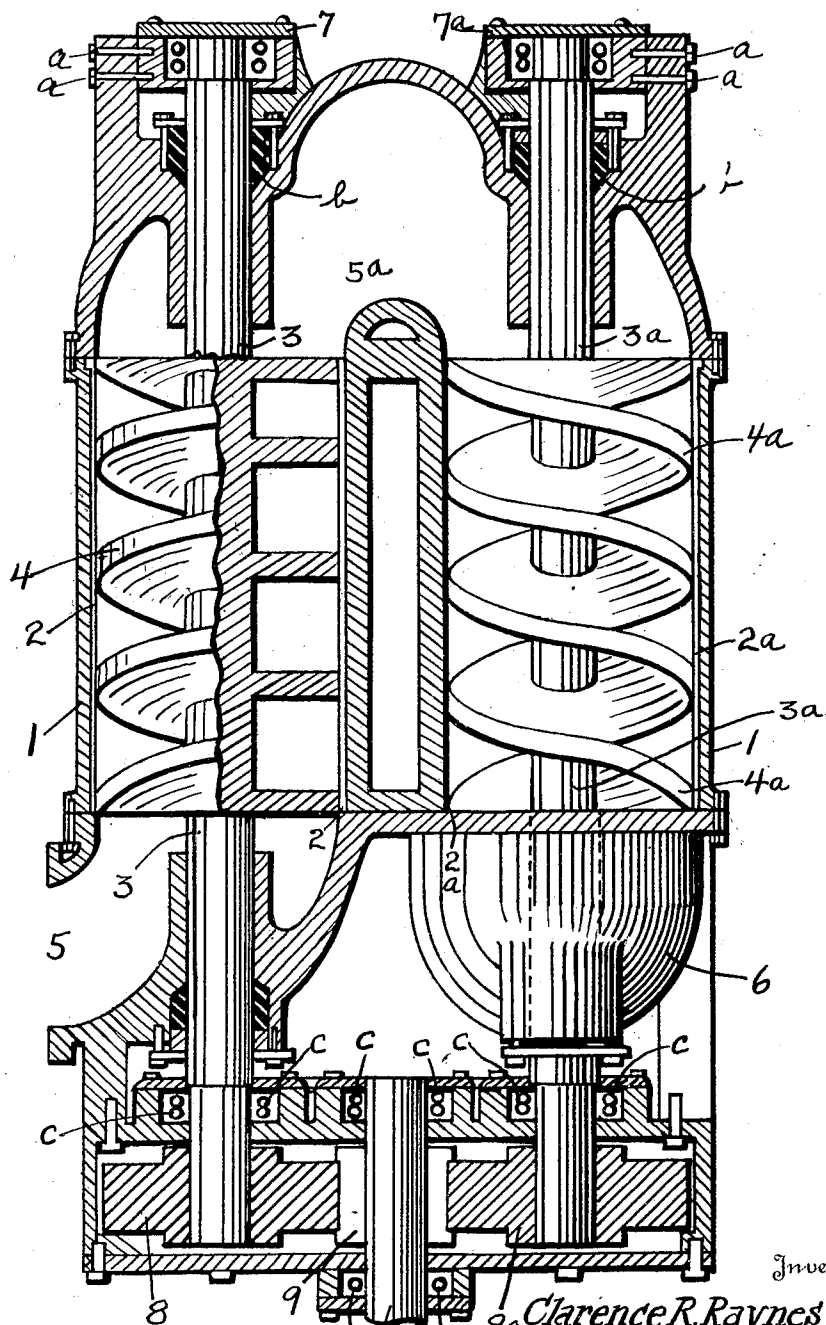


Fig. 1.

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2 Sheets-Sheet 2

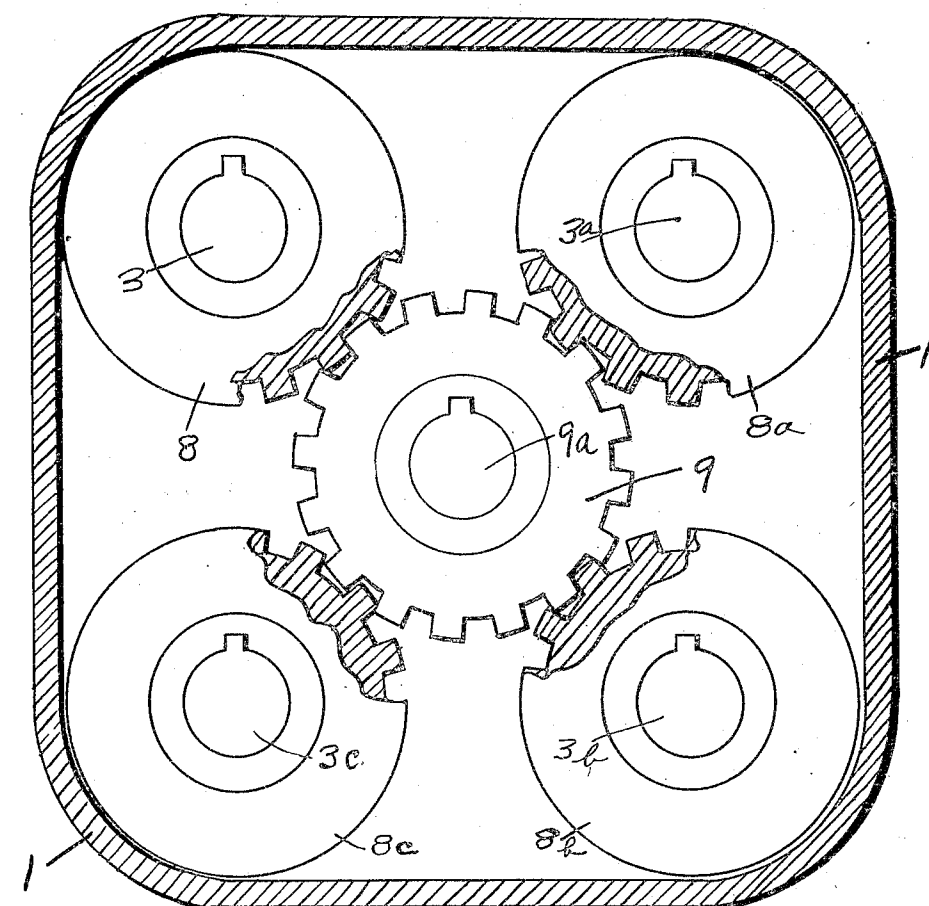


Fig. 2.

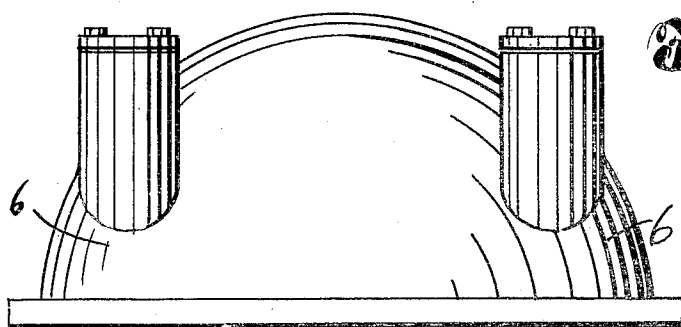


Fig. 3.

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UNITED STATES PATENT OFFICE.

CLARENCE R. RAYNES, OF DALLAS, TEXAS.

PRESSURE PUMP.

Application filed February 19, 1923. Serial No. 620,017.

To all whom it may concern:

Be it known that I, CLARENCE R. RAYNES, citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Pressure Pumps, of which the following is a specification.

This invention relates to a pressure pump whereby a series of shafts with screw threads thereon operate within cylinders within the pump to introduce liquids at low speed through the device and increasing the speed of said liquids materially in their passage through said series of screw shafts to a point of outlet established adjacent to the point of egress of the liquids as they emerge from the final cylinder of the series.

A feature of my invention is the possibility of obtaining tremendous liquid pressure by its use and making it exceptionally well suited for use in municipal work, oil pumping fire engines and the like, or for any purpose wherein it is desired to increase liquid pressure.

Another feature is the compactness of the apparatus, same being substantially rectangular, longitudinally and laterally and conforming somewhat to the shapes of the cylinders within the device.

The screw shafts within the cylinders are driven by gear means situated between them and in contact with other gear means attached to and rotating said screw shafts when actuated by the driving gear above mentioned.

By my present invention any number of cylinders and screw shafts may be grouped into a single apparatus and operated from a single drive gear and shaft.

For example, and to obtain a more complete understanding of the invention, the following description of the drawings attached hereto is submitted:

Figure 1 represents a longitudinal cross-section of the invention.

Figure 2 represents the top or plan view of the invention, showing the method of operation, and with parts cut away to show the construction of portions of the device.

Figure 3 shows a cross-section of the return bend connecting two stages or cylinder ends.

In Figure 1, 1 represents the frame of the device, 2 and 2^a represent the walls of the cylinders containing screw shafts 3 and 3^a, with blades 4 and 4^a thereof, for conveying liquids from entrance 5, through cylinder 2, into passage 5^a through cylinder 2^a, into return bend 6 to cylinder opposite 2^a (not shown), and through the latter cylinder to a cylinder opposite and parallel cylinder 2, the last two cylinders in the device being connected by a means similar to means 5^a, said means having the same relationship with the last two cylinders and screw shafts as 5^a, has to cylinders 2 and 2^a, and the screw shafts therein.

Screw shafts 3 and 3^a, are supported in frame 1 by bearing supports 7 and 7^a, the latter being held onto and attached to frame 1 by suitable means *a-a*.

Packing joints *b-b* prevent the passage of liquid out of chamber 5 through the entrance or port, or bore wherein shafts 3 and 3^a rotate.

At the opposite ends of shafts 3 and 3^a are shown screw shaft gears 8 and 8^a, actuated by driving gears 9 on shaft 9^a.

All gear shafts mounted on suitable bearings *c*, in order to eliminate all possible friction.

In Figure 2, the arrangement of driving gear 9 on shaft 9^a in relation to the gears 3, 3^a, 3^b and 3^c, with gear 8, 8^a, and 8^c, thereon is shown.

What is claimed is:—

A liquid pump of the character described comprising in combination, a housing having therein a series of symmetrically spaced cylinders in parallel relation and having their opposite ends open, a dome-shaped cover secured to the upper end of said housing and having passage ways therein communicating with the upper ends of said cylinders whereby they may be in communication in progressive order, a plate secured to the lower end of said housing and having a passage way therein communicating with the lower ends of two of said cylinders and an inlet and outlet passage way communicating with the lower ends of the other of said cylinders, shafts extending through said cylinders and journaled in suitable bearings carried by said plate and dome.

shaped cover, a spirally arranged blade arranged within each cylinder and connected to said shaft, the leads from said spiral blade being arranged to effect the progressive flow of liquid through the passage ways, and a common means arranged to effect simultaneous rotation of said shafts to in-

crease the velocity of the passage of the liquid through the pump, substantially as and for the purpose specified. 10

In testimony whereof I have signed my name to this specification.

CLARENCE R. RAYNES.