L. CHAPMAN.

Centrifugal Pump.

No. 162,743. Patented May 4, 1875.

Fig 1

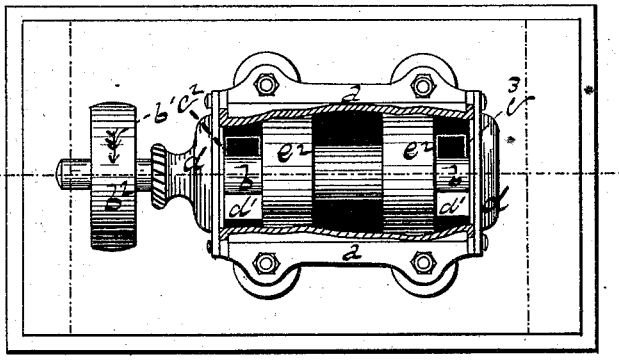


Fig. 2

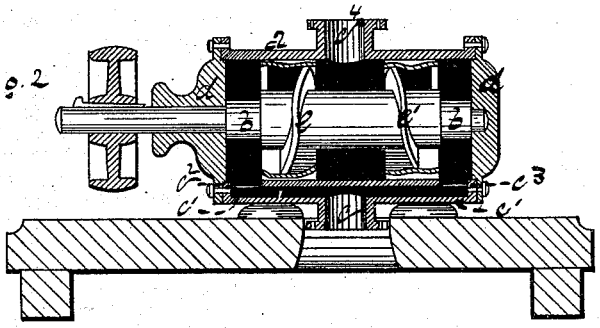


Fig. 5

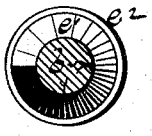


Fig 3

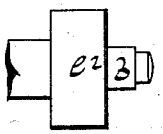


Fig 4

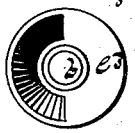


Fig 6

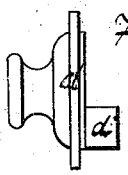
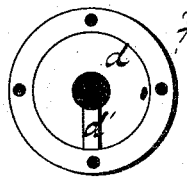


Fig 7



Witnesses.

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UNITED STATES PATENT OFFICE.

LUKE CHAPMAN, OF COLLINSVILLE, CONNECTICUT.

IMPROVEMENT IN CENTRIFUGAL PUMPS.

Specification forming part of Letters Patent No. **162,743**, dated May 4, 1875; application filed September 5, 1874.

To all whom it may concern:

Be it known that I, LUKE CHAPMAN, of Collinsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements pertaining to Centrifugal Pumps, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a top or plan view of a centrifugal pump embodying my said improvements, with a part of the containing-case represented as broken away, so as to show the interior parts. Fig. 2 is a view of the same pump in vertical longitudinal central section, on the plane indicated by the dotted line *x x*, Fig. 1, and looking in the direction indicated by the arrow *x'*. Fig. 3 is a detail view, looking at the edge, circumference, or periphery of one of the two worms which are upon the main shaft, the worm selected being the one which is toward the right end of the shaft in Figs. 1 and 2. Fig. 4 is a detail view, looking at the outer or right side of the worm shown in Fig. 3. Fig. 5 is a detail view, looking at the inner or left side of the worm shown in Fig. 3. Fig. 6 is an edge detail view of one of the caps to the cylinder or containing-case. Fig. 7 is a detail view of the inner face of the cap-plate shown in Fig. 6.

The parts in which the invention consists will be particularly specified and claimed at the end of this specification.

The letter *a* indicates the barrel or exterior case, which contains the operating parts; *b*, the main shaft, caused to rotate in the direction indicated by the arrow b^1 by a belt running on the pulley b^2.

The water comes into the pump through the ingress-pipe *c*, entering the tube c^1, running to both ends of the pump and into the cylinder through the openings c^2 c^3. The water escapes through the egress-pipe c^4. The two cap-plates *d* are each furnished with a plate or wing, *d'*, extending radially within the pump, from the shaft *b* to the interior of the pump-barrel, and extending from the cap to the side or end of the nearest worm. I call these plates *d'* cut-offs, they being set within the pump-barrel at one end of the two inlets c^2 c^3 to prevent the free rotation of the water, and thereby cause it to enter sidewise into the worms.

When the rotation of the worm is in the direction indicated by the arrow *b'* these cut-offs are set at the end of the inlets c^2 c^3, indicated in Fig. 1. Between the center and left end of the barrel a worm or volute wing, *e*, is hung upon the shaft *b*, and a similar worm or volute wing, e^1, is hung between the center and right end of the barrel, the difference between the two worms being that the worm *e* has a left-handed twist or spiral, while the worm e^1 has a right-handed twist.

The water is caused to enter these worms upon their outer sides or ends as they rotate, as hereinbefore indicated, and, having thus entered, is forced to the center of the barrel, and out through the pipe c^4. Each of these worms is surrounded by a circumferential band, e^2, which just fits within the barrel of the pump, and more or less of the outer sides or ends of the worms is closed or faced by a facing, e^3. I have shown these sides or ends as thus half-faced or half-closed in Fig. 4.

I claim as my invention—

1. A volute wing or worm, *e*, having a circumferential band, e^2, and a facing, e^3, upon one end or side, substantially as shown and described.

2. The combination of the cylinder *a*, having the inlets c^2 c^3, the cut-offs *d'*, the shaft *b*, and the right and left hand worms *e* e^1, each provided with a circumferential band, e^2, substantially as shown and described.

LUKE CHAPMAN.

Witnesses:

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JOHN HENRY BROCKLESBY.