J. ROBERTSON.

ROTARY PUMP AND BLOWER.

APPLICATION FILED MAY 9, 1913.

1,180,190.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

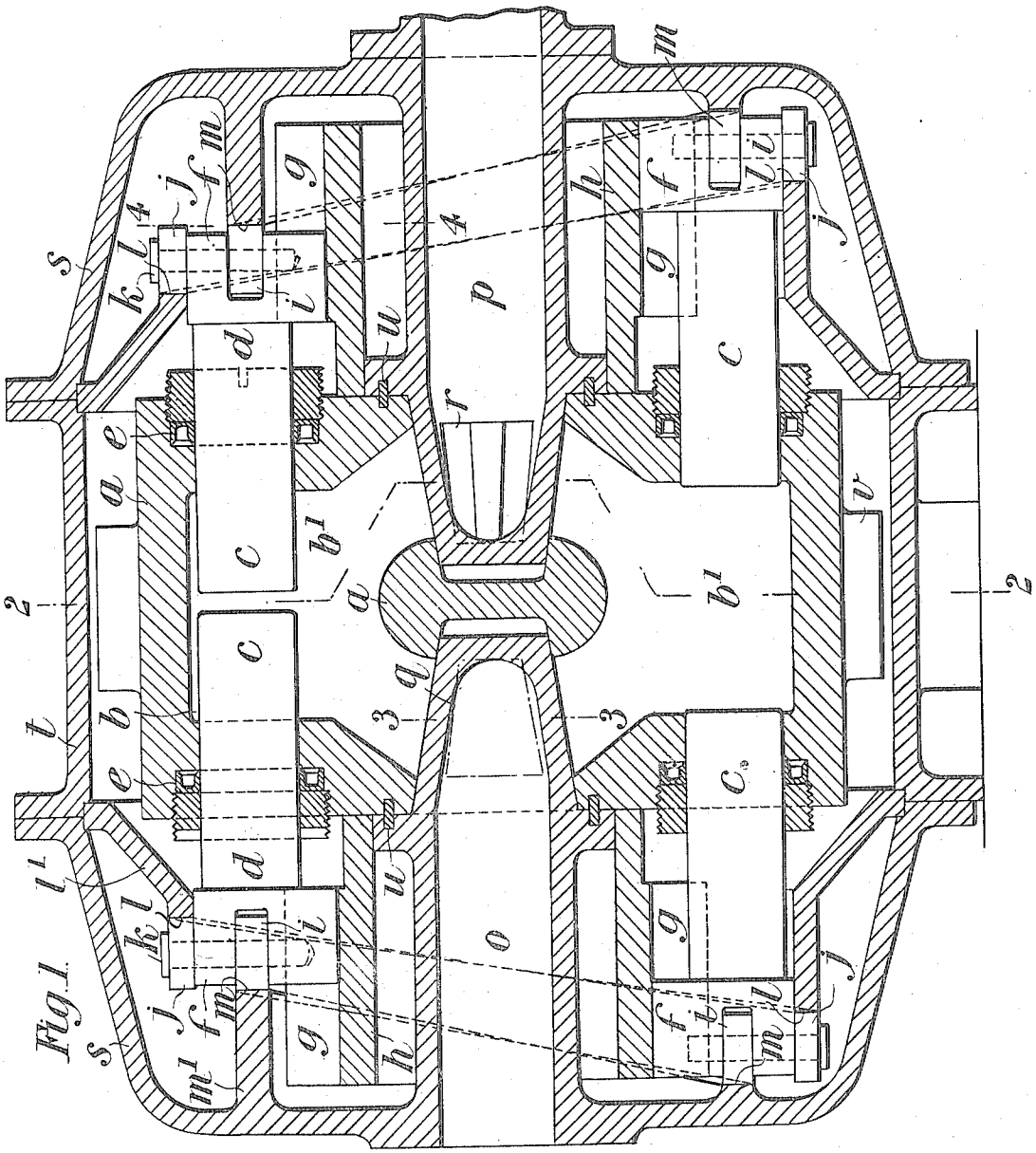


Fig. 1.

Witnesses.

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2 SHEETS—SHEET 2.

Fig. 2.

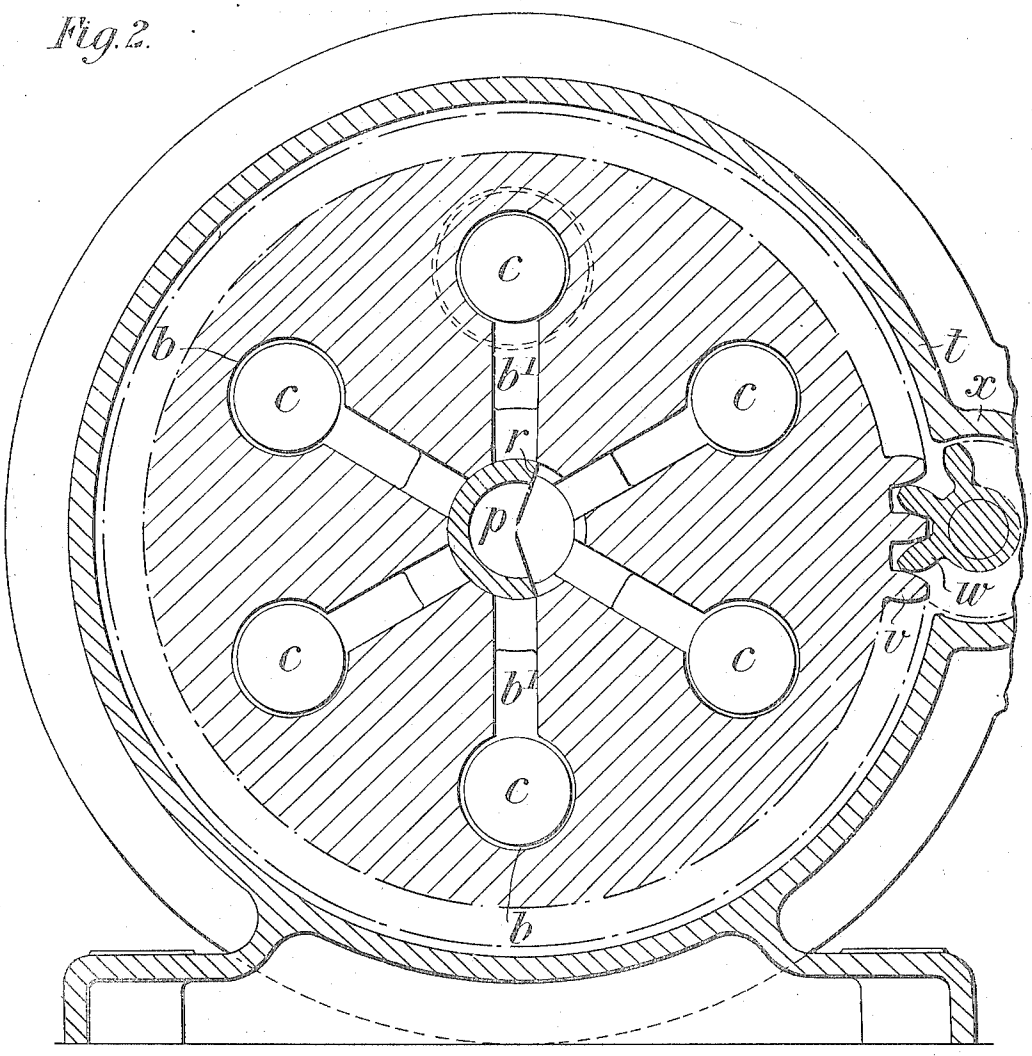


Fig. 3.

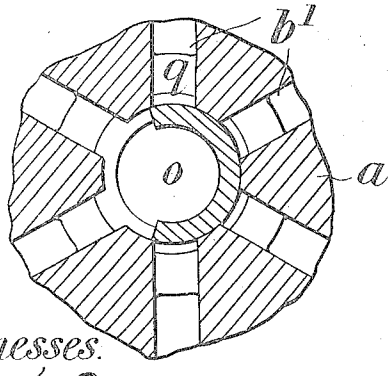
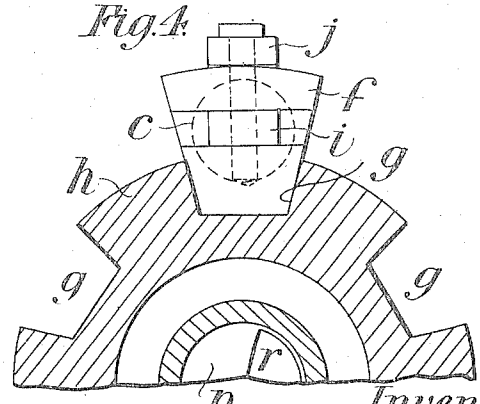


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES ROBERTSON, OF LEYTONSTONE, ENGLAND.

ROTARY PUMP AND BLOWER.

1,180,190. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed May 9, 1913. Serial No. 766,614.

To all whom it may concern:

Be it known that I, JAMES ROBERTSON, a subject of the King of Great Britain, residing at 28 Preston road, Leytonstone, Essex, England, have invented new and useful Improvements in Rotary Pumps and Blowers, of which the following is a specification.

My invention relates to improvements in rotary pumps and blowers of the kind wherein a number of pairs of pistons or rams is mounted, parallel to, and around, the axis of a rotary body in cylinders or spaces of which they are caused to reciprocate so as to advance toward and recede from one another as the body rotates, during which rotation the cylinders are brought into communication in proper sequence with inlet and outlet ports.

According to my invention the pump comprises a cylindrical drum or body which is formed with a number of cylinders or chambers in which the pairs of rams or plungers are reciprocated, each plunger being extended through a stuffing-box to the exterior of the drum and provided with a guide-block working in a corresponding guide-way on a cylindrical member rotating with or forming an extension of the drum. The guide-blocks are each provided with a pair of rollers which engage two annular cam-surfaces.

The aforesaid drum, with its attendant moving parts, is revolubly mounted upon two axial passages or inlet and outlet tubes having at their inner ends openings adapted to be put into communication with the cylinders or plunger chambers as the drum rotates. These passages or tubes may advantageously be integral with, or attached to, an outer casing having end portions which inclose and carry the above mentioned cylindrical cam portions.

To enable the invention to be fully understood, I will describe it by reference to the accompanying drawing, in which:—

Figure 1 is a longitudinal central section of my improved pump. Fig. 2 is a section on the line 2—2, Fig. 1, looking toward the left. Fig. 3 is a similar section on the line 3—3, Fig. 1, and Fig. 4 is a section on the line 4—4, Fig. 1, showing a detail.

a represents the cylindrical drum or body which is formed with a number of cylinders or chambers *b*, and *c* are plungers or rams provided in pairs, which are reciprocated in the chambers *b*. The rear ends *d* of the plungers *c* extend through the stuffing boxes *e*, and are provided with guide-blocks *f* working in the corresponding guide-ways *g* formed in the cylindrical pieces rotating with, or forming part of, an extension of the drum *a*.

i and *j* are the rollers mounted upon pins *k* carried in the block *f*, and *l* and *m* are the cam faces engaged by the rollers *j* and *i* respectively. These cam faces are formed on annular ribs l^1 and m^1 attached to or carried by, the casing *s*, *t*. The said cam faces *l* and *m* together constitute the means for reciprocating the pistons or rams *c* within their chambers *b* when the drum *a* is rotated.

o and *p* are the two axial passages or inlet and outlet tubes upon which the drum *a* with its rams, plungers and guide-blocks is revolubly mounted, the said inlet and outlet tubes *o* and *p* having ports *q* and *r* at their adjacent ends respectively directed diametrically opposite to one another, the said ends being preferably conical as shown and being adapted to be put into communication with the cylinder or pump chambers *b* as the drum rotates through the medium of the passages b^1. The passages or tubes *o*, *p* are advantageously formed integral with, or are attached to, the outer casing portions *s* which inclose the ends of the pump.

u are packing rings of any suitable form provided between the rotary drum *a* and the tubes *o* and *p*, upon which it revolves; *v* are peripheral spur teeth provided upon the drum *a* and *w* is a pinion mounted in an extension *x* of the casing *t*, Fig. 2, which meshes with the teeth *v* and serves to rotate the drum *a*.

The operation of the pump is as follows, that is to say, as the drum *a* is rotated through the medium of the pinion *w* and peripheral teeth *v*, the rams or plungers *c* are caused to reciprocate by the cams *l* and *m*, the outward or suction strokes taking place when the chambers or cylinders *b* are in communication with the inlet port and the inward or discharge strokes following when the chambers are open to the outlet port, so that fluid is alternately drawn in and expelled from each cylinder or chamber.

Claims.

1. A rotary pump comprising a plurality of tubes in axial alinement provided with oppositely disposed openings, a drum rotatably mounted on said tubes, an annular series of chambers extending through said

drum near its periphery and disposed parallel to the axis of said tubes, radial passages placing said chambers in communication with the openings in said tubes, a plurality of pistons mounted in pairs in said chambers, guide blocks provided upon the outer ends of said pistons, guide ways provided upon the ends of said drum and in which said guide blocks are adapted to travel, rollers provided on said guide blocks in axial alinement, a casing inclosing said drum, oppositely disposed annular flanges of different diameters provided on the interior of said casing at each end thereof, cam faces provided on said flanges, said rollers engaging said cams, and means for rotating said drum whereby said cams will reciprocate both pistons of a pair simultaneously in opposite directions.

2. A rotary pump comprising a plurality of tubes in axial alinement having openings on opposite sides thereof, a drum rotatably mounted on said tubes, an annular series of chambers provided in said drum and extending parallel with the axis of said tubes, pairs of pistons provided in said chambers, stuffing boxes provided at the outer end of said chambers and through which the pistons are adapted to extend, guide blocks provided at the outer ends of said pistons, guide ways provided at the ends of said drum and in which the guide blocks are adapted to be reciprocated, a plurality of rollers in axial alinement provided on each of said guide blocks, a casing inclosing said drum, and oppositely disposed annular ribs of different diameters at each end of the casing provided with cam faces adapted to engage said rollers, to cause both pistons of a pair to be reciprocated simultaneously in opposite directions when the drum is rotated.

JAMES ROBERTSON.

Witnesses:
JOHN E. BOUSFIELD,
C. G. REDFERN.