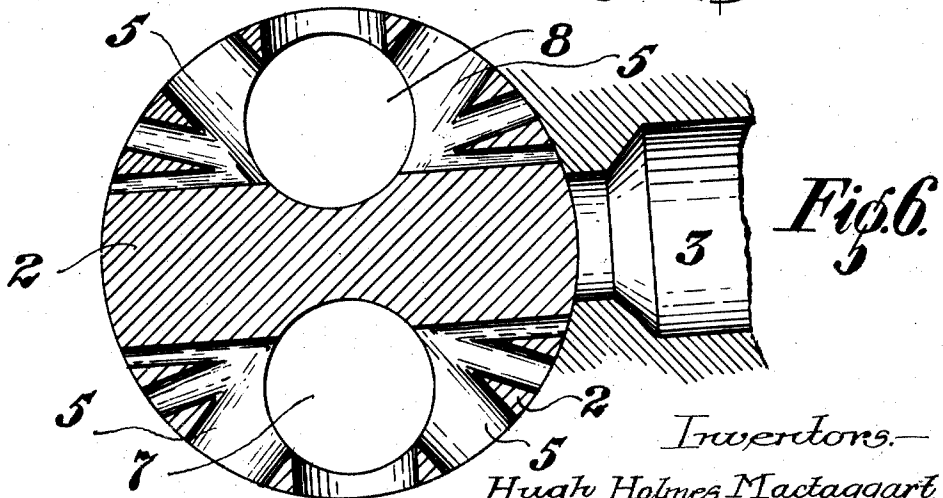
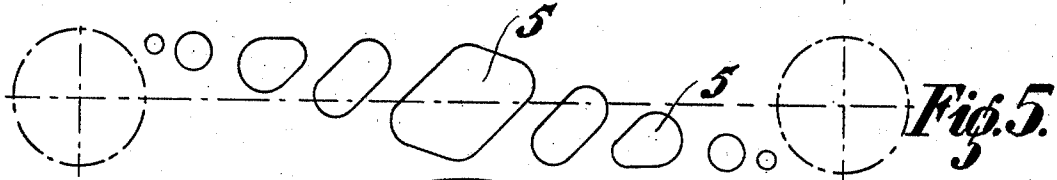
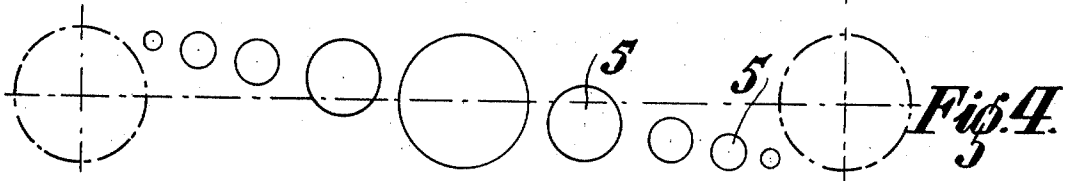
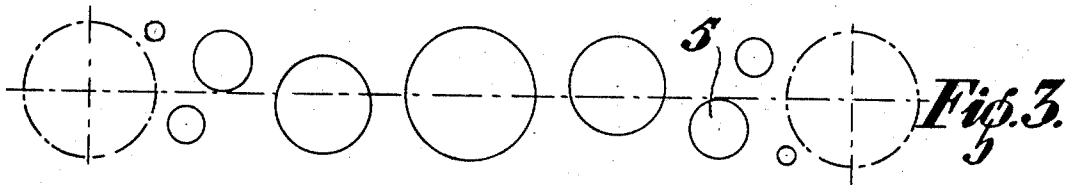
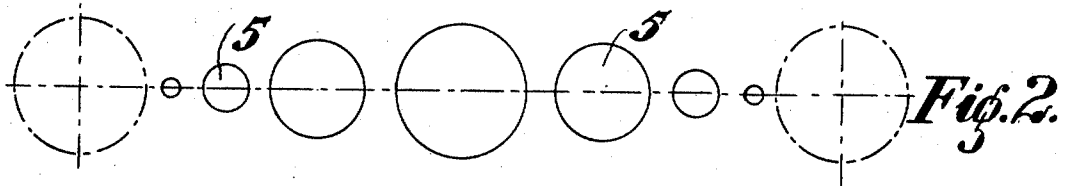
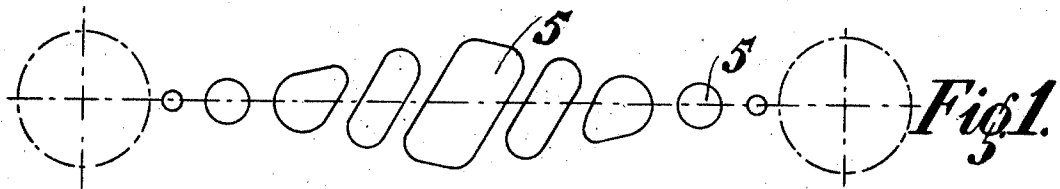


ROTARY PUMP AND MOTOR.

1,360,128.

2 SHEETS—SHEET 1.



5th Inverdon.—
Hugh Holmes MacTaggart,
Robert Grigor Scott.
by their Attorneys—
Howson & Howson

H. H. MacTAGGART AND R. G. SCOTT.

ROTARY PUMP AND MOTOR.

APPLICATION FILED JULY 24, 1919.

1,360,128.

Patented Nov. 23, 1920.

2 SHEETS--SHEET 2.

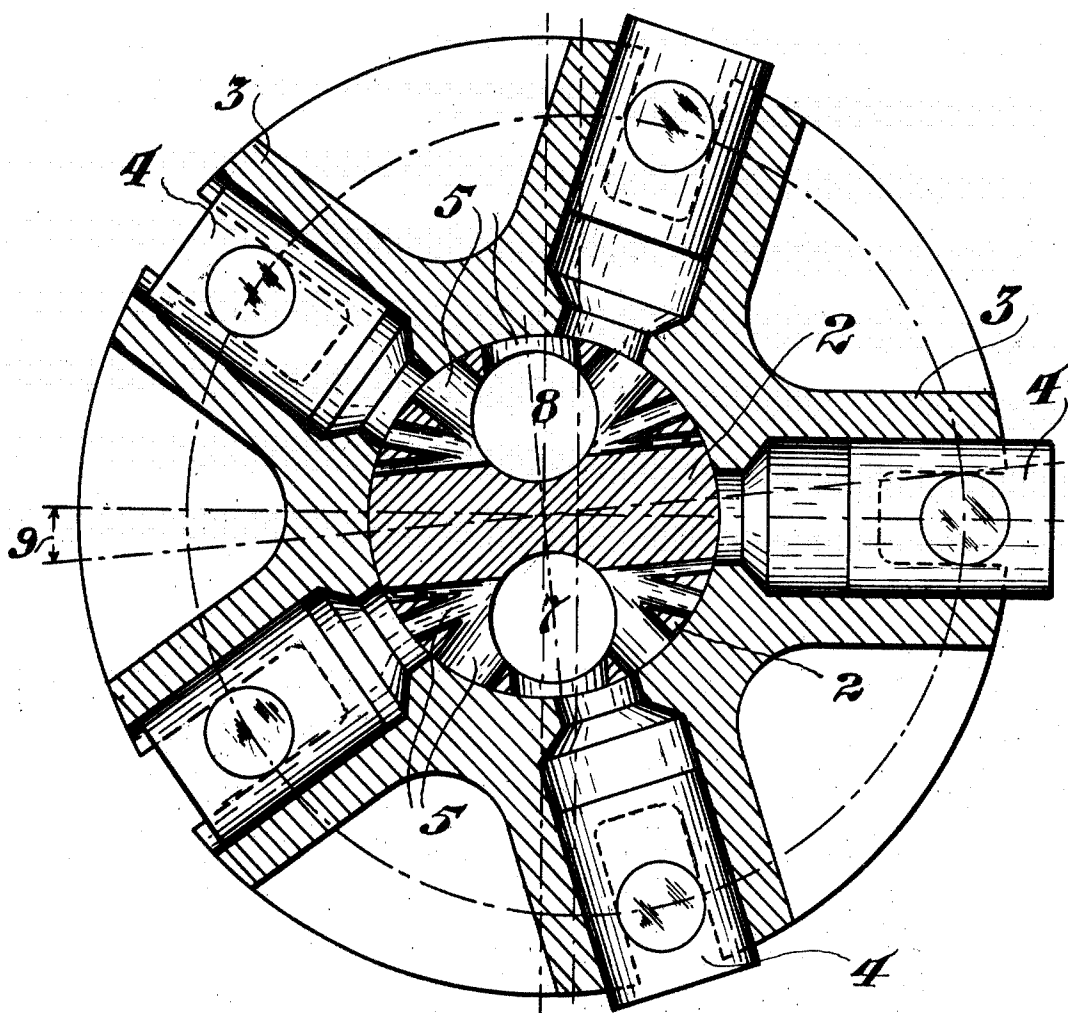


Fig. 7.

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UNITED STATES PATENT OFFICE.

HUGH HOLMES MAC TAGGART AND ROBERT GRIGOR SCOTT, OF LOANHEAD, SCOTLAND.

ROTARY PUMP AND MOTOR.

1,360,128.

Specification of Letters Patent. Patented Nov. 23, 1920.

Application filed July 24, 1919. Serial No. 313,086.

To all whom it may concern:

Be it known that we, HUGH HOLMES MAC TAGGART and ROBERT GRIGOR SCOTT, subjects of the King of Great Britain and Ireland, and residing at Station Iron Works, Loanhead, Midlothian, Scotland, have invented Improvements in and Relating to Rotary Pumps and Motors, of which the following is a specification.

This invention has reference to improvements in and relating to rotary pumps and motors.

In order that our invention and the manner of carrying the same into practice may be properly understood we have hereto appended two sheets of explanatory drawings.

In these drawings Figures 1 to 5 each show diagrammatic views of half the circumference of the D tube around which the cylinder body carrying the radial cylinders rotates, so as to illustrate the various ways in which the hole apertures can be arranged in said tube to form the ports which communicate between the radial cylinders and the suction and discharge passages.

Fig. 6 is a transverse section of the D tube showing the arrangement of ports on the pressure and suction sides.

While Fig. 7 on Sheet 2 is a transverse section corresponding to Fig. 6 with the cylinder body mounted axially thereon and carrying five sets of radial cylinders.

Referring to these drawings:—

This invention has reference to improvements in and relating to pumps and motors of the rotary plunger type and particularly that class wherein a cylinder body 1 is driven by a prime mover and rotates about a stationary central spindle provided with passages and ports termed the D tube 2, the D tube constituting the valve of the pump; and wherein the pistons 4 within the radially arranged cylinders 3 in cylinder body 1 derive their movement of reciprocation by coöperation, without definite attachment, with an eccentrically adjustable stroke controlling ring or drum which revolves or floats around in company with the cylinder body 1; a reversal of direction of the fluid's motion being obtained by moving this eccentric ring from the one side to the other side of the axis of rotation.

Heretofore in applying this construction of pump in combination with the hydraulic or other gears, great noise or sound has re-

sulted when the pumps are at full pressure and speed, and the objective of the present invention is to obviate or silence these sound noises.

The usual practice has been to make the ports of the D tubes with very little lap or lead, namely, when each cylinder has finished its suction or discharge stroke its piston is on the dead center, and the cover bridge between the suction and discharge ports of the D tube is practically the same width as the cylinder port. When the cylinder piston begins its discharge stroke the liquid in it at a low pressure is at once subjected to the full discharge pressure. At the end of the discharge stroke the high pressure liquid in each cylinder in turn comes, for the aforesaid reason, in sudden contact with the low pressure liquid on the suction side port of the D tube. These sudden rises and falls in pressure cause severe shocks and as there are usually 5 to 7 cylinders rotating at a speed of 800 to 1000 revolutions per minute the resultant sound is very noisy.

Our improvements consist in arranging a series of hole apertures 5 in the D tube 2 to form the ports which communicate between the radial cylinders 3 in cylinder body 2 and the suction and discharge passages, 7 and 8. These hole apertures 5 would preferably be formed of different or variable diameters or areas and shapes, as particularly shown in Figs. 1 to 5, and which has the effect of allowing the high pressure to come on the cylinder pistons on the discharge side 8 and off on the suction side 7 gradually, thus reducing the shock. These holes 5, would be formed and arranged to suit various sizes and variable capacities of pumps, as what suits one size may not be applicable to another.

In combination with the arrangement for forming the ports as aforesaid, an additional improvement is obtained in some sizes of pumps by giving advance to the D tube 2, as indicated at 9 Fig. 6. Whenever the pistons 4 pass the horizontal line they commence their suction or discharge stroke, but as the center line of the D tube 2 is advanced relative to said line as indicated at 9, this makes the cut-off on the suction side and the opening to pressure a little late and this again varies with the different sizes of pumps.

What we claim is:—

1. In rotary pumps and motors the com-

5 bination of a revoluble cylinder body formed
with a series of radial cylinders and adapted
to rotate on a fixed D tube and like valve,
a series of hole apertures in said tube form-
10 ing ports which communicate between the
radial cylinders and the suction and dis-
charge passages, so as to allow the high pres-
sure to come on each cylinder on the dis-
charge side, and off on the suction side grad-
15 ually and thus reduce shock and minimize
sound, substantially as herein set forth.

2. In rotary pumps and motors in combi-
nation, a revoluble cylinder body formed
with a series of radial cylinders and rotat-
15 ing on a fixed D tube and like valve, a series

of hole apertures in said tube forming ports
which communicate between the radial cylin-
ders and the suction and discharge passages so
as to allow the high pressure to come on each
cylinder on the discharge side and off on 20
the suction side gradually and thus reduce
shock and minimize sound, the D tube mak-
ing the cut-off on the suction side and the
opening to pressure a little late, substan-
tially as herein set forth.

HUGH HOLMES MAC TAGGART.

ROBERT GRIGOR SCOTT.

Witnesses:

EDWARD GIBB CLEMENT,
STEWART ROSS.