G. DE C. MAY.

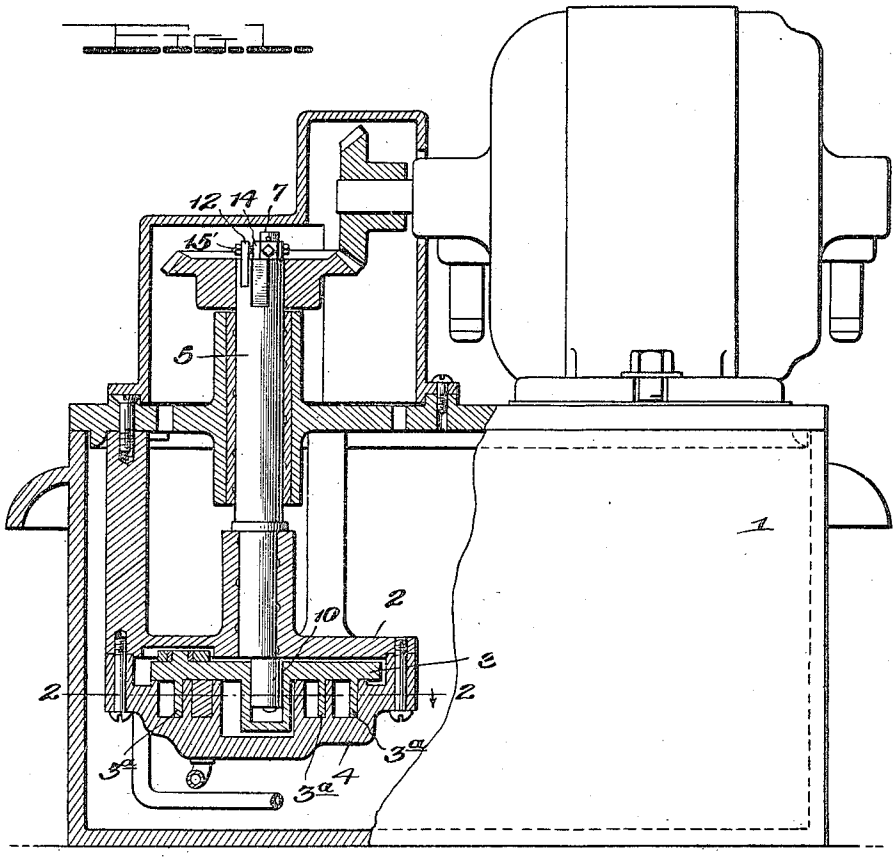
AUTOMATIC ADJUSTER FOR ECCENTRIC SHAFTS.

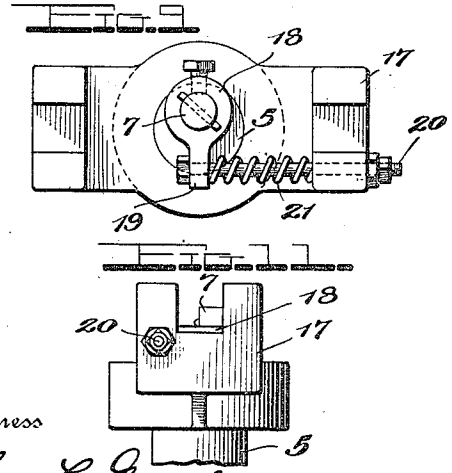
APPLICATION FILED DEC. 13, 1915.

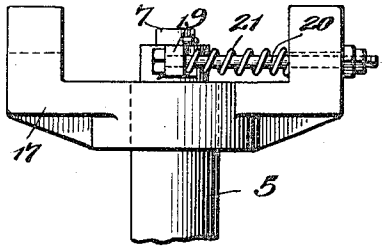
1,223,997.

Patented Apr. 24, 1917.

2 SHEETS—SHEET 1.







Witness

Chas. L. Griesbauer.

Inventor

G. de C. May,

By G. B. McGrath

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

G. DE C. MAY.

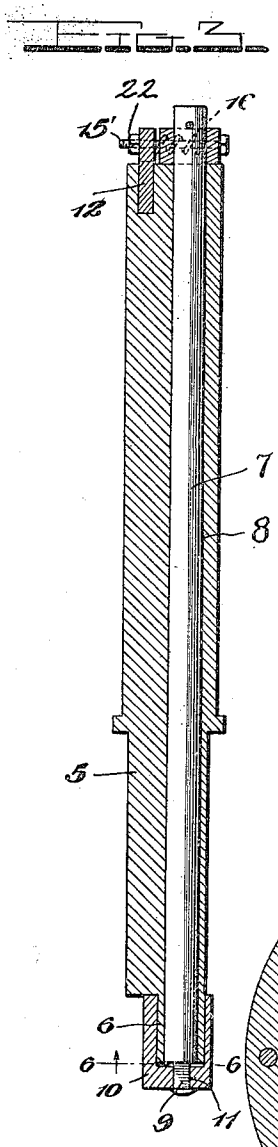
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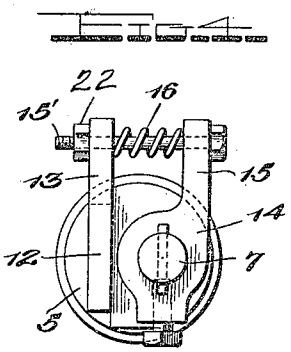
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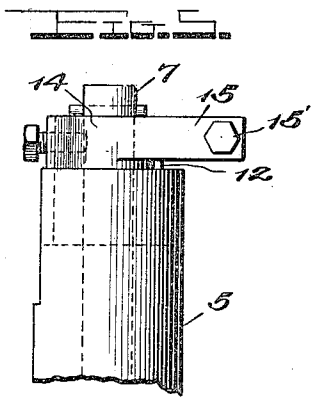
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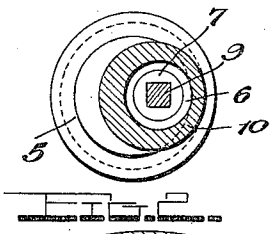
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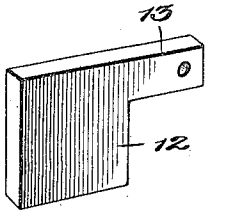
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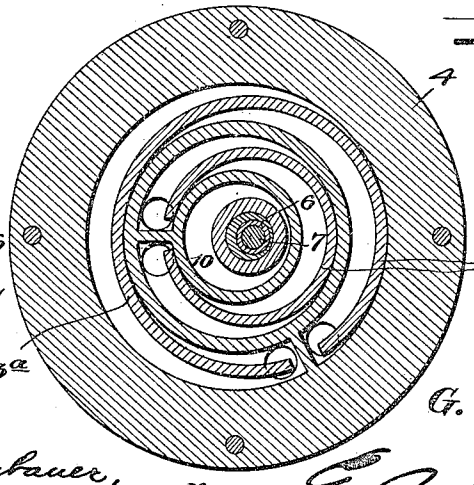


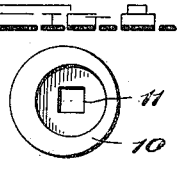












Witness

Chas. L. Griebauer,

Inventor

G. de C. May,

By E. B. MacBath

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GERALD DE COURCY MAY, OF WASHINGTON, DISTRICT OF COLUMBIA.

AUTOMATIC ADJUSTER FOR ECCENTRIC SHAFTS.

1,223,997. Specification of Letters Patent. Patented Apr. 24, 1917.

Application filed December 13, 1915. Serial No. 66,485.

To all whom it may concern:

Be it known that I, GERALD DE COURCY MAY, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Automatic Adjusters for Eccentric Shafts, of which the following is a specification.

This invention relates to an adjustment for shafts having eccentric portions, and is especially adapted for use in connection with rotary pumps.

For purposes of illustration I have shown and described the invention as applied to a pump of the May-Nelson type, and especially to that form of pump shown in the patent granted to me Oct. 12, 1915, No. 1,156,700.

Applied to a pump of this type the object of the invention is to overcome the difficulty of obtaining and maintaining the best possible adjustment of clearance between the rings of the impeller and the fixed walls of the pump body.

The invention consists of the novel features of construction hereinafter described, pointed out in the claims, and shown in the accompanying drawings, in which:—

Figure 1 is a side sectional elevation showing the invention applied to a pump of the type mentioned.

Fig. 2 is an enlarged section on the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal section through the shaft and bushing, a rod being in elevation.

Fig. 4 is a plan of the outer end of the shaft with my invention applied thereto.

Fig. 5 is a side elevation of the outer end of the shaft.

Fig. 6 is a cross section through the bushing and squared portion of a rod.

Fig. 7 is a perspective view of a shaft plate.

Fig. 8 is an end view of the bushing.

Fig. 9 is a plan view of a modification.

Fig. 10 is a side elevation of Fig. 9.

Fig. 11 is an end elevation of Fig. 9.

In these drawings 1 represents an oil casing, 2 the top of a pump of the May-Nelson type, 3 the impeller, having the rings 3^a, and 4 the body of the pump carrying the usual stationary walls. A shaft 5 having an eccentric portion 6 operates the impeller. All of these parts are shown and fully described in the patent above referred to, and are illustrated in the accompanying drawings to bring out more clearly the advantages of the present invention.

The shaft 5 is provided with a longitudinal bore 8 on the axial line of the eccentric portion 6 and through said bore passes loosely a rod 7. This rod terminates at its inner end in a squared pin 9.

An eccentric cup-like bushing 10 fits loosely on the eccentric portion 6, and its outer or closed end has an opening 11 adapted to receive the pin 9, and when the parts are assembled the pin is headed, upset or otherwise secured to the bushing. As shown in Figs. 1 and 2 this bushing is loosely mounted in the impeller of the pump.

The rod 7 projects beyond the outer end of the shaft 5 and a plate 12 having an arm 13 is set in the outer end of the shaft. A suitable collar 14 is adjustably secured, as by a set screw, on the projecting portion of the rod. A bolt 15′ connects the two arms, and carries a spring 16 the ends of which bear on the arms, and said spring exerts pressure on the rod 7, and through it on the bushing 10, at a right angle to the axis of the rod and bushing.

In other forms of pumps or shaft mountings I find it desirable to modify this construction somewhat, placing on the outer end of the shaft a yoke 17, securing a sleeve 18 on the rod 7, with an arm 19, and a bolt 20 is carried by the yoke and the arm and carries a spring 21.

In both forms the principle and results obtained are the same.

Suitable nuts, pins, etc., are employed where necessary.

The nut 22 carried by the bolt may be used as a stop in certain cases, and the spring pressure can be increased or decreased by adjustment of the sleeve or collar 14, and arm 15, if the nut 22 should be at its limit of travel.

In pumps of this type the maximum possible eccentricity is limited by contact of the impeller with the walls of the pump body, or by the nut 22 if used as a stop.

By tests made on vacuum pumps it has been found that by means of this device the spring compensates for any variations in machine work on the pump, and produces at all times a minimum clearance between the impeller and the pump body, producing a better and steadier vacuum than it has been possible to obtain with a fixed adjustment,

no matter what means were employed for obtaining fine variations of the position of the eccentric bushing. This has been proven by testing both methods on the same pump.

This device also prevents breakage or damage of parts of the pump should foreign matter enter therein, by permitting the necessary increased clearance between the working parts, the rings and the walls, until such matter has been ejected, and such action is automatic. Expansion and contraction due to temperature changes are also automatically taken care of by this device.

What I claim is:—

1. The combination with a pump of the kind described comprising a shaft having an eccentric portion on its inner end, a bushing thereon, and an impeller actuated by said bushing, said shaft and eccentric portion having a longitudinal bore therethrough, of a rod in said bore and extending therefrom at each end, an arm carried by the outer end of the rod and at an angle thereto, and a spring supported from said shaft and bearing on said arm.

2. The combination with a pump of the type described comprising a shaft having an eccentric portion at its inner end and a longitudinal bore passing through said shaft and eccentric portion, a bushing on said eccentric portion, and an impeller engaging said bushing, of a rod passing loosely through the said bore and projecting therefrom, the outer end of the shaft being recessed, a plate fitting in said recess and having a projecting arm, an arm secured to said rod, and a spring arranged between and bearing on said arms.

In testimony whereof I affix my signature in the presence of two witnesses.

GERALD DE COURCY MAY.

Witnesses:

HENRY MAY,

MICHAEL KILECLANE, Jr.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."