No. 732,386. PATENTED JUNE 30, 1903.

J. B. WANTZ.

FRICTION GEAR FOR ELECTRIC MOTORS.

APPLICATION FILED FEB. 9, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

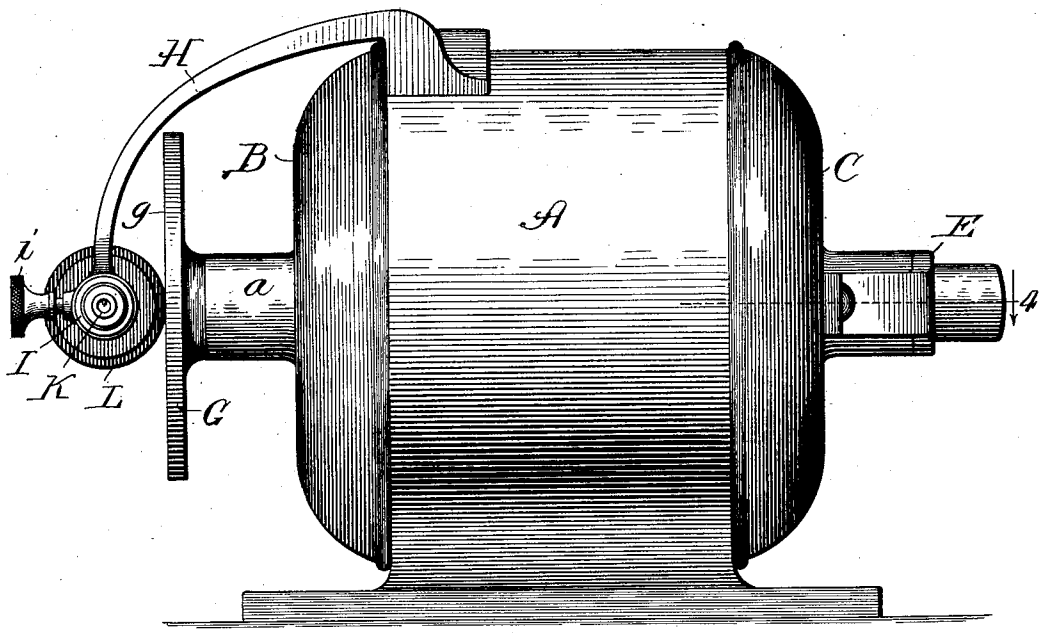
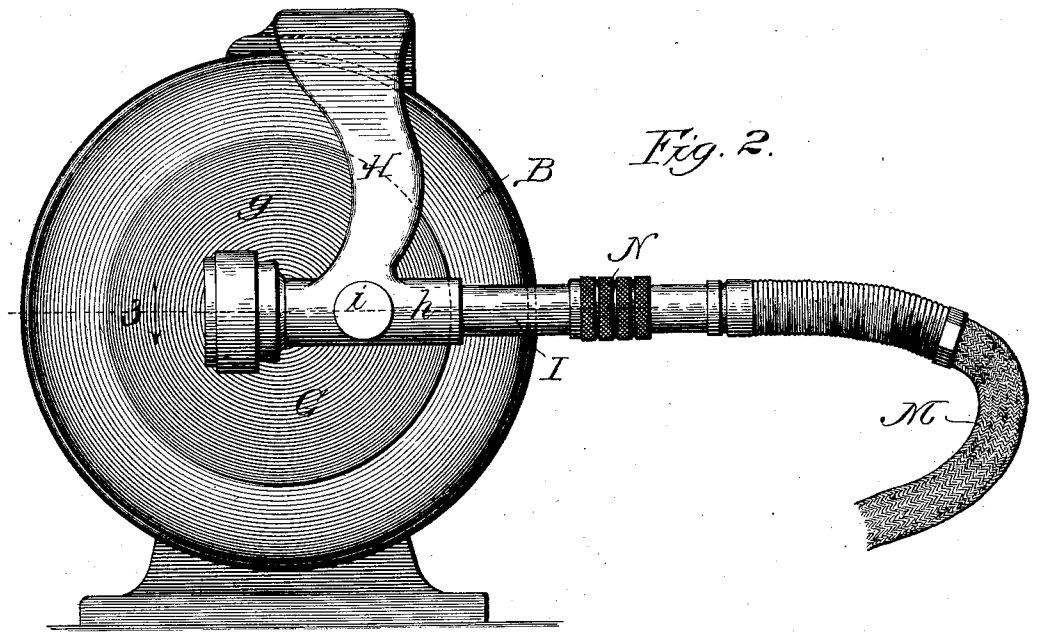


Fig. 2.



Witnesses:
Chas. P. Gaylord.
John Enders Jr.

Inventor:
Julius B. Wantz,
By Dyrenforth, Dyrenforth & Lee,
Att'ys.

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

No. 732,386. PATENTED JUNE 30, 1903.

J. B. WANTZ.

FRICTION GEAR FOR ELECTRIC MOTORS.

APPLICATION FILED FEB. 9, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

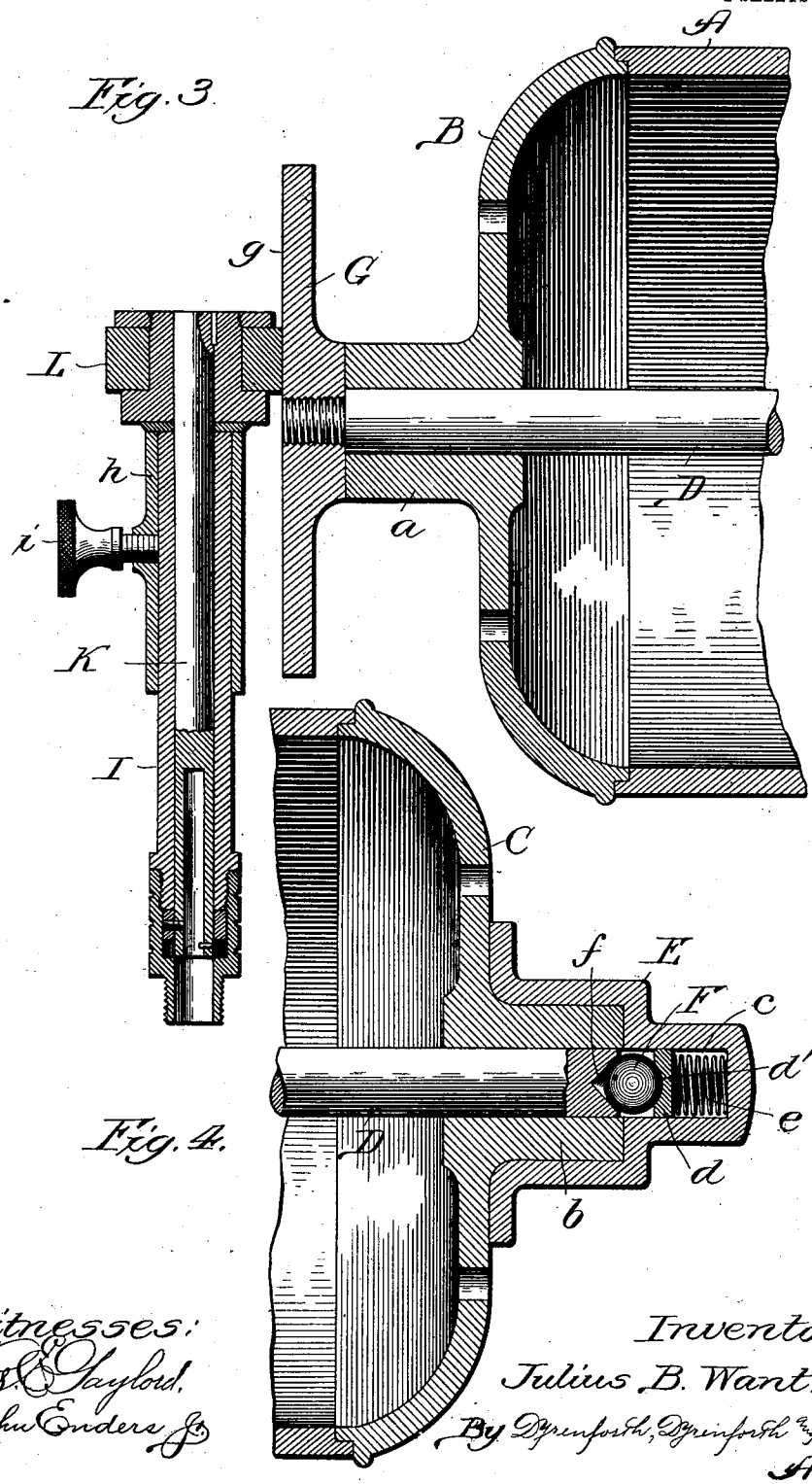


Fig. 4.

Witnesses:
Chas. C. Saylord.
John Enders Jr.

Inventor:
Julius B. Wantz.
By Dyrenforth, Dyrenforth & Lee,
Att'ys.

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

No. 732,386. Patented June 30, 1903.

UNITED STATES PATENT OFFICE.

JULIUS B. WANTZ, OF CHICAGO, ILLINOIS, ASSIGNOR TO VICTOR ELECTRIC COMPANY, A CORPORATION OF ILLINOIS.

FRICTION-GEAR FOR ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 732,386, dated June 30, 1903.

Application filed February 9, 1903. Serial No. 142,561. (No model.)

To all whom it may concern:

Be it known that I, JULIUS B. WANTZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Friction-Gear for Electric Motors, of which the following is a specification.

My object is more especially to provide a simple and convenient motor of improved construction for actuating the shaft of a massaging implement or similar light-running device or tool, whereby the speed and power transmitted to such driven device may be readily and quickly varied by the operator without changing that of the motor itself.

The improvements are particularly desirable in connection with electric motors adapted for operation on an alternating lighting-current.

In carrying out my invention I provide the armature or armature-shaft of the motor with a yielding thrust-bearing at its inner or rear end and with a friction-disk at its forward end. Journaled upon the motor casing or frame and extending at right angles to the face of the disk is a longitudinally-adjustable shaft carrying a friction-wheel engaging said friction-disk, the bearing or gripping pressure between said disk and wheel being effected by said yielding thrust-bearing.

Referring to the drawings, Figure 1 is a side elevation of my improved electric motor; Fig. 2, an end elevation of the same, the flexible shaft extension being broken away; and Figs. 3 and 4, enlarged broken plan sections taken, respectively, on line 3 in Fig. 2 and line 4 in Fig. 1.

A is the motor-casing body portion, provided with a forward head B and rear head C, the whole forming the motor-frame. On the head B is a hollow bearing projection *a*, and on the head C is a hollow bearing projection *b* in line with the bearing projection *a*.

D is an armature-shaft extending at opposite ends through and journaled in the bearing projections *a b*. On the shaft D is the armature-winding, (not shown,) and the body A contains the field-magnets. (Not shown.) Fitting over the bearing projection *b* and bolted in place to the head C is a cup-shaped bearing-cap E, containing a chamber *c* in line with the shaft D. In the chamber *c* is a plunger-disk *d*, having a concave bearing-surface *d'*, and confined between the plunger-disk and the outer end of the chamber *c* is a spiral spring *e*. In the end of the shaft D in the bearing *b* is a conical bearing-socket *f*, and interposed between the shaft and plunger-disk is a thrust-bearing ball F, fitting the bearing-sockets *f d'* at opposite sides. Fastened centrally upon the end of the shaft D beyond the bearing *a* is a disk G, having a face *g*, presenting a friction-surface.

Fastened upon the body A of the motor-casing is preferably a spring bracket-arm H, which may be of the shape shown, carrying at its free end a sleeve *h*. I is a tube forming a bearing for a shaft K, passing through it. The tube I fits through the sleeve *h* and is longitudinally adjustable therein. Passing through the sleeve *h* is a thumb-screw *i* for fastening the tube I in adjusted position. On the end of the shaft K is a friction-wheel L, which may be constructed and keyed to the shaft in the manner shown in Fig. 3. The opposite end of the shaft K is adapted for for connection with a flexible shaft M, the casing of which shaft is attached to the tube I by the usual coupling N. The flexible shaft M would carry the massaging implement or other device or tool in the usual way.

The wheel L is held with yielding pressure by the bracket-arm H in position for frictional contact with the face *g* of the disk G. The spring *e* of the thrust-bearing presses the armature-shaft and parts carried thereby yieldingly in the direction of the friction-wheel L to insure the desired degree of pressure of the friction-disk against the friction-wheel. The spring *e* has sufficient resistance to insure the desired frictional engagement between the friction-disk and friction-wheel; but in the event of too great resistance being offered by the friction-wheel against turning the spring *e* will yield and permit the friction-wheel to slip upon the disk. This prevents overburdening of the motor. The ball F operates as an antifriction-bearing against the thrust of the shaft.

Fig. 3 shows the friction-wheel in its position nearest the center of rotation of the friction-disk. When it is desired to increase the

speed of the shaft K and flexible shaft, the thumb-screw *i* may be loosened to permit the tube I to be moved longitudinally to position the friction-wheel farther from the center of rotation of the disk, and when adjusted the parts are fastened securely in position by turning the thumb-screw *i*. Thus any speed of rotation within the limits afforded may be given to the flexible shaft, and the adjustments may be effected readily and quickly by the operator.

The flexibility of the arm H insures proper alinement of the friction-wheel.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a friction-gearing, of a frame, a rotatable shaft mounted in said frame, a friction-disk fixed to said shaft, a driven shaft, a friction-wheel on the driven shaft and engaging said disk, and a flexible bracket fixed to said frame and having a bearing for the driven shaft.

2. The combination, in a friction-gearing, of a frame, a rotatable shaft mounted in said frame, a yielding thrust-bearing for one end of the shaft, a friction-disk fixed on the other end of the shaft, a flexible bracket-arm fixed to the frame, a driven shaft journaled in said arm, and a friction-wheel on the driven shaft engaging said disk.

3. In a friction-gear for an electric motor, the combination with the motor-frame, of an armature-shaft journaled in said frame, an antifriction yielding thrust-bearing in the frame engaging the rear end of said shaft, a friction-disk on the forward end portion of said shaft, a flexible bracket on said frame, a driven shaft journaled in said bracket, and extending in a plane at right angles to said disk with means for adjusting it longitudinally, and a friction-wheel on said driven shaft in yielding frictional engagement with said disk.

JULIUS B. WANTZ.

In presence of—
WALTER WINBERG,
WM. B. DAVIES.