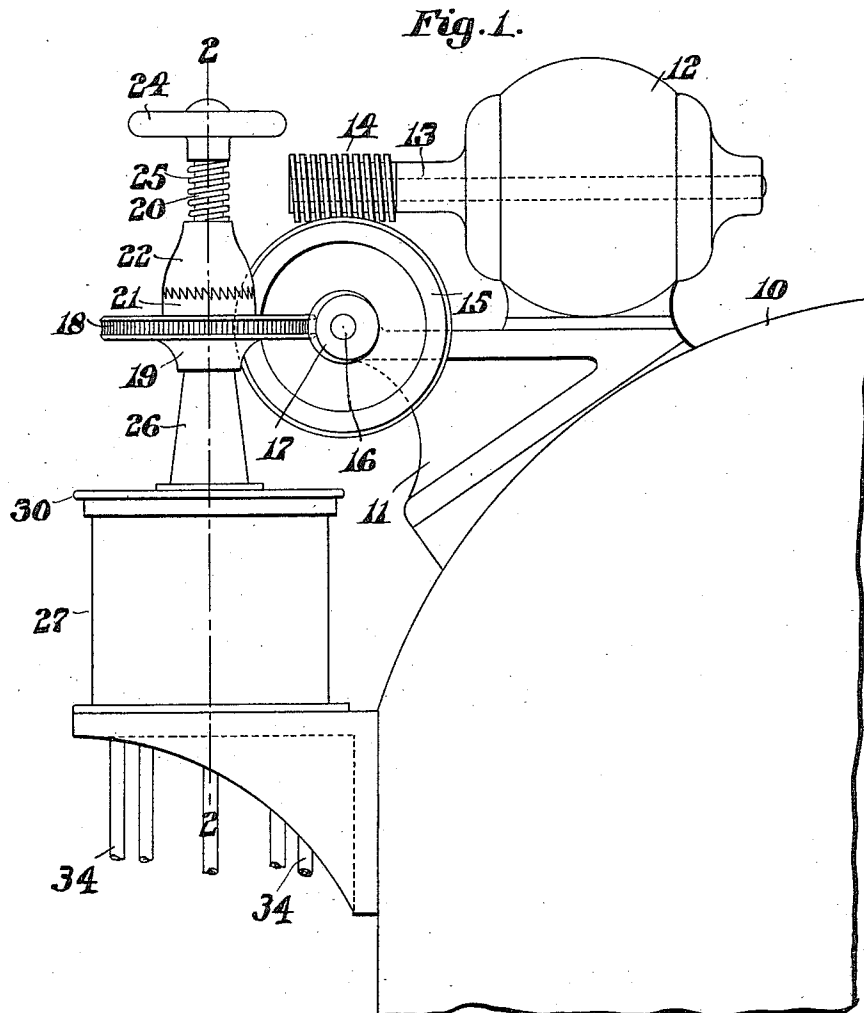


D. H. ANDREWS.
MERCURY DROPPER.
APPLICATION FILED JAN. 17, 1912.

1,060,306.

Patented Apr. 29, 1913.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

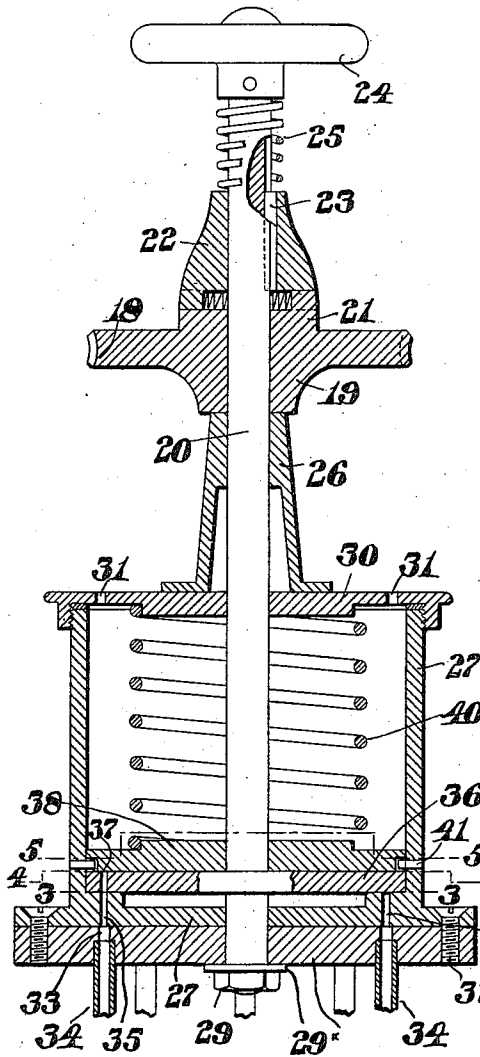


Fig. 3.

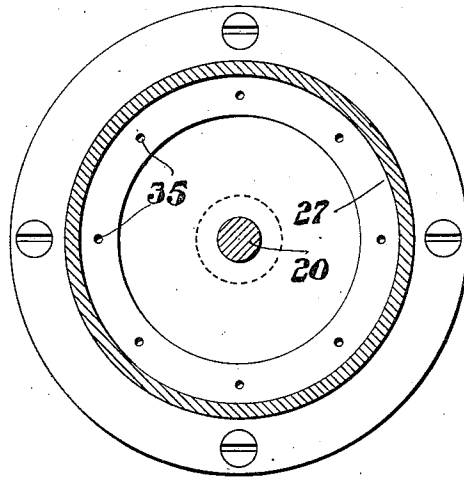


Fig. 4.

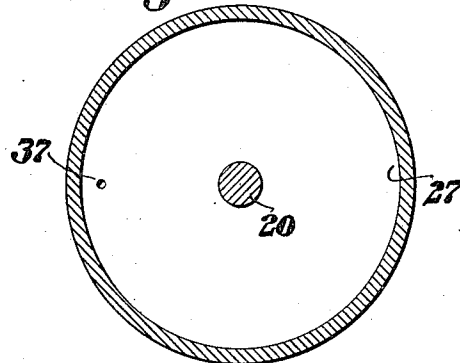
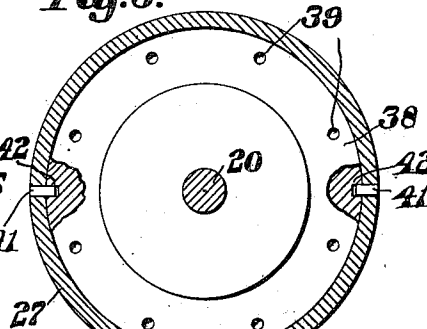


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MERCURY-DROPPER.

1,060,306.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed January 17, 1912. Serial No. 671,753.

To all whom it may concern:

Be it known that I, DAVID H. ANDREWS, a citizen of the United States of America, and a resident of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Mercury-Droppers, of which the following is a specification.

This invention relates to devices for depositing a desired quantity of mercury or some similar liquid upon the periphery of the armature of a dynamo electrical machine to insure its proper lubrication and also a suitable electric connection with the coacting brushes even when the armature is driven at a high velocity from a high speed motor.

The particular object of the present invention is to provide a means for automatically separating a given quantity of the liquid from the source of supply during the operation of the machine and for manually operating a portion of said device when the machine is not in operation to prevent further delivery of the liquid to the armature periphery.

The present invention is an improvement upon the invention shown and described in Letters Patent No. 966,840, issued to Ernest C. Ketchum Aug. 9, 1910.

The invention consists of certain novel features of construction and arrangement of parts which will be readily understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings: Figure 1 represents an elevation of a machine embodying the features of the present invention. Fig. 2 represents a vertical section of the same, the cutting plane being on line 2—2 on Fig. 1, said figure being drawn to an enlarged scale, and Figs. 3, 4, and 5 represent respectively horizontal sections of the same, the cutting planes being on lines 3—3, 4—4, and 5—5 on Fig. 2.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 represents a portion of a dynamo electrical machine having secured thereto the bracket 11 on which is mounted a motor 12 having a revoluble shaft 13 to which is secured a worm 14 meshing with and driving a worm gear 15 secured to a shaft 16 mounted in bearings

in the bracket 11. The shaft 16 has secured thereto a worm 17 meshing with a worm gear 18 formed upon a revoluble member 19 surrounding a vertical shaft 20. This revoluble member 19 is provided with a toothed hub 21 the teeth of which coact with similar teeth formed upon a sleeve 22 keyed as indicated at 23 to the revoluble shaft 20. This shaft 20 has secured to its upper end an operating handle 24 between the hub of which and said sleeve 22 is interposed a spring 25 adapted to keep the teeth of said sleeve 22 and those formed upon the hub of the revoluble member 19 normally in engagement. The shaft 20 is revolved in a bearing in the support 26 and has another bearing for its lower end in the bottom of the receptacle 27 and the base plate 28. Its lower end is provided with a nut 29 between which and the under face of the base plate 28 is a washer 29*. This nut serves to prevent displacement of said shaft. The support 26 is secured to or forms a part of the cover 30 threaded to said receptacle 27. This cover is provided with a plurality of openings 31 therethrough.

The receptacle 27 is secured to the base plate 28 by means of the screws 32 and the base plate 28 has a plurality of perforations 33 therethrough, each perforation communicating with a tube 34 adapted to convey portions of the contents of the receptacle 27 to any desired point. The bottom of the receptacle 27 has a plurality of perforations 35 therethrough registering with the perforations 33 in the base plate. Formed upon the shaft 20 is a disk 36 which covers the entire bottom of the receptacle 27 and is provided with a perforation 37 which in the rotation of the shaft 20 is adapted to successively register with each of the perforations 35 in the bottom of said receptacle 27. Above and in contact with the upper face of said disk 36 is an annular member 38 provided with a plurality of perforations 39 extending therethrough, intermediate the perforations 35, these perforations 39 being in the path of movement of the perforation 37 as the shaft 20 rotates about its axis. This annular member 38 is retained in contact with the upper face of the disk 36 at all times by means of the spring 40 interposed between its upper face and the inner face of the cover 30. This annular member 38 is prevented from turning about

the axis of the shaft 20 by means of the pins 41 engaging slots 42 in the periphery thereof.

The receptacle 27 is filled with amalgam of mercury or some similar material which it is desired to use in predetermined quantities. The pressure of the atmosphere entering the receptacle through the openings 31 in the cover 30 acts upon the liquid contained within the receptacle 27 and causes it to fill the perforations 39 in the annular member 38. As the disk 36 revolves, whenever the perforation therethrough passes beneath one of the perforations 39 the contents of said perforation will pass into the perforation 37 and will be carried thereby until in its movement it registers with the next adjacent perforation 35 in the bottom of the receptacle 27, when the contents of said perforation 37 will pass therefrom through the perforation 35 into its tube 34, this operation causing a given quantity of the liquid in the receptacle to be selected and transferred in the rotation of the disk 36 to another point where it may be delivered to a tube provided to carry it to its final place of deposit. The construction for effecting this operation is substantially the same as that described in the beforementioned Letters Patent on which the present invention is an improvement.

The difficulty found to exist with the previous device was that when the shaft 20 ceased to revolve, sometimes it occurred that the perforation 37 would be in register with one of the perforations 35, and there would always be enough leakage between the annular member 38 and the disk 36 to permit a greater quantity of the mercury or other liquid in the receptacle 27 to pass between these two members into the perforations 37 and 35 into the delivery tube than was desired. This was found to be a great objection, and to obviate this is the purpose of the present invention. It is obvious that in the present device all the time the motor 12 is in operation a continuous rotation of the shaft 20 is secured through the various worms and worm gears, the teeth formed upon the hub 21 of the revoluble member 19 transmitting its motion through the splined member 22 to said shaft 20. If it should occur when the motor 12 stops that the perforation 37 would be in register with one of the perforations 35 the operator simply by means of the handle 24 turns the shaft 20 sufficiently to bring these perforations 35 and 37 out of register, the spring 25 yielding sufficiently during this operation to permit the toothed splined member 22 to ride over the teeth of the hub 21 of the revoluble member 19.

It is believed that the operation and many advantages of the invention will be thoroughly understood from the foregoing.

Having thus described my invention, I claim:

1. In a device of the class described, the combination of a receptacle adapted to contain a liquid; a tube therefrom adapted to convey the contents of said receptacle to any desired place; mechanism, including a revoluble shaft, for intermittently separating a portion of said liquid from the remainder and delivering it to said tube; a member freely revoluble about said shaft provided with ratchet teeth; a member keyed to and movable endwise of said shaft provided with teeth normally engaging the teeth of said revoluble member; a spring for retaining said members in normal engagement; and power driven mechanism for revolving said revoluble member but adapted to prevent the accidental rotation thereof; and means for manually rotating said separating mechanism independently of said power driven mechanism.

2. In a device of the class described, the combination of a receptacle adapted to contain a liquid; a tube therefrom adapted to convey the contents of said receptacle to any desired place; mechanism, including a revoluble shaft, for intermittently separating a portion of said liquid from the remainder and delivering it to said tube; a member freely revoluble about said shaft provided with ratchet teeth; a member keyed to and movable endwise of said shaft provided with teeth normally engaging the teeth of said revoluble member; a spring for retaining said members normally in engagement interposed between said handle and said keyed member; and power driven mechanism for revolving said revoluble member but adapted to prevent the accidental rotation thereof; and means for manually rotating said separating mechanism independently of said power driven mechanism.

3. In a device of the class described, the combination of a receptacle adapted to contain a liquid; a tube therefrom adapted to convey the contents of said receptacle to any desired place; mechanism, including a revoluble shaft, for intermittently separating a portion of said liquid from the remainder and delivering it to said tube; a member freely revoluble about said shaft provided with ratchet teeth; a member keyed to and movable endwise of said shaft provided with teeth normally engaging the teeth of said revoluble member; a spring for retaining said members normally in engagement; a worm gear on said revoluble member; and a power driven worm meshing therewith adapted to normally prevent rotation of said revoluble member but to drive the same when desired; and means for rotating said separating mechanism independently of said power driven mechanism.

4. In a device of the class described, the combination of a receptacle adapted to contain a liquid; a tube therefrom adapted to convey the contents of said receptacle to
 5 any desired place; a revoluble plate in said receptacle provided with a perforation therein adapted to register with said tube in rotating and having a shaft secured to and revoluble therewith; a disk held in contact with said revoluble plate and provided with a plurality of perforations
 10 out of alinement with said tubes and adapted to register successively with said perforations in said revoluble plate during the revolution of the latter; a toothed member loosely mounted on said shaft and adapted
 15 to be power driven; another member keyed to said shaft but movable endwise thereof provided with teeth engaging said toothed member; means for rotating said shaft independently of said toothed member; and
 20 means for normally retaining the teeth of said keyed member and toothed member in engagement to prevent accidental movement of said perforated plate.
- 25 5. In a device of the class described, the combination of a receptacle adapted to contain a liquid; a plurality of tubes therefrom adapted to convey the contents of said re-
- ceptacle to any desired places; a revoluble plate in said receptacle provided with a perforation therein adapted to register with
 30 said tube in rotating and having a shaft secured to and revoluble therewith; a disk held in contact with said revoluble plate and provided with a plurality of perforations
 35 out of alinement with said tubes and adapted to register successively with said perforations in said revoluble plate during the revolution of the latter; a toothed member loosely mounted on said shaft and adapted
 40 to be power driven; another member keyed to said shaft but movable endwise thereof provided with teeth engaging said toothed member; means for rotating said shaft independently of said toothed member; and
 45 means for normally retaining the teeth of said keyed member and toothed member in engagement to prevent accidental movement of said perforated plate.

Signed by me at 4 Post Office Sq., Boston, 50
 Mass. this 6th day of January, 1912.

DAVID H. ANDREWS.

Witnesses:

WALTER E. LOMBARD,
 NATHAN C. LOMBARD.

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