

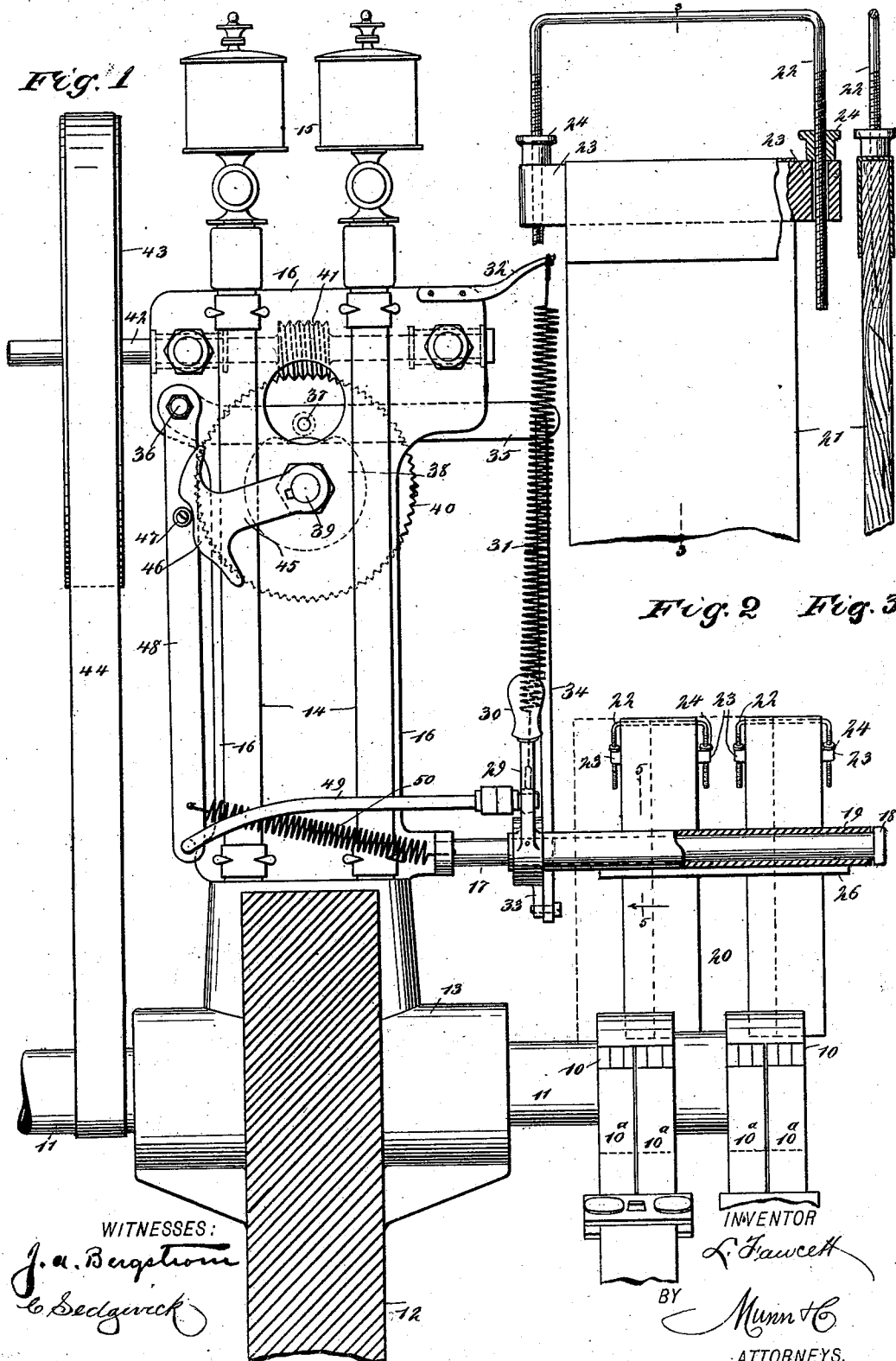
(No Model.)

2 Sheets—Sheet 1.

L. FAWCETT.
LUBRICATOR.

No. 510,779.

Patented Dec. 12, 1893.



WITNESSES:
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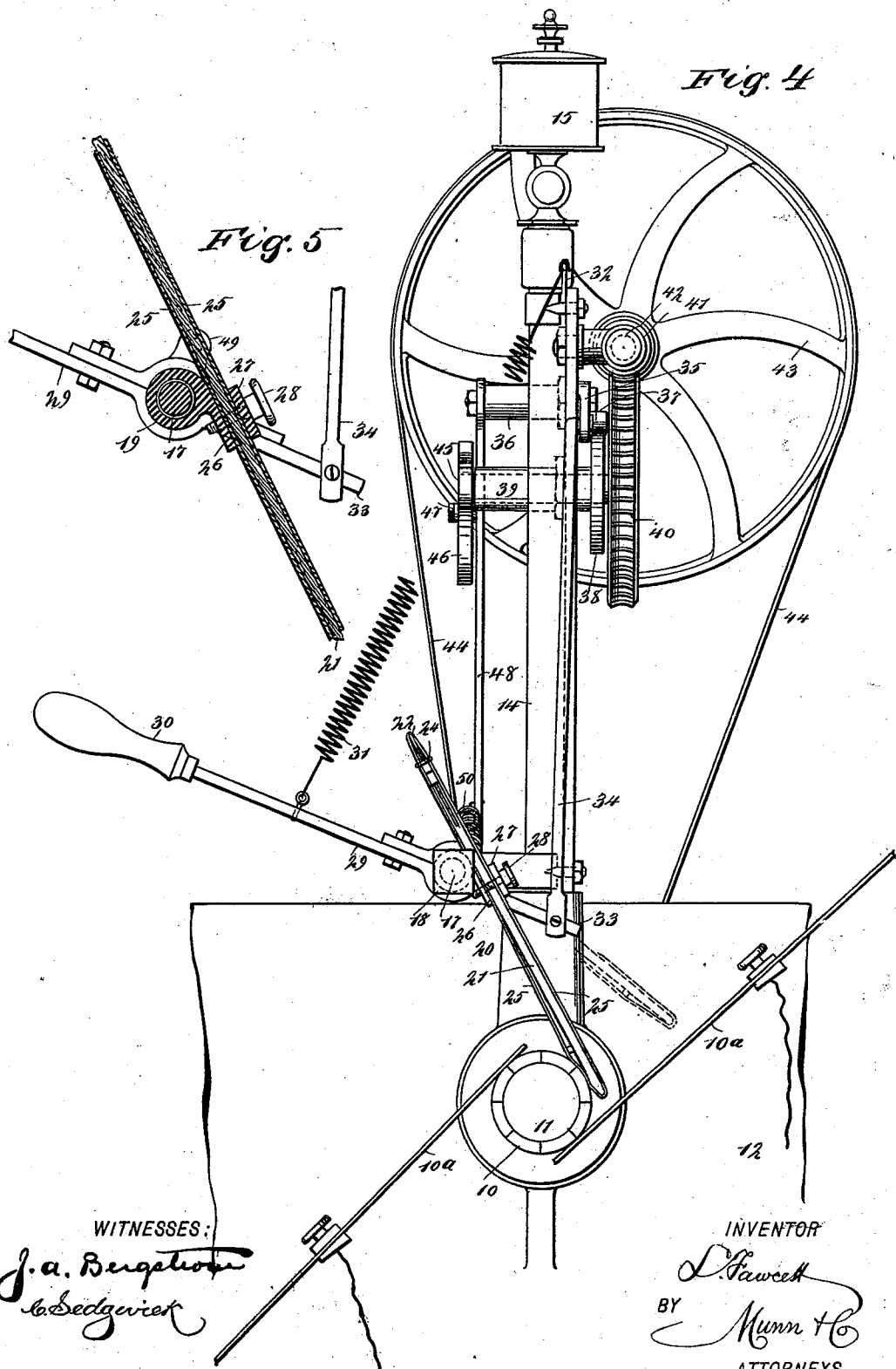
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UNITED STATES PATENT OFFICE.

LINDLEY FAWCETT, OF EUREKA, CALIFORNIA.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 510,779, dated December 12, 1893.

Application filed May 2, 1893. Serial No. 472,756. (No model.)

To all whom it may concern:

Be it known that I, LINDLEY FAWCETT, of Eureka, in the county of Humboldt and State of California, have invented a new and Improved Oiler, of which the following is a full, clear, and exact description.

It is necessary to occasionally oil the bearing surfaces of the commutators of electric motors in order to keep the said faces smooth, as otherwise the friction of the brushes causes grooves to be worn in the commutators and the latter soon get uneven and do not work properly, as an imperfect contact is made with the brushes. Only a little oil is necessary, but the oil should be frequently applied.

The object of my invention is to produce a very simple and economical apparatus which may be applied to any motor, which is adapted to wipe the commutators with a swab as often as is necessary, which applies the swabs in the same manner that they would be applied by hand, so as to touch every portion of the bearing faces of the commutators, and also to provide a simple arrangement for operating the swabs from the armature shaft, the speed being reduced so that the swabs will be applied at only necessary intervals.

A further object of my invention is to provide a simple swab which may be easily adjusted so as to bring a new wearing surface into engagement with the commutator, and to provide a convenient means of fastening and releasing the swab.

To this end my invention consists of certain features of construction and combinations of parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a detail front elevation of my improved device as applied to the commutators of a motor, a portion of the device being shown in section. Fig. 2 is an enlarged detail view, partly in section of one end of the swab or oil holder, showing the means for stretching and tightening the swab. Fig. 3 is a detail longitudinal section on the line 3—3 in Fig. 2. Fig. 4 is a detail end view of the apparatus with parts broken away; and Fig.

5 is a detail section of the swab holder on the line 5—5 in Fig. 1.

The commutators 10 are of the usual kind and are provided with the customary brushes 10^a. The commutators are secured to the armature shaft 11 of the motor 12, the shaft being journaled in a box 13 in the frame of the motor in the usual way. Projecting from the box are the oil tubes 14 which are provided with oilers 15 at the top, and these tubes and oilers form no part of my invention, but the tubes assist in supporting the plate 16 which extends upward parallel with the tubes and forms a support for certain parts of my improved apparatus, as hereinafter described.

Extending outward horizontally from the lower portion of the plate 16 and parallel with the shaft 11 and above the commutators 10, is a stationary shaft 17 having a collar 18 at its outer end, and on this shaft is journaled loosely a sleeve 19 which turns on the shaft and also slides longitudinally thereon, and this sleeve carries a swab holder 20. The swab holder 20 is provided with parallel plates 21 which extend opposite the commutators and which carry the swabs, as described below.

The plates 21 are preferably of wood or some other poor conductor, so that in case the swabs which they carry should wear through, there would be no chance for the current to run from the armature through the plates and the field of the motor. The plates 21 may be of any necessary size according to the size of the commutators, and any desired number of them may be used. Each plate is provided at one end with a longitudinally adjustable bail or frame 22, the shanks of which extend through lugs 23 on the sides of the plate, and the shanks are threaded and provided with nuts 24, by means of which the frame may be moved in and out in relation to the plate.

A swab or cover extends longitudinally over each plate 21 and over the frame 22 thereon, the swab being endless and composed of some suitable absorbent fabric having the necessary strength and durability, canvas being a good material for this purpose. The plates and swabs are secured to the sleeve 19, being held between plates 26 and 27 by thumb

screws 28, which project through the plates and through the swabs. The plate 26 is secured to the sleeve 19 and consequently the device just described constitutes a clamp by which the plates may be easily fastened or loosened. It will be understood, however, that any suitable means may be employed for fastening the swabs to the sleeve, so as to permit them to oscillate and slide, without affecting the principle of the invention.

Clamped to one end of the sleeve 19 is a lever 29 having at one end a suitable handle 30 and secured to this lever is a spring 31 which extends upward and is, at its upper end fastened to an arm 32 on the plate 16, and the tension of the spring is such as to normally lift the lever, tilt the sleeve, and throw the swabs on the plates 21 into contact with the commutators 10^a, as shown best in Fig. 4.

Secured to the lever 29 and sleeve 19 and projecting from the side of the sleeve opposite the lever 29, is an arm 33 to which is secured an upwardly extending pitman 34, and this at its upper end is pivoted to a lever 35 which extends horizontally across the plate 16 and is secured to a stud or short shaft 36, which is journaled in the said plate and which therefore is adapted to swing vertically. The lever 35 is provided with a roller 37 which rides on a cam 38 on a shaft 39 which is also secured in the plate 16, and the movement of the cam causes the lever 35 to oscillate vertically and impart an up and down movement to the pitman 34, so that the pitman, when pulled up, tilts the sleeve 19 against the pressure of the spring 31, thus raising the swabs from the commutators, and when the pitman moves down, the tension of the spring 31 returns the swabs to the commutators and thus the oil is applied at proper intervals, which intervals may be regulated by the shape of the cam 38 and by the speed at which it is driven. The swabs are also moved laterally over the face of the commutators, as herein-

after described. The shaft 39 is driven by a worm wheel 40, which meshes with a screw 41 on the shaft 42, this shaft being journaled horizontally on the plate 16 and it is provided with a pulley 43, which connects with the armature shaft by a belt 44. It will be understood that other speed reducing gear may be substituted for that described, to give the necessary movement to the swabs, without departing from the principle of the invention.

On one end of the shaft 39 is a crank 45 which carries a two winged cam 46 adapted to contact with a roller 47 on the lever 48, which lever is fulcrumed or pivoted on the stud 36 and is therefore adapted to swing in and out under the influence of the cam 46 and the retracting spring which is secured to the lever and which will be described presently.

The lever 48 hangs downward in a substantially vertical direction, and its lower end is provided with a pitman 49 which extends out-

ward toward the commutators and is connected to the clamp which fastens the lever 29 to the sleeve 19. The lower end of the lever has also fastened to it a spiral spring 50 which is secured also to the plate 16, and the tension of the spring is such as to normally push the lower end of the lever outward, thus carrying the sleeve 19 and the commutator swabs to the outer end of the shaft 17 and to the outer edges of the commutators, as shown in Fig. 4.

It will be seen that under the combined influence of the cam 46 and spring 50, the lever 48 will be oscillated and the sleeve 19 moved inward and outward on the shaft 17, so that every portion of the commutators will be touched by the swabs. The above description shows therefore that the swabs will be alternately raised from and applied to the commutators and that they will also be moved laterally across the faces of the commutators, and the faces of the commutators will therefore be kept sufficiently lubricated if the swabs are occasionally supplied with oil. When the swabs are to be changed or any work is to be done upon the swab holder, the lever 29 may be depressed, thus raising the swab plates 21 and the swabs thereon, and the lever may be fastened down in some convenient way so that any necessary work may be performed on the swab holder or on the commutators.

I do not confine myself to the mechanism described for applying the swabs to commutators, as it is obvious that this may be accomplished in other ways, as for instance by a revolving shaft, having swabs connected to arms projecting from same that may be adjusted to wipe the faces of commutators in passing, at each revolution of the shaft, to be actuated by suitable gearing in connection with reducing worm gear, or by sliding frame attached to a suitable support extending over commutator and provided with swabs that may be brought in contact with commutator at suitable intervals by the action of cam and spring.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a revoluble body, such as a commutator, of an automatically oscillating and laterally sliding swab held adjacent to the face of the commutator, and mechanism for applying and removing the swab to and from the commutator and also for moving it laterally over the face of the commutator, substantially as described.

2. The combination, with a revoluble body, such as a commutator, of an oscillating longitudinally extensible plate arranged opposite the face of the commutator, and an endless swab carried by the plate and adapted to touch the face of the commutator, substantially as described.

3. The combination, with a revoluble body, such as a commutator, of an automatically

oscillating and laterally sliding plate arranged opposite the face of the commutator mechanism for imparting said two movements to the plate, and a swab carried by the plate and adapted to touch the face of the commutator, substantially as described.

4. The combination, with the commutators of an electric motor, of an automatically oscillating sleeve arranged parallel with the commutator or armature shaft, plates carried by the sleeve and adapted to swing opposite the faces of the commutators and to slide in a plane parallel with the axis of the commutators mechanism for imparting said two movements to the sleeve, and swabs carried by the plates and adapted to touch the faces of the commutators, substantially as described.

5. The combination, with the commutators of an electric motor, of a shaft extending parallel with the commutator shaft, a sleeve held to slide and turn automatically on the shaft, plates secured to the sleeve and extending opposite the commutator faces, swabs carried by the plates and adapted to touch the faces of the commutators, springs connected with the sleeve and adapted to hold the plates against the commutators and the collar at one end of the shaft, and a cam and lever mechanism to automatically oscillate and slide the sleeve and plates against the tension of the said springs, substantially as described.

6. The combination, with the commutators of an electric motor, of a shaft extending parallel with the commutator shaft, a sleeve held to slide and turn on the shaft, plates carried by the sleeve and projecting opposite the faces of the commutators, swabs secured to the plates and adapted to touch the faces of

the commutators, a lever secured to the sleeve and projecting laterally therefrom, a spring connected with the lever and with an adjacent fixture so as to swing the swabs into contact with the commutators, a spring arranged to hold the sleeve at one end of its shaft, operating levers for oscillating and sliding the sleeve against the action of its springs, and a shaft geared to the commutator shaft and provided with two cams engaging said operating levers, substantially as described.

7. A commutator swab comprising an oblong plate provided between its ends with a bearing to permit it to oscillate and an endless swab extending around the said plate, substantially as set forth.

8. A commutator swab comprising a longitudinally extensible plate, provided between its ends with a bearing to permit it to oscillate and an endless swab extending around the said plate, substantially as set forth.

9. In a commutator, a swab holder or frame comprising the plate provided with a bearing between its ends and with apertured lugs at its upper or outer end and the -shape extension the threaded side bars of which pass through said apertures and provided with adjusting nuts, substantially as set forth.

10. The combination with the sleeve 19, having parallel longitudinal clamping plates 26, 27 and set screws extending therethrough, of the swab plate clamped between said two plates and carrying an endless swab, substantially as set forth.

LINDLEY FAWCETT.

Witnesses:

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