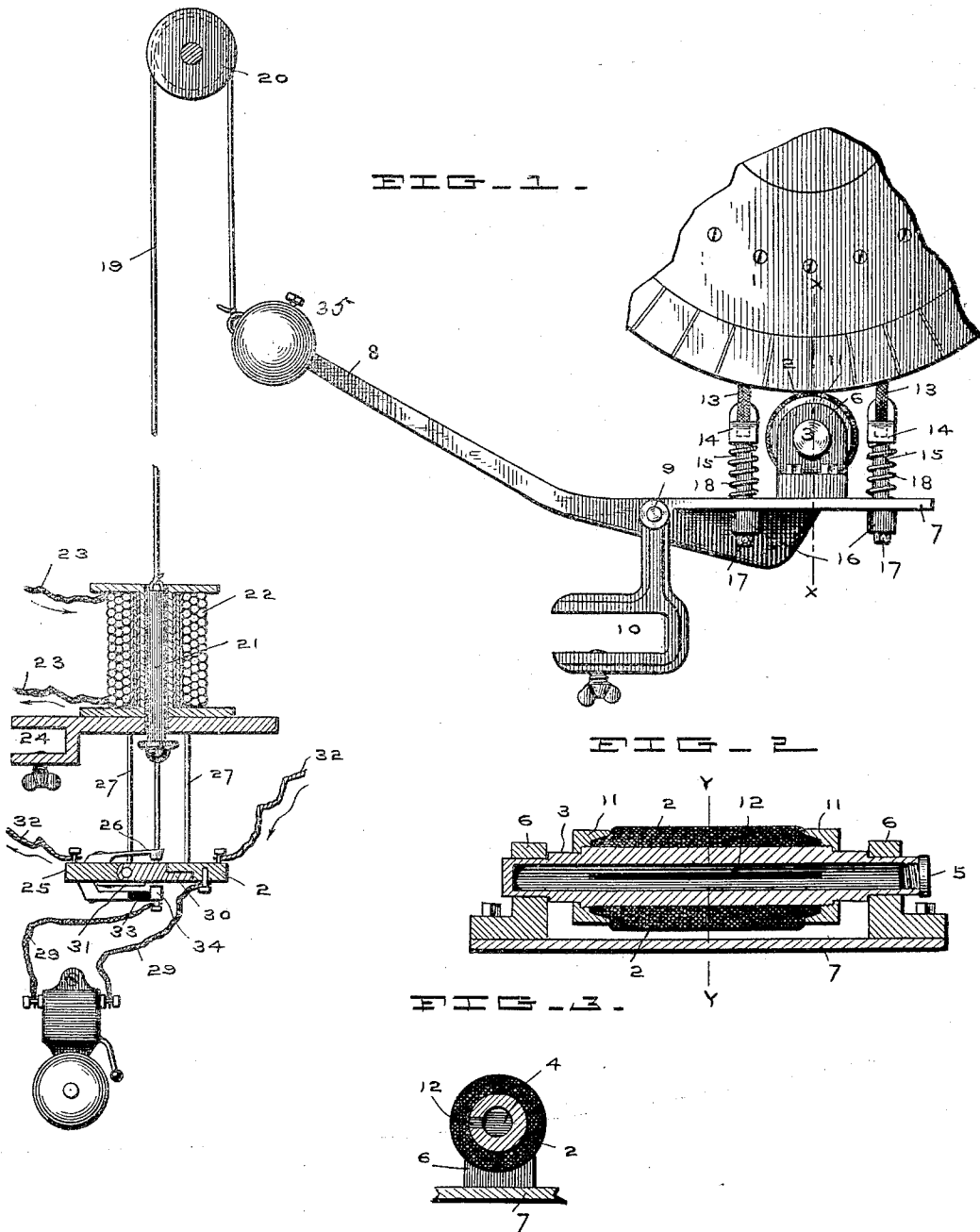


(No Model.)

F. L. McGAHAN.
COMMUTATOR OILER.

No. 461,105.

Patented Oct. 13, 1891.



Witnesses

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FRED L. MCGAHAN, OF INDIANAPOLIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO HENRY C. BAILEY, OF EDINBURG, INDIANA.

COMMUTATOR-OILER.

SPECIFICATION forming part of Letters Patent No. 461,105, dated October 13, 1891.

Application filed November 7, 1890. Serial No. 370,708. (No model.)

To all whom it may concern:

Be it known that I, FRED L. MCGAHAN, of Indianapolis, county of Marion, and State of Indiana, have invented certain new and useful Improvements in Commutator-Oilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

My invention relates to improvements in devices for oiling commutators, and will be understood from the following description.

In the drawings, Figure 1 is a side elevation of my device, the coil being in section. Fig. 2 is a horizontal section of the oiler on the line *x x*, Fig. 1. Fig. 3 is a cross-section on the line *y y*, Fig. 2.

In detail, 1 is the commutator, which is mounted on the dynamo or motor in the usual manner. The oiler comprises a layer of felt or similar material 2, wrapped about a cylinder 3, which has an oil-chamber 4 extending nearly its entire length, closed by a cap 5, the cylinder being mounted in bearings 6, bolted to a supporting-plate 7, which is connected to a weighted lever 8, pivoted at 9 to a clamp 10, by means of which it may be secured to a table or other support. The ends of the felt wrapper 2 are held in place by screw-caps 11, as shown in Fig. 2. A central slot 12 allows the oil to escape from the chamber for saturating the felt. On either side the oiling-cylinder are wipers composed of pieces of felt 13, secured in slotted heads 14, formed integral with spindles 15, which pass through the plate 7 and through the collars 16 to give a longer bearing to the spindles, and are secured in place by pins 17, passing through the end of the spindles below the collar.

18 are springs coiled on the spindles between the plate 7 and the shoulder formed by the head 14. At the connection of the lever 8 with the plate 7 a heavy rib is formed, which not only strengthens the plate, but serves as a counter-balance to the adjustable weight upon the lever 8, whose gravity holds the oiler in contact with the periphery of the commutator. A cord 19 is connected to the outer end of the weighted lever 8, passing

over the sheave-pulley 20, a weighted core of soft iron 21 being connected to the opposite end of the cord, this core moving in the helix 22, whose wires 23 are connected in the circuit of the dynamo or motor. The base of the helix is formed into a clamp 24 for securing it to any suitable support. A divided plate or frame 25 is located beneath this base, having a spring-button 26 in line with the boss or head of the core, the plate 25 being supported by wires 27, which form a cage for the core.

30 is a contact-plate, one end being pivoted to one side of the divided plate 25, and its opposite end is held in contact with the opposite side of such plate by a spring 31, attached to the under side.

32 are the main station-circuit wires, connected by binding-posts on either side of the divided plate 25, and when the weighted core is raised and in its normal position the main station-circuit passes from one side of such plate to the other through the pivoted contact-plate 30.

29 is a loop of the main circuit, one end being connected to the divided plate 25 on one side and its other end to a block 34, supported beneath the contact-plate 30 from the opposite plate 25 and insulated therefrom at 33, as shown.

The weight of the ball-arm 8 of the pivoted base-plate 7, which carries the oilers and wipers, is such as to normally hold the felt 2 of the oiling-cylinder in contact with the periphery of the commutator, and the chamber in the cylinder being supplied with oil the felt is saturated and the oil is evenly distributed over the face of the commutator, and as the latter revolves any surplus of oil is carried away by the wipers on either side the oiling-cylinder. The spindle of the wiper being controlled by the coiled spring, the tension of the latter will hold the felt carried in the jaw in contact with the commutator and take up any wear in the edge of the felt.

My device operates as follows: As the commutator revolves, its face being in frictional contact with the felt of the oiling-cylinder, the latter revolves also, while the wipers on each side carry away any surplus oil and dis-

tribute it evenly over the face of the commutator, preventing its accumulation in too great quantity at any point, and thus preventing the wearing or clogging up of the brush or the lodging of dirt. The effect of this would be to cause the wires to burn out, the circuit or current being more or less interrupted, and the wooden oilers ordinarily used are also liable to be burned up, and the whole device requires constant watching, and in case of an accident of this kind the ordinary oiler has to be removed by the hand of the operator to prevent its total destruction. My device requires no such watching, being entirely automatic in its operation, as I will now proceed to explain.

The gravity of the lever 8 is such as to normally hold the felt of the oiling-cylinder in contact with the commutator; but the outer end of this lever, as before mentioned, is connected through the cord 19 to the core 21 of the helix 22, whose wires 23 are connected to the dynamo-circuit. While the current is passing through the coil the core will be held up by the force of the current in the position shown in Fig. 1; but the instant that the current is interrupted or broken from any cause the magnetism of the core ceases and the latter drops by its gravity, its head striking the spring-button 26, depressing the pivoted contact-plate 30, which contacts with the block 34. The main-station current then passes from one side of the divided plate down through the loop 29, sounding an alarm upon the gong or bell and passing through the block 34, contact-plate 30, and opposite side of the divided plate 25, and out over the main-circuit wire 32, the same movement pulling up the outer end of the lever 8, which swings upon the pivot 9, dropping the oiling-cylinders and wipers away from contact with the face of the commutator, removing them from any danger of burning, and the gravity of the core 21 holds the oiler in that position until it is replaced by the hand of the engineer. In other words, an interruption of the current through the coil 22 operates to draw the oiler away from the commutator, and it will remain separated from it until manually restored. The weight 35 is secured to the lever 8 by a set-screw to allow its adjustment thereon when desired to equalize the weight of the core 21.

When two or more dynamos are connected to the main station-circuit, each has located in its own circuit a helix 22, weighted core 21, and connections, as before described, for operating upon and breaking the station-circuit, causing such current to pass over a loop and ringing a bell located therein.

It is obvious that the shape of the oiler might be varied, and oil might be supplied to its fibrous surface externally instead of from within, and I do not intend to limit myself to the form herein shown, the principle of my invention being the holding of a saturable substance in contact with the commu-

tator by the gravity of its support and the latter connected to the core of an electro-magnet, which is set in the same circuit with the commutator, so that any interruption of the current in the coil will allow the core to drop, and, falling, it will draw the oiler away from contact with the commutator entirely, thus preventing its destruction by the flashing or the heat of the current.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. An oiler for commutators, comprising a cylinder covered with saturable material and having an oil-chamber within, such cylinder mounted in bearings connected to a pivoted base-plate, and a weighted lever connected to such plate whose gravity normally holds the cylinder in contact with the commutator, all combined substantially as shown and described.

2. An oiler for commutators, comprising a cylinder covered with felt or fibrous material, an oil-chamber within, such cylinder revolving in bearings connected to a pivoted base-plate connected to a weighted lever whose gravity normally holds the oiler in contact with the commutator, one or more spindles carrying wipers also connected to such pivoted plate, and springs coiled on such spindles, whose tension normally holds the wipers in contact with the commutator for distributing the oil received from the cylinder, all combined substantially as shown and described.

3. An oiler for commutators, comprising a cylinder having an oil-chamber within and revolving in bearings supported upon a pivoted base-plate connected to a weighted lever whose gravity normally holds the oiler in contact with the commutator, a lever connected to such pivoted plate, and a cord connecting the outer end of the lever to the core of an electro-magnet set in the dynamo-circuit, such core weighted at its lower end to the degree that its normal gravity will draw the oiling-cylinder away from contact with the commutator, all combined substantially as shown and described.

4. An oiler for commutators, comprising a saturable material connected to a suitable support, the latter weighted and normally holding such material in contact with the commutator, an electro-magnet set in the circuit of the dynamo, a weighted core therein connected to the oiler-support, and an alarm mechanism set in an independent circuit and actuated by the fall of the core of the electro-magnet, all combined substantially as shown and described.

5. In a commutator-oiler, a cylinder, an oil-chamber within, a saturable material upon the outside of such cylinder connected with the oil-supply, a base-plate providing bearings for such oiling-cylinder and pivoted to a suitable support, an arm carrying an adjustable weight connected to such base-plate, and an

5 electro-magnet set in the circuit of the dynamo, its core connected to the weighted arm of the base-plate supporting the cylinder, whereby the breaking of the current operates to free the oiling-cylinder from the commutator, all combined substantially as shown and described.

In witness whereof I have hereunto set my hand this 3d day of November, 1890.

FRED L. MCGAHAN.

Witnesses:

H. D. NEALY,
E. B. GRIFFITH.