

No. 780,047.

PATENTED JAN. 17, 1905.

B. G. LAMME.
ELECTRIC MOTOR.
APPLICATION FILED JUNE 30, 1904.

Fig. 1.

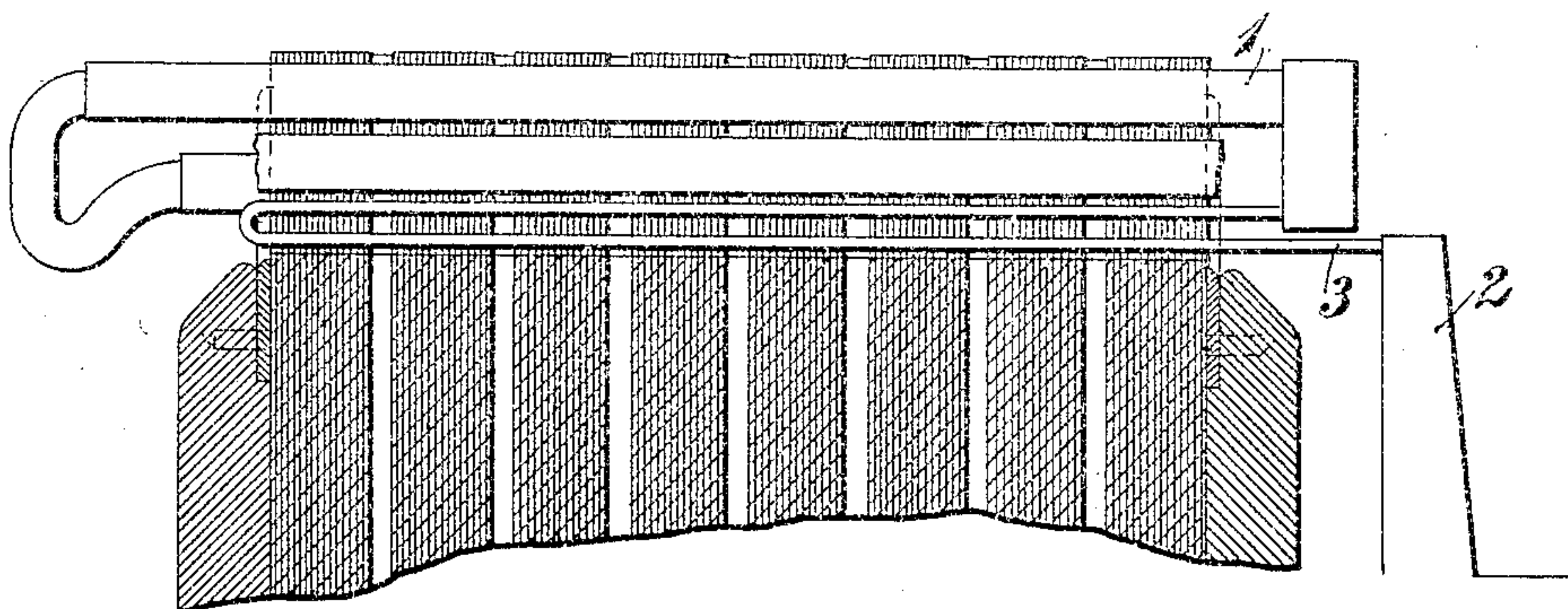
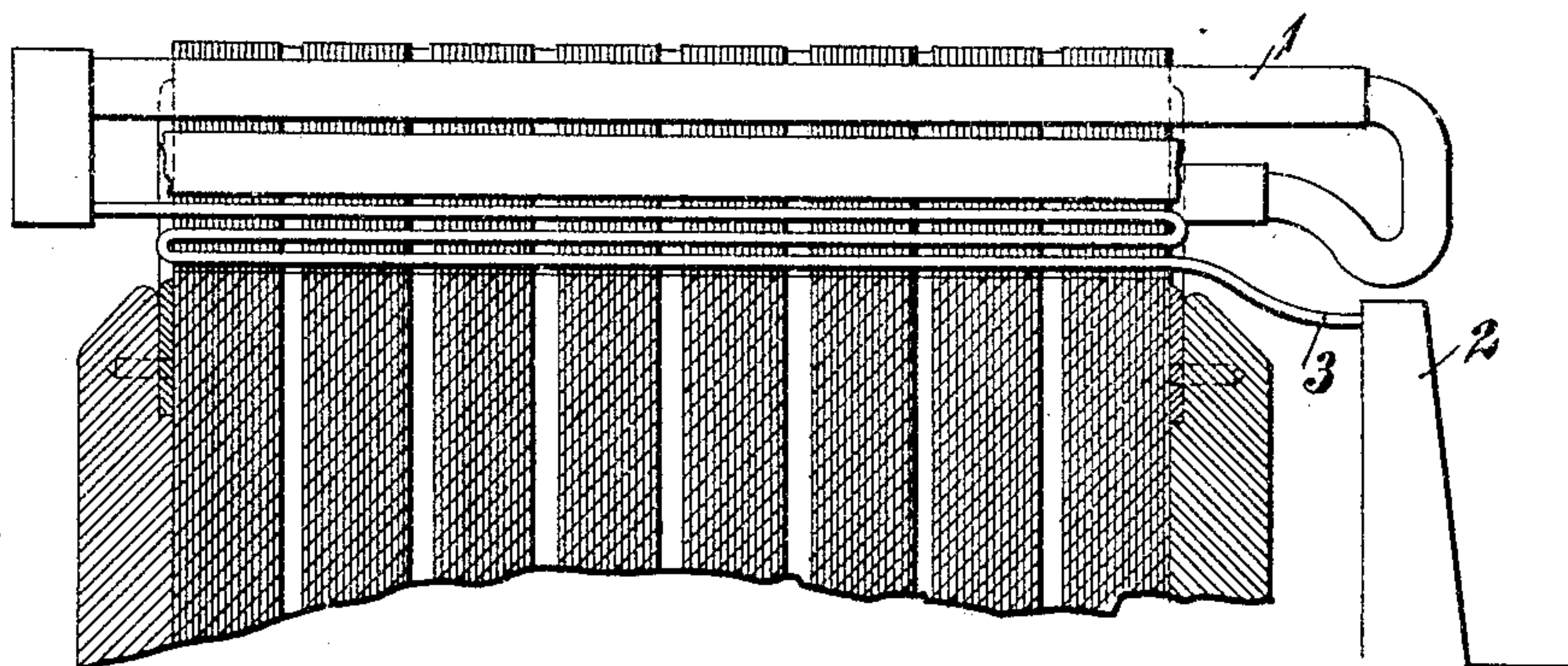


Fig. 2.



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ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 780,047, dated January 17, 1905.

Application filed June 30, 1904. Serial No. 214,819.

To all whom it may concern:

Be it known that I, BENJAMIN G. LAMME, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric Motors, of which the following is a specification.

My invention relates to electric motors, and particularly to such motors as employ resistance connections between the commutator-bars and the armature-coils for the purpose of preventing injurious sparking at the commutator.

The object of my invention is to so locate and proportion the resistance-leads which connect the armature-coils with the commutator-bars that greater mechanical strength may be afforded the structure than could otherwise be obtained.

In the accompanying drawings, Figure 1 is a part-sectional view of an armature and commutator embodying one form of my invention, and Fig. 2 is a similar view of an armature and commutator embodying another form of my invention.

In the construction of alternating-current electric motors having armatures and commutators similar to those of direct-current motors it has heretofore been proposed to connect the armature-coils with the commutator-segments by means of leads containing a sufficient amount of resistance to reduce the current in the armature-coils, which are short-circuited at any instant by the brushes to such a value that the sparking between the brushes and the commutator-bars shall be unobjectionable. Such leads have generally connected the several commutator-bars with the ends of the armature-coils which are nearest to the commutator-cylinder; but it has also been proposed to connect the commutator-segments with the ends of the armature-coils which are remote from the commutator-cylinder by means of resistance-leads to be preferably located in the armature-slots. In designing certain sizes of motors, however, it has been found that in order to obtain the required resistance the cross-sectional dimensions of the

resistance-leads if arranged as above indicated would be so small as to afford a poor mechanical construction. I have therefore devised another arrangement of leads for such cases which permits of the employment of leads having greater length, and thus for a given resistance provides a greater cross-section of the leads, and therefore greater mechanical strength.

Referring to Fig. 1, the end of armature-coil 1 which is nearest the commutator-cylinder 2 is connected thereto by means of a resistance-lead 3, which is of such cross-section and length as to introduce the desired amount of resistance into the circuit formed when a brush makes contact with two of the commutator-segments. In order to obtain the proper mechanical strength, the resistance-lead 3 should have a comparatively large cross-sectional area, its resistance being proportioned by adjusting its length. The lead is placed in the bottom of the armature-slot, and preferably in the slot that contains one side of the corresponding armature-coil, and it is folded upon itself a sufficient number of times to obtain the proper length for the desired resistance.

In Fig. 1 the lead is simply doubled upon itself; but it is evident that if a greater resistance is desired the lead may be again doubled upon itself or a construction like that shown in Fig. 2 may be employed, in which the segments of the commutator 2 are severally connected to the ends of the armature-coils 1, which are remote from the commutator-cylinder, and the resistance-lead 3 is of three times the length that it would be if it connected the remote end of the armature-coil directly with the corresponding commutator-segment.

It is evident that by means of the construction comprising my present invention a better mechanical construction is afforded for the resistance-leads than could otherwise be obtained and that almost any desired resistance or any desired cross-section of resistance-lead may be employed.

The invention is of particular advantage in comparatively small sizes of motors, but may

be applied to large motors where a great cross-section of resistance-lead is desired. Not only is the section of the resistance-lead increased, but with this increased section there is an increased radiating-surface, and therefore the loss in the lead is distributed throughout a greater amount of material, the capacity for dissipating heat being thereby increased. If the resistance-leads are folded upon themselves an even number of times, the lead becomes non-inductive.

I claim as my invention—

1. An electric motor having an armature, a commutator and resistance-leads which connect the several commutator-bars to the corresponding armature-coils, said leads being located in the armature-slots and folded on themselves a sufficient number of times to obtain a definite resistance.

2. An electric motor having an armature, a

commutator, and resistance-leads which connect the ends of the armature-coils that are remote from the commutator to the several commutator-bars, said leads being located in the armature-slots and being twice folded upon themselves.

3. An electric motor having an armature, a commutator and leads of a definite resistance between the several commutator-bars and the ends of the armature-coils, said leads being located in the armature-slots and being doubled on themselves a sufficient number of times to obtain said definite resistance.

In testimony whereof I have hereunto subscribed my name this 28th day of June, 1904.

BENJ. G. LAMME.

Witnesses:

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