

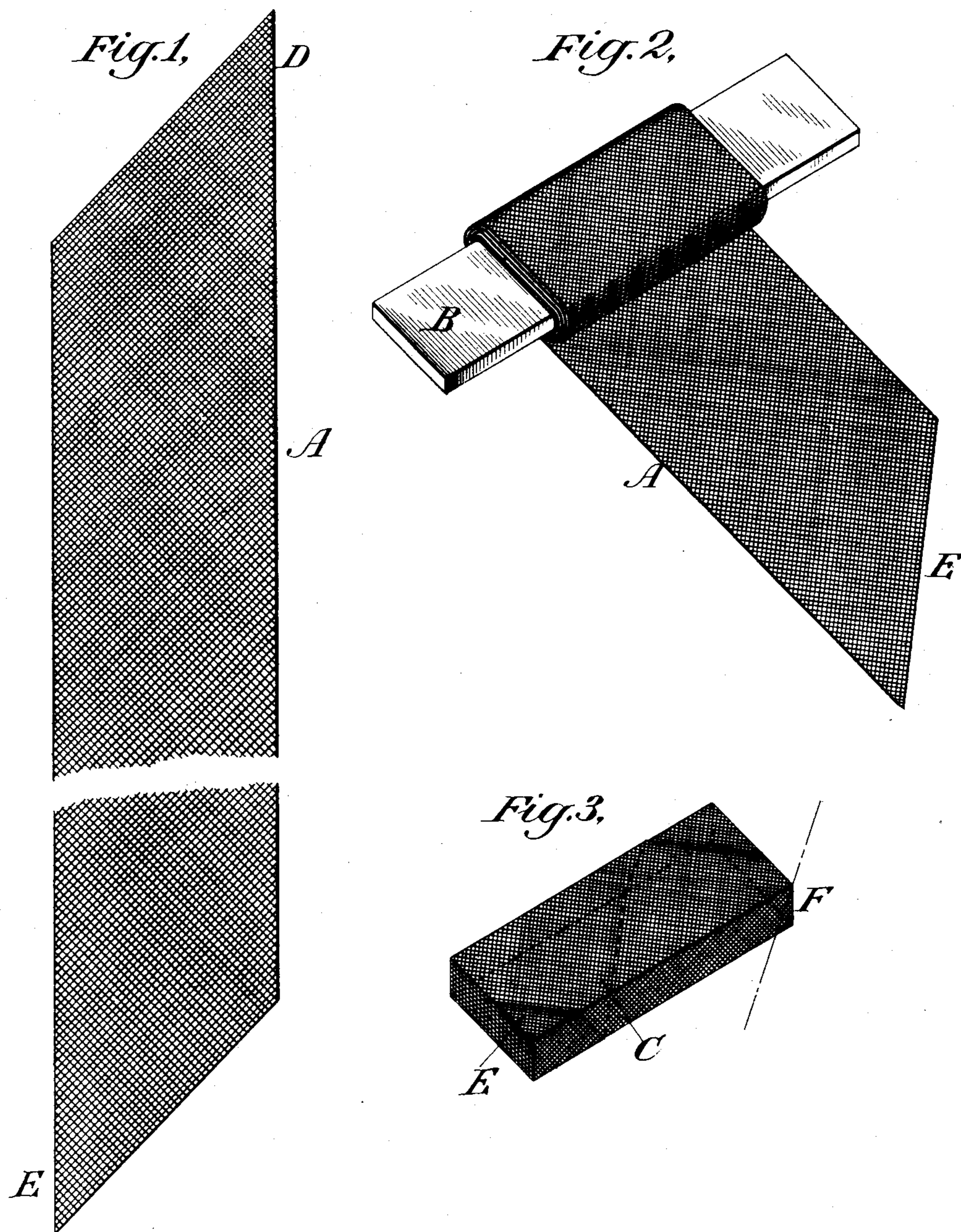
No. 610,705.

Patented Sept. 13, 1898.

J. W. DICKEY.
BRUSH FOR ELECTRICAL MACHINES.

(Application filed Dec. 8, 1894.)

(No Model.)



Witnesses:-

O. H. Hayward
Charles O. Long

Inventor:-

Joseph Wells Dickey
by James M. Stickney
his attorney.

UNITED STATES PATENT OFFICE.

JOSEPH WELLS DICKEY, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
CHARLES E. CHAPIN, OF SAME PLACE AND MILFORD, CONNECTICUT.

BRUSH FOR ELECTRICAL MACHINES.

SPECIFICATION forming part of Letters Patent No. 610,705, dated September 13, 1898.

Application filed December 8, 1894. Serial No. 531,293. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WELLS DICKEY, a citizen of the United States, residing in New York city, county, and State, have invented
5 and made certain new and useful Improvements in Brushes for Electrical Machines; and I hereby declare that the following is a full, clear, and exact description and specification of the same, reference being had to
10 the accompanying drawings, forming part of the same.

This invention relates to brushes for electrical machines wherein it is necessary to maintain electrical connection between moving and stationary parts.

The object of the invention is the production of a brush from woven-wire fabric or wire-gauze in a manner such that it will be homogeneous throughout its useful extent,
20 will be durable, and easily and cheaply constructed.

With these ends in view the invention consists in a brush for electrical machines composed of woven-wire fabric made up into the desired form and compacted by pressure.
25 Said fabric is preferably cut on the bias, so as to present only ends of wires to the wearing-surface or to the surface upon which the brush is to bear. This arrangement of the wires also
30 gives to the brush the desired flexibility. The layers of fabric constituting the brush may be formed by folding or rolling or otherwise massing the fabric into the form of brush desired.

The invention further consists in a brush for electrical machines made from woven-wire fabric and having the last or outside lap or fold provided with a bias or oblique end, whereby the point thereof will terminate at
40 one end of the brush and which may there be secured in place by soldering it to the mass of the brush, the oblique end acting as a binder. This act of soldering down the said end may be performed by dipping the end of the brush
45 into solder, whereby at the same time the several layers or folds of the brush may be soldered to one another at that end of the brush and the parts or folds of the brush thereby held securely together.

50 In the accompanying drawings, which form a part of this specification, Figure 1 represents

a portion of the woven-wire fabric used in making a brush. Fig. 2 represents in perspective the wire fabric being rolled upon a mandrel, and Fig. 3 shows in perspective a completed
55 brush.

The fabric for making a brush is, as above stated, preferably cut from the sheet or piece on the bias, as represented at A, the ends being left oblique, as at D and E, whereby they
60 terminate at the sides of the strip and whereby the outside layer or last strip of the fabric constituting a brush will have its end at one end of the brush, as shown at E, Fig. 3, so that
65 said end may be soldered down to the mass of the brush. The securing of this end in place may be most readily accomplished by dipping that end of the brush into solder. That act
also serves the useful purpose of securing together at that end all the layers or folds of
70 the brush. After the fabric has been folded, rolled, or otherwise massed into the form approximating the shape of the brush desired it is put into a mold or press and subjected to
sufficiently high pressure (by hydraulic or
75 other means) to thoroughly compact the fabric and produce the brush in the exact form required. If desired, a mandrel, as shown at B, Fig. 2, may be used in the folding or rolling
80 process, the mandrel being removed before the enrolled fabric is put into the press. It is then that the end where the free point of the fabric lies is dipped into molten solder. To fit the brush for use on a commutator or
ring, it remains simply to chamfer one end
85 thereof, substantially as indicated by the broken line at F in Fig. 3.

In a brush made in accordance with my invention the whole of the gauze is firmly compacted together into practically a solid mass,
90 and the heavy pressure employed gives the brush a compactness nearly equal to solid material without destroying its flexibility, and the edge of the oblique end is somewhat concealed and protected by being pressed into
95 the mass of the brush.

The line C in Fig. 3 indicates the spiral direction taken by the oblique side of the end E as said end is wrapped about the mass of the brush. This formation of this end of the
100 brush fabric and the manner of securing it in place effectually binds the layers or folds

of the brush together without having to resort to stitching or riveting or soldering down the side of the brush. Any of these latter modes of securement are objectionable, since
5 they destroy the homogeneity of the brush and render its operation defective.

As will be seen, a brush constructed as above set forth always presents the ends of wires to the wearing-surface, and the brush
10 may be consumed quite to the soldered end without meeting with any change in the extent or composition of the wearing-surface.

The method above outlined for the construction of a brush for electrical machines, and likewise the press or mold referred to for compacting the brush, are not claimed herein nor more fully described for the reason that they form no part of the invention of the article here claimed and constitute the subject-
20 matter of an application filed by me of even date herewith, bearing Serial No. 531,291.

I am aware that commutator-brushes have heretofore been made from woven-wire fabric, also that said brushes have been made from
25 a series of sheets of woven-wire fabric cut on the bias, so as to present only the end of wires to the commutator and laid one upon the other and soldered together at one end, and I therefore do not lay claim, broadly, to these
30 features.

The invention claimed is—

1. A brush for electrical machines consisting of successive layers of wire-gauze formed into the desired shape, and then compacted
35 by pressure.

2. A brush for electrical machines consisting of successive layers of wire-gauze in which the wires are disposed diagonally to the length of the brush, compacted together by pressure.

40 3. A brush for electrical machines, having an exterior fold or layer terminating in an oblique or diagonal end enwrapping it and terminating at one end of the brush and there soldered in place, substantially as set forth.

45 4. A blank for a brush for electrical machines,

consisting of a strip of woven-wire fabric cut on the bias, and of a width equal to the length of the brush to be formed and terminated in oblique ends having their points
50 at the sides of the strip.

5. A brush for electrical machines formed from diagonally-cut woven-wire fabric wound and compressed into the form desired and into a practically solid but flexible mass.

6. A woven-wire dynamo-brush, consisting of several laps of wire-gauze, overwound and pressed into suitable shape, and having its final or outer lap obliquely disposed so that the extreme point of the said lap only is secured at about the end of the brush, whereby
55 practically the entire brush may be utilized upon the commutator of a dynamo.

7. A wire-gauze blank for a dynamo-brush cut obliquely or bias to the parallel side of the strip or roll of wire mesh and having its
60 ends oblique to the parallel sides of the said blank and forming points therewith, and in which the individual wires of the blank are disposed obliquely to the length and breadth of said blank, all constructed and arranged
70 substantially as and for the purposes specified.

8. A dynamo-brush formed from a woven-wire blank, cut from a strip or roll of mesh and obliquely to its length and width, wound, compressed and molded into form substantially as specified.

9. A dynamo-brush formed from a strip or strips of woven-wire mesh, assembled and pressed into proper shape by sufficient force
80 to form a compact mass, and having its wires running obliquely to the length of the brush all constructed and arranged to operate, substantially as and for the purposes specified hereinbefore.

JOSEPH WELLS DICKEY.

Witnesses:

JAMES M. HICKS,
CHARLES W. LOW.

DISCLAIMER.

610,705.—*Joseph Wells Dickey*, New York, N. Y. BRUSH FOR ELECTRICAL MACHINES.

Patent dated September 13, 1898. Disclaimer filed May 13, 1913, by the assignee, *Charles E. Chapin*.

He hereby disclaims—

“Each and every brush which is claimed in any of claims 1, 2, 5, 8, or 9, except brushes in which the gauze is firmly compacted together into practically a solid mass and given a permanent set in the form desired.” [*Official Gazette*, May 27, 1913.]