(No Model.) 3 Sheets—Sheet 1.

A. B. SOAR & E. W. COLLIER.

WIRE GAUZE BRUSH FOR DYNAMOS OR MOTORS.

No. 556,870. Patented Mar. 24, 1896.

Fig. 1.

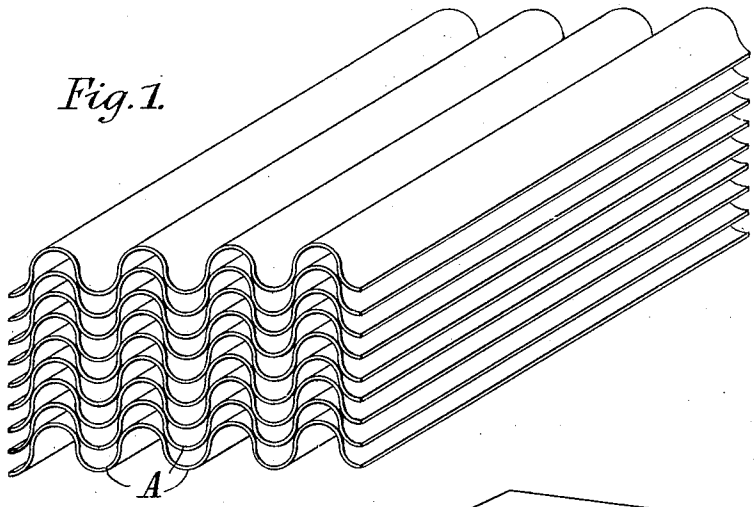


Fig. 2.

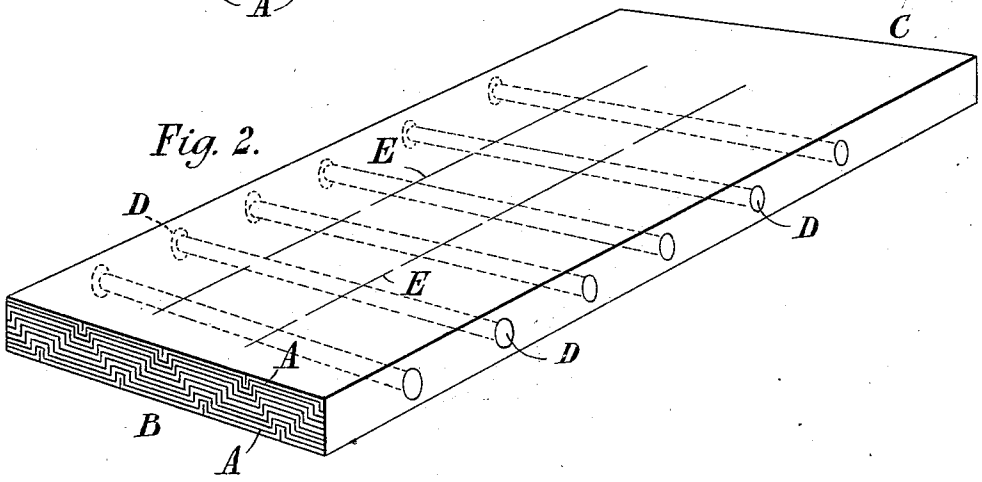
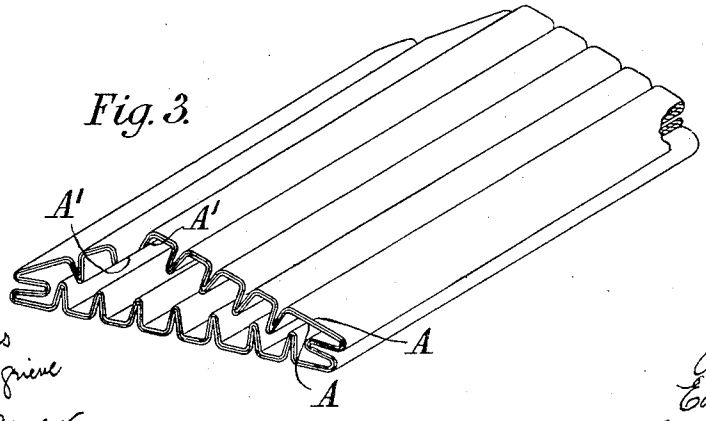


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

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Fig. 5.

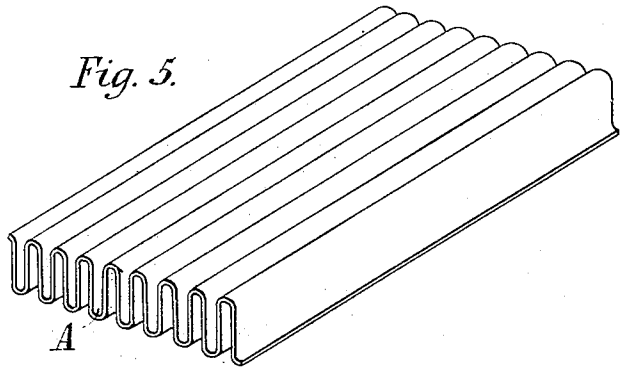

Fig. 6.

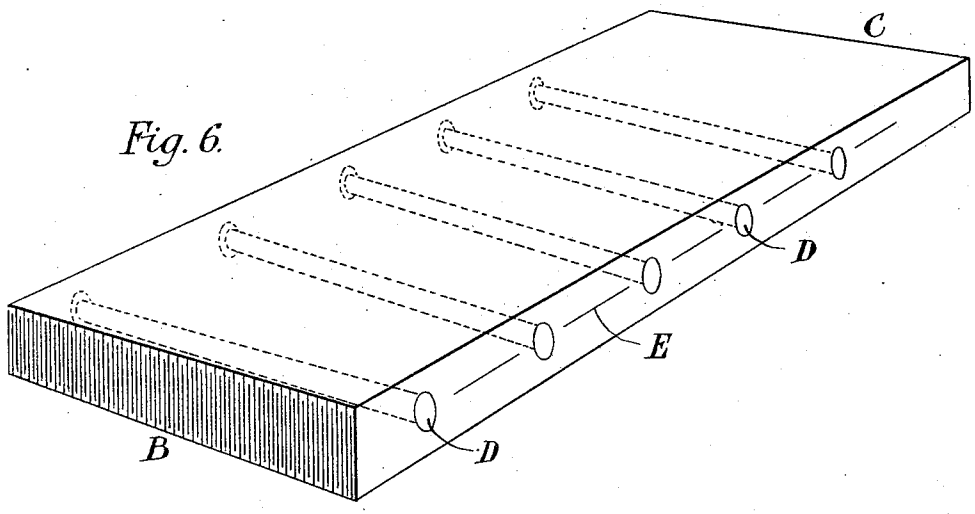

Fig. 4.

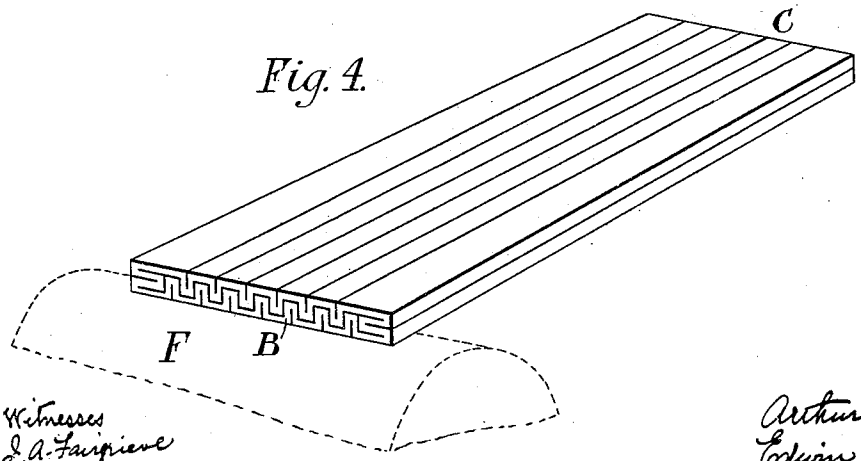

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Fig. 7.

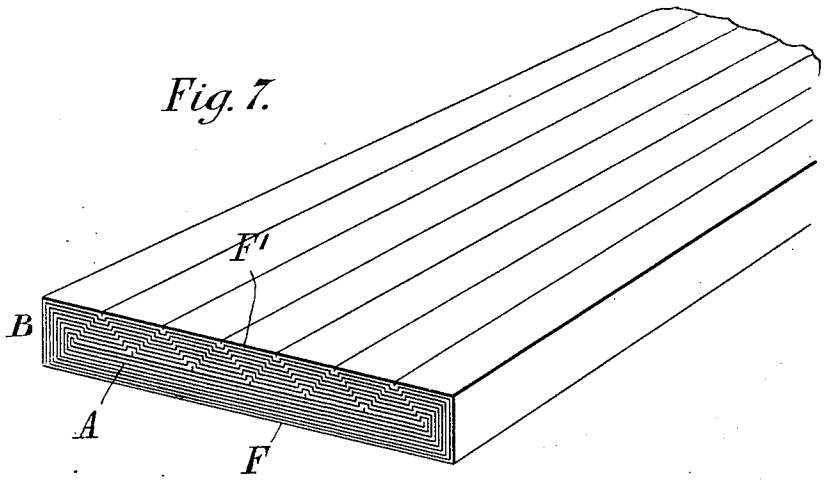
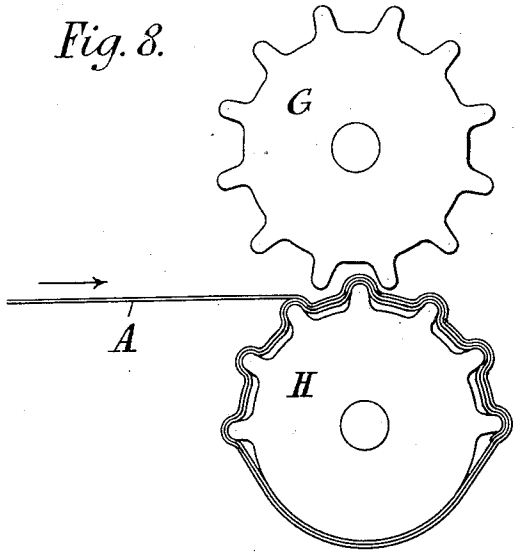


Fig. 8.



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UNITED STATES PATENT OFFICE.

ARTHUR BURGESS SOAR AND EDWIN WILLIAM COLLIER, OF LONDON, ENGLAND.

WIRE-GAUZE BRUSH FOR DYNAMOS OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 556,870, dated March 24, 1896.

Application filed December 7, 1895. Serial No. 571,429. (No model.) Patented in England April 27, 1895, No. 8,385.

To all whom it may concern:

Be it known that we, ARTHUR BURGESS SOAR and EDWIN WILLIAM COLLIER, subjects of the Queen of England, residing at London, England, have invented an Improved Wire-Gauze Brush for Dynamos or Motors, (for which we have obtained Letters Patent in England, No. 8,385, dated April 27, 1895,) of which the following is a specification.

This invention relates to an improved wire-gauze brush.

The ordinary wire-gauze dynamo-brush hitherto usually employed consists of a number of superimposed layers of gauze, either in separate pieces or constituted by a folded sheet, or by a sheet wound into tubular form and pressed into a flat strip. The end of such a brush is cut or filed obliquely, so that the ends of all the layers may make contact with the commutator. In a brush of this sort having, say, twenty layers the particular layer of gauze nearest to the commutator-axis has the support of the other nineteen layers, but the other layers, considered in succession, have a relatively-diminishing amount of support from their outer layers for that part of each which is in proximity to the commutator, and it is found that those portions of the layers curl apart and otherwise separate from each other and from contact with the commutator under the action of the latter, so as to cause sparking and necessitate frequent trimming.

The object of our invention is to prevent this defect.

According to our invention we construct electrical contact-brushes of wire fabric in such manner that they have folds or corrugations therein which lie in the direction of the length of the brush—that is to say, folds or corrugations so situated that each ridge and furrow presents its end at that part of the brush which is to be in contact with the commutator—that is to say, the corrugations are so constructed that they will bear edgewise on the contact.

We corrugate a layer of wire fabric by pressure or otherwise and superimpose such corrugated layers upon each other with the corrugations of the contiguous layers resting in each other and subject the series to heavy pressure in a mold to constitute a brush. The corrugations of the different layers interlock and are in frictional engagement, so that no layer can be loosed from its neighbor while in use. The layers can, if desired, be riveted or stitched together. Or we fold a sheet of wire fabric into contiguous folds and subject the folded sheet to pressure in a mold to form a flat bar or thick strip, the width of the folds approximately equaling the thickness of the bar or strip. In this instance the folds should preferably be riveted or stitched together or held in clips or otherwise prevented from opening out from each other. Or the corrugated or folded wire fabric may be produced by weaving the filaments thereof into corrugated form. A binding fabric may be incorporated with it to tie the corrugations or folds together.

The accompanying drawings illustrate by way of example the construction of brushes according to this invention. In the drawings the individual filaments of each layer of fabric are omitted for the sake of clearness, the layers being indicated as if they were of thin sheet metal.

Figure 1 is a perspective view of a series of superimposed corrugated layers of wire fabric such as are hereinbefore referred to prior to their compression. Fig. 2 is a similar view of a brush formed by the compression of the layers illustrated in Fig. 1. Fig. 3 is a perspective view, partly in section, of a sheet of wire fabric folded into several layers, the compound sheet being corrugated in readiness to be compressed to form a brush such as is shown in Fig. 4, which is a view in perspective of the completed brush. Fig. 5 is a view showing a sheet of wire fabric folded into contiguous folds lengthwise of the brush, as aforesaid, prior to being compressed. Fig. 6 is a similar view of the sheet of fabric of Fig. 5 after compression. Fig. 7 is a view in perspective of another form of the completed brush, the difference being that at the left-hand side thereof the superposed layers of wire-gauze are flat for a short distance instead of being corrugated. Fig. 8 represents in de-

tail suitable corrugated rollers employed to effect the corrugations in the several layers of fabric or wire-gauze.

Like letters indicate like parts throughout the drawings.

A are the individual layers of wire fabric.

B or C is the end of the brush which is to be presented to the commutators.

D are rivets and E is wire-stitching to preserve the compactness of the completed brush. These, as aforesaid, need not always be employed.

The compound sheet of fabric shown in Figs. 3 and 4 is so folded that those edges A′ of the sheets which are parallel to the folds or compressed corrugations do not appear at the surface of the brush. The edges of this brush have each a compressed fold therein additional to those of the other surfaces.

In Fig. 8, G represents a roller corrugated all around or provided at suitable distances apart with longitudinal ribs, as shown. H represents a roller also provided with similar longitudinal ribs on a portion of its periphery or circumference only, these said rollers G and H representing one means employed for corrugating the layers of fabric, although it is evident that other means may be resorted to for the purpose.

In any of the operations or constructions hereinbefore referred to we may substitute for a single layer of wire fabric a compound layer produced by suitably superimposing (as by folding or otherwise) two or more layers. Such a compound layer is shown in Fig. 3.

In dotted lines in Fig. 4 we have, by way of example, shown the contact F upon which the brush bears to be in the form of an ordinary cylindrical commutator. The brush, however, is equally applicable to contacts or commutators of other form.

We claim—

1. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze, the said layers being compressed together to constitute practically a solid brush, substantially as shown and for the purpose described.

2. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material, the same being compressed to constitute practically a solid brush, and the free edges thereof being confined beneath the surface, substantially as shown and for the purpose described.

3. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material, the said layers being compressed together to constitute practically a solid brush, and the individual filaments of said layers interlocking with each other, substantially as shown and for the purpose described.

4. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material pressed into compact form with the sides of the corrugations lying close to each other, substantially as shown and for the purpose described.

5. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material lying directly in contact with each other and pressed together, substantially as shown and for the purpose described.

6. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material pressed into compact form with the corrugations lying close to each other, and means for holding the layers together, substantially as shown and for the purpose described.

7. An electrical contact or commutator brush comprising superposed layers of corrugated wire-gauze material pressed into compact form with the sides of the corrugations lying close to each other, in combination with rivets passing through the sides of the corrugations, substantially as shown and for the purpose described.

In testimony whereof we have hereunto set our hands in the presence of the two subscribing witnesses.

ARTHUR BURGESS SOAR.
EDWIN WILLIAM COLLIER.

Witnesses:
C. ROSE,
JOSEPH LAKE.