No. 846,003. PATENTED MAR. 5, 1907.

T. BRANTLEY.

BRUSH.

APPLICATION FILED OCT. 11, 1906.

Fig. 1.

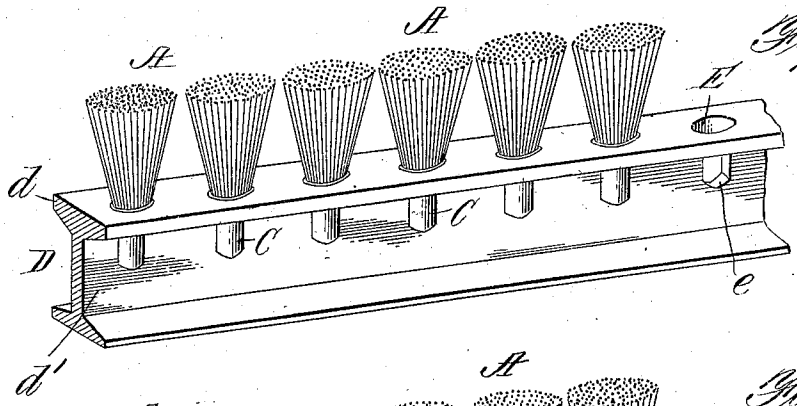


Fig. 2.

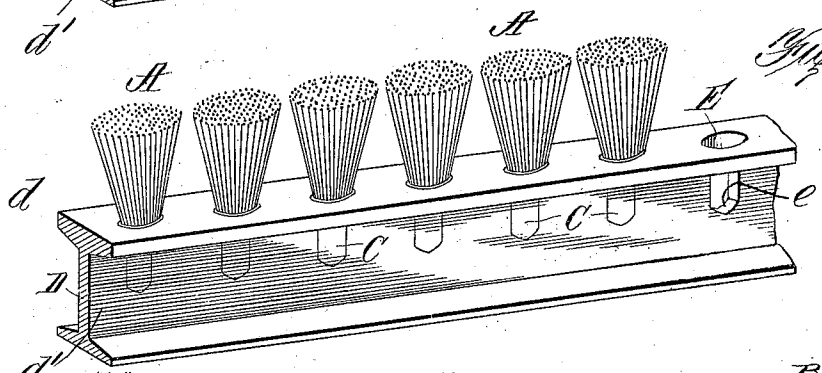


Fig. 3.

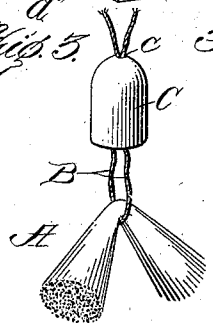


Fig. 4.

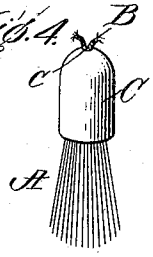


Fig. 5.

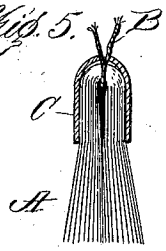


Fig. 6.

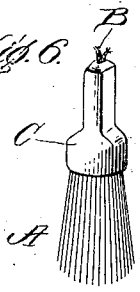


Fig. 7.



Fig. 8.

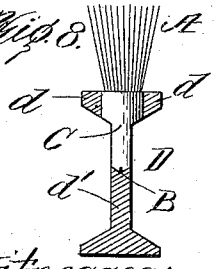


Fig. 9.

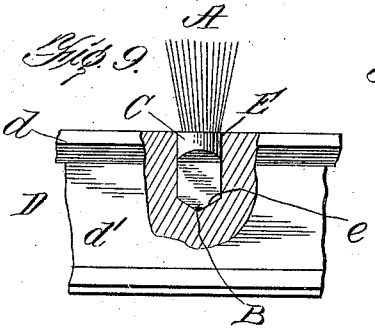
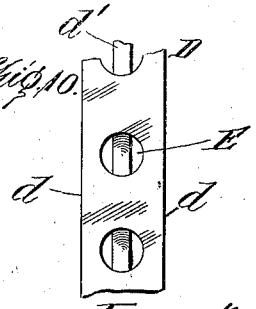


Fig. 10.



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BRUSH.

No. 846,003. Specification of Letters Patent. Patented March 5, 1907.

Application filed October 11, 1906. Serial No. 338,404.

To all whom it may concern:

Be it known that I, THOMAS BRANTLEY, a citizen of the United States, residing in Albany, county of Dougherty, and State of Georgia, have invented certain new and useful Improvements in Brushes, of which the following is a specification.

The object of my invention is to provide improved means for attaching bristles or tufts of other similar material to a brush frame, bar, or block.

My invention is especially applicable to the construction of cotton-gin brushes, but is not limited thereto.

In Letters Patent of the United States No. 723,579, of March 24, 1903, I have shown an improvement in brushes in which each tuft of the brush is formed by drawing a bunch of bristles into a ferrule by means of a cord and then applying glue or similar material to cement the tuft to the ferrule. The ferrule thus formed was placed in a notch or recess in the edge of the brush-bar and then the ferrule was compressed to unite it to the bar, the ferrule being formed with flanges to overlap the walls of the recess. I have found that it is not necessary to use glue or cement, and I have changed the form of the ferrule and employed a brush-bar of improved construction to receive the ferrules carrying the bristles and to hold them in such manner that they may be readily compressed and firmly united to the bar.

In the accompanying drawings, Figure 1 is a perspective view of my improved brush-bar with a series of tufts therein, the ferrules being uncompressed. Fig. 2 is a similar view showing the appearance of the brush after the ferrules have been compressed. Fig. 3 is a perspective view showing the manner of drawing a tuft of bristles into the ferrule. Fig. 4 shows the tuft drawn into the ferrule with the ends of the drawing-in cord cut close to the end of the ferrule. Fig. 5 shows a vertical central section through the tuft and ferrule illustrated in Fig. 4. Fig. 6 is a side elevation showing the appearance of the ferrule after it is compressed. Fig. 7 is an end view of the ferrule, showing how the cord is gripped after the ferrule is compressed. Fig. 8 shows a transverse section through a brush-bar carrying a tuft of bristles. Fig. 9 shows a side elevation of a brush-bar with parts broken away to show how the ferrule carrying bristles is connected with the bar. Fig. 10 is a top view of a portion of a brush-bar.

I preferably employ a brush-bar which is I-beam shape in cross-section; but this precise form of bar is not essential. I prefer, however, to employ a bar which has flanges on opposite sides of the body portion, so that when holes are drilled for the reception of the tufts the walls of the holes in the flanged portion may be continuous, as shown in Fig. 10, while the holes in the body portion or web of the bar are open on opposite sides. Each tuft of bristles is preferably formed by taking a bunch of bristles A and passing a cord B around it in the manner indicated in Fig. 3. The cord is then passed through a ferrule C, made of thin, soft, or malleable metal, which is tapered or conical at its end and formed with a round hole *c*, through which the cord passes. The cord is then pulled up through the hole, so as to draw the tuft of bristles into the ferrule in the manner indicated in Fig. 4, and then the ends of the cord are cut off, so that only short ends project from the conical end of the ferrule. I find that the bristles can be drawn tightly into the ferrule and held there without the use of cement. While I prefer to allow the ends of the cord to project in the manner shown, so as to be gripped when the ferrule is compressed, this is not absolutely essential, as I find that the bristles are held quite securely by the mere compression of the ferrule. The brush-bar D is formed with side flanges *d*, projecting laterally from the central web *d'*. The web is somewhat thinner or less in width than the diameter of the ferrule. Holes E are drilled in the flanges and extended into the body or web *d'* of the bar. In this way holes are formed in the flanged portion of the bar which have continuous circular walls, while the holes in the body portion of the bar are open on opposite sides. The drill naturally forms a conical end *e*, which receives the conical end of the ferrule.

The tufts and ferrules in the forms shown in Figs. 4 and 5 are dropped into the holes E in the manner illustrated in Fig. 1, in which condition the ferrules will project sidewise from the body portion of the bar to some extent. After the ferrules and bristles are thus assembled in the bar compression may be applied, which will flatten down the ferrules in the manner indicated in Fig. 6 and also in Fig. 2, causing the ferrules to fill out the

holes in the body portion *d'* of the bar and to produce a firm connection between the ferrules and the bar, while the faces of the ferrules are flattened down smooth and flush with the sides of the bar, so that there are no projecting flanges or edges which would tend to catch lint. So neatly and tightly can this connection be made that the compression alone may be depended on to hold the ferrules and bristles in place; but for additional security I preferably allow the ends of the cord B to project through the holes *c*, and when the compression is applied the walls of the holes *c* are flattened in the manner indicated in Fig. 7, and these walls will grip the cords, and thus prevent the tufts from separating from the ferrules. Should any particular tuft of bristles become injured or worn more than the others, it can be removed without disturbing the other tufts. Of course sufficient force may be applied to pull the tuft and ferrule out of the bar; but I have found that centrifugal force and other forces incident to the use of the brush are not sufficient to separate the ferrules from the bar or the tufts from the ferrules.

I claim as my invention—

1. The combination of a brush-bar having a body portion or web formed with a series of receiving-holes open at the side and a flanged portion formed with holes closed at the side and communicating with the holes in the body portion, and tufts of bristles closely fitting the walls of said holes and secured therein.

2. The combination of a brush-bar having a body portion or web formed with a series of tuft-receiving holes open at the side and a flanged portion formed with holes closed at the side and communicating with the holes in the body portion and tufts of bristles having ferrules fitting said holes in the web and flanged portions and secured therein.

3. The combination of a brush-bar having a body portion or web formed with tuft-receiving holes open at the side and a flanged portion formed with holes closed at the side and communicating with the holes in the body portion, ferrules containing tufts and fitting said holes which are compressed and flattened at the side.

4. The combination of a brush-bar, a compressed ferrule having a conical end provided with a tuft of bristles in the ferrule and a hole at the conical end, a cord engaging the tuft and passing through the hole and which is gripped by the walls of the hole, substantially as described.

5. The combination of a brush-bar having a body portion or web formed with tuft-receiving holes open at the side and a flanged portion formed with holes closed at the side and which communicate with the holes in the body portion, ferrules fitting in said holes in the flanged and body portion of the bar and which are flattened and compressed to produce a smooth finish flush with the sides of the body portion of the bar and to cause the ferrule to fit tightly the walls of the holes in the bar, and tufts of bristles held by the ferrules.

In testimony whereof I have hereunto subscribed my name.

THOMAS BRANTLEY.

Witnesses:

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N. B. DEHON.