(No Model.)

J. C. BONNER.

BRUSH.

No. 421,812. Patented Feb. 18, 1890.

Fig. 1.

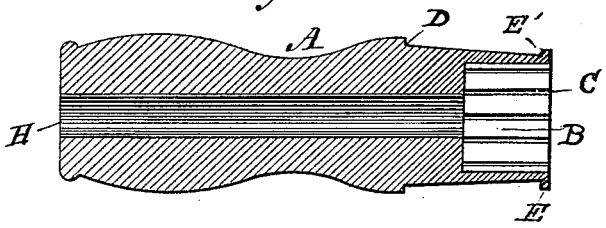


Fig. 5.

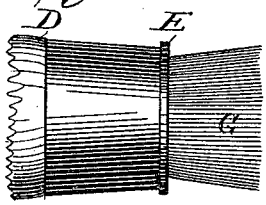


Fig. 2.

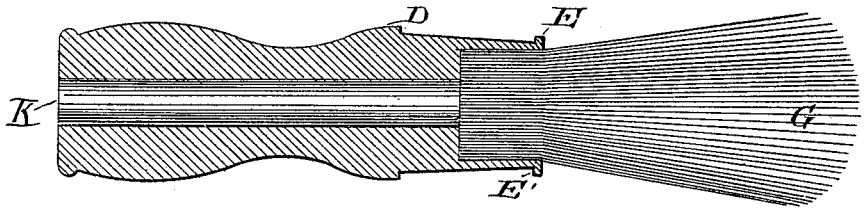


Fig. 3.

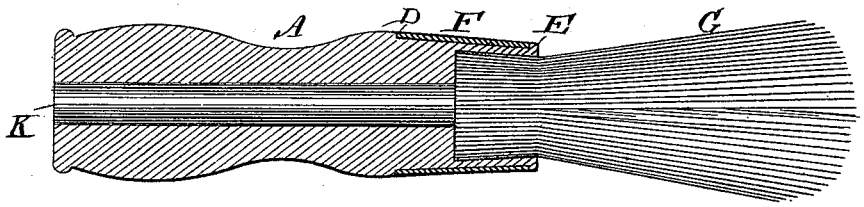
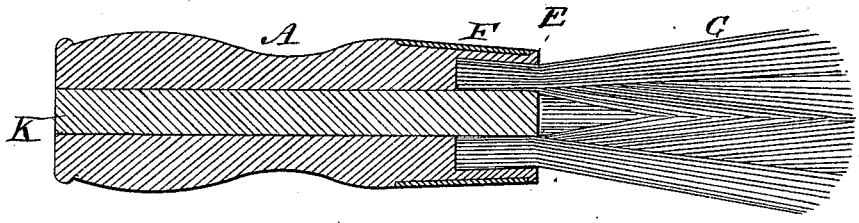


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH C. BONNER, OF TOLEDO, OHIO, ASSIGNOR OF ONE-HALF TO JOHN AMES, JR., OF SAME PLACE.

BRUSH.

SPECIFICATION forming part of Letters Patent No. 421,812, dated February 18, 1890.

Application filed August 14, 1889. Serial No. 320,667. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. BONNER, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Brushes, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce a firm and durable brush of superior quality which may be cheaply made.

My invention consists in the improvements I will describe fully in detail, and then succinctly define in my claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a central longitudinal section of a brush-handle having a socket for the reception of a bristle knot. Fig. 2 is a similar section of the same with the bristles set in place in the socket. Fig. 3 is another similar section of the same, showing in section a ferrule applied around the portion of the handle forming the socket and containing the bristles. Fig. 4 is another section similar to Fig. 3, except that it shows a peg driven down through the handle into the bristle ends within the socket. Fig. 5 shows a part of a finished brush in side elevation.

Referring to the letters upon the drawings, A indicates a brush-handle turned into ordinary shape, with a bristle-socket B in one end, which is preferably sawed or slitted at C, as shown, leaving spaces in the walls of the socket, so that it can be compressed into funnel shape.

D indicates an annular shoulder upon the handle.

E indicates an annular projection around the bristle ends of the handle, forming an annular shoulder E′, similar to that above mentioned. The annular groove between these shoulders is designed to receive a tapered ferrule F, and it is formed by turning.

G indicates an ordinary bunch of bristles, forming the brush such as usually made, and knotted or compacted in any ordinary way at the upper end.

To complete my brush, after having formed the handle and bunch of bristles, as just described, I insert the bristle knot in the socket of the handle, then apply the rigid tapered ferrule F in the annular groove of the handle between the shoulders D and E′. I may employ either one of two methods of applying this tapered ferrule. First, I may force a tapered ferrule of proper size over the bristles and over the annular projection E, because the socket-walls being preferably slitted at C, as described, and the knot of bristles being somewhat yielding it is practicable to force the tapered ferrule to place between the shoulders D and E′. Second, in order to get a tapered ferrule in place, I may apply an ordinary cylindrical ferrule or piece of tubing around the brush-handle below the shoulder D, and then by heavy pressure—as, for example, clamping in suitable dies by means of a hydraulic press—I may compress the lower end of the ferrule and force the tube into funnel shape, so that it will fit the groove between the shoulders D and E′ tightly.

By applying a tapered ferrule in either of the ways described I can make a very durable brush without using wire or twine, that would loosen or unwind, soften, or gum up, and without having any metal surface exposed to corrode or rust. The bristles are only in contact with wood, and will adhere firmly, which they would not do if they came in contact with metal. The ferrule being forced into the annular groove around the handle, the walls of the socket will spring outward and the annular projection E will always lock the ferrule in place, so that it can never slip off, while it will firmly fasten the bristle knot in place in the socket, so that the bristles will not be liable to drop or pull out.

In order to add greater security and durability to the brush, I provide a hole H longitudinally through the brush-handle and drive into it and down into the bristle knot a pin K, so as to expand the bristle knot within the ferrule and hold it with great firmness to its place. In some cases I may dispense with the pin driven through the handle; but it forms a convenient and important strengthening feature of my brush and is much more effective than a short pin driven merely into the bristle knot within the ferrule, because it serves as a bond when applied through the

handle to hold the bristles and handle together. It can be glued or otherwise firmly secured in the handle after being driven into the brush-knot and causing its upper end to flare so much that it cannot slip out of the grasp of the tapered ferrule and socket-walls of the handle. The taper of the bristle-socket walls can of course be formed by compression without slitting or kerfing; but it can be formed easier after slitting; hence that is preferable.

What I claim is—

1. In a brush, the combination of a handle provided with a tapering bristle-socket and having the annular projection E and shoulder D, so as to leave an annular groove around the outside of the lower end of the bristle-socket, with a rigid tapered ferrule, substantially as set forth.

2. In a brush, the combination, with the handle having a bristle-socket with tapering walls and rigid tapering ferrule, the bristle knot, and a pin driven from above into a hole extending longitudinally through the handle and entering the bristle knot and co-operating with the tapered ferrule to secure the bristles in place, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

JOSEPH C. BONNER.

Witnesses:

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