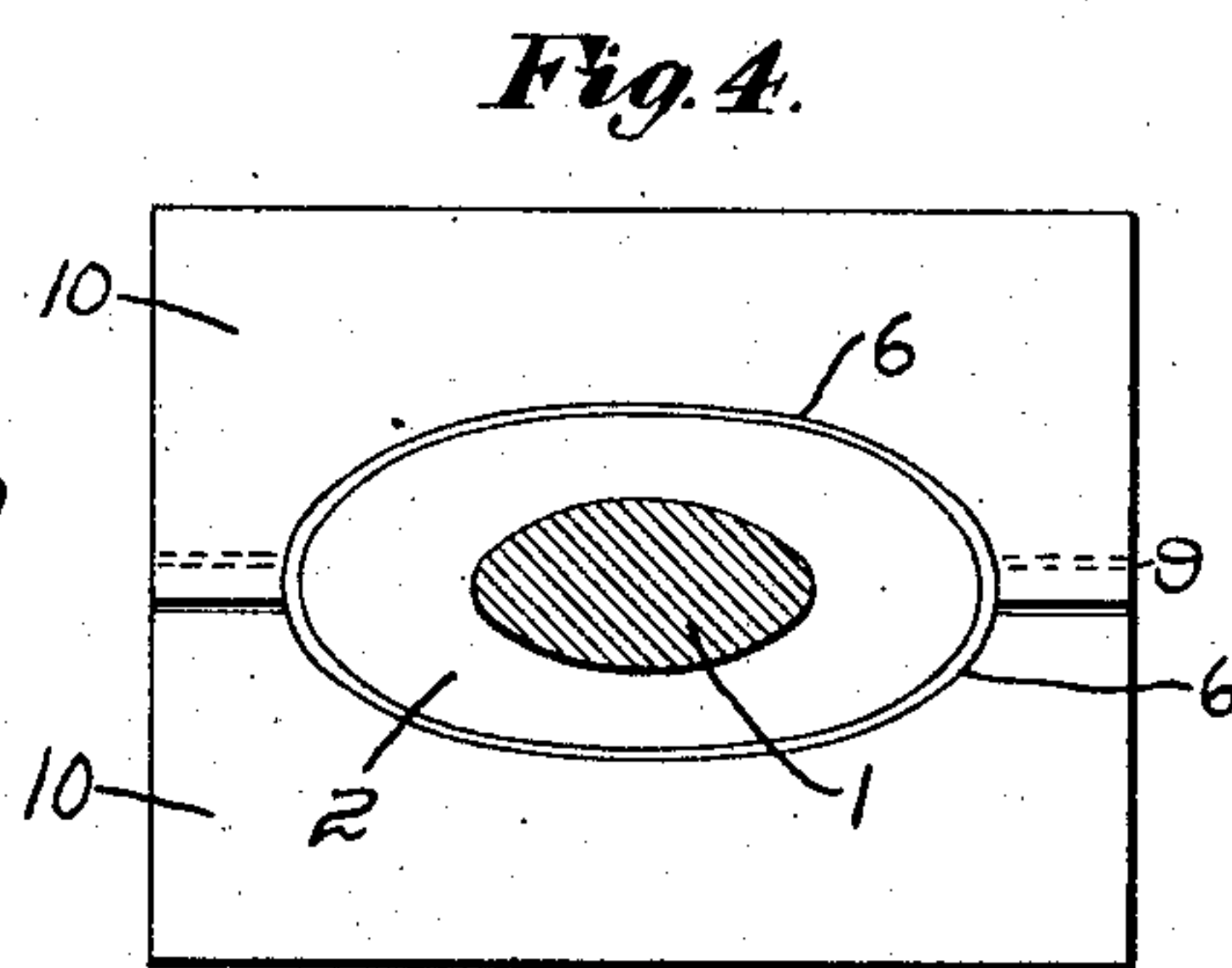
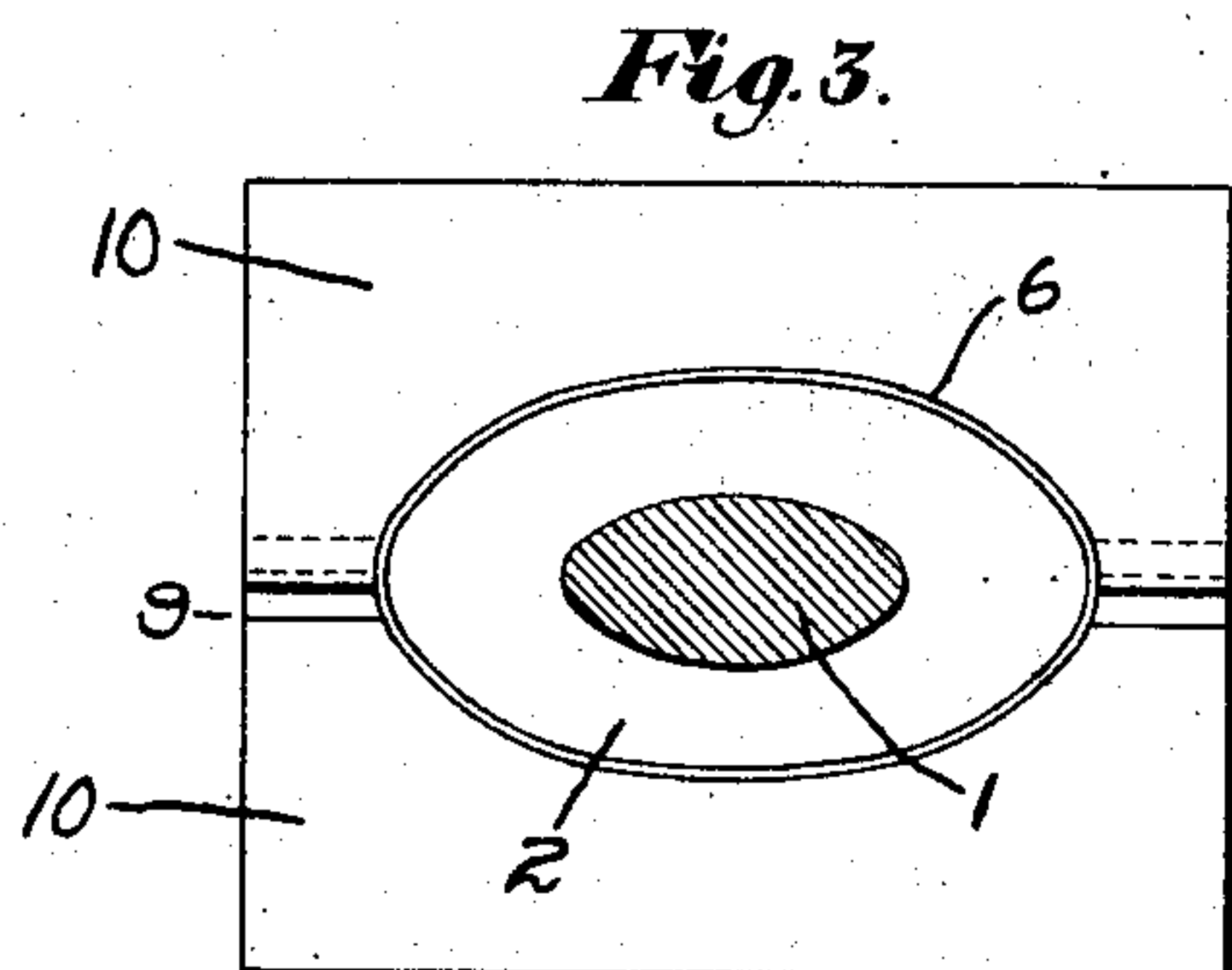
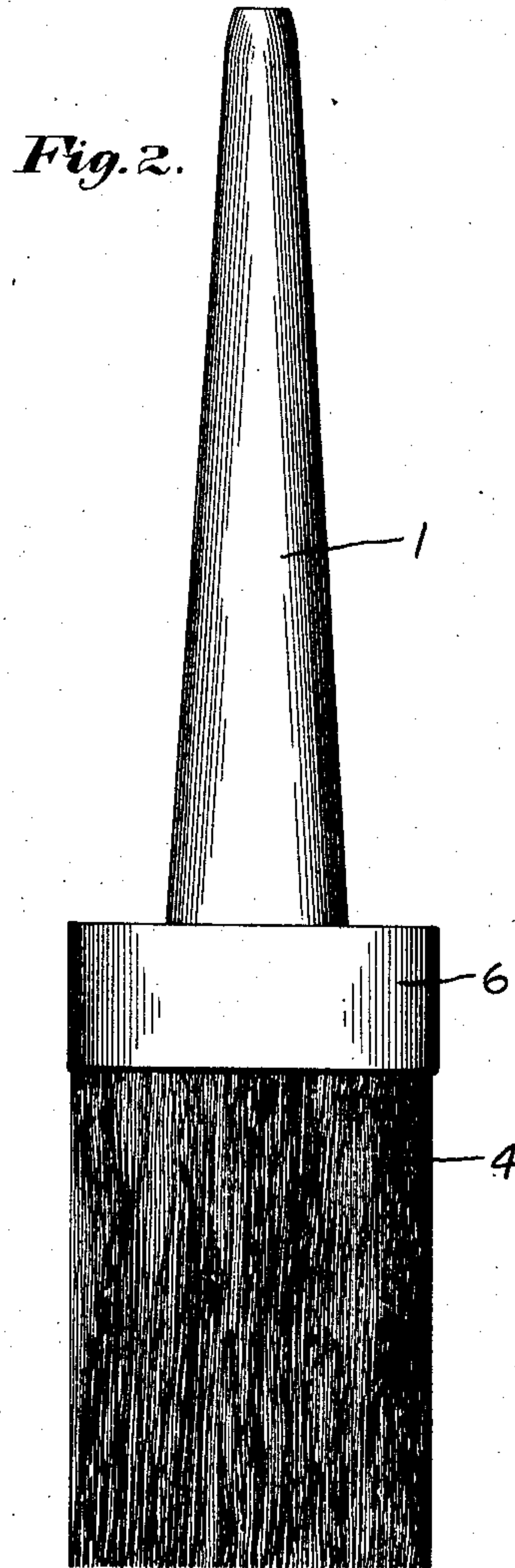
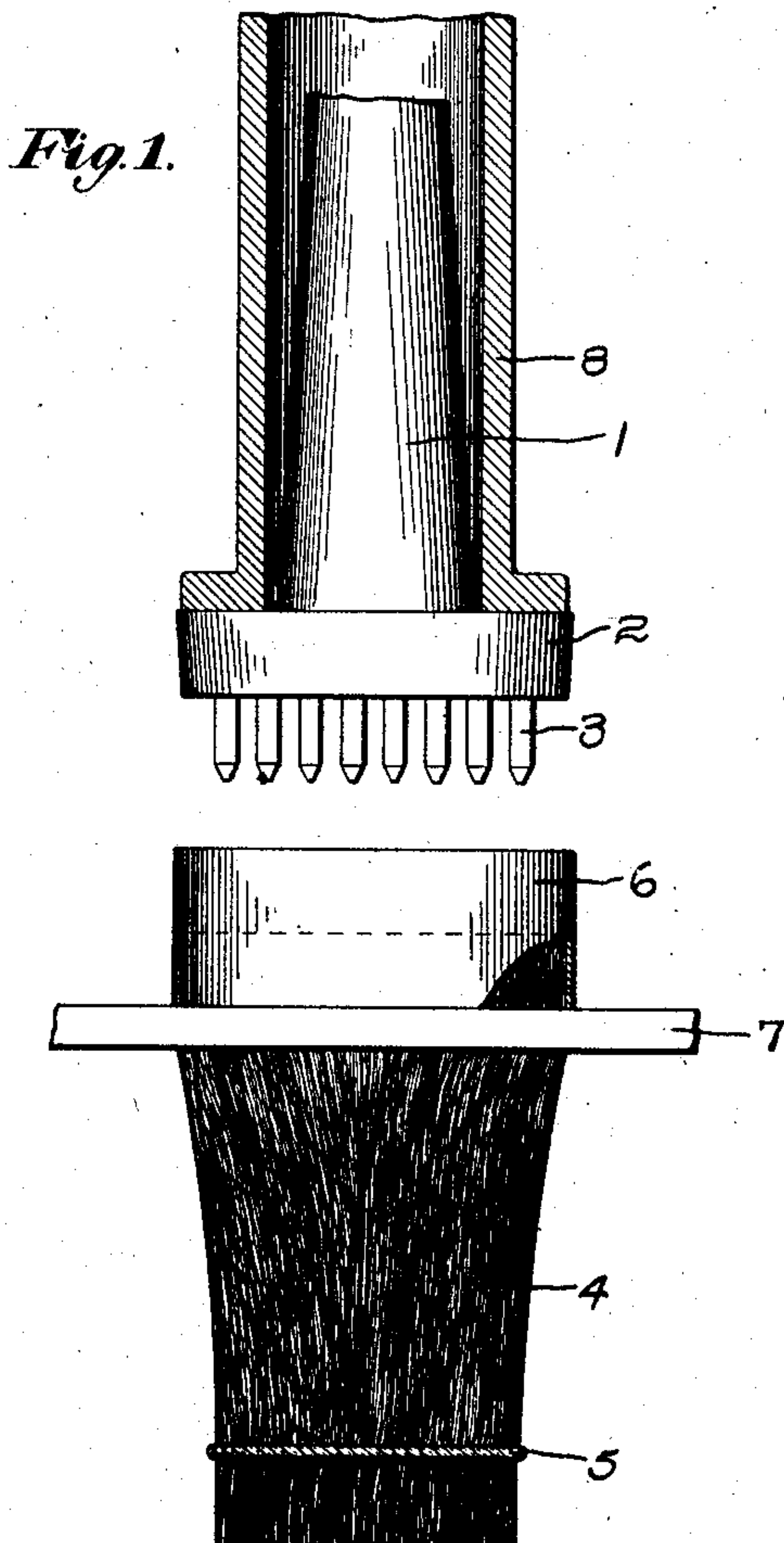


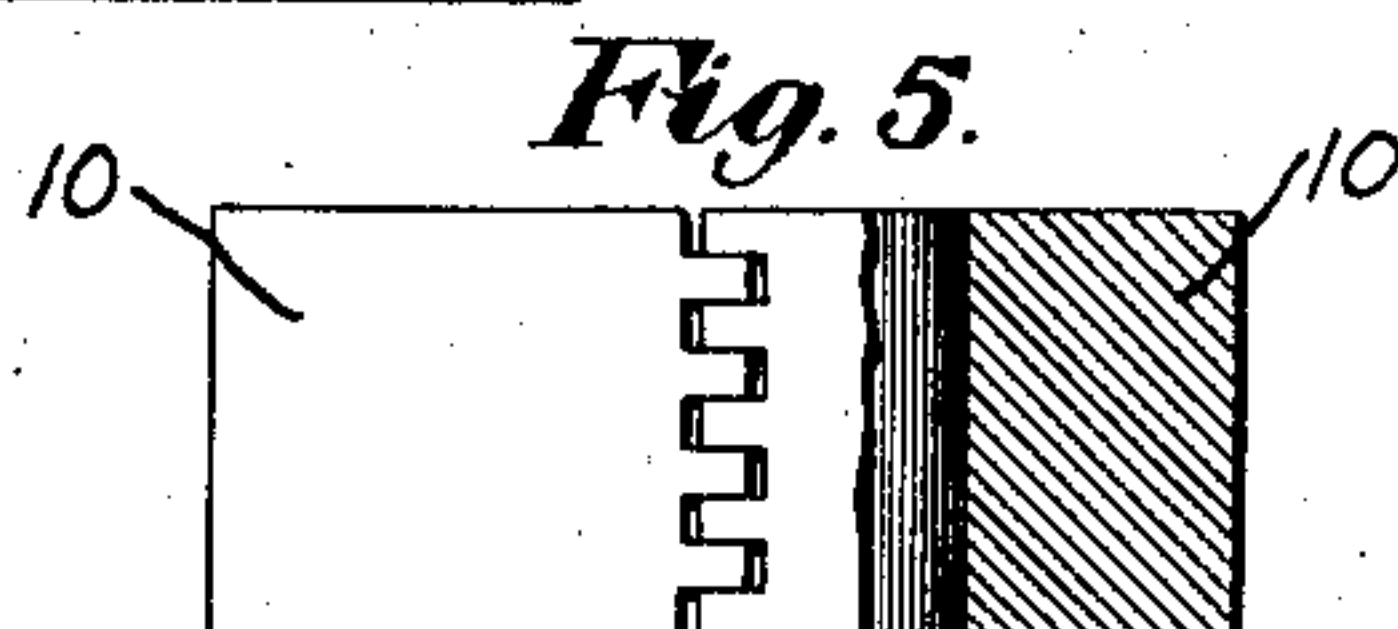
G. A. VICKERY.  
METHOD OF MAKING BRUSHES.  
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997,346.

Patented July 11, 1911.



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# UNITED STATES PATENT OFFICE.

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## METHOD OF MAKING BRUSHES.

997,346.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed March 23, 1910. Serial No. 551,168.

*To all whom it may concern:*

Be it known that I, GEORGE A. VICKERY, a citizen of the United States, and a resident of Medford, in the county of Middlesex, State of Massachusetts, have invented an Improvement in Methods of Making Brushes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an improvement in brushes and method of making the same, and has reference particularly to means for securing the bristles or substitutes therefor to the handle.

My invention relates particularly to brushes wherein the bristles are secured to the handle by means of a metallic band compressed about and upon both the bristle butts and the handle butt. Prior to my invention it has been common to bunch the bristles with their butt ends opposite the lower face of the handle butt, place a ferrule of ductile metal about said assembled bristles and handle butt and then compress the ferrule from all sides about the contained bristles and handle butt by driving the ferrule through a tapering die. This method tends to flare the bristles and is otherwise objectionable.

My present invention overcomes this objection as well as those of other methods now in use.

Of the drawings illustrating the preferred method of practicing my invention, Figure 1 shows the handle butt, the ferrule and the bunched bristles before and in position for assembling; Fig. 2, the same elements assembled; Fig. 3, a plan view in section taken through the handle of the assembled brush in position in the die for contracting the ferrule; Fig. 4, a similar view after the ferrule has been contracted; and Fig. 5, an end view of the die, partly broken out.

The brush shown in the drawings is of the flat, oval type, and comprises the handle 1 and its butt 2, provided, preferably, in turn, with the usual bristle holding pegs 3.

Having assembled a bunch of bristles 4, in the usual manner, and loosely tied about the flag ends of same a cord 5, a ferrule 6 of suitable size and form is slipped over the bunch, from the flag end thereof, followed

by a plate 7 of suitable material, as metal, and containing an aperture corresponding approximately in outline to that of the ferrule but somewhat narrower than the ferrule so as to support the latter while the butt 2 is driven therein. The bunch of bristles is then locked in an ordinary vise, butt end up, with the plate 7 resting on the jaws of said vise, and supporting the ferrule with the ends of the bristles within the same extending above the top of the plate 7 as far as it is intended they shall extend within the ferrule among the pegs. The handle butt 2 is then positioned directly over or within the ferrule and butt end of the bunch of bristles, and is driven into the bunch of butt ends, the pegs 3 entering among the bristles until the upper face of the butt is substantially even with the upper edge of the ferrule, the ferrule being of such dimensions as will fit the butt snugly, when the latter is driven into it. If desired, cement may be applied to the butt ends of the bristles before the pegs are driven therein to more securely anchor the bristles thereto. Any convenient means may be used for driving the butt into the ferrule, as for instance, a driving tube 8, see Fig. 1, positioned over the handle 1, and to the upper end of which the necessary pressure may be applied as by an ordinary mallet. After the handle and butt have been driven into the ferrule as described the brush is removed from the plate 7 and vise, assembled as shown in Fig. 2. The next step is to contract the ferrule 6 upon the butt 2 and bristles to firmly secure the whole for use.

The contraction of the butt and ferrule is performed by applying pressure laterally to said ferrule, as in a die 9 of suitable size and configuration. The die I prefer to employ is composed of two like members, 10, having dovetailed engagement with each other at their ends, see Fig. 5, to permit relative or joint movement thereof. The apertures in said members are, in this case, oval in form, and the length of said die is substantially equal to the length of the ferrule 6, but is preferably considerably less in width, to permit the two halves of the die to be closed upon and to contract the ferrule laterally but not longitudinally.

The ferrule 6 and its contained butt 2 and



bristles having been positioned between the two members 10, 10, of the die 9, said members, owing to their dovetailed engagement as described, may be closed upon said ferrule by the application thereto in any convenient manner of the necessary pressure, until the bunch of bristle ends, butt 2 and ferrule 6 are contracted substantially as shown in Fig. 4.

It will be evident that, when the pressure is applied to the two sides of the die there will be a tendency on the part of the butt 2 and ferrule 6 to expand lengthwise, but as the length of the die is substantially that of the ferrule such lengthwise expansion cannot take place. Therefore, the effect of this lateral compression of the ferrule is to compress the handle butt laterally, but without increasing its length, the material, usually wood, of which it is made, permitting such compression. The ferrule, however, is endless and of metal, hence when compressed laterally the resistance offered to the tendency of the ferrule to lengthen, results in an actual compacting of the metal at and in the vicinity of the ends of the dies and which in effect reduces the peripheral dimension of the ferrule. The side portions of the ferrule are closed bodily and without compacting, one toward the other, upon the handle butt and the bristles to grip the same. The metal thus forced toward the ends of the die is compacted thereat so that when the brush is released the compacted end portions of the ferrule serve to prevent the closed in sides from springing or being forced outward again, holding the bristles firmly gripped and both gripped to the handle butt.

The prior method heretofore referred to of forcing the ferrule and brush through the die, mutilates to a great degree the surface of the ferrule, necessitating refinishing of the outer face thereof to render it commercially attractive; and second, in driving the ferrule and brush through the die the lower edge of the ferrule emerges first from the die and expands more or less as the upper portion of the ferrule reaches and is forced through the small end of the die thus loosening the grip of the lower edge of the ferrule upon the gripped ends of the bristles and permitting them to spread and also to loosen when the brush is used; third, the previous disposition of the bristles is destroyed and the desired symmetrical form of the brush is difficult if not impossible to obtain. This disarrangement of the bristles is evidently due to the compression of the bristles from all sides made necessary by the driving of the ferrule through the closed die.

By my improved method of securing the ferrule to the butt I am able to overcome the disadvantages of the present methods and

my method also possesses distinct advantages of its own.

By my improved method the pressure is applied to the ferrule and bristles only at the sides, consequently only the bristles at the sides of the brush are forced to readjust themselves under pressure, the bristles at the ends remaining substantially undisturbed, the original form of the brush and general disposition of the bristles are not disturbed. The result is a brush wherein the bristles lie more nearly parallel, and one of more symmetrical outline than can be made by any other process, so far as I am aware. The ferrule being free from mutilation after being forced through the die, it is not necessary to go to the expense and delay of refinishing the same. The ferrule may even be nickel-plated before being contracted.

I have shown herein a convenient embodiment of my invention but it will, doubtless, be possible to vary the details thereof without departing from the spirit and scope of the invention.

#### Claims—

1. The improvement in the art of making brushes which consists in assembling a handle butt, a bunch of bristles with the butt ends thereof opposed to the lower face of said butt and a ferrule about said butt and butt ends of said bristles, and contracting said ferrule substantially throughout its height about said bristles by the application of pressure to portions only of said ferrule.

2. The improvement in the art of making brushes which consists in assembling a handle butt, a bunch of bristles with the butt ends thereof opposed to the lower face of said butt and a ferrule about said butt and butt ends of said bristles, and contracting said ferrule about said bristles and handle butt by the application of pressure laterally to vertical sections only of said ferrule and said handle butt after the latter is driven into said ferrule.

3. The improvement in the art of making brushes which consists in assembling a handle butt, a bunch of bristles with the butt ends thereof opposed to the lower face of said butt and a ferrule about said butt and butt ends of said bristles, and reducing the width of said ferrule substantially throughout its height without changing the length thereof.

4. The improvement in the art of making brushes which consists in assembling a handle butt, a bunch of bristles with the butt ends thereof opposed to the lower face of said butt and a ferrule about said butt and butt ends of said bristles, and compacting the metal of said ferrule at its ends only.

5. The improvement in the art of making brushes which consists in assembling a handle butt, a bunch of bristles with the butt

ends thereof opposed to the lower face of  
said butt and a ferrule about said butt and  
butt ends of said bristles, and modifying  
the form of said ferrule at certain points  
5 thereof only, while compacting the metal at  
other points.

In testimony whereof, I have signed my

name to this specification, in the presence of  
two subscribing witnesses.

GEORGE A. VICKERY.

Witnesses:

IRVING U. TOWNSEND,  
EVERETT S. EMERY.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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