

J. J. POTTER.
MANUFACTURE OF BRUSHES.
APPLICATION FILED JAN. 12, 1909.

928,401.

Patented July 20, 1909.

Fig. 1.

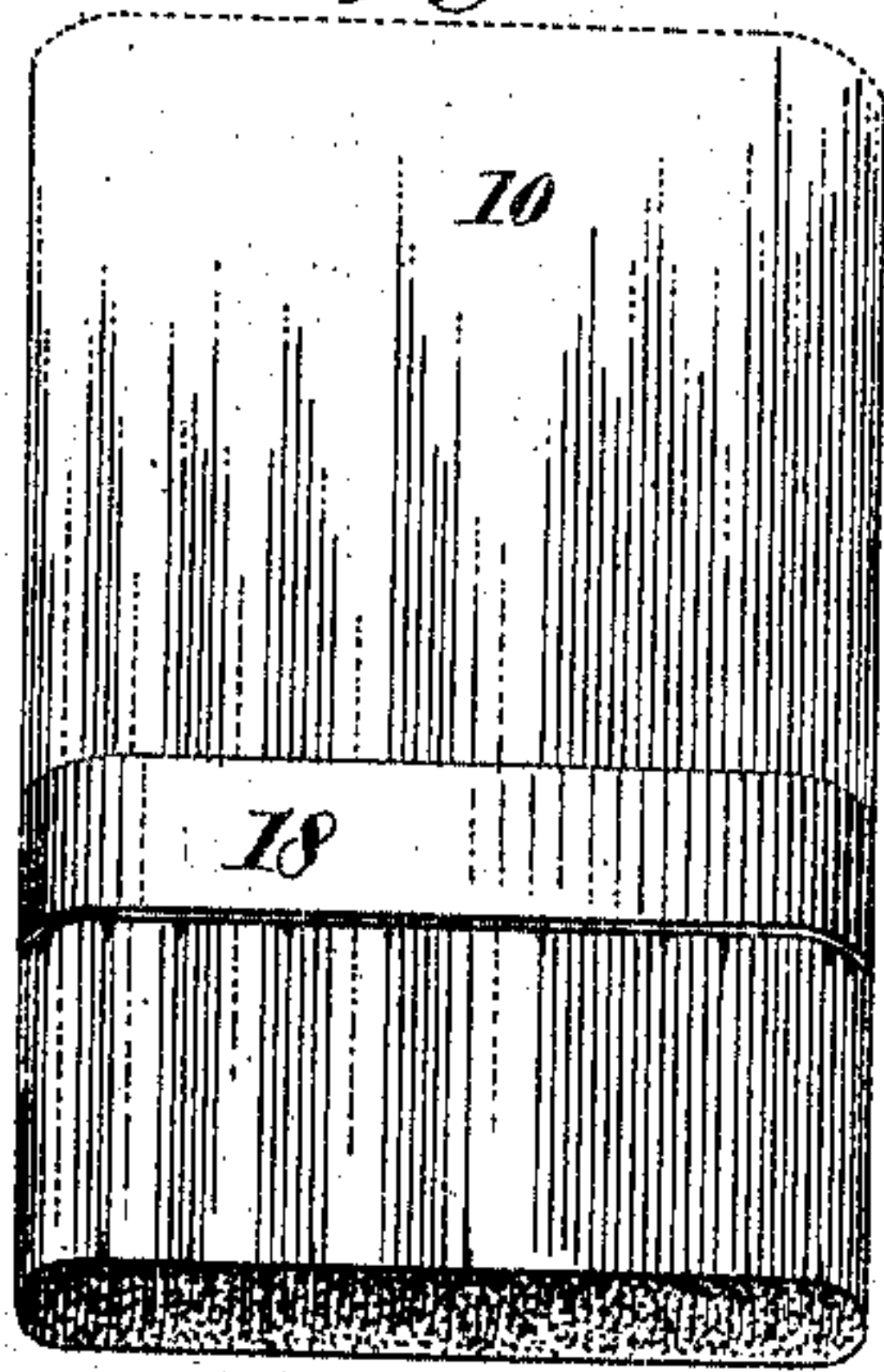


Fig. 2.

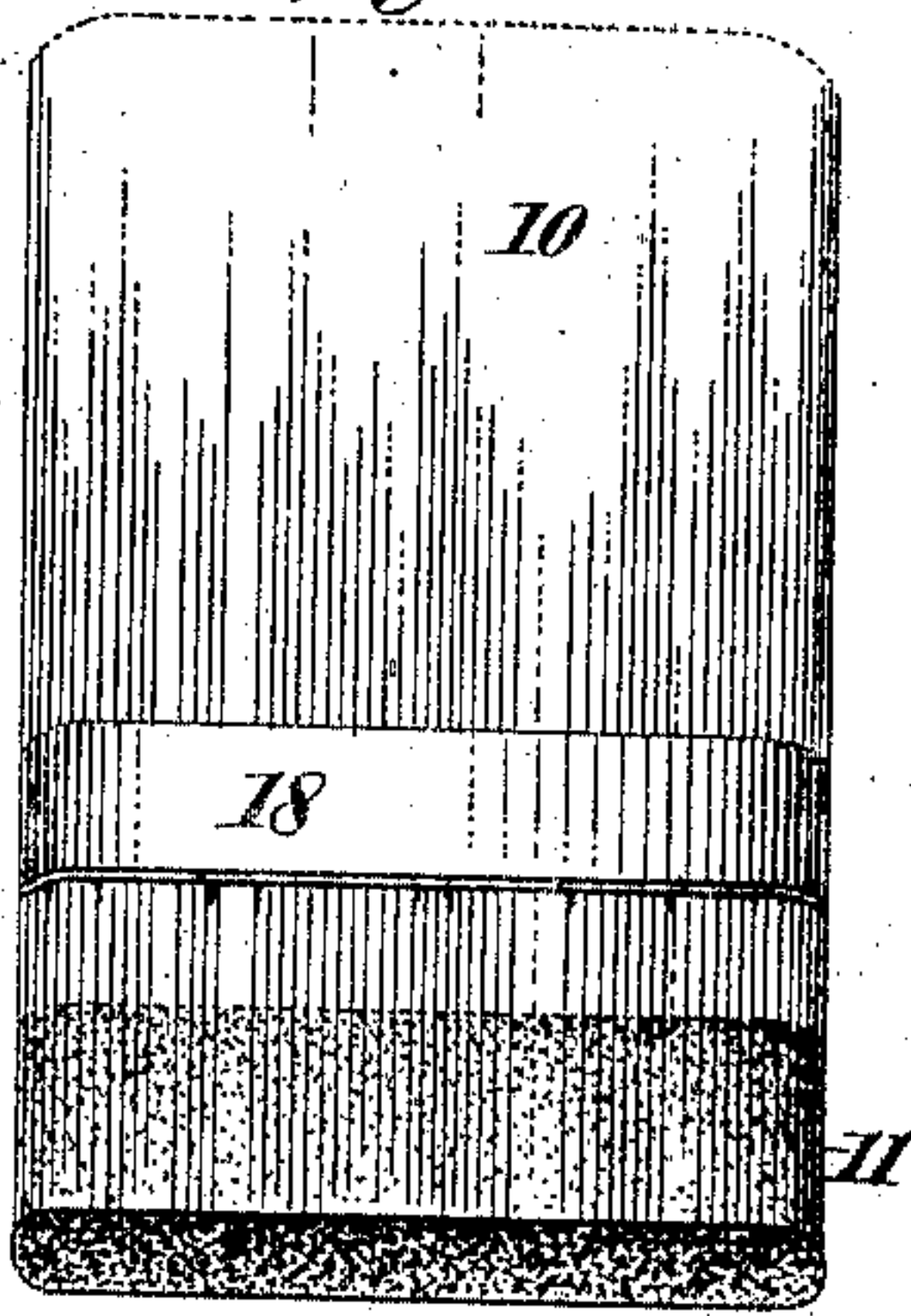


Fig. 3.

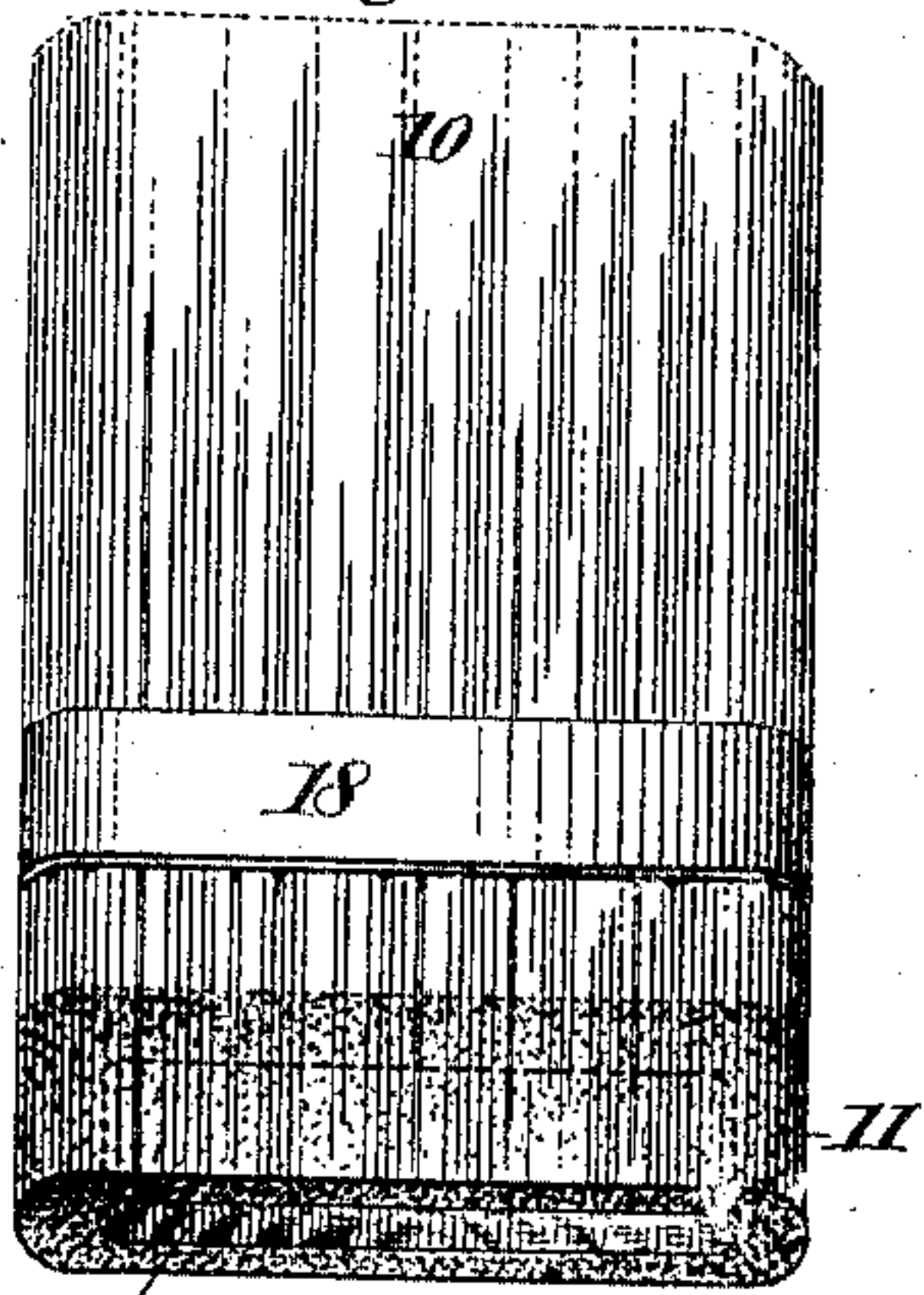


Fig. 4.

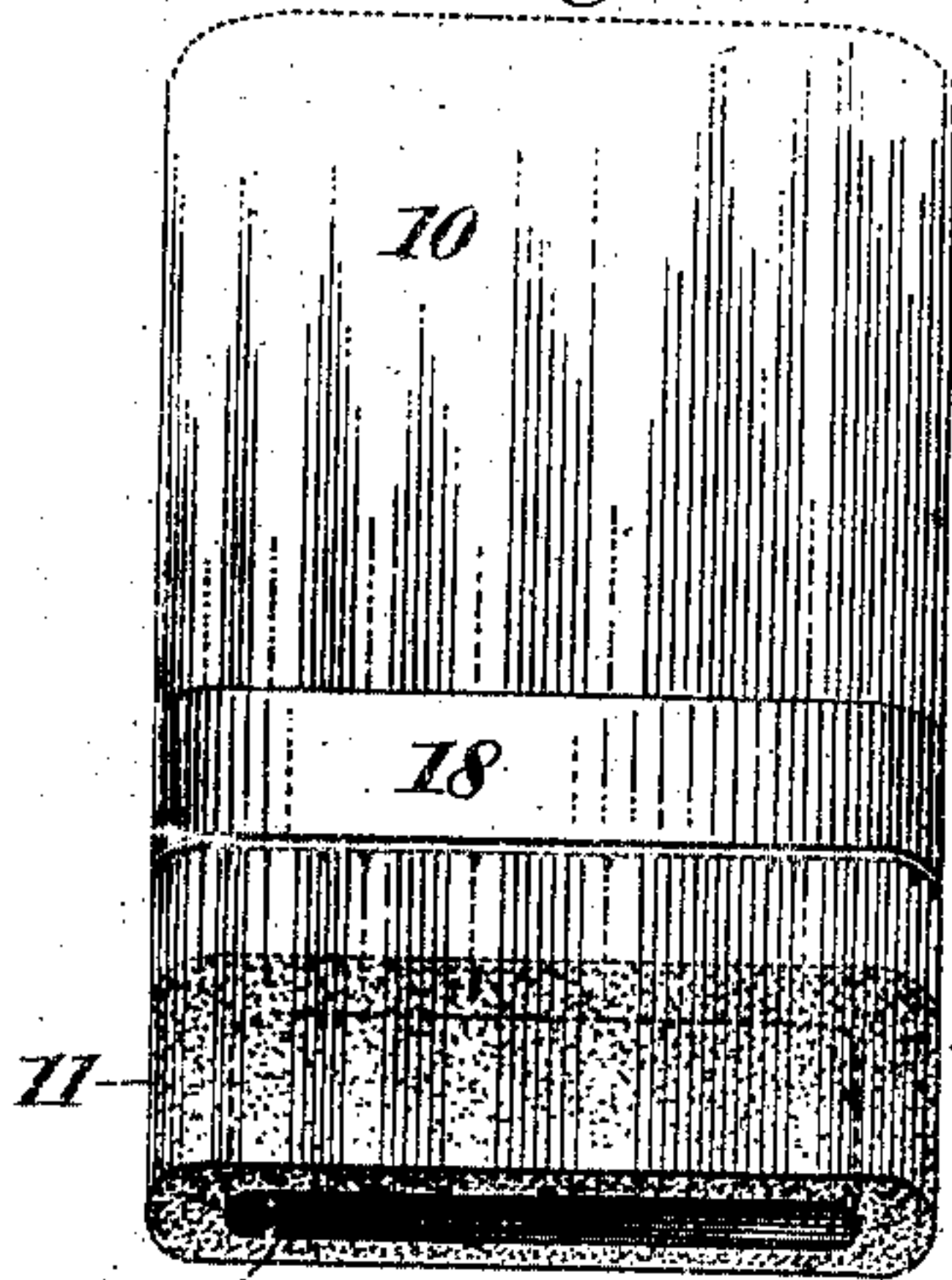


Fig. 5.

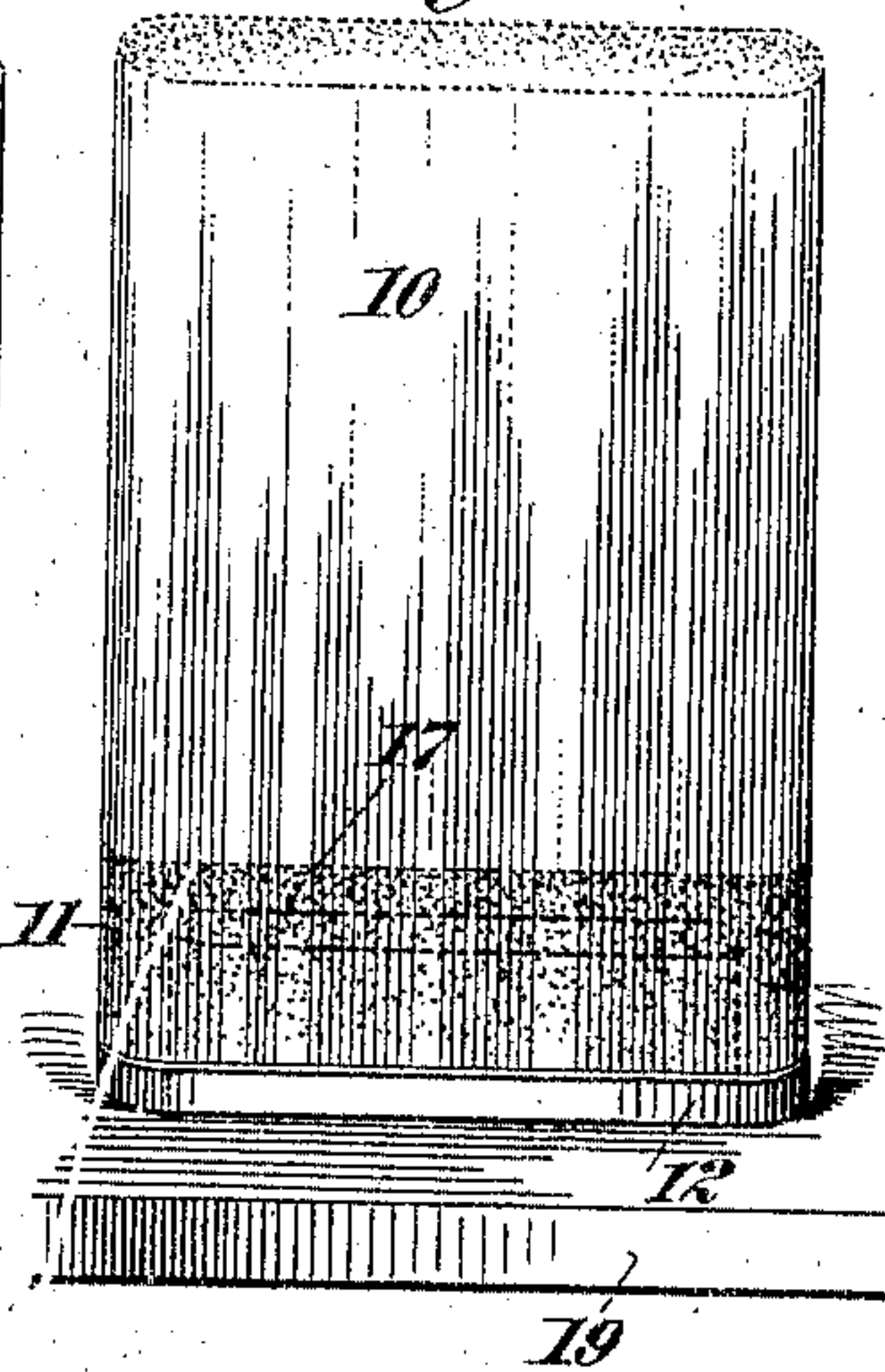


Fig. 6.

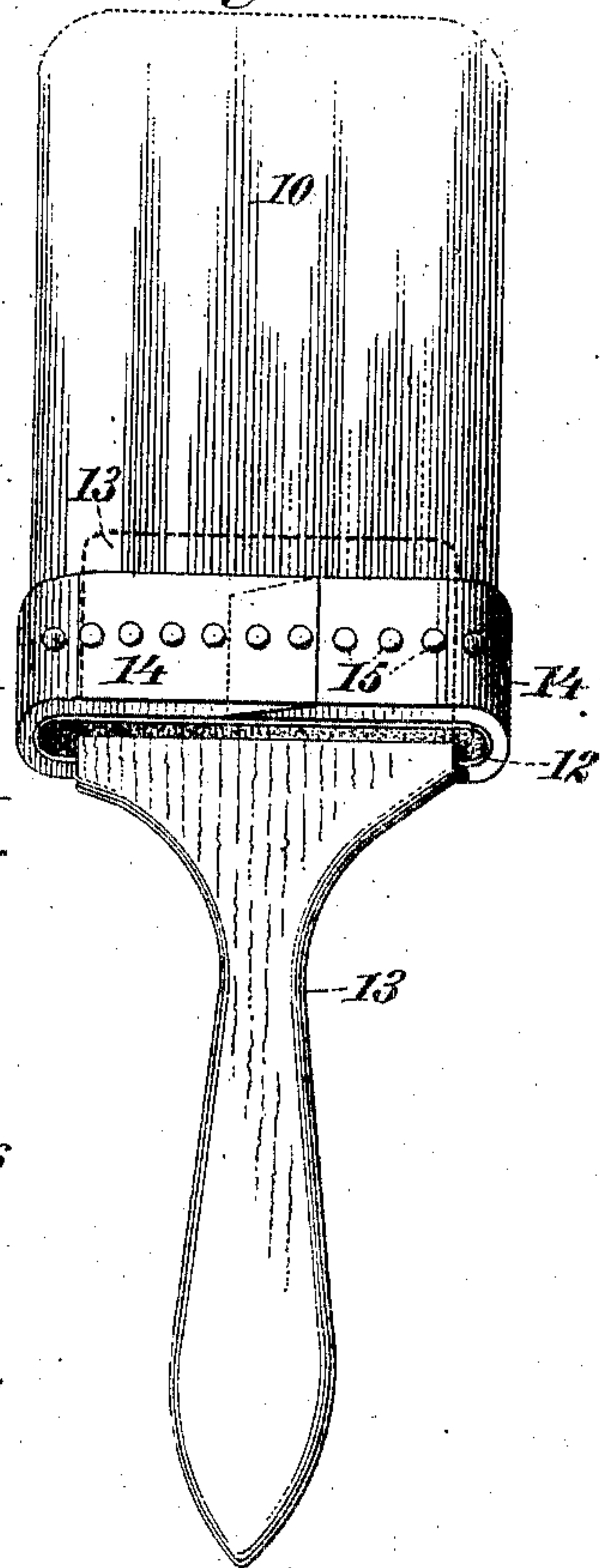


Fig. 7.

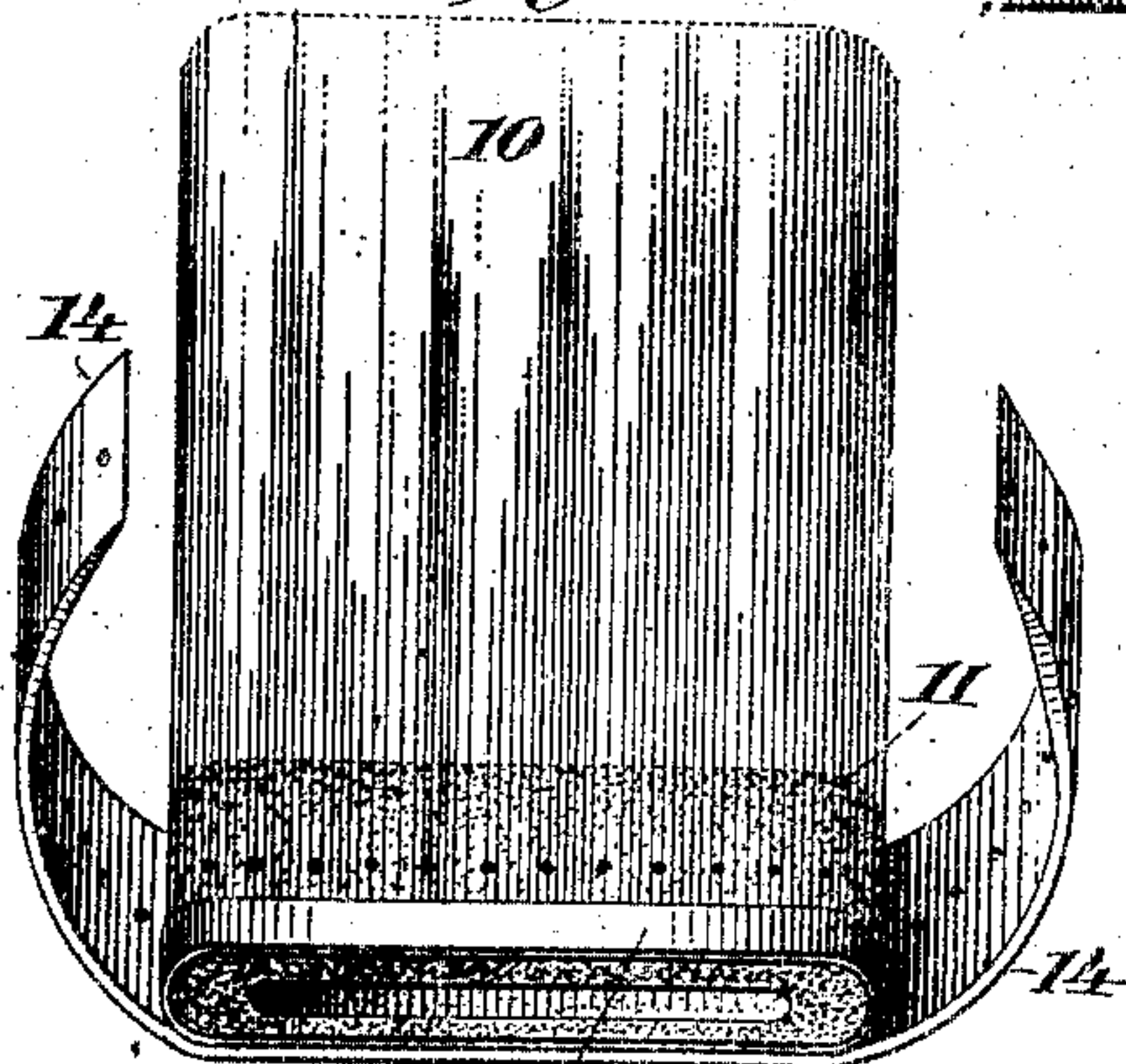


Fig. 8.



Fig. 9.



WITNESSES: 12

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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF BRUSHES.

No. 928,401.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed January 12, 1909. Serial No. 471,844.

To all whom it may concern:

Be it known that I, JOHN J. POTTER, a citizen of the United States, and a resident of South Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Manufacture of Brushes, of which the following is a specification.

The invention relates to improvements in the manufacture of brushes, and consists in the novel features, structure and method hereinafter described, and particularly pointed out in the claims.

This invention relates more especially to a brush comprising a suitable bunch of bristles, a wooden handle whose inner end is confined within the knot of the bristles and an exterior band of leather encompassing the exterior of the knot and a narrow metal band thereon and secured by small nails driven through it (said exterior band) and the knot and cementitious material therein and into that portion of the handle confined within the knot. The material used in securing the bristles at one end to form the knot is rubber, which in the manufacture of the brush is vulcanized and becomes hard rubber or vulcanite and in the most effectual manner binds the bristles at the knot together, so that there will be no shedding of the bristles during the use of the brush. The knot is further secured by an encompassing metal band and an exterior band or strap, preferably of leather, which covers said metal band and the knot and is secured by small nails driven through it and into the knot and handle.

One of the objects of my invention is to enable the successful manufacture of a brush of this character with the knot-ends of the bristles secured together by vulcanized rubber thoroughly incorporated in the knot and binding all the bristles together.

The purpose of the invention is the production of a brush of the character presented herein which shall be durable and lasting and hence of greater value to the user.

The brush of my invention and its method of manufacture will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Figure 1 is a perspective view of the bunch of bristles, with a templet band thereon, ready to be dipped at its end into the

rubber solution; Fig. 2 is a like view of the same after the end of the bunch of bristles has been dipped into the solution; Fig. 3 is a like view of the same showing a further stage in the method of manufacture, this step consisting in the opening of the knot at its central portion by means of a blade and the insertion in said opening of a wooden plug, after receiving which knot is allowed to dry to some extent or until the rubber becomes semi-plastic; Fig. 4 is a like view of the same, showing a further stage in the method of manufacture, this step consisting in the substitution of a metal plug for the said wooden plug in the knot; Fig. 5 is a like view of the same, showing a further stage in the method of manufacture, this step consisting in forcing a permanent metal band down on the knot and vulcanizing the rubber by standing the knot on a heated table, the metal plug in the meantime remaining within the knot; Fig. 6 is a like view of the completed brush, the metal plug, after the vulcanization, having been removed from the knot, the inner end of the handle having been inserted in the opening left by said plug and the leather band or strap having been applied to secure the bristles and handle together and protect the knot-end of the bristles; Fig. 7 is a like view of the bristles removed from the handle and showing the leather band opened outwardly, this figure being presented to show the hole in the knot occupied by the inner end of the handle and to indicate that the nails which are driven through the leather band enter the knot instead of passing through the bristles beyond the same; Fig. 8 is a detached perspective view of the wooden plug used in the step illustrated in Fig. 3, and Fig. 9 is a like view of the metal plug used during the vulcanizing step indicated in Fig. 5.

In the drawings, 10 designates the bristles or the like, 11 the knot formed at one end thereof, 12 the permanent metal band on said knot, 13 the wooden handle, and 14 the leather strap or band covering said metal band and knot and secured by nails driven through the leather and knot and into the inner end of the handle, whereby the latter becomes firmly secured in position. The wooden plug used in that stage of the manufacture indicated in Fig. 3 is designated by the numeral 16, and the metal plug there-

after substituted for the wooden plug in the vulcanization step is denoted by the numeral 17. The templet-band, which is commonly used in this art, is designated by the numeral 18, and the heated table on which the vulcanization is effected is denoted by the numeral 19.

The first step in the manufacture is to form the bunch of bristles 10 and apply thereto the usual templet-band 18 (Fig. 1) defining the character of the brush, after which the bunch of bristles at one end is dipped into a rubber-solution to the requisite extent to form the knot 11 (Fig. 2), the rubber-solution being caused to enter in between the bristles so that finally the bristles shall be securely embedded in the rubber and become inseparable from one another. Thereafter the manufacturer will by means of a blade form an opening in the middle of the knot-end of the bunch of bristles by separating the opposite sides of the bunch from each other and insert in said opening a wooden plug 16 (Fig. 3) which is of elongated outline and defines an opening which is finally to be occupied by the inner end of the handle 13. After the wooden plug 16 has been placed in the knot the bunch of bristles is placed in a drying chamber to effect to some extent the hardening of the rubber solution or to cause it to become semi-plastic, thereby permitting the knot to take definite form or become to a degree fixed.

The next step in the method of manufacture pertains to the vulcanization of the rubber in the knot, and in carrying out this step I remove the wooden plug 16 and force into its place the slightly larger metal plug 17 and apply the band or ferrule 12, which is forced down to the lower or outer end of the knot, as shown in Fig. 5, whereupon I stand the knot end of the bristles containing the metal plug and bound by the band or ferrule 12 on the heated table 19 and leave the same there until the vulcanization of the rubber has taken place. During the vulcanization the band 12 and metal plug 17 become heated and aid in the vulcanization step, the use of the plug 17 being particularly beneficial in conveying the heat to the interior of the knot. The efficiency of the vulcanization may be increased if while the bunch of bristles is standing on the table 19 the knot is gradually squeezed or pressed against the metal plug 17. Upon the removal of the bunch of bristles from the table 19, the plug 17 may be knocked out and the knot is allowed to cool, becoming then dry and hard.

The next step in the manufacture is to properly apply the handle 13 and strap or band 14, and this step if the best results are to be attained is of importance. In carrying out this step of the process I stand the knot end of the bunch of bristles on a

heated table and effect the softening to a suitable extent of the rubber above the metal band 12, and thereupon and before the rubber cools again, insert the inner end of the handle 13 into the opening in the knot left by the metal plug 17 and tightly apply and secure by nails 15 the leather strap or band 14, the latter covering the metal band 12 and those portions of the knot beyond it and said nails being driven through the softened portion of the knot beyond said band 12 and into the inclosed inner end of the handle. By softening those portions of the knot beyond the band 12 before applying the handle 13 and strap 14, I am enabled to drive the nails 15 through the knot without fracturing the same and secure a very decided and efficient firmness in the connection of the handle, knot, strap and nails, the result being the production of a very durable brush having no fractures in the knot to be concealed by paint or the like. In Fig. 7 I illustrate the strap as having been partly removed from the knot so as to indicate the line along the knot at which the nails 15 were applied, these nails having been driven substantially centrally of the strap and knot and beyond the metal band 12 and into the inner end of the handle, which, as indicated by dotted lines in Fig. 6, projects inwardly beyond the knot.

What I claim as my invention and desire to secure by Letters Patent, is:

1. The improvement in the manufacture of brushes comprising the forming of a bunch of bristles, dipping one end of the same in a rubber solution to form the knot, opening the knot at its interior and inserting therein a plug, drying the knot to a suitable extent, removing said plug and inserting a metal plug and forcing a metal band on the exterior of the knot, vulcanizing the rubber in the knot, removing the metal plug, inserting the inner end of a handle into the opening in the knot, and nailing a strap around said knot and band, the nails passing through the strap and knot and into the handle; substantially as set forth.

2. The improvement in the manufacture of brushes comprising the forming of a bunch of bristles, dipping one end of the same in a rubber solution to form the knot, opening the knot at its interior and inserting therein a plug, drying the knot to a suitable extent, removing said plug and inserting a metal plug and forcing a metal band on the exterior of the knot, vulcanizing the rubber in the knot, allowing the knot to cool and harden, heating the knot to soften the same, inserting the inner end of a handle into the opening in the knot left by the removal of the metal plug at any convenient stage in the manufacture, and nailing a strap around said knot and band,

the nails passing through the strap and softened rubber and into the handle; substantially as set forth.

3. The improvement in the manufacture
5 of brushes comprising the forming of a bunch of bristles, dipping one end of the same in a rubber solution to form the knot, applying within the knot a metal plug and on its exterior a close fitting band, vulcaniz-
10 ing the rubber in the knot with said metal plug in place, removing the plug, inserting the inner end of a handle into the opening left in the knot by the removal of said plug, and nailing a strap around said knot and
15 band, the nails passing through the strap and knot into the handle; substantially as set forth.

4. The improvement in the manufacture
20 of brushes comprising the formation of a bunch of bristles, dipping one end of the same in a rubber solution to form the knot, applying within the knot a plug and on its exterior a close-fitting band, vulcanizing the rubber in the knot, allowing the knot to cool
25 and harden, heating the knot to soften the same, inserting the inner end of a handle into the opening in the knot left by the removal of the plug at any convenient stage of the manufacture, and nailing a strap
30 around said knot and band, the nails pass-

ing through the strap and softened rubber and into the handle; substantially as set forth.

5. The improvement in the manufacture
35 of brushes comprising the formation of a bunch of bristles, dipping one end of the same in a rubber solution to form the knot, opening the knot at its interior and insert-
40 ing therein a plug, drying the knot to a suitable extent, removing said plug and inserting a slightly larger metal plug and forcing a metal band on the exterior of the knot, vulcanizing the rubber in the knot with the
45 metal plug in place, allowing the knot to cool and harden, heating the knot to soften the same, inserting the inner end of a han-
50 dle into the opening in the knot left by the removal of the metal plug at any time after the vulcanization, and nailing a strap around said knot and band, the nails pass-
55 ing through the strap and softened rubber and into the handle; substantially as set forth.

Signed at Newark, in the county of Essex
and State of New Jersey, this eighth day of
January A. D. 1909.

JOHN J. POTTER.

Witnesses:

EDWARD G. ROBERTSON,
WILLIAM R. WRIGHT.