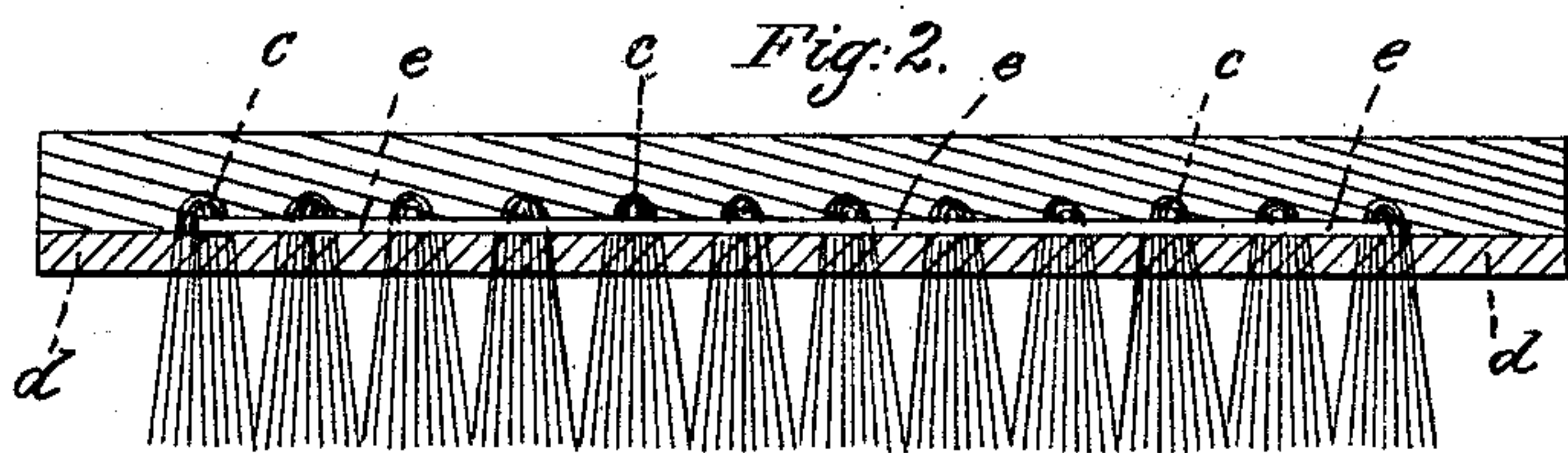
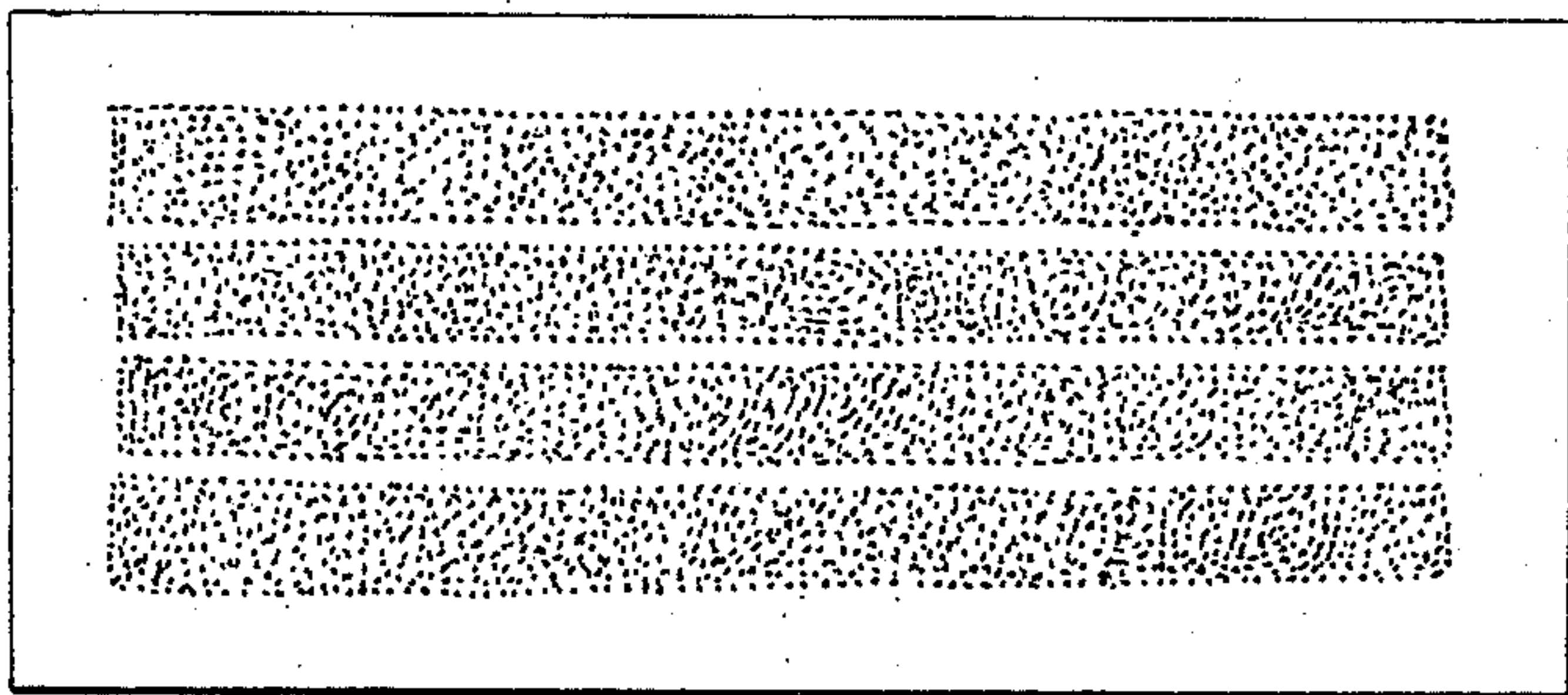
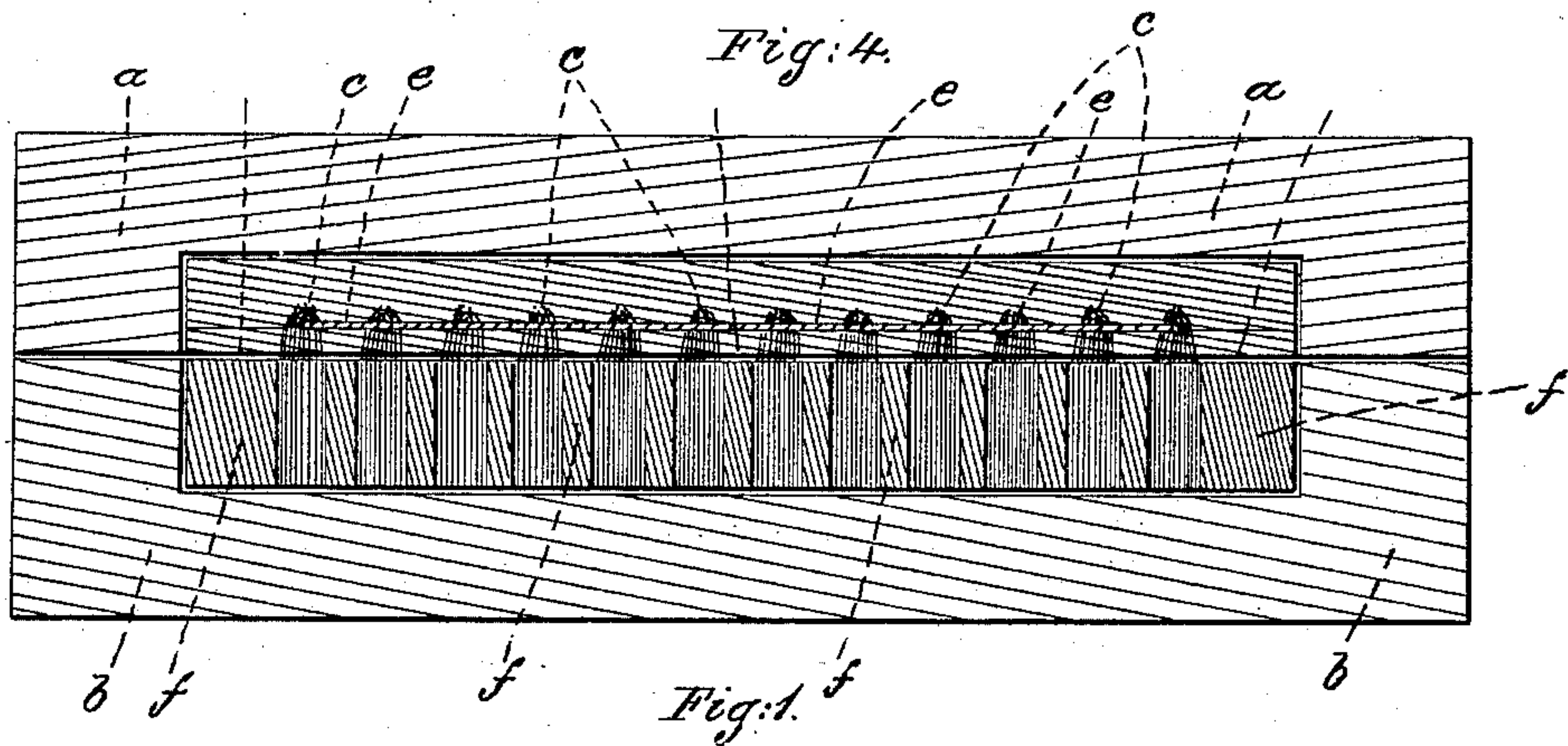


T. J. MAYALL.

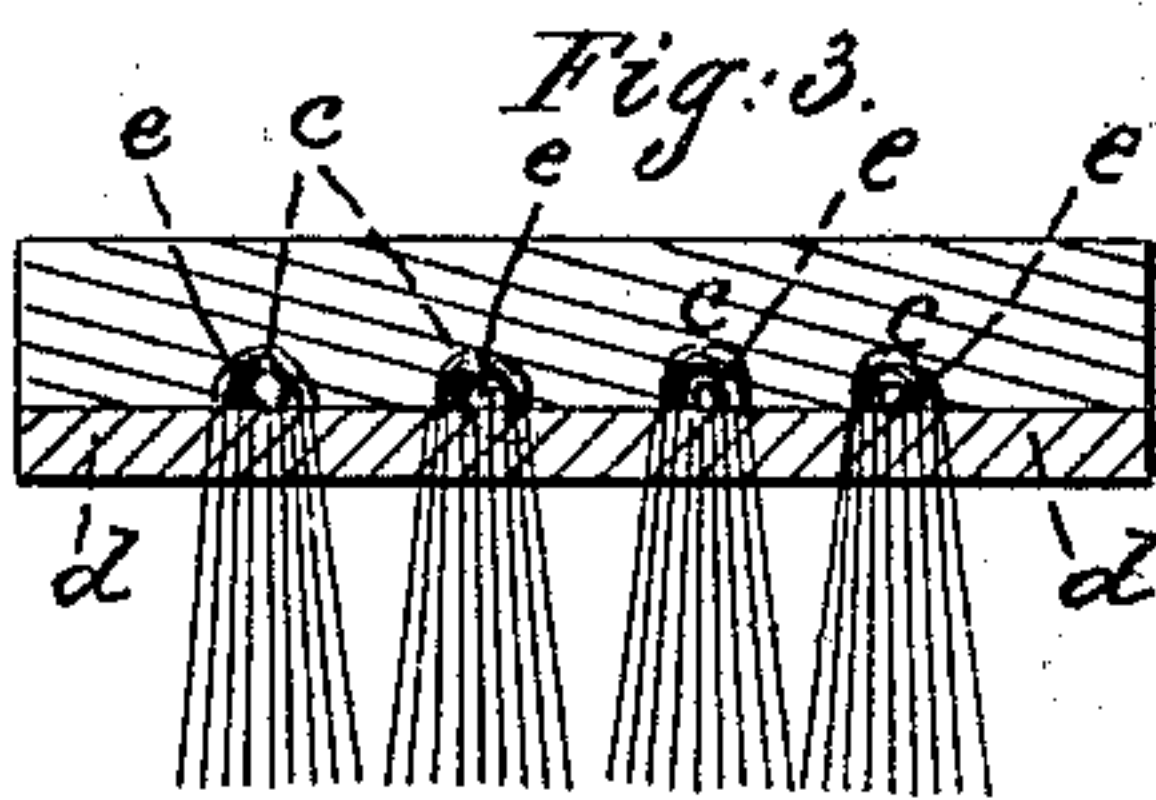
Brush.

No. 31,613.

Patented March 5, 1861.



Witnesses:
Joseph Garrett
Albert W Brown



Inventor:
Thos Mayall.

UNITED STATES PATENT OFFICE.

THOMAS J. MAYALL, OF ROXBURY, MASSACHUSETTS.

BRUSH.

Specification of Letters Patent No. 31,613, dated March 5, 1861.

To all whom it may concern:

Be it known that I, THOMAS J. MAYALL, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Brushes; and the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a top view of my new brush. Fig. 2 is a longitudinal vertical section of the same. Fig. 3 is a transverse vertical section. Fig. 4, is a sectional view showing the manner of molding the back of the brush &c.

In the ordinary manufacture of brushes, the manner of securing the bristles has prevented their being firmly held, so that they soon become loose and drop out long before the bristles are deteriorated. This is particularly the case with brushes that are used in water, or acids, as when fastened or secured with cement, the cement becomes soft by the action of the water or acid, and when fastened by wires, the wires become rusted and eaten off.

My invention consists in a new mode of securing bristles or other materials, used in brushes, by fixing them in a setting, or backing, or stock of india rubber or gutta-percha. By this means the bristles are so firmly held and clasped by the elastic force of the rubber or gutta-percha, that they can not become loose, or be drawn out, and will retain their place until entirely worn out and so that the action of water or acids, can not, as in ordinary brushes, act upon or destroy their setting. I am enabled by this improvement to make the backing or stock of the brush either stiff or flexible, as may be desired.

I will now proceed to describe in detail one mode of forming a brush by my new method.

I make a composition of about the following proportions, viz; 8 lbs. of rubber or gutta percha, 3 lbs. of white-lead or zinc,

and $\frac{3}{4}$ lb. of sulfur. These ingredients are perfectly combined and mixed together, and placed in the part *a a* of a metallic mold *a a—b b*. Each bunch of bristles is then doubled over, as shown in the drawings so as to form loops *c, c* &c. which are then passed through a perforated sheet of rubber or gutta-percha *d d*. A wire *e e* is then passed through a series of the loops *c, c*, &c. upon the upper surface of the sheet *d d*, as shown in Figs. 2 and 3. The bristles, thus placed, are then inserted in a wooden or other die-plate *f f*—which serves as a follower and to protect them from the heat during the vulcanizing process, and placed in the lower half *b b* of the mold *a a—b b*, as clearly shown in Fig. 4, so that the tops of the bristles shall come in contact with the plastic composition previously placed in the part *a a* of the mold. The whole is then subjected to pressure in the molds, and heated any desirable length of time at a temperature of about 260° Fahrenheit.

It may be desirable, to sprinkle upon the bristles soap-stone-dust, or other suitable material, to protect them from heat during the curing process, and cold water may be admitted around them in the lower part of the mold, while the upper part of the mold thereof is subjected to heat. The result is that the bristles become firmly embedded in the rubber or gutta-percha setting, and can not become loose therein.

The back or stock of the brush can be made of a flexible composition of india rubber or gutta-percha, so as to be adapted to irregular or curved surfaces, in any of the well-known modes practiced by rubber manufacturers.

It will be evident that by varying the forms of the molds, the brush can be formed of any shape or outline, such as square, oblong, elliptical, circular, or irregularly curved, and that the backing or stock of the brush, instead of being formed wholly of rubber or gutta percha compositions, may be made partly of wood or other material, perforated with holes or having grooves or channels therein, into which the bristles surrounded by a suitable body or setting of india rubber or gutta percha, can be placed or molded, the setting of india rubber or gutta-percha being then vulcanized, as before.

There are of course a variety of modes other than those above described by which the brush can be formed and the bristles

fastened in or to the rubber; the composition
stated and the degree of heat to be employed
also admit of many modifications, and there-
fore, I shall not, in my claim, limit myself
5 to the materials, or the proportions named,
or to the degree of heat to be employed.

Having thus described my improvements,
what I claim as my invention and desire to
have secured to me by Letters Patent is,—

10 My new mode of securing bristles or other
materials used in brushes, by fixing them in
a setting or stock of india rubber or gutta

percha substantially in the manner herein
described, so that the said bristles shall be
firmly held in their places and clasped by 15
virtue of the elastic force of the india rub-
ber or gutta percha and their setting pro-
tected against the action of water or other
agents to which they might be exposed in
the use of the brush.

THOS. J. MAYALL.

Witnesses:

JOSEPH GAVETT,

ALBERT N. BROWN.