

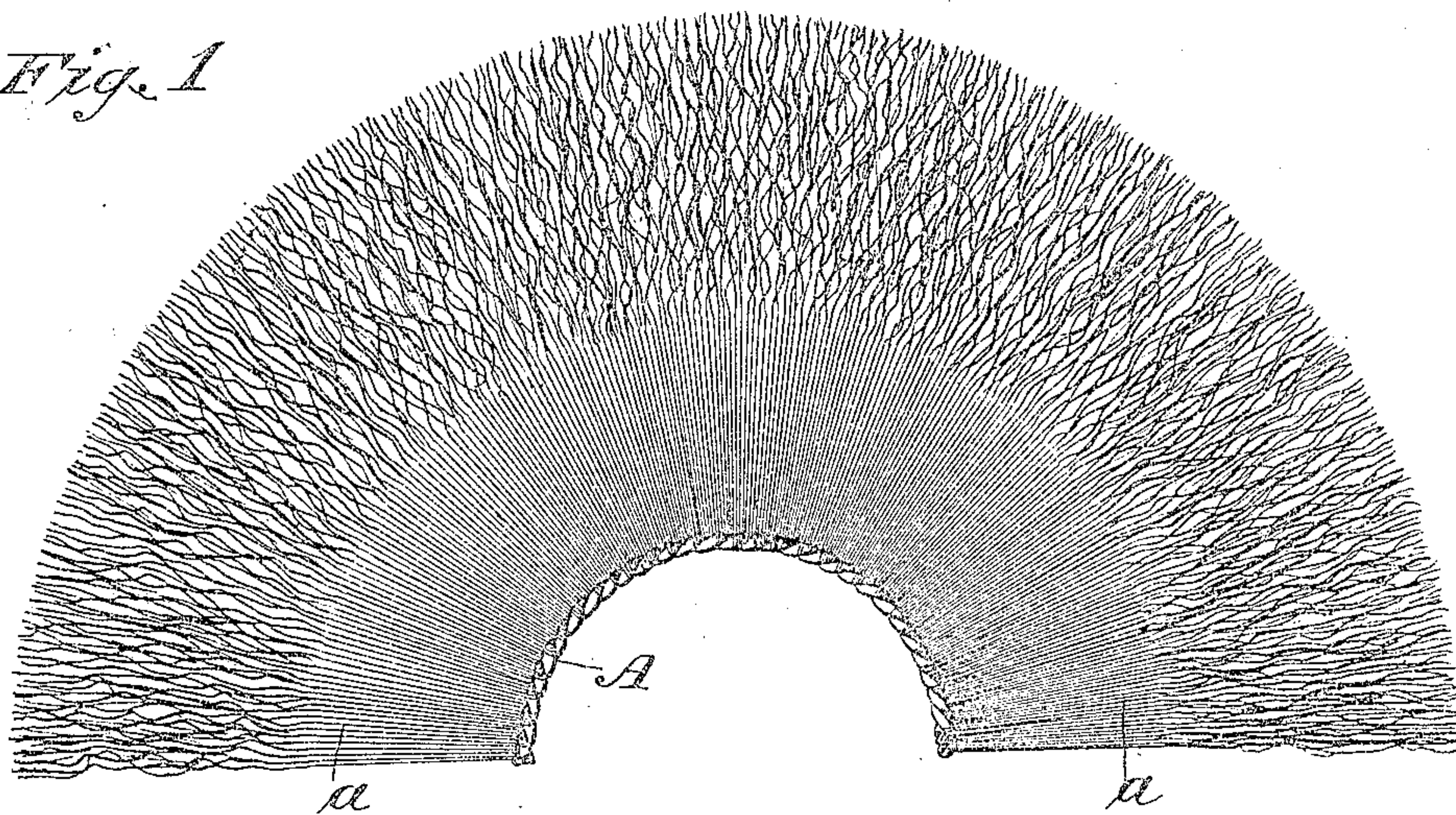
No. 822,757.

PATENTED JUNE 5, 1906.

H. NIELSON.  
ROTARY BRUSH.

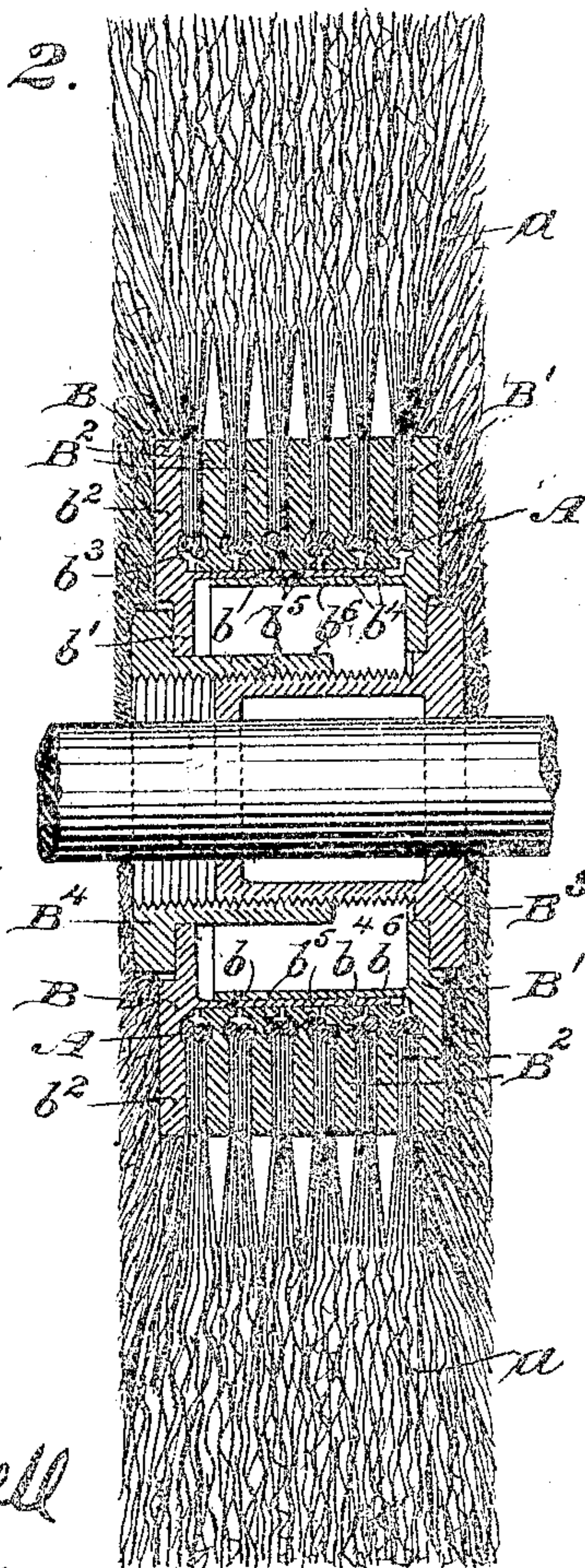
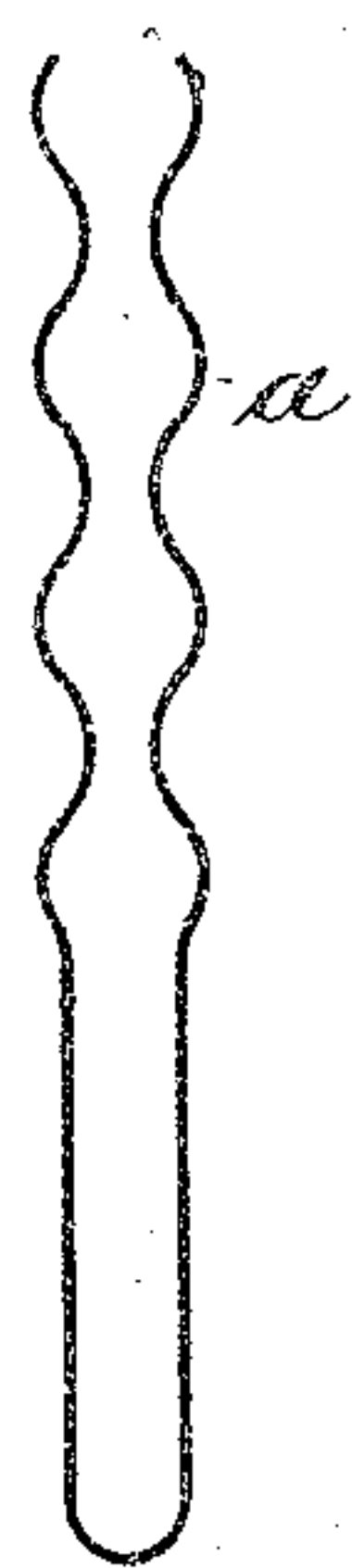
APPLICATION FILED JUNE 17, 1904.

*Fig. 1*

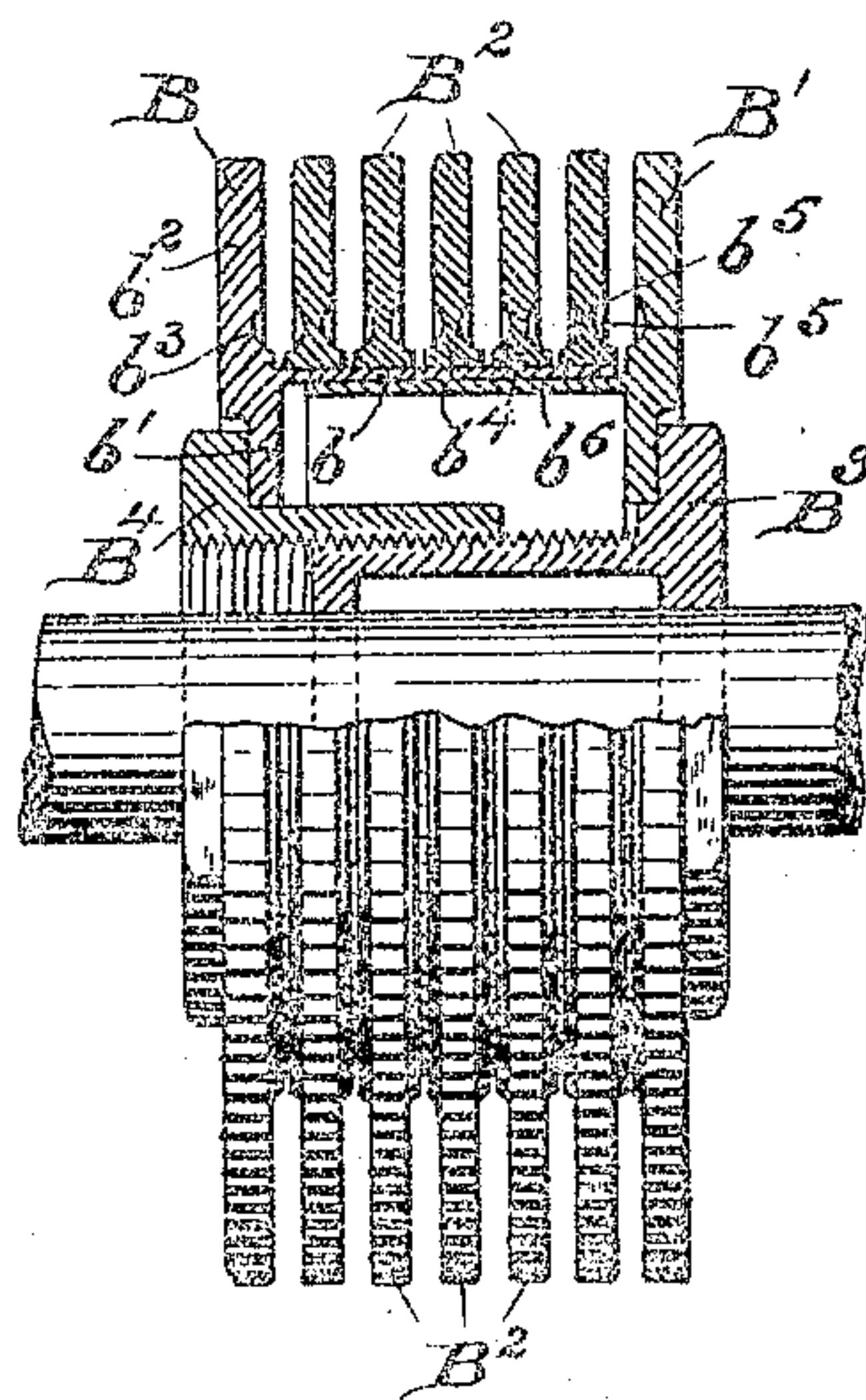


*Fig. 2.*

*Fig. 4.*



*Fig. 3.*



WITNESSES:

*G. W. Saywell*  
*Jno. P. Oberlin*

INVENTOR:

*Henry Nielson,*  
by his attorney *J. B. Fay.*



# UNITED STATES PATENT OFFICE.

HENRY NIELSON, OF CLEVELAND, OHIO, ASSIGNOR TO THE OSBORN MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## ROTARY BRUSH.

No. 822,757.

Specification of Letters Patent.

Patented June 5, 1906.

Application filed June 17, 1904. Serial No. 212,970.

*To all whom it may concern:*

Be it known that I, HENRY NIELSON, a subject of the King of Denmark, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Rotary Brushes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention relates to rotary brushes, its object being to provide a brush structure which is readily assembled, efficient in its operation, durable, and economical in its construction.

Said invention consists of means herein-after fully described, and particularly set forth in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure 1 represents an elevation of one-half of one of the brush-sections. Fig. 2 represents a vertical axial section of a complete brush. Fig. 3 represents a partial vertical axial section and partial elevation of the hub and separating-rings, and Fig. 4 represents one of the bristles of the brush.

The brush complete consists, primarily, of the bristle-sections and the hub. Each section comprises a circular bristle-base A, consisting, preferably, of two twisted strands of wire and a mass of doubled undulate interlocking bristles *a*, secured at their bases between the said two strands. The end portions of each bristle are given an undulate formation, as shown in Fig. 4, there being provided a great number of such bristles, so that they are crowded in thickly together and interlocked with each other, thus binding them all into one compact mass and enabling them to withstand wear for a longer period by distributing all strains equally throughout said sections. The bristles stand out radially from the bristle-base, as shown in Figs. 1 and 2, and when all the sections are assembled, as shown in Fig. 2, the corrugations of contiguous sections will intermesh and support each other, so that all the sec-

tions are united into an interlocked structure. It will be readily noted that this interlocking is caused by the corrugations of the bristles catching and retaining each other and that the number of points at which the bristles thus catch, and consequently the force with which the bristles are bound together, will be dependent upon the number of undulations in the contiguous bristles.

The hub consists of two outer members B and B' and means for binding the same together. Member B consists of a cylindrical barrel *b*, having an outer diameter substantially equal to the inner diameter of the bristle-bases A, such barrel being provided with an end web *b'* and a flange *b<sup>2</sup>*, the inner side of said flange being formed with a circular groove *b<sup>3</sup>* near its junction with the barrel, as shown. The other end member B' is similar in construction to member B, excepting that its barrel *b<sup>6</sup>* is of a diameter such that it will slip inside barrel *b*. The means for binding the whole structure together consists of an elongated nut B<sup>4</sup> and an externally-threaded sleeve B<sup>3</sup>, such nut and sleeve each provided with a hexagonal head. Intermediately of the flanges of members B and B' are alternately placed a series of separating-rings B<sup>2</sup> and the brush-sections A. Each ring B<sup>2</sup> is formed with an inner bead *b<sup>4</sup>*, one on each side, and a groove *b<sup>5</sup>* contiguous to each bead, so that each two contiguous rings will form an annular space having an inner enlarged portion and an outer contracted portion. When the parts are assembled, the bases A lie in the enlarged portions of said spaces and the bristles project through the contracted portions. Such construction securely fixes each bristle-base and leaves all that portion of each bristle projecting from the base free from extreme pressure or becoming deformed through the pressure. I have found that said structure materially increases the life of the bristles, reducing the liability of crystallization and consequent breakage of the bristles near the hub.

The bristle ends being substantially united or linked throughout the entire brush, separation thereof does not occur in the same degree it occurs in the ordinary brush during use, the strain due to the engagement with the work operated upon being distributed throughout the whole structure instead of being confined to a small portion thereof.



Having described my invention in detail, that which I particularly point out and distinctly claim is—

1. In a rotary brush, the combination of a plurality of bristle-sections, each comprising a circular base and bristles attached thereto; separating-rings, one between each two contiguous bristle-sections, provided with grooves adapted to receive the bases of said bristle-sections and with outer flat portions adapted to bear against and support the bristles of said sections; and a hub adapted to receive said bristle-sections and separating-rings, such hub comprising two members registering one within the other and provided with flanges adapted to bear against and secure the outer bristle-sections respectively and means adapted to secure said two members together.
2. A rotary brush comprising the combination of a plurality of bristle-sections; a separating-ring between each two contiguous sections, said rings adapted to receive and support the bristle-sections and each provided with an inner bead; and means for binding said sections and rings into a unitary structure comprising two telescoping barrels, upon the outer one of which said beads are mounted, each having a flange adapted to bear against and support the outer bristle-sections respectively, and an end web; and a locking member comprising two cooperating parts provided with flanges adapted to bear upon said end webs, respectively.
3. A rotary brush comprising the combination of a plurality of bristle-sections, each section consisting of a bristle-base and bristles attached thereto; a separating-ring be-

tween each two contiguous sections having an inner bead, each two contiguous rings forming an annular space comprising contracted outer and inner portions and an intermediate enlarged groove, said rings adapted to receive and support the bristle-bases in said grooves and the bristles in said contracted outer portions; and means for binding said sections and rings into a unitary structure comprising two telescoping barrels, upon the outer one of which said beads are mounted, said barrels being provided with flanges adapted to bear against and support the outer bristle-sections, respectively; and a locking member for telescoping the barrels.

4. A rotary brush comprising the combination of a plurality of bristle-sections each composed of a circular base formed of twisted strands and doubled bristles secured at their bases between said strands; separating-rings, one between each two contiguous bristle-sections, adapted to secure the bases and to support the bristles of said bristle-sections; and a hub comprising means for binding said sections and rings together, such means consisting of two barrels one adapted to register within the other, upon the outer of which said sections are mounted, each such barrel having a flange adapted to bear against and secure the outer bristle-sections and means adapted to secure said two barrels together.

Signed by me this 14th day of June, 1904.

HENRY NIELSON.

Attest:

L. H. KENNEY,  
J. H. JONES.