

**No. 698,878.**

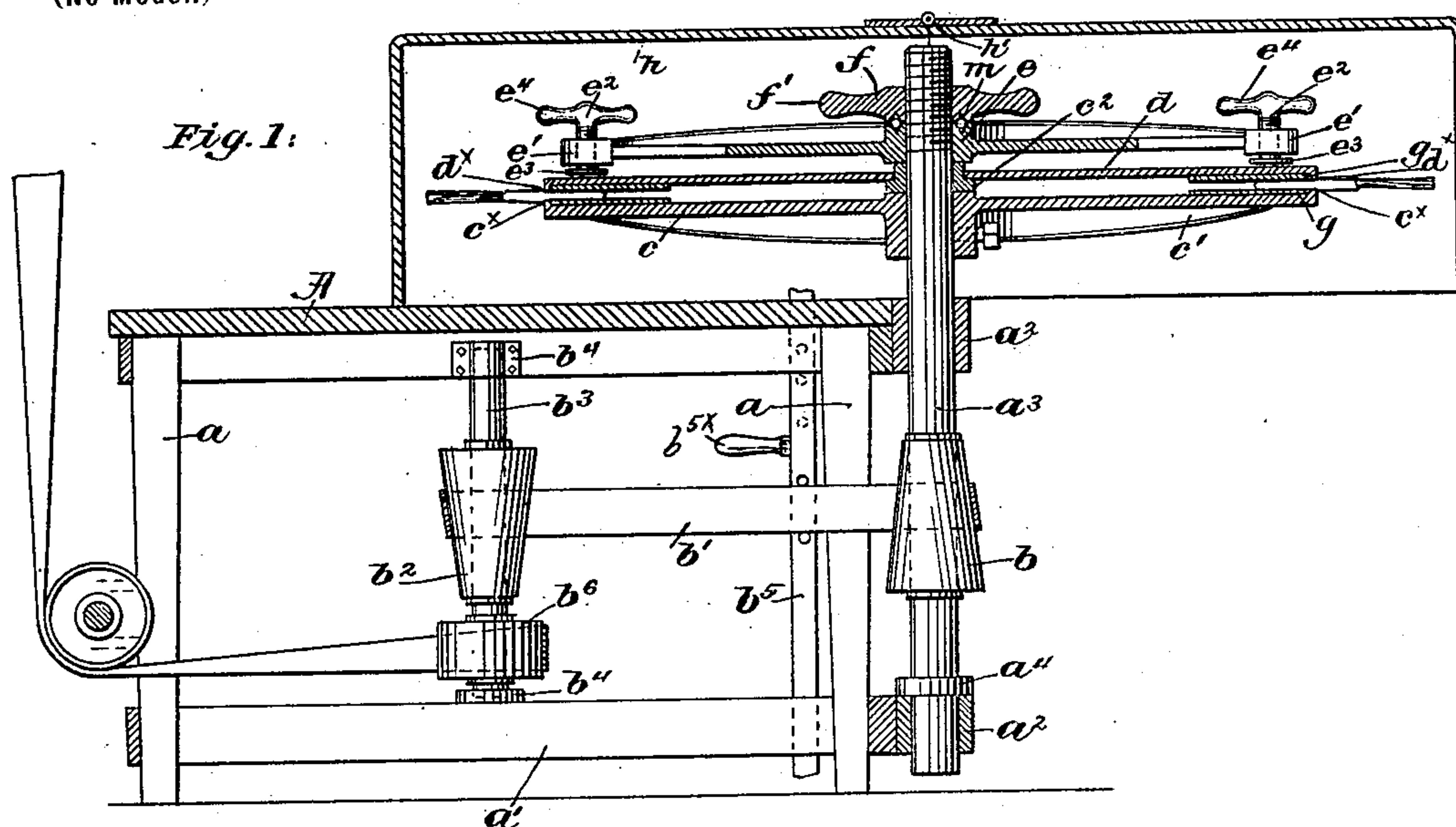
Patented Apr. 29, 1902.

**G. A. VICKERY.**

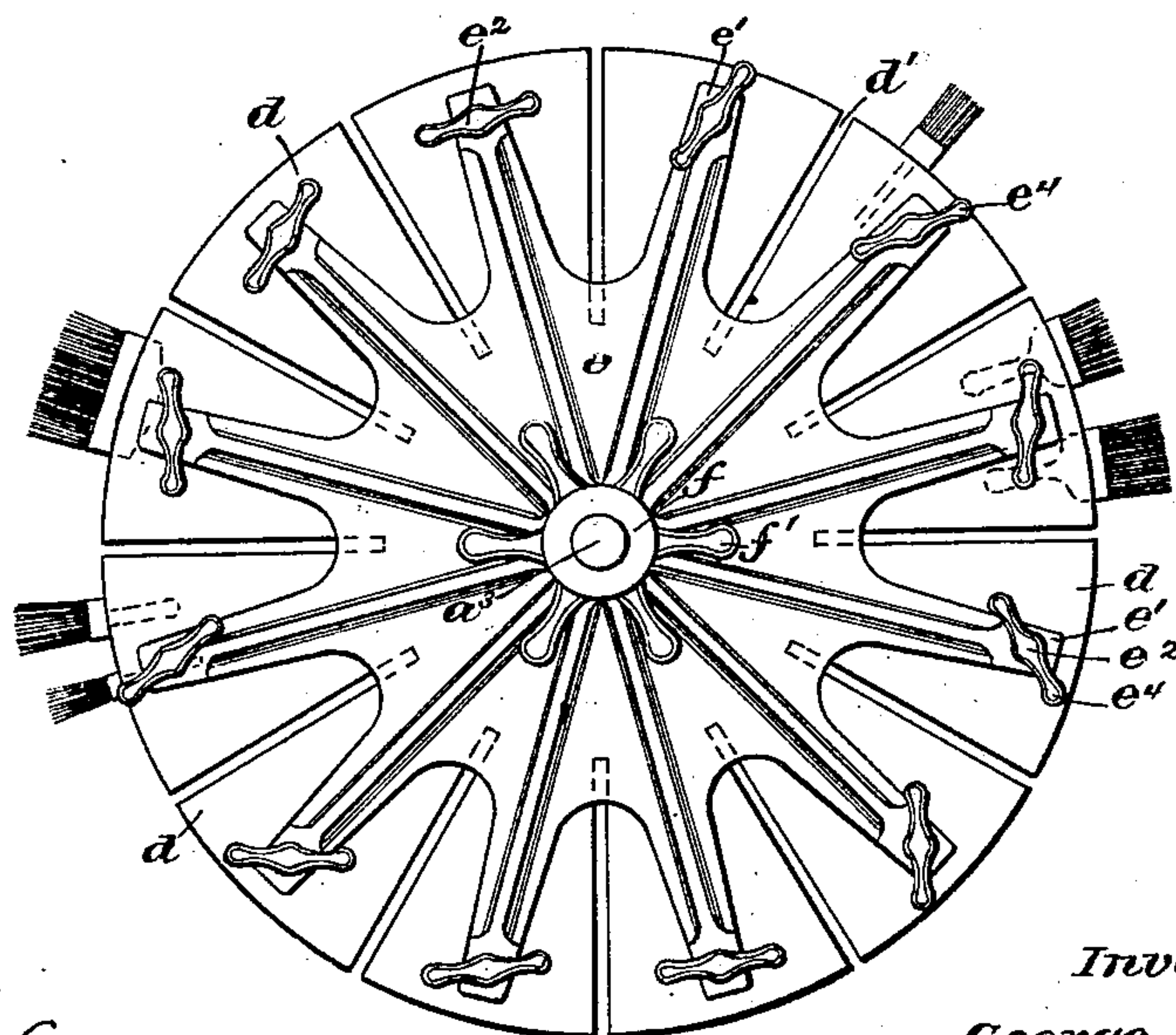
**CENTRIFUGAL BRISTLE EXPELLING MACHINE FOR BRUSHES.**

(Application filed Feb. 12, 1902.)

(No Model.)



*Fig: 2 :*



Witnesses,  
Elliott J. Emery  
A. E. Chesley

Inventor,  
George A. Vickery,  
by Frederick L. Emery  
Att'y.



# UNITED STATES PATENT OFFICE.

GEORGE A. VICKERY, OF LEXINGTON, MASSACHUSETTS.

## CENTRIFUGAL BRISTLE-EXPELLING MACHINE FOR BRUSHES.

SPECIFICATION forming part of Letters Patent No. 698,878, dated April 29, 1902.

Application filed February 12, 1902. Serial No. 93,702. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. VICKERY, a citizen of the United States, residing at Lexington, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Centrifugal Bristle-Expelling Machines for Brushes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide improved means for expelling loose bristles from brushes.

Up to the present time the prevailing method have been to remove loose bristles by hand so far as possible before the brushes leave the factory, or in some instances the bristles are removed by pressing the bristle end of the brush against a revolving drum provided with spikes which in passing through the mass of bristles are supposed to remove any loose bristles therein. Both these methods, however, have been considered more or less unsatisfactory.

My invention provides a machine by which one or more brushes may be rotated at high speed to cause any loose bristles therein to be expelled by centrifugal force, I having found this to be much more effective, as well as more economical, than the present hand method referred to.

To enable my invention to be understood, I have illustrated one embodiment thereof in the accompanying drawings, wherein—

Figure 1 is a vertical longitudinal section of a machine illustrating such embodiment of my invention; and Fig. 2, a top or plan view of the rotating brush-holding means, Fig. 1.

In the embodiment of my invention selected for illustration herein and shown in the drawings, A is a bench or table of substantial construction carried by suitable legs  $a$ , connected by the members or braces  $a'$ . At one end of this bench or table are provided bearings  $a^2$ , in which is rotatably mounted the brush-carrying shaft  $a^3$ , the same being supported in vertical position by a collar  $a^4$ , secured thereon and resting upon the lower bearing  $a^2$ . This shaft is rotated in suitable manner, preferably by speed-varying devices. As an example thereof I have here provided said shaft with a cone-pulley  $b$ , connected by

a belt  $b'$  with an inverted cone-pulley  $b^2$ , mounted upon a vertical shaft  $b^3$ , journaled in suitable bearings  $b^4$ , carried by the framework of the bench. A suitably-arranged belt-shifting device  $b^5$  is provided, having a handle  $b^{5x}$ , by which the belt may be raised and lowered thereby to vary the speed of rotation of the brush-carrying shaft relative to the shaft  $b^3$ . The shaft  $b^3$  is provided with a pulley  $b^6$ , belted in suitable manner, as shown, to any convenient counter or driving shaft, by which rotation is imparted to the said shaft  $b^3$ .

The brush-carrying shaft  $a^3$ , as hereshown, has secured upon it near its upper end a clamping member  $c$ , shown as in the form of a circular flat table suitably strengthened at its under side by ribs  $c'$ .

Upon the hub of the table  $c$ , which I will hereinafter designate as the "bottom clamping member," rests a step-collar  $c^2$ , upon which is seated a circular disk  $d$ , which (see Fig. 2) is radially slitted at  $d'$ , so that in effect it presents a series of segmental clamping-sections, each of which by reason of the resiliency or elasticity of the material has a certain capacity to move or be moved independently of the adjacent segments, for a purpose to be described. Surmounting the step-collar  $c^2$  and the radially-slitted disk  $d$  is a second clamping member  $e$ , in the form of a multi-armed spider, having as many arms  $e'$  as there are segments of the disk  $d$ , each arm of the spider standing over one of the segments of the disk beneath it. On the end of each spider-arm  $e'$  is mounted a threaded clamping device  $e^2$ , having an enlarged head  $e^3$  at its lower end to bear upon the disk-segment  $d$  beneath it and provided at its upper end with an operating-handle  $e^4$ , whereby the particular segment beneath any particular screw  $e^2$  may be depressed or relieved independently of the other and remaining segments.

The upper end of the brush-carrying shaft  $a^3$  is threaded to receive the clamping nut or device  $f$ , shown as provided with a plurality of radially-extended arms  $f'$ .

Adjacent faces of the bottom clamping member  $c$  and of the slitted disk  $d$ , provided with clamping lips or edges  $c^x d^x$ , inside which said member and disk are faced with rubber



*g* or other suitable yielding or engaging material to more effectively engage and hold the brushes inserted between them.

To use the device, the clamping device or nut *f* having been slackened the brushes to be treated or rotated are inserted between the lower clamping member *c* and the slitted disk *d*, as indicated in Figs. 1 and 2, one or more brushes being placed beneath each disk-segment *d*, the bristle ends of the brushes invariably directed outward. Having thus positioned the desired number of brushes, the clamping device *f* is screwed down on the brush-carrying shaft *a*<sup>3</sup>, thereby through the clamping-spider *e* and the intervening slitted disk *d* clamping said brushes firmly in position upon the bottom or table clamping member *c*. Thereafter rotation at high speed of the shaft *a*<sup>3</sup> by the means described will cause centrifugal force to expel all loose bristles contained in the said brushes, the operation being continued during such time as experience determines is necessary to expel loose bristles from the particular brushes rotated.

Should it be desired to depress one of the disk-segments *d* to a greater extent than another to accommodate brush handles or heads of varying thicknesses, the same is accomplished by screwing down the particular screw or device *e*<sup>2</sup> controlling that particular segment, so that the machine is capable of holding a variety of types or sizes of brushes. Also should it be desired for any reason to release the brush or brushes held beneath any particular disk-segment the same is accomplished by unscrewing the device *e*<sup>2</sup>, controlling that segment without disturbing the main clamping device *f* and the remaining brushes held in the machine. In other words, the machine is so constructed that all the brushes to be operated upon at one time may be simultaneously clamped and released or the several brushes may be independently clamped and released, as desired.

To facilitate manipulation of the clamping device *f*, I have grooved the same at its under side and also correspondingly grooved the adjacent face of the spider member to receive a series of antifriction-balls *m*.

To collect and save the bristles expelled by rotation of the brushes, as well as to safeguard against accidental loosening and throwing out of any of the brushes, I have provided a hood *h*, inclosing the rotating brush-carrier and preferably in halves hinged together at *h'*, permitting one half to be turned over to expose the carrier to enable the brushes to be applied thereto and removed therefrom.

Obviously my invention is not limited to the particular embodiment thereof here shown and described.

Having described my invention and without limiting myself in the matter of details, what I claim, and desire to secure by Letters Patent, is—

1. A centrifugal bristle-expelling machine for brushes comprising a rotatable brush-car-

rier provided with brush-attaching means and operating means for said carrier.

2. A centrifugal bristle-expelling machine for brushes comprising opposed brush-clamping members, a shaft to rotate the same, means to operate said shaft, and clamping means to press said clamping members one toward the other.

3. A centrifugal bristle-expelling machine comprising a brush-carrying shaft and means to rotate it, a plurality of clamping members arranged on said shaft and adapted to hold between them a plurality of brushes, and a clamping device mounted on said shaft to press said clamping members one toward the other, to clamp between them said brushes.

4. A centrifugal bristle-expelling machine comprising a plurality of clamping members adapted to receive and hold between them a plurality of brushes with means for individually clamping and releasing individual brushes, and means to rotate said clamping members.

5. A centrifugal bristle-expelling machine comprising a plurality of clamping members adapted to receive and hold between them a plurality of brushes with means for moving said clamping members one bodily toward the other for simultaneously clamping and releasing said brushes, and means to rotate said clamping members.

6. In a machine of the class described a shaft, a table-like clamping member arranged thereon, an opposed segmental member, with means for moving the latter bodily toward the former.

7. In a machine of the class described a shaft, a table-like clamping member arranged thereon, an opposed segmental member, with means for moving the latter bodily toward the former, and means for moving the segments of said segmental member one toward and from the said table-like member one independent of another.

8. In a machine of the class described, a table-like clamping member, an opposed segmental member, the spider, means to move the latter and said segmental member toward said table-clamping member and means carried by the several arms of said spider member to act upon the segments of said segmental member.

9. A centrifugal bristle-expelling machine comprising opposed members adapted to receive between them a brush or brushes to be acted upon, said members being provided with yielding faces to engage the brush or brushes, and means to press said members one toward the other to clamp said brush or brushes between them.

10. A centrifugal bristle-expelling machine comprising brush-rotating means and variable-speed driving mechanism therefor, whereby to vary the centrifugal action to accommodate the brush or brushes acted upon.

11. A centrifugal bristle-expelling machine comprising a plurality of rotatable clamping



members adapted to receive between them a  
brush or brushes to be acted upon, said mem-  
bers having raised clamping edges and yield-  
ing clamping-faces adjacent said raised edges  
5 to engage the said brush or brushes, and  
means to move said members one toward the  
other.

In testimony whereof I have signed my  
name to this specification in the presence of  
two subscribing witnesses.

GEORGE A. VICKERY.

Witnesses:

FREDERICK L. EMERY,  
ANNIE E. CHESLEY.