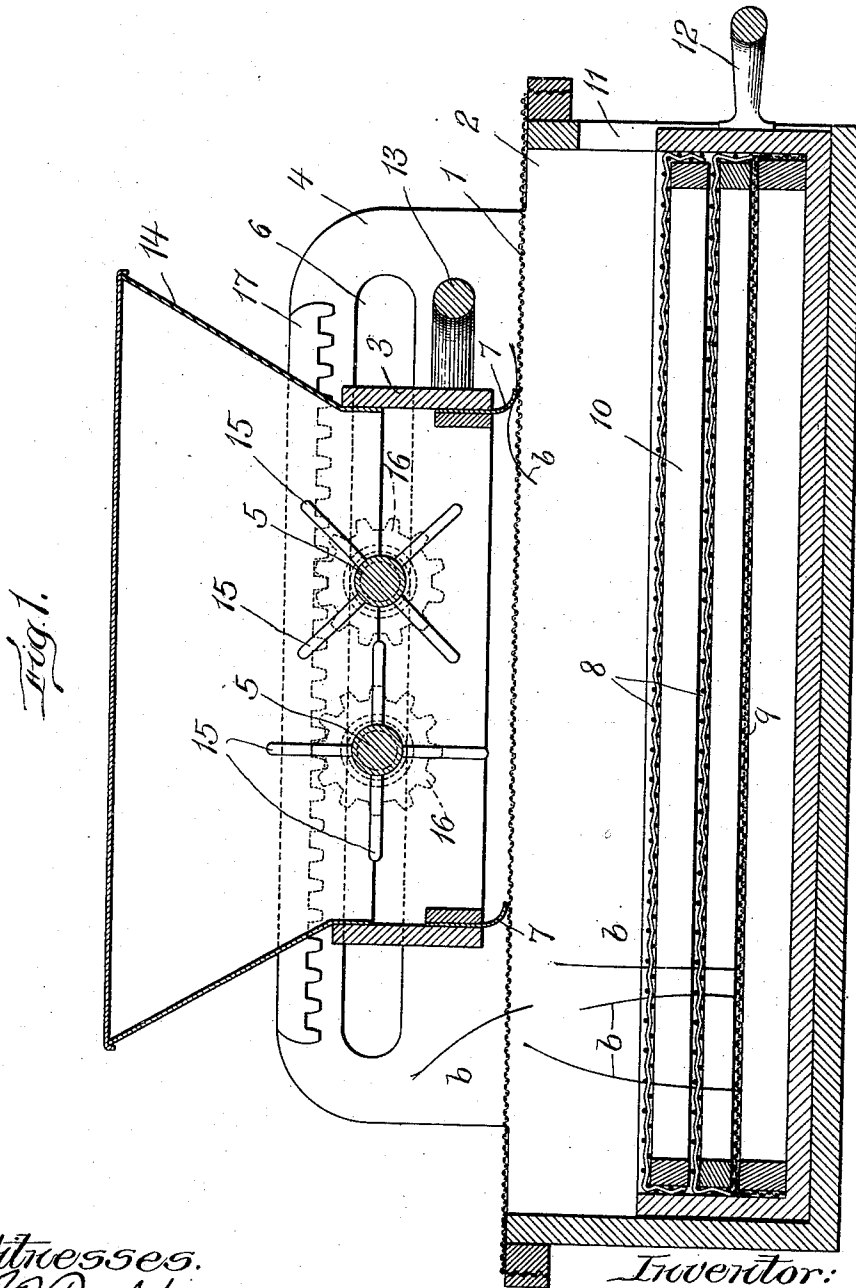


E. VOGEL.
BRISTLE REDEEMING MACHINE.
APPLICATION FILED APR. 30, 1910.

976,955.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 1.



Witnesses:
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P. W. Pezzetti

Inventor:
Ernest Vogel
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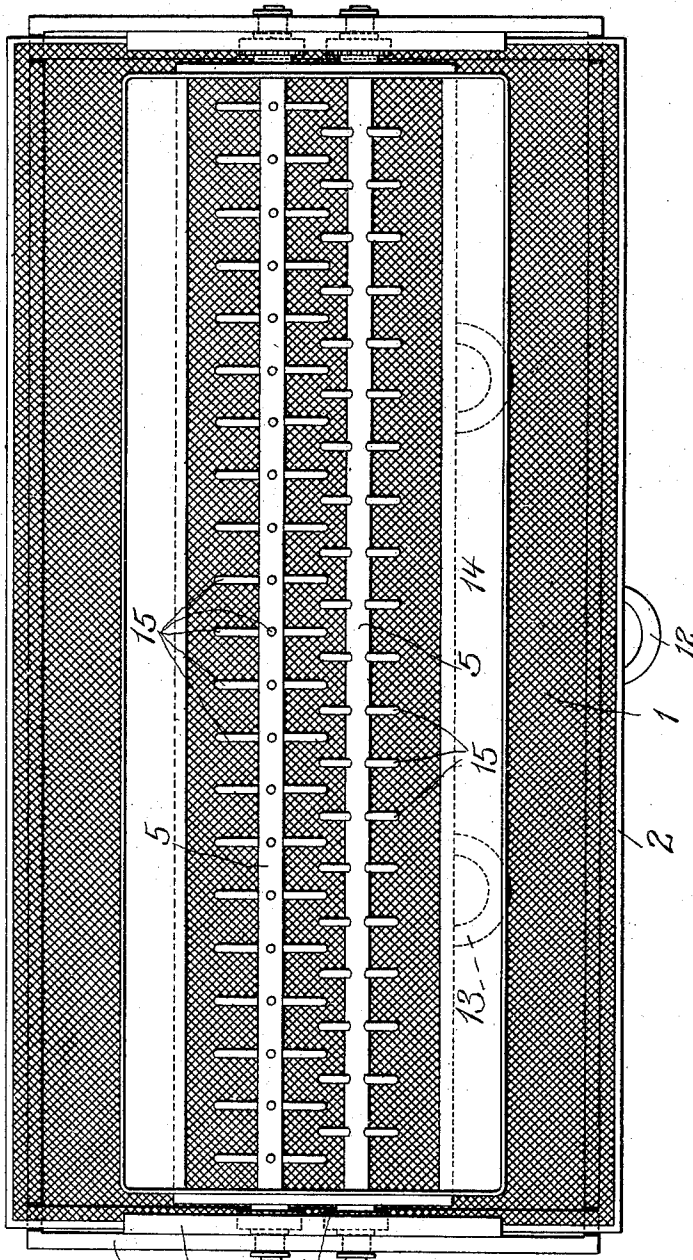
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2 SHEETS-SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

ERNEST VOGEL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO JOHN L. WHITING-J. J. ADAMS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

BRISTLE-REDEEMING MACHINE.

976,955.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed April 30, 1910. Serial No. 558,615.

To all whom it may concern:

Be it known that I, ERNEST VOGEL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Bristle-Redeeming Machines, of which the following is a specification.

This invention relates to the art of brush-making, and has for its object to redeem, or in other words, to arrange in condition suitable for use, those bristles which have been dropped, or have fallen in the course of brush manufacture, into such disorder as to have become practically waste material. In brush-making it is essential that all the bristles should be arranged in one way, that is, with their butt ends together and secured to the back or body of the brush, their outer ends being loose and free. In the various operations of sorting the bristles for length and placing them in the brushes, many of the bristles escape and fall in all directions upon benches, floors and any other surfaces near at hand. The bristles which have thus escaped are in such confusion when gathered together that they are unfit for immediate use in the making of brushes and are practically so much waste material.

My object is to devise a method and provide a machine by which such waste material may be redeemed and converted into properly arranged bristles capable of being economically graded as to length and placed in brushes.

In carrying my invention into effect I have devised a machine by which a mass of disordered bristles, however much confused, may be quickly arranged so that all the bristles extend one way with their corresponding ends side by side.

The machine illustrated in the drawings contains the essential principles of my invention and illustrates the same in their simplest form.

In the drawings,—Figure 1 represents a cross-section of such a machine. Fig. 2 represents a plan view of the same.

The method and apparatus by which the object of my invention is carried into effect rely for their operation on the fact that the bristles are split at their outer ends and compact at their butt ends, whereby the butt ends are enabled to enter small holes or openings, while the feathery split ends are excluded from such holes, and upon the fur-

ther fact that they have minute barbs inclined toward such outer ends, whereby when they are subjected to back and forth rubbing action they are moved in one direction only, that is, butt end first. Accordingly I provide as the principal elements in the machine a rubbing member and a retaining member, the latter having perforations of sufficient size to permit the butt ends of the bristles, that is, the ends which come from the skin of the animal, to pass through them, but not of sufficient size to receive the split outer ends of the bristles. This retaining member is represented by the character 1 and is preferably a wire screen of fine mesh, although obviously any other perforated or foraminous surface or plate might be employed. This member, which for convenience of description I will hereinafter refer to as the screen, extends across a box into which the bristles fall and the depth of which is great enough to allow them to pass entirely through the screen. The rubbing member is represented for illustration and explanation of a possible concrete embodiment of means by which my invention may be carried into effect, as a frame 3, contained between upwardly extending plates or walls 4 at the ends of the box 2, and having rods or shafts 5 extending through slots 6 in the end walls 4, by which it is supported and guided so that it may travel over and parallel with the screen 1. Depending from those sides of the frame 3 which extend transversely to the direction of movement of the frame are rubbing devices 7 which are conveniently flaps or strips of soft flexible material such as leather, which bear upon the screen and are enabled to rub upon the bristles without applying too great pressure thereto. When these rubbing strips move along a bristle from the split end toward the butt end thereof they engage the minute barbs of the bristle and carry the bristle along with them until the butt end of the bristle is caught by one of the perforations and passes through the same. When, however, the rubbing device passes along the bristle from the butt toward the split end thereof, it passes over the bristle without moving it, for the reason that the barbs of the bristle are engaged with the screen and extend in the same direction as the movement of the rubbing device, whereby the bristle is arrested by the screen and is not

caught by the rubbing device. Thus on successive back and forth movements of the rubbing frame, the strips 7 engage the bristles of which the butts point in the general direction of movement of the frame and push such bristles through the screen, forcing them farther and farther through until they finally fall into the box. The bristles which thus pass through the screen are retained in an upright position and prevented from again falling into disorder by one or more screens or perforated plates 8, having a coarser mesh or larger perforations than the screen 1. These coarse screens allow the bristles to fall freely until they are stopped by the bottom of the box, or by a bottom plate 9, which is preferably also a screen of a mesh too fine to permit the bristles to pass through them, while yet permitting dust and refuse to pass. These screens are preferably removable from the box 2, being secured to an inner box or frame 10, which is adapted to pass in and out through an opening 11 in the front wall of the box 2 in the manner of a drawer, and has a handle by which it may be thus removed and replaced.

The machine here illustrated is shown as being operable by hand and the rubbing frame 3 has handles 13 adapted to be grasped for that purpose. It should be noted that the upper part of the rubbing frame is formed as or provided with a hopper 14, into which the disordered mass of bristles is thrown and by which they are conducted to the screen 1 within the range of movement of the rubbing device. Also carried by the reciprocating frame and forming a supplemental or alternative means for sorting and arranging the bristles are stirring devices which may conveniently have the form of bars 15 secured to the shafts 5. The bars preferably project radially from the shafts and are spaced closely enough together, as shown in Fig. 2, so that they will engage all of the bristles contained within the limits of the frame. These stirring or agitating devices are rotated with the shafts 5 at each reciprocation of the frame 3, and for the purpose of imparting this rotation the shafts are provided on their ends with pinions 16 which mesh with racks 17 on the end walls 4 of the machine. The stirring devices agitate the mass of bristles, preventing it from becoming matted and tossing the bristles so that some of them will fall so nearly upright as to pass through the screen 1. It is possible to utilize the stirrers only and dispense with the rubbing flaps 7, as the stirrers alone are sufficient to toss the bristles so that in time a large proportion of them will pass through the screen. Likewise the rubbing members or flaps 7 may be used alone without the stirrers, as they will act on all bristles which lie otherwise than par-

allel with them and cross their line of motion, and will thus in time cause most of the bristles to pass through the screen. It is preferable, however, to use both the stirrers and rubbers in unison, as thereby the entire mass of bristles is more quickly arranged and passed through the screen than otherwise, for all bristles which are not at first thrown through the screen by the tossing action of the stirrers, or pushed through it by the action of the rubbers, will quickly be so arranged by the stirrers as to be properly acted upon by the rubbers.

I desire it to be understood that I do not limit myself to the form of construction or mode of operation of the machine hereinbefore described and illustrated, as many modifications and changes therein may be made without departing from the spirit of my invention. I propose and reserve the right to apply power means for operating the machine and to make any alterations in the relative positions and motions of the screen, rubbing device, and stirring device which may later seem desirable.

I claim,—

1. A machine for arranging bristles with their corresponding ends extending all one way, comprising a support having perforations adapted to admit the butt ends of the bristles and to exclude the split outer ends thereof, and means arranged over said support to act on a quantity of bristles lying thereon and so place certain of the bristles that their butt ends may pass through the support.

2. A machine for converting a disordered confused mass of bristles into an orderly condition with corresponding ends of the bristles all pointing the same way, comprising a perforated support, and means arranged above said support operable to stir and toss the bristles lying thereon, whereby such of the bristles as fall butt-end downward in line with perforations of the support are enabled to enter and pass through such perforations.

3. A machine for redeeming bristles, comprising a perforated support on which a disordered mass of bristles is placed, and a soft, flexible rubbing member having a frictional surface, mounted and arranged to travel back and forth across said support in contact therewith, or with bristles lying thereon, whereby the bristles are moved butt-end first and caused to pass through the support.

4. A machine for redeeming bristles, comprising a perforated support on which a disordered mass of bristles is placed, and a stirring device having arms arranged to enter the mass and lift the bristles, whereby such as fall with their butt-ends downward and in line with the perforations of the support are caused to pass through the same.

5. A machine for redeeming bristles, com-

prising a perforated support on which a mass of bristles is placed, and a frame arranged and guided above said support so as to travel back and forth thereover, a flexible rubbing member carried by said frame adapted to engage the bristles frictionally and move them butt-end first, whereby such ends are caused to enter the perforations of said support, and stirring means carried by said frame for arranging the bristles more or less in the direction of travel of said frame.

6. A machine for redeeming bristles, comprising a perforated support on which a disordered mass of bristles is placed, and a frame arranged and guided above said support so as to travel back and forth thereover, a flexible rubbing member carried by said frame adapted to engage the bristles frictionally and move them butt-end first, whereby such ends are caused to enter the perforations of said support, and stirring means carried by said frame and having arms adapted to project into the mass of bristles for arranging the bristles more or less in the direction of travel of said frame.

7. A machine for redeeming bristles, comprising a perforated support on which a disordered mass of bristles is placed, a frame mounted above said support with provision for traveling back and forth over the same, a rotary stirrer carried by said frame and having arms adapted to extend into the mass

of bristles and agitate the same, and stationary means for causing said stirrer to rotate as the frame is reciprocated.

8. A bristle-redeeming machine comprising a perforated support, on which a mass of bristles may be placed, means for acting on said bristles in such manner as to cause them to pass butt-end first through the perforations of said support, and means below said support arranged to hold the bristles which pass through the same substantially parallel with each other.

9. A bristle-redeeming machine, comprising a fine-mesh screen, the interstices of which are of such size as to admit the butt ends of bristles and reject the split ends thereof, on which the bristles are placed and agitated in such manner as to cause them to pass through the meshes thereof, and a coarser screen below said fine screen, the meshes of which form compartments into which the bristles passing through the first screen may freely enter and by which they are held in substantially the same relation to one another as that in which they pass through the first screen.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ERNEST VOGEL.

Witnesses:

H. W. HASEY,

A. NELSON KILLGORE.