No. 747,651. PATENTED DEC. 22, 1903.

B. M. SCHAUMAN.

MACHINE FOR PREPARING BRISTLES FOR BRUSH MAKING.

APPLICATION FILED APR. 7, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.

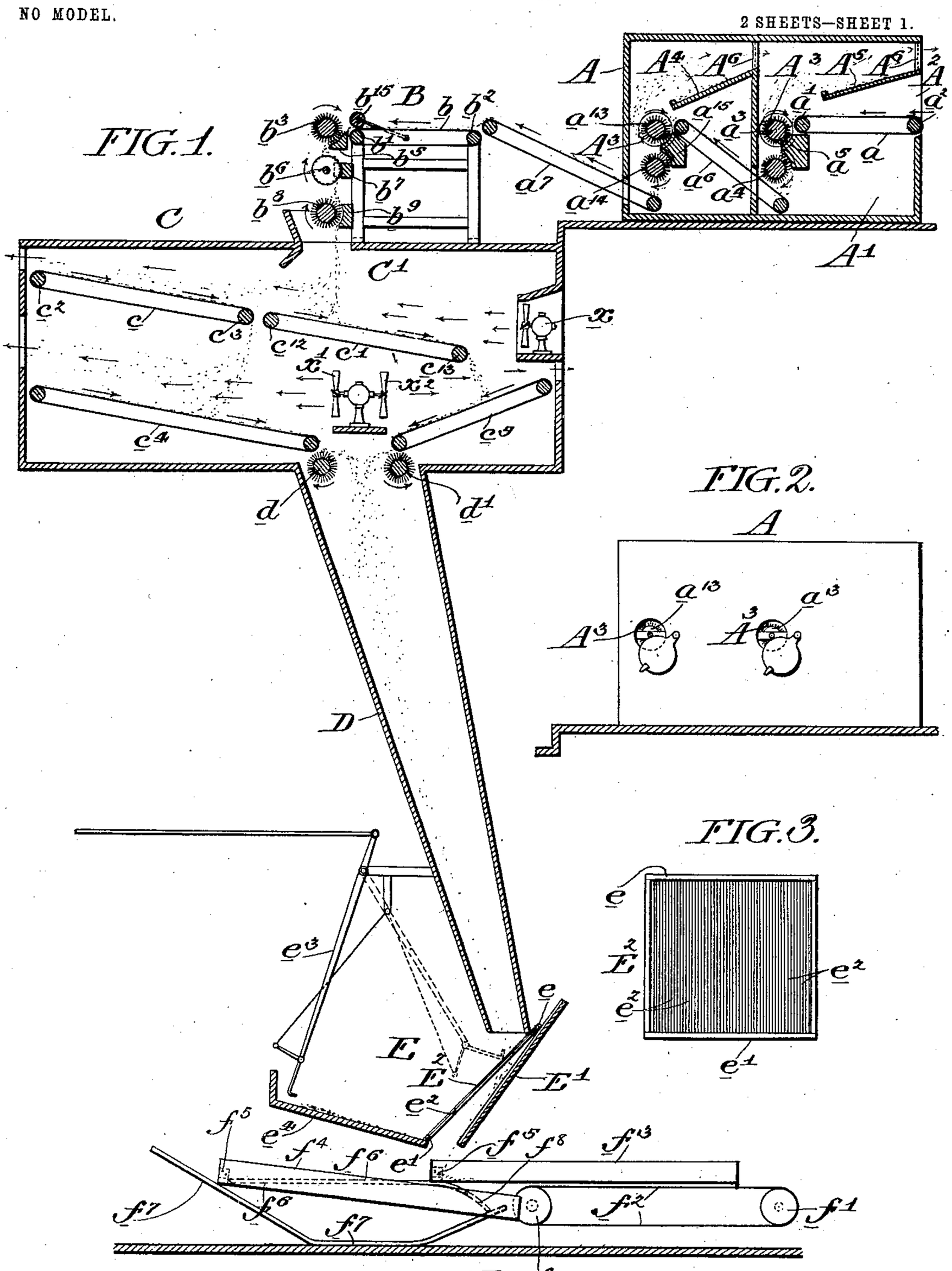


FIG. 2.

FIG. 3.

WITNESSES:
Eugene V. Coggey,
Stewart

INVENTOR.
Bror Max Schauman.
BY Dodge & Williams
ATTORNEY.

No. 747,651. PATENTED DEC. 22, 1903.

B. M. SCHAUMAN.

MACHINE FOR PREPARING BRISTLES FOR BRUSH MAKING.

APPLICATION FILED APR. 7, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

FIG. 4.

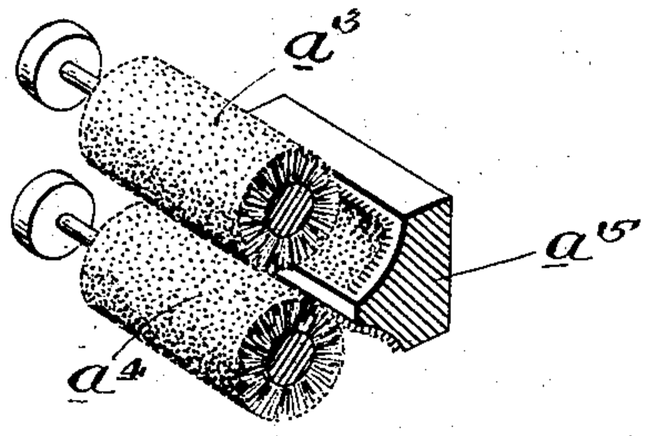


FIG. 5.

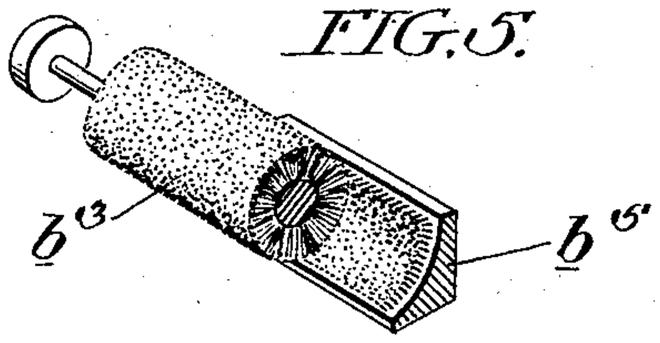


FIG. 6.

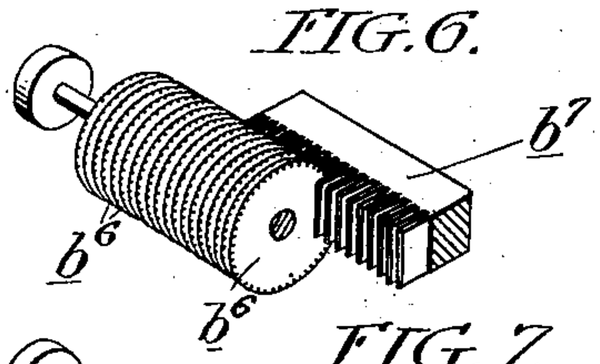


FIG. 7.

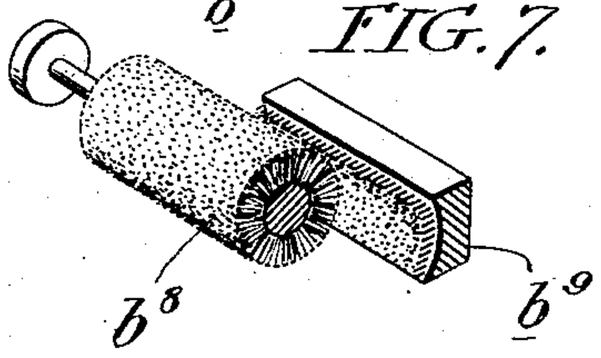
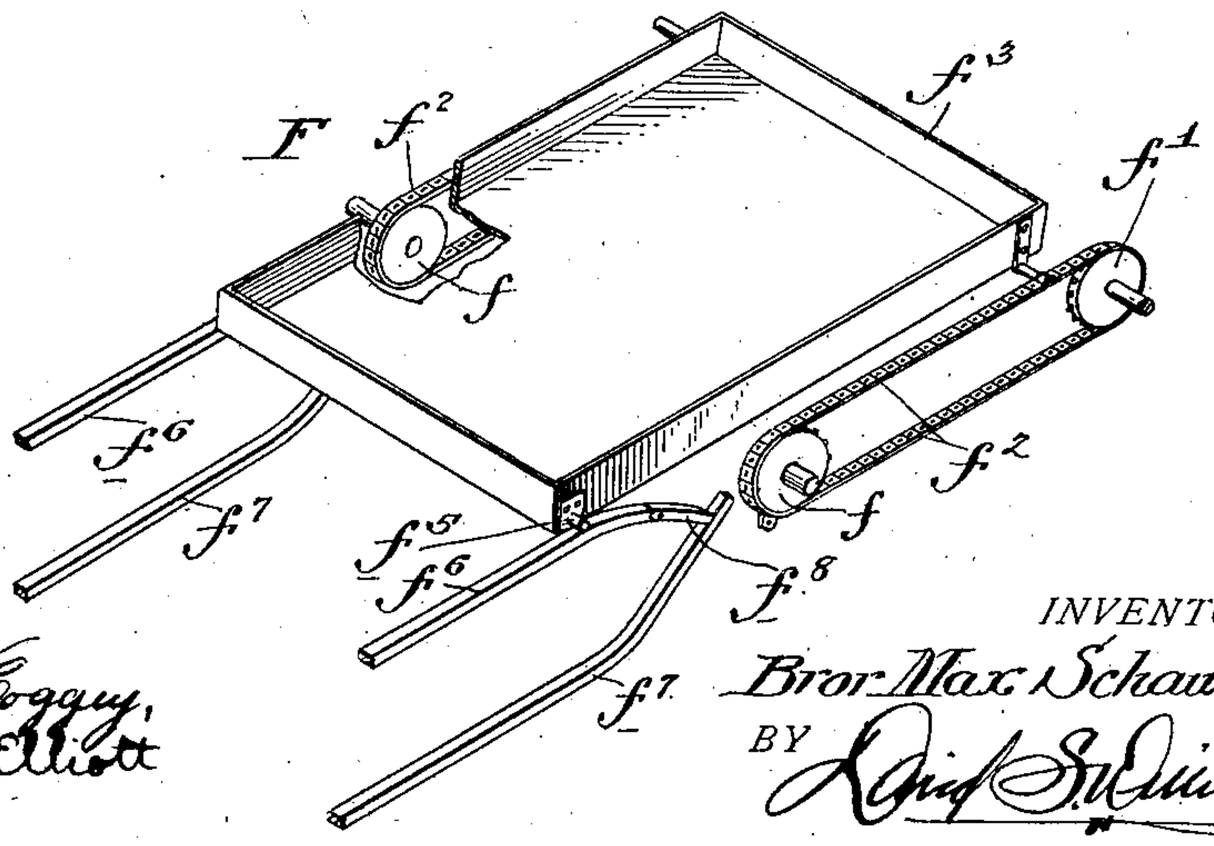


FIG. 8.



WITNESSES:

Eugene V. Eggay,

Norman W. Elliott

INVENTOR.

Bror Max Schauman

BY Louis S. Williams

ATTORNEY.

No. 747,651. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

BROR MAX SCHAUMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO UNION BRISTLE AND FIBER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MACHINE FOR PREPARING BRISTLES FOR BRUSH-MAKING.

SPECIFICATION forming part of Letters Patent No. 747,651, dated December 22, 1903.

Application filed April 7, 1903. Serial No. 151,428. (No model.)

To all whom it may concern:

Be it known that I, BROR MAX SCHAUMAN, a subject of the King of Sweden and Norway, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Preparing Bristles for Brush-Making, of which the following is a specification.

My invention relates to a machine for treating hair or bristles to prepare them for the brush-maker's use, and is adapted to, although not necessarily confined to, the treatment of goat-hair, which contains a certain amount of very fine hair or wool unfit for brush-making and which must be combed out or otherwise removed before the product is fitted for the brush-maker's use. In addition to this my invention involves the straightening and arrangement of the bristles with their butts or root ends in one direction and their soft, split or flag ends in the opposite direction, which is accomplished by taking advantage of the fact that the center of gravity of nearly all of the bristles is located nearer to the root end than the flag end. There is, however, a fair percentage of the bristles in which this does not hold good, so that the old method of dropping the bristles through a vertical chute and allowing them free space in which to turn will not serve to arrange the bristles butts downward which have not their center of gravity at or near to the root end. My invention therefore embodies such treatment as will cause all of the bristles to be turned butts downward regardless of the location of the center of gravity in each bristle. Another step in the treatment embodies the removal of bent bristles, which may be turned in such a manner that both the root end and flag end lie in the same direction, making it impossible to treat such bristles until after they have been removed and straightened. The final step in the treatment contemplates the arrangement of the bristles in traveling pans with the butt ends all in one direction.

My invention will be more fully understood by reference to the following drawings, in which I have represented a complete machine for accomplishing the treatment of the product above described, in which—

Figure 1 illustrates a diagrammatic view of the machine in its entirety. Fig. 2 represents a side elevation of the first separator, showing the dampers for regulating the ingoing current of air which are arranged alike on both sides of the machine. Fig. 3 represents a front elevation of the screens for collecting any bent hair which may fall through the chute. Fig. 4 illustrates a perspective view of a portion of the revolving pickers and picker-plate of the first separator mechanism. Fig. 5 shows a similar view of the revolving comb and comb-plate of the combing mechanism. Fig. 6 represents a like view of the straightening mechanism. Fig. 7 illustrates a perspective view of the finishing-comb and its comb-plate, and Fig. 8 shows a perspective view of a portion of the receiver.

Referring to the reference-letters of the drawings, A represents the first separator mechanism for removing the loosely-associated wool-dust, &c., at the beginning of the operation.

B represents the combing and straightening mechanism.

C represents a second separator mechanism in which all of the woolly matter is removed.

D represents the inclined chute for turning the bristles butts downward as they fall.

E represents the mechanism by which the bent bristles are collected and removed, and F illustrates the receiver mechanism by which the bristles are caught and caused to rest with their butt ends in one direction.

The separator mechanism A comprises a chamber A′, provided with an endless belt or apron a, which is carried by rollers a' and a^2. The material to be treated is fed in through the opening A^2 and carried by the belt a to the removing-pickers a^3 and a^4, which are in the form of rollers, the surface of which is provided with a large number of wire teeth. The material to be treated is caused to pass between these rolls and a corresponding picker-plate a^5, which is in like manner pro-

vided with a large number of teeth arranged in lines between the teeth of the revolving pickers. The material after passing through these rolls is caught and carried by an endless conveyer a^6 to a second set of pickers a^{13} and a^{14}, which are in every respect like those just described and in like manner have a similar picker-plate a^{15}. As the pickers are rapidly revolved they draw in a current of air through the openings A^3 in the side walls of the chamber and by centrifugal force carry the current in the direction indicated by the arrows and in so doing cause a portion of light hair or wool which intermingles with the bristles to be caught up and be deposited upon shelves A^4 and A^5, while the air escapes through reticulated partitions A^6. From the separator mechanism A the partially-treated product is carried by a conveyer a^7 to the combing and straightening mechanism B, which comprises an endless belt or conveyer b, mounted upon rollers b' and b^2, which deliver the material to a revolving comb b^3, the hair being slowly fed to the comb by the conveyer-belt b and a roller b^{15}, which is pivoted to the frame of the machine. The teeth of the revolving comb b^3 are arranged to work between the teeth of a comb-plate b^5, and between these the material is fed to a series of toothed disks b^6, arranged close together and working in a slotted beam b^7, which in conjunction with the disks serve to remove adhering particles of skin, &c., and to straighten such of the bristles as may be bent or curved. The material then passes to the finishing-comb, comprising a toothed cylinder b^8, operating between the teeth of a comb-plate b^9, and from thence the material passes to the final separator C. The material at this point of the operation being practically free from adhering masses or matted bunches is delivered through an opening in the top of the chamber C' to inclined conveyers c and c', each comprising an endless belt or apron carried, respectively, upon rollers c^2 and c^3 and c^{12} and c^{13}, which travel at a slow rate of speed. The material as it falls upon these conveyers is subjected to the action of a light current of air delivered by a fan x, which carries away the fine woolly particles, but allows the heavier hair or bristles to fall upon the conveyers c and c', after which the operation is repeated by similar conveyers c^4 and c^5, operated in a similar manner and by the action of fans x' and x^2 in the manner just described. The bristles, which by this time have been freed from woolly matter, are fed to the inclined chute D by revolving brushes d and d', journaled directly below the adjacent ends of the conveyer c^4 and c^5. The chute D is inclined at such an angle as to cause all of the bristles to touch lightly against one of its inclined walls, causing the flag end, which offers slightly more resistance than the butt-end to lag behind, and thus in the fall the bristles will be delivered at the bottom of the chute with all of the butt-ends pointing downward. As the bristles pass out through the lower end of the chute they are delivered upon an inclined corrugated plate E', over which is arranged a fine-wire screen E^2, comprising bars $e\ e'$, between which are stretched a number of fine wires e^2, arranged in parallel lines very close together. This screen serves to catch any bent bristles which may have escaped the proper action of the combing and straightening mechanism B, and as they collect on the screen they are caught up by a swinging arm e^3 and delivered to a table e^4. The final operation embraces that of catching the bristles in such a manner as to cause all of the butt-ends to point in one direction, which is accomplished by means of the receiver mechanism F, comprising two pans f^3 f^4, which are reciprocated below the plate E' by means of chain belts $f^2\ f^2$, to which said pans are pivotally attached at one end, said belts being driven by sprocket-wheels $f\ f'$, mounted upon stud-shafts at opposite sides of the pans. The pans are alternately passed under the corrugated plate E', the free end of each being guided in its forward movement by a lug f^5, resting upon a rail f^6, and in its backward movement by a rail f^7, inclined at both ends, so that it will receive the lug f^5 at the limit of the forward movement and guide it downward as the pivoted end of the pan is carried around the sprocket-wheel f and again will carry the free end of the pan upward until the lug passes a switch f^8, after which the pivoted end of the pan passes around the sprocket-wheel f' and the lug f^5 will again be brought to bear upon the rail f^6.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A machine for preparing bristles for the brush-maker's use, comprising a separator mechanism adapted to remove loosely-associated wool from the bristles, a combing and straightening mechanism, a second separator mechanism adapted to remove the finer woolly particles from the bristles, an inclined chute for turning the bristles, and a movable receiver to catch and turn the bristles, substantially as specified.

2. A machine for preparing bristles for the brush-maker's use, comprising a separator mechanism adapted to remove loosely-associated wool, from the bristles, a combing mechanism in line therewith, a second separator mechanism adapted to remove the finer particles of wool, associated with the bristles, an inclined chute in line with said mechanism, a mechanism located at the mouth of the chute for collecting and removing bent bristles and a mechanism to receive and turn the bristles, substantially as specified.

3. A machine for preparing bristles for the

brush-maker's use, comprising a separator mechanism, a combing mechanism, a second separator mechanism comprising a series of conveyers to carry the bristles and a fan or fans adapted to project a current of the air in a direction opposite to that taken by the bristles, an inclined chute, a mechanism for collecting and removing bent bristles, and a mechanism to receive and turn the bristles, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

BROR MAX SCHAUMAN.

Witnesses:

DAVID S. WILLIAMS,

ARNOLD KATZ.