

J. MORRISON, JR.
MECHANISM FOR HANDLING BRISTLES,
APPLICATION FILED DEC. 3, 1918.

1,319,104.

Patented Oct. 21, 1919.

2 SHEETS—SHEET 1.

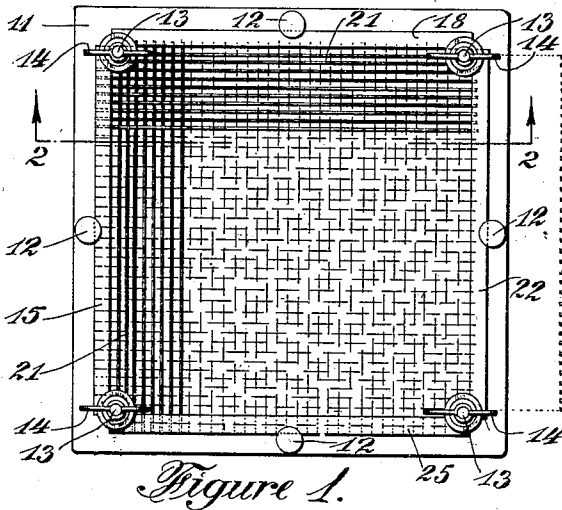


Figure 1.

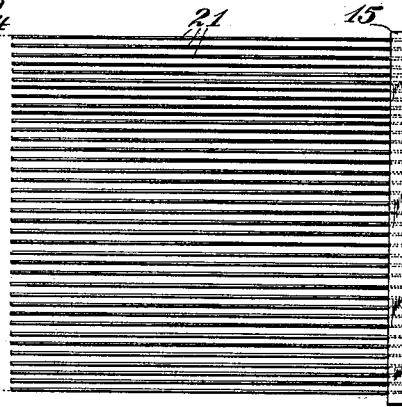


Figure 3.



Figure 2.

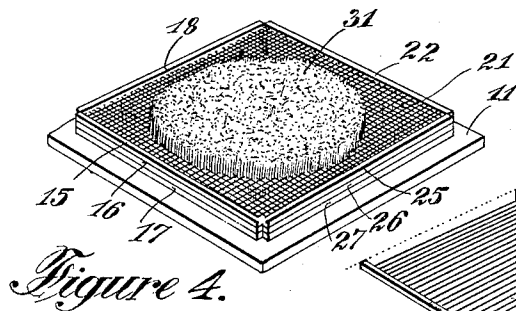


Figure 4.

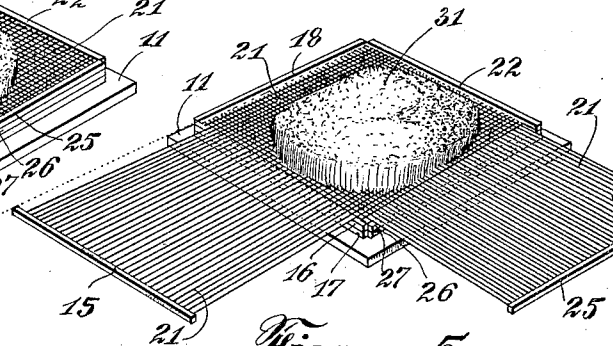


Figure 5.

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2 SHEETS—SHEET 2.

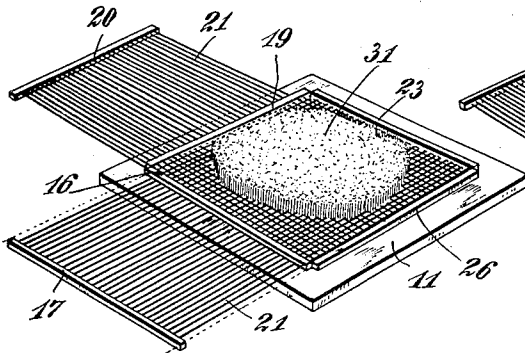


Figure 6.

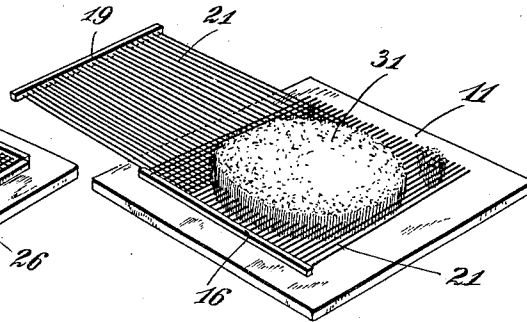


Figure 7.

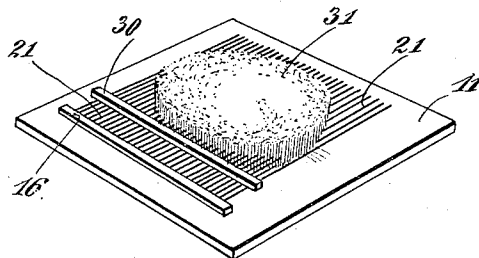


Figure 8.

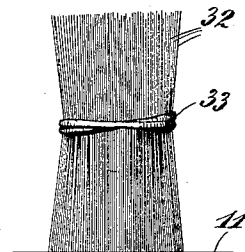


Figure 10.

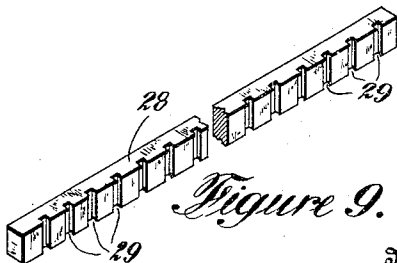


Figure 9.

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UNITED STATES PATENT OFFICE.

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MECHANISM FOR HANDLING BRISTLES.

1,319,104.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN MORRISON, JR., a citizen of the United States, residing at Glens Falls, in the county of Warren and State of New York, have invented certain new and useful Improvements in Mechanisms for Handling Bristles, of which the following is a full, clear, and exact description.

My invention relates to mechanisms for handling bristles of the kind generally used for the manufacture of brushes, my more particular purpose being to facilitate the assortment and classification of loose bristles in order that they may be grouped into bundles or otherwise arranged symmetrically, and thus made ready for succeeding operations.

A good deal of the bristles used in this country are imported, and come in bunches varying in length from two to six or more inches.

The bunches are made up by hand, the loose bristles being assembled parallel to each other, and then combed and assorted as to length, so that the butt ends of the bristles all extend in one direction, the frayed or split ends extending in the opposite directions. In practice bundles of considerable size are finally assembled and tied, after which they are ready for delivery to the brush maker.

In the practical work of brush manufacture, bristles are formed into tufts, and in the individual tuft there are two distinct ways in which the bristles may be arranged with reference to their length, that is, the bristles may be cut to double the length of the tuft as it actually appears thereafter in the finished brush, or it may be cut to the single length of the tuft. In other words, the bristles may be bent like hairpins, or they may be arranged in straight single lengths. Since, however, long bristles are harder to obtain and are more expensive than short ones, there is considerable advantage to the manufacturer in using bristles each having the same length as the tufts into which the bristles are to be formed. In practice, it is an easy matter to buy comparatively short bristles in any quantity and

at any time, but this is not true of the longer bristles.

My invention may also be used for arranging bristles in which both ends are alike, or at least in which the butt-end need not be distinguished from the feather end but in which the bristles are to be disposed parallel to each other.

In cutting bristles for the purpose of making brushes, it is customary to measure and cut from the butt ends. This is upon the principle of conserving as much as possible of the most valuable portion of the bristle. This mode of cutting necessarily results in the accumulation of large quantities of relatively short end portions, which, in this art, are known as tops. These tops are composed of bristles too short to be cut and bent as above described, but of sufficient length to be cut and used in single lengths—that is, the individual bristles, after cutting, each being of the same length as the tufts.

My invention is of peculiar value in connection with the work of sorting and arranging the bristle tops above mentioned.

In practical brush making the bristles are usually cut by hand, and in such case the workman who does the cutting has left in his hands, at intervals, little clusters of the bristle tops. As these tops are left they can readily be tied into bundles, but in order to tie these bundles much time must be consumed. Thus the workman can not do much work cutting bristles unless he can dispose of the tops without stopping to tie them. As a result, some of the principal manufacturers of brushes simply cause the bristle tops to be thrown loosely into boxes or bags. These bristles tops are subsequently sold at a low price and used in the making of inferior brushes, in which the ragged or feathery ends of the bristles are left on. Such brushes are unsightly in appearance and have but little real value for any purpose.

By the aid of my invention, however, the loose bristle tops can be arranged in order, so that the frayed or feathery ends all extend in the same direction.

Beginning with a mass of loose tops, or

with a confused mass of bristles of different lengths, and extending in all conceivable directions, my device brings order out of chaos and enables the bristles, or tops, or mixture
 5 of bristles and tops, as the case may be, to be arranged with the butt ends all extending one way, and with this result accomplished the material may readily be separated into
 10 bunches and tied by hand, or it may be simply tied up in one immense bunch, as preferred.

Reference is made to the accompanying drawings, forming a part of this specification, and in which like letters indicate like
 15 parts throughout all of the figures.

Figure 1 is a plan view of my apparatus, complete and assembled ready for use.

Fig. 2 is a section on the line 2—2 of Fig. 1, looking in the direction indicated by the
 20 arrows.

Fig. 3 is a plan view of one of the removable needle bars forming a part of my device.

Fig. 4 is a perspective of my apparatus, as it appears when packed full of bristles and ready for the needle bars to be removed.

Fig. 5 is a perspective of the apparatus full of bristles, and shows how the two uppermost needle bars are removed.

Fig. 6 is a perspective showing how the two lowermost needle bars are removed.

Fig. 7 is a perspective showing the device as it appears while the first of the two middle needle bars are being removed.

Fig. 8 is a perspective of the device as it appears with only one of the middle needle bars left, and with a stop bar in position to prevent disarranging the bristles.

Fig. 9 is a fragmentary perspective of a spacing bar which may also, if desired, be used as a stop bar; and

Fig. 10 is a side elevation of a bunch of bristles as duly assorted and tied.

A board is shown at 11, and may be a slab of wood or merely the top of a flat table.

A number of bolts are shown at 12, and are detachably connected with the board, preferably extending through it, after the manner of dowel pins. A number of other bolts appear at 13, and are provided with wing nuts 14. These bolts are also detachably connected with the board, preferably extending through it.

Entirely separate from the board and the bolts, and normally disconnected therefrom, are a number of needle bars 15, 16, 17, 18, 19, 20, each having the form shown in Fig. 3, and being provided with a number of needles 21 disposed parallel to each other—that is, arranged in a row. Opposite the needle bars 15, 16, 17, 18, 19, 20 are spacing bars 22, 23, 24, 25, 26, 27, for receiving the ends of the needles. For this purpose the
 65 spacing bars are slightly indented as may

be understood from Fig. 2. In order to fit the ends of the needles into the indentations of the spacing bars, a guide bar 28 provided with notches 29, as shown more particularly in Fig. 9, may be employed. This guide bar
 70 is simply laid across the needles 21 so that the respective needles slide into the notches 29, and this spaces the needles equi-distant, so that their ends may enter the indentations of the spacing bars. A stop bar is shown
 75 at 30 in Fig. 8, and is used for preventing the disarrangement of the bristles when the last one of the spacing bars is withdrawn, as shown in Fig. 8, and as hereinafter described.

In order to arrange the mechanism to receive the bristles the parts are disposed as indicated in Figs. 1 and 2. The several needle bars are superposed one over the other and opposite each needle bar is a spacing bar so that the several spacing bars are likewise superposed one above the other. As thus arranged, the needles of the spacing bars 15, 16, 17, are disposed crosswise of the needles of the spacing bars 18, 19, 20. Moreover, the needles of each spacing bar 15, 16, 17, are in immediate proximity to the needles of each spacing bar 18, 19, 20, so that the groups of needles carried by different spacing bars are paired relatively to each other. For instance, the needles of the spacing bar 15 are paired with the needles of the spacing bar 18, in the sense that the two groups of needles cross each other while practically in contact.

Thus, as may be understood from Figs. 1 and 2, the various needles are so arranged as to constitute practically a plurality of screens located one above the other, these screens being virtually made up of little squares or voids, the respective voids of one screen being directly below those of other screens. In the entire composite structure, therefore, we have voids extending vertically and uninterrupted from top to bottom of the group of screens.

The operation of my device is as follows:—

The bristles, in the condition above described, are showered loosely and slowly upon the screens. If desired, the board 11 and parts carried by it may meanwhile be jarred or agitated gently, each bristle being loose, and having, as above described, a comparatively heavy and solid butt end and also a light or feathery end. Each bristle tends by gravity to turn and drop with its heavier or butt end downwardly. This leaves all of the feathery ends pointing upwardly. More bristles being added and the device shaken or jarred continuously, or as found desirable, the bristles are all worked into the voids, and tend to wedge therein, more or less tightly. The operator by means of his hand or of a beater of some kind, pounds
 130

upon the mass of bristles, now disposed with their light or feathery ends upward, and assuming the general form indicated in Fig. 4. The bristles being all beaten down
 5 evenly, the mass, as a whole, has more or less resemblance to a thick plush mat, as indicated in Fig. 4.

The operator next grasps the spacing bars and draws them out, as shown more particularly in Figs. 5, 6 and 7. He first pulls
 10 out the spacing bars 15 and 18—in other words, the two top spacing bars. Next he withdraws the two bottom spacing bars 17 and 20. This leaves the two middle spacing
 15 bars 16 and 19. The needles of these two spacing bars extend in two directions directly through the center of the mass of bristles, which is now supported upon its lower side—correspondingly to the bottom
 20 ends of the bristles, as may be understood from Fig. 7. Next the spacing bar 19 is withdrawn, as indicated in Fig. 7, and this leaves the parts in the condition indicated in Fig. 8. A stop bar 30 is now rested upon
 25 the needles of the spacing bar 16, as shown in Fig. 8. The operator holds the stop bar with one hand and with the other grasps the spacing bar 16 and withdraws its needles upon the mass of bristles. This leaves the
 30 bristles standing on end, and packed together, but otherwise unsupported.

The operator next ties a band or cord around the entire mass of bristles if he wishes to keep it together as a mass. If,
 35 however, he wishes to divide it into bunches he takes off, with his hand, bunch after bunch of the bristles and ties them into bunches, one of which is shown at 32. He places a cord or band 33 around each bunch.
 40 He may, however, if he so desires, withdraw the last comb slowly, pressing the bristles from it directly into a box, where they remain arranged.

The foregoing description applies more
 45 particularly to bristles which have been cut to comparatively short lengths. For bristles of greater length the spacing bars may be made thicker or larger, or more of them may be employed, as desired.

50 I do not limit myself to the precise construction shown, as variations therefrom

may be made without departing from the spirit of my invention.

I claim:—

1. A device of the character described, 55 comprising a needle bar provided with needles extending therefrom, and a spacing bar detachably engaging the ends of said needles.

2. A device of the character described, 60 comprising a plurality of needle bars each provided with a row of needles, said needle bars being so disposed that the needles of one bar cross the needles of another bar, and a spacing bar detachably engaging the ends 65 of the needles of each row.

3. A device of the character described comprising a plurality of screens detachably connected together and disposed substantially parallel to each other, each screen being 70 made in two parts detachably mated together, so that one of said parts may be withdrawn while its mating part is left in the frame, in order to facilitate the disengagement of the screens from stock material extending therethrough. 75

4. A device of the character described, comprising a plurality of needle bars each provided with needles extending laterally from it and disposed in a row, a plurality 80 of other needle bars each provided with needles extending laterally from it and disposed in a row, said second mentioned needle bars being fitted to engage said first mentioned needle bars in such position that the 85 needles of said second mentioned needle bars cross the needles of said second mentioned needle bars, the various needle bars being detachable from each other and thus removable independently. 90

5. A device of the character described, comprising a composite frame built up of separate bars detachably fitted together, each bar being provided with a number of longitudinal members extending from it in the 95 form of a row, said bars being so formed that when fitted together in said frame the longitudinal members of one bar extend across those of another bar, each bar being removable independently of the others.

JOHN MORRISON, JR.

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