

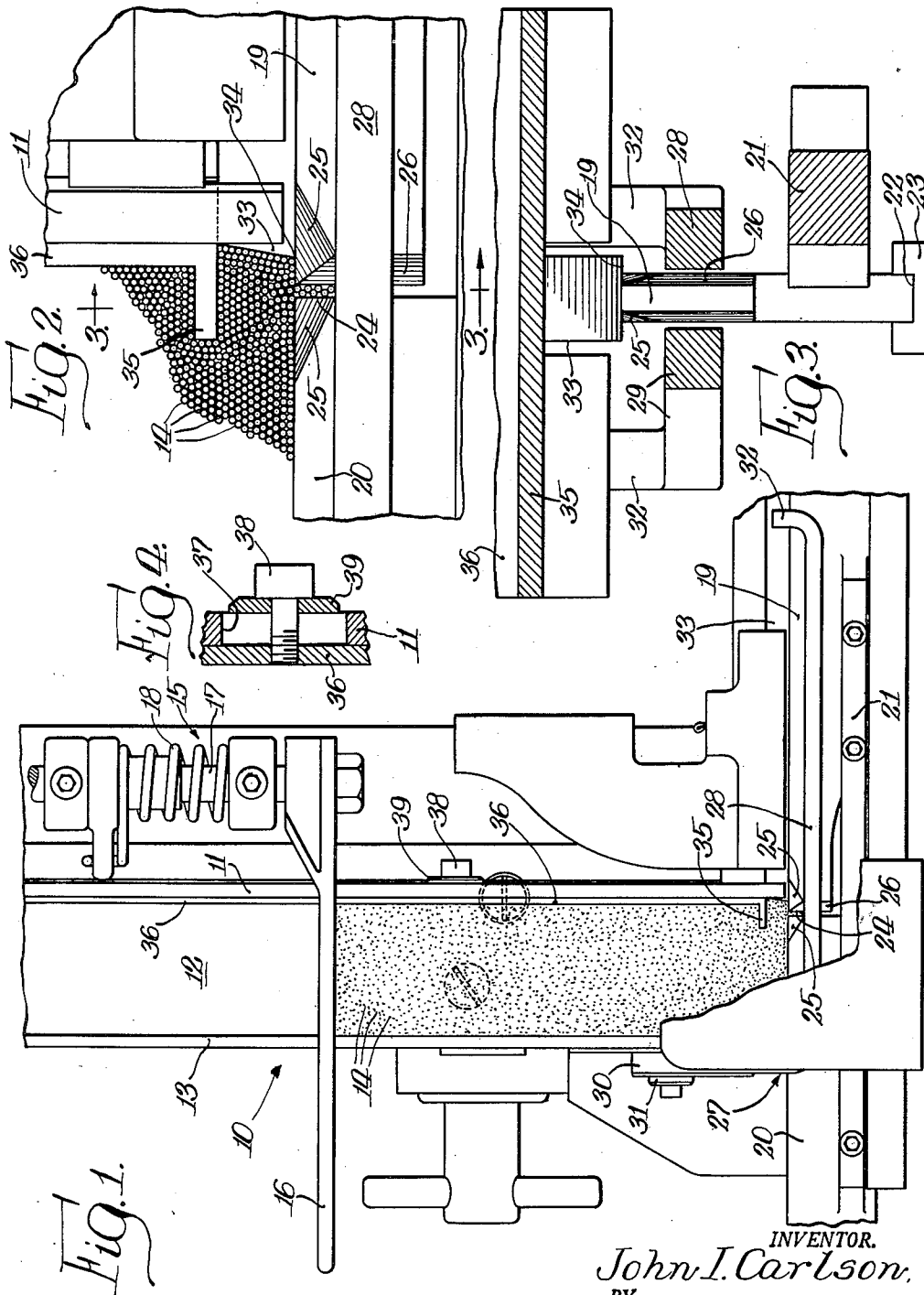
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STOCK BOX FOR BRUSHMAKING MACHINES

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STOCK BOX FOR BRUSHMAKING MACHINES

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The invention relates to a stock box for a brush making machine and has as a general object to provide a stock box of new and improved construction.

A more particular object of the invention is to provide an improvement in stock box construction which reduces to a minimum the splitting of bristles or the jamming of bristles between the picker and the stripper bars.

Another object is to provide a stock box in which the downward force of the column of bristles and the stock weight resting thereon is somewhat relieved from the bristles resting on the picker bar and in the slot therein as the slot in the picker bar approaches the stripper bar.

A further object is to provide a stock box having a baffle projecting inwardly of the box at the side having the stripper bar spaced a short distance above the picker bar.

Other objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a fragmentary view primarily in elevation but partially in section of a brush making machine having a stock box embodying the features of my invention.

Fig. 2 is an enlarged view of a portion of Fig. 1.

Fig. 3 is a vertical sectional view taken along the line 3-3 of Fig. 2.

Fig. 4 is an enlarged fragmentary view of an adjustable securing means.

While the invention is susceptible of various modifications and alternative constructions, it is shown in the drawing and will hereinafter be described in a preferred embodiment. It is not intended, however, that the invention is to be limited thereby to the specific construction disclosed. On the contrary, it is intended to cover all modifications and alternative constructions falling within the spirit and scope of the invention as defined in the appended claims.

As shown in the drawings for purposes of disclosure, the invention is embodied in a stock box, generally designated 10, adapted for use with a brush making machine. The box is provided to hold a supply of bristles, either animal, metal or synthetic, used in the tufting of the brushes made on the machine. The stock box is mounted in vertical position and has three sides 11, 12 and 13, the fourth side being open, as clearly seen in Fig. 1. Bristles 14 are positioned in the box parallel with the sides 11 and 13 and with their ends projecting somewhat through the open fourth side of the box.

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The bristles 14 are pressed downwardly in the box by a weighted means, generally designated 15, of conventional construction. This weighted means herein comprises a flat horizontally extending presser foot 16 nonrotatably secured to the lower end of a vertically disposed shaft 17. The presser foot 16 has a lateral projection, not visible in Fig. 1, which extends into the stock box 10 to overlie and rest on the bristles 14 therein. The shaft 17 is mounted for vertical sliding movement and is also rotatable so that the presser foot 16 may be swung out and away from the stock box 10. A torsion spring 18 is associated with the presser foot so as to tend to urge the same to the position assumed in Fig. 1.

At its lower end the stock box 10 is open with the bristles 14 being supported on the upper edge of a bar known as the picker bar. The picker bar is actually composed of a part 19 and a part 20 rigidly secured together in end to end relationship by another bar or strip 21 commonly referred to in the trade as the picker bar link. The combined bars reciprocate in a groove 22 formed in a way 23 mounted in the bed of the machine. The adjacent ends of the bars 19 and 20 do not abut but are spaced from one another to form a notch 24 which may be adjusted in width by adjustment of the bars 19 and 20 toward or away from one another. The adjacent ends of the bars 19 and 20 are also given a special shape to aid the bars in their function of picking the desired number of bristles but this shaping of the ends of the bars forms no part of this invention. Suffice it to say, therefore, that each bar is given a triangular bevel 25 with bar 19 also given a bevel 26 along its end edge.

Acting as a limiting means determining the depth of the picker bar notch 24 is a forked element, generally designated 27, having a pair of tines or fingers 28 and 29 extending parallel with and closely adjacent to the picker bar on opposite sides thereof. The tines 28 and 29 are joined in a yoke 30 which is bent at right angles to the tines 28 and 29 and is adjustably secured by means of a bolt 31 to raise or lower the fork for varying the depth of the notch 24. At their free ends the tines 28 and 29 have upturned portions 32 to prevent any accidental loss of bristles when they are moved by the picker bar near the end of the fork for further steps in the tufting operation.

Disposed above the picker bar and sliding on the upper edge thereof is a stripper bar 33. The bar 33 is urged downwardly onto the picker bar by spring means not clearly shown but is held

stationary against any longitudinal movement. One end of the bar 33 projects through the wall 11 and into the stock box 10. At that end the bar 33 is cut on a slight bias so as to form with the edge in contact with the picker bar an angle somewhat less than 90° so as to form a point 34.

As is well known to those skilled in the art, it is the purpose and function of the picker bar to pick up a certain number of bristles and transport the same to a position at the end of the fork 27 where other mechanism of the brush making machine comes into play and inserts them as tufts in a previously drilled brush back. This is effected, of course, by having the required number of bristles drop into the notch 24 as the picker bar reciprocates back and forth underneath the column of bristles in the stock box. Preferably the picker bar always picks up the same number of bristles or at least within one of the same number of bristles, for example, seven or eight. It is the function of the stripper bar 33 to remove from the notch 24 any bristles not more than half within the notch, or any bristles which are not properly within the notch because not lying strictly at right angles to the picker bar, or any other bristles which are likely to interfere with the transfer of the desired number of bristles from the stock box to the end of the fork 27. Were the bristles always of exactly the same diameter the notch 24 could be adjusted so that there would be very little difficulty in having the picker bar always pick the same number of bristles. However, in working with elements of such small diameter (wire bristles average .012 of an inch in diameter, and synthetic polymer bristles such as "nylon" average .018 of an inch in diameter), it is impossible to hold exactly to these dimensions and even variation of a few thousandths of an inch constitutes a very big percentage change in the diameter and hence in the number of bristles that will fit into the picker bar notch.

As a result, great difficulty has long been experienced because the point 34 of the stripper bar would split a bristle, particularly a synthetic bristle, which was half in and half out of the notch. In the case of wire bristles, the bristle would become wedged underneath the stripper bar or repeated instances of the point of the stripper bar striking a wire bristle half in and half out of the notch would dull the point and presently either an excess number of bristles would be picked up or there would be an increased tendency of the bristles to slip underneath the stripper bar and become wedged or otherwise interfere with the proper operation of the machine. Various attempts were made to overcome this problem by changing the shape of the end of the stripper bar and in other ways, but all have to date proved unsuccessful.

Herein a solution to this problem is disclosed. Located above the picker bar a distance approximately that of the width of the stripper bar 33, though this relationship is in nowise critical, and on the wall 11 through which the stripper bar projects is an inwardly projecting baffle 35. This baffle, as best seen in Fig. 1, projects inwardly only a relatively small distance, on the order of one-fifth or one-sixth of the width of the stock box 10, and thus makes its presence felt only over the small area directly beneath it. Herein the baffle 35 takes the form of a flange on the lower end of a plate 36 mounted on the inner face of the wall 11 of the stock box. The plate 36 is mounted for vertical adjustment relative to the

wall 11 so as to vary the position of the baffle 35 relative to the picker bar and to that end the plate 36 is secured by a plurality of means of the type shown in Fig. 4. Wall 11 has a vertically extending slot 37 formed therein and projecting through this slot is a bolt 38 which engages the plate 36 and also passes through a washer 39 by means of which the plate 36 may be tightly clamped in any adjusted position.

Extensive use of the construction under actual commercial conditions has established the success of the invention and the fact that it is the solution to the heretofore unsolved problem. Located as it is, the baffle 35 relieves the bristles beneath it from the downward force exerted by the weight of the column of bristles and from the weighted means 15 that would otherwise press down on them and which, moreover, is exerted on the bristles to the left of the baffle 35, as viewed in Figs. 1 and 2. While this force in actual pounds is not considerable, nevertheless it is sufficient to force the bristles into the notch 24 of the picker bar as it reciprocates underneath the column of bristles. With the relief of this force from the bristles in the notch of the picker bar and immediately above the picker bar as it enters the area beneath the baffle 35, it is in the first place easier for the stripper bar 33 to strip off of the picker bar a bristle which is only partially received in the notch 24. Thus there is not present the same force tending to retain the bristle in the notch or to force it underneath the stripper bar 33 as when the baffle 35 is absent. It is also believed that the bristles trapped in the small space underneath the baffle 35 in and of themselves act as stripper means relieving the point 34 of the stripper bar of much of the work which it previously had to do and, particularly, of much of the abutting against bristles wedged half in and half out of the notch and thus offering a very firm and securely lodged element with which the point 34 was brought into engagement. While the bristles 14 in the area beneath the baffle 35 thus act as stripper means, they are, of course, being constantly changed and thus have no opportunity to wear to any shape which would interfere with the proper operation of the picker bar.

As is well known to those skilled in the art, the bristles are not picked precisely at the middle but are picked somewhat to one side of the middle. This is necessary in order that the jaws performing the tufting and stapling operation may engage the tuft of picked bristles directly at the midpoint for otherwise each tuft would be composed of short and long bristles. Since the bristles are neither supported nor picked by the picker bar directly at the midpoint, there is a natural tendency for the longer portions of the bristles to drop down and thus not lie parallel with the top surface of the picker bar, that is, they do not lie horizontal. This means, of course, that, due to the inclination of the bristles to the horizontal, the top bristle in the notch 24 might at one side of the picker bar be within the notch and at the other side project outwardly of the notch. Under such circumstances, the stripper bar might well shear off the bristles or the bristles might jam under the stripper bar. Another difficulty encountered with a conventional stock box is that the bristles some times do not lie absolutely perpendicular to the picker bar. With the notch 24 in the picker bar being so very narrow, the bristles cannot drop into it

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unless they are lying very nearly at right angles to the picker bar.

The provision of the flange or baffle 35 is material in overcoming both of these problems, particularly the former. In the first place, with the baffle relieving the bristles underneath the baffle from the weight of the column of bristles and the presser foot, there is less of a tendency for the bristles to assume other than a horizontal position. Moreover, with the baffle disposed horizontally, that is, parallel to the top surface of the picker bar and with the baffle defining a space for a limited number of bristles, the bristles tend to assume a horizontal position much more readily and completely than when there is nothing but more bristles above them all crowding and forming an irregular rather than a plain, truly horizontal surface above them. Not only do the bristles in this space beneath the baffle tend to assume and retain a horizontal position, but they also tend to assume and maintain a position more nearly perpendicular to the picker bar. Believed to contribute to this latter result is the fact that the baffle 35 not only is parallel with the top surface of the picker bar, that is, horizontal, but that its edge is parallel to the wall 11 of the stock box, that is, perpendicular to the direction of reciprocation of the picker bar. It is believed that the bristles in passing this inner edge are, like the edge itself, caused to assume a position more nearly perpendicular to the direction of movement of the picker bar.

I claim as my invention:

1. In a brush making machine, a reciprocatory picker bar having a notch formed therein for receiving a desired number of bristles, a stripper bar cooperating with said picker bar, a stock box disposed vertically for the gravity flow of bristles and mounted perpendicular to the direction of reciprocation of said picker bar and with its end immediately adjacent the notched edge of said picker bar, said stock box being open at the end adjacent said picker bar so that the stock in said box rests directly on said picker bar, and a single baffle plate projecting inwardly of said stock box a fraction only of the width of said box from the side of emergence of the picker bar with bristles in its notch, said baffle plate projecting at right angles to the longitudinal center line of said stock box and closely adjacent said picker bar to relieve at the stripper bar the force otherwise acting to urge bristles into the notch in said picker bar and to trap bristles beneath said plate to aid the stripper bar in removing excess bristles from the notch in the picker bar.

2. In a brush making machine, a reciprocatory picker bar having a notch formed therein for receiving a desired number of bristles, a stripper bar cooperating with said picker bar, a stock box mounted perpendicular to the direction of re-

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ciprocation of said picker bar and with its end immediately adjacent the notched edge of said picker bar, said stock box being open at the end adjacent said picker bar so that the stock in said box rests directly on said picker bar, and a baffle plate projecting inwardly from the side of said stock box from which said picker bar emerges with its notch filled with bristles parallel with and closely adjacent to said picker bar for less than one-third of the width of said stock box to form adjacent said stripper bar a pocket to trap a small quantity of bristles.

3. In a brush making machine, a reciprocatory picker bar having a notch formed therein for receiving a desired number of bristles, a stripper bar cooperating with said picker bar, a stock box mounted perpendicular to the direction of reciprocation of said picker bar and with its end immediately adjacent the notched edge of said picker bar, said stock box being open at the end adjacent said picker bar so that the stock in said box rests directly on said picker bar, and a plate adapted to be secured to that wall of the stock box having the stripper bar projecting therethrough and having at the end adjacent the picker bar an inwardly projecting flange forming a baffle supporting the weight of the bristles above it and trapping bristles beneath it, said baffle being positioned approximately at the top of said stripper bar.

4. In a brush making machine, a reciprocatory picker bar having a notch formed therein for receiving a desired number of bristles, a stripper bar cooperating with said picker bar, a stock box mounted perpendicular to the direction of reciprocation of said picker bar and with its end immediately adjacent the notched edge of said picker bar, said stock box being open at the end adjacent said picker bar so that the stock in said box rests directly on said picker bar, and a baffle projecting inwardly from the side of said stock box from which said picker bar emerges with its notch filled with bristles, the under surface of said baffle lying in a plane parallel to the plane of the top surface of said picker bar and the inner edge of said baffle lying at right angles to the direction of movement of said picker bar and means for adjustably securing said baffle to permit variation in the spacing thereof from said picker bar.

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