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2,272,800

RECIPROCATING TRIMMER MECHANISM FOR BRISTLING MACHINES

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2 Sheets-Sheet 1

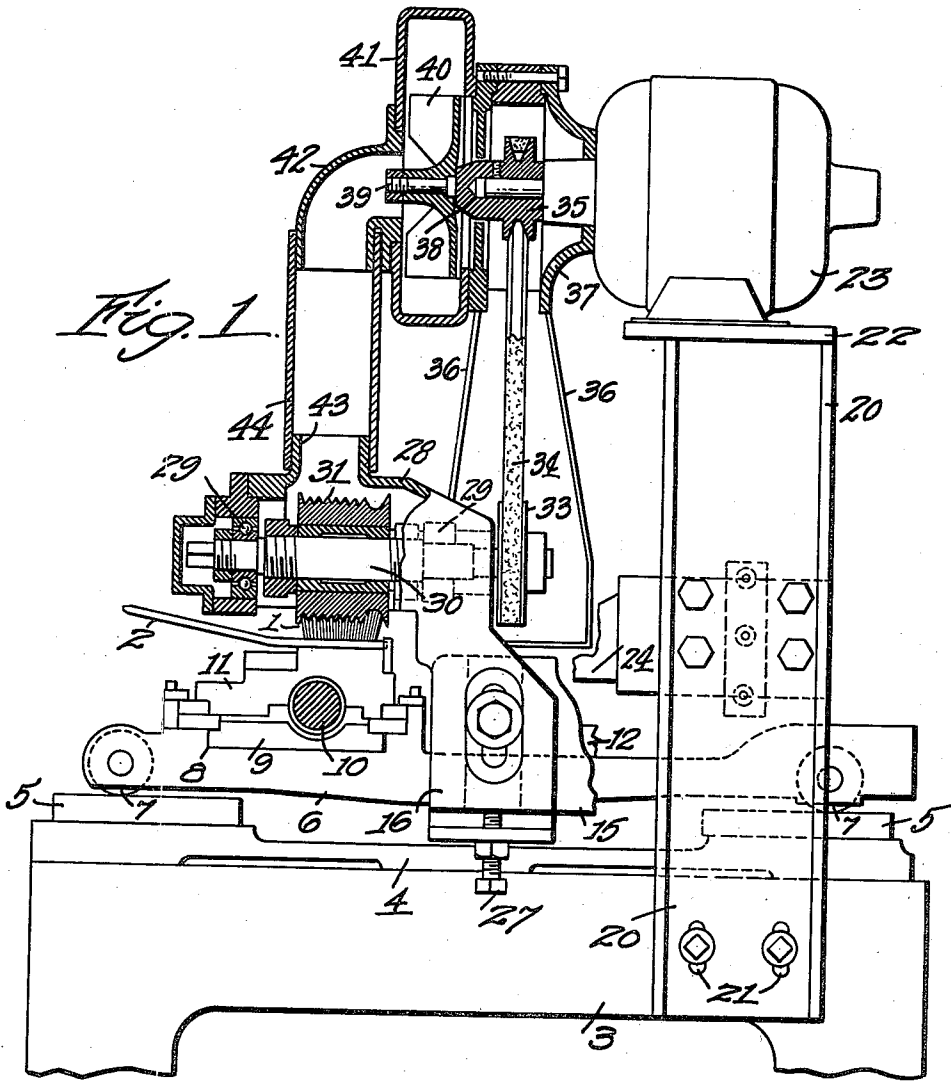


Fig. 1.

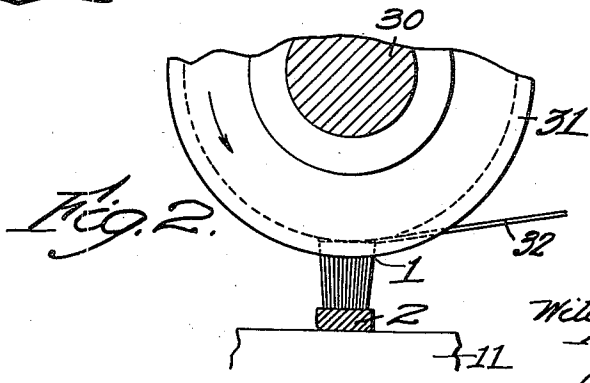


Fig. 2.

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2 Sheets-Sheet 2

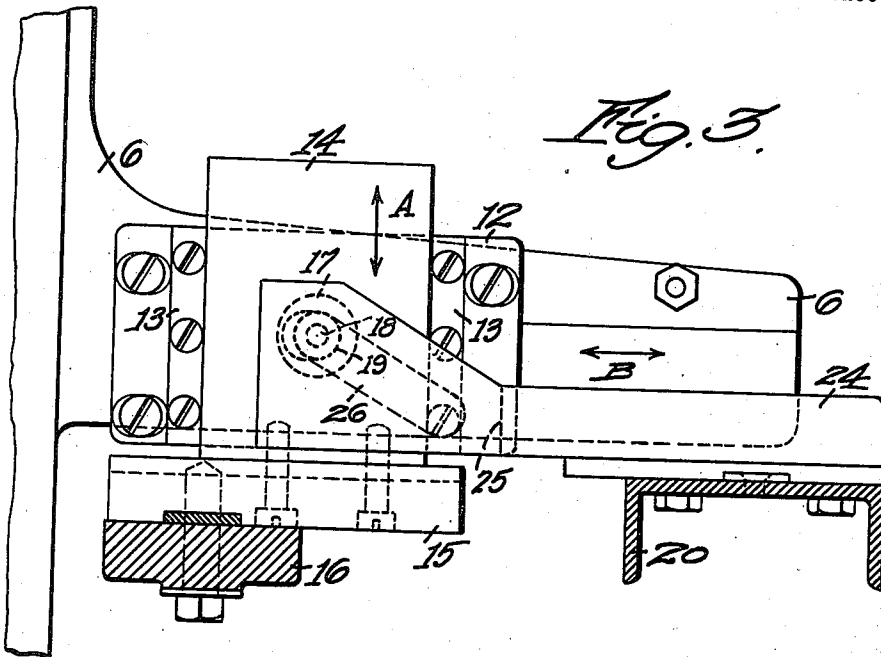


Fig. 3.

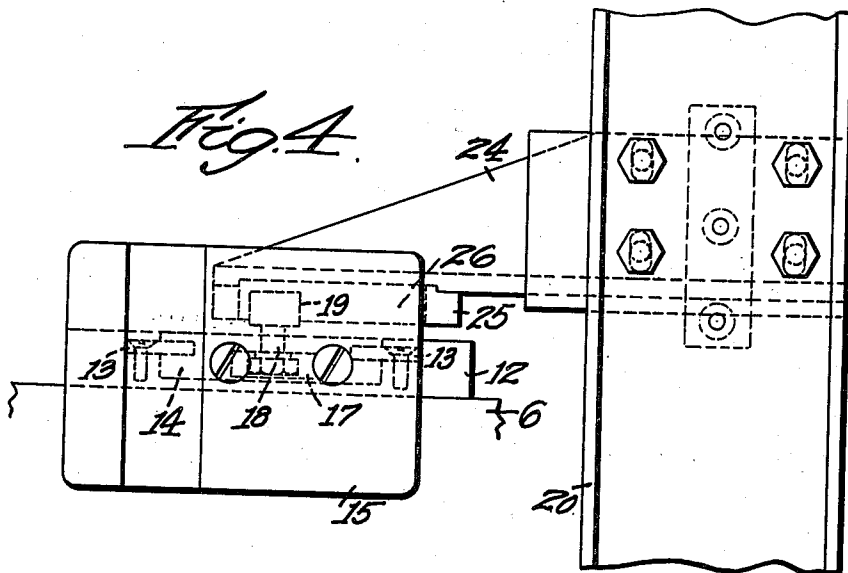


Fig. 4.

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UNITED STATES PATENT OFFICE

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RECIPROCATING TRIMMER MECHANISM FOR BRISTLING MACHINES

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16 Claims. (Cl. 300—17)

This invention relates to trimmer mechanisms for bristling machines, and the objects of the invention include the provision of a trimmer for the ends of previously set bristles, such trimmer being of a construction to thoroughly trim the bristles in a brush back without removing the brush from the bristling machine; the provision of a bristle trimmer which operates to apply a desired conformation to the ends of bristles in a brush back just after the setting operation and before the brush blank holder leaves the bristling machine; the provision of a bristle trimmer which is arranged to sweep transversely across the bristles in a brush back as many times as the brush carriage reciprocates; and the provision of a trimmer mechanism which is mounted to follow the motions of the brush and holder therefor so as to move with the same longitudinally of the brush, but at the same time is adapted to reciprocate transversely thereof so as to ensure cutting only transverse configurations in the bristles.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

Fig. 1 is a view in end elevation showing a trimmer embodying the present invention, and as applied to a bristling machine, parts being in section;

Fig. 2 is a diagrammatic representation illustrating the shearing of the bristle ends;

Fig. 3 is a plan view showing the cam mechanism employed to reciprocate the trimmer; and

Fig. 4 is a side elevation of the parts shown in Fig. 3.

In the prior art, it has been necessary to remove bristled brushes from the bristling machine and to manually transfer them to a stationary trimmer cutter to obtain the desired configuration of the bristle ends as illustrated for example at 1 on the bristles in brush 2 in Fig. 1. The present invention, however, is directed to a mechanism adapted to be mounted on the bristling machine and to automatically trim the bristles to desired shape.

The stationary base of the bristling machine is indicated at 3, and located on its top surface there is a plate 4 having two cam surfaces 5, 5, one at the front of the machine and one at the rear, not here shown but similar to those at 70, 70 in patent to Person, 1,846,141, dated February 23, 1932. A carriage 6 is equipped with rollers 7 which travel on the cam surfaces, and as the

carriage is reciprocated left to right in Fig. 1, its height is varied by these cam surfaces for the drilling and setting operations, which form no part of the present invention. The carriage has a guide-way 8 which slidably guides a slide 9, the latter journalling a large screw shaft 10. This shaft is adapted to mesh with a half-nut on the brush blank holder 11 which slides longitudinally along the slide 9 under influence of the screw shaft. The carriage 6 and slide 9 are transversely reciprocated by appropriate cam or other means, as shown in Patent No. 1,846,141, and the screw shaft 10 is intermittently rotated in timed relation to advance the brush blank holder past the drill and the bristle setting needle. The mechanism for accomplishing these movements form no part of the present invention, and as they are clearly disclosed in said patent, it is not thought necessary to further illustrate them here.

On the top surface of carriage 6, there is mounted a horizontal plate 12 to the rear of the slide 9. This plate is provided with ways 13 for the sliding reception of a further plate 14 mounted to reciprocate in the direction of arrow A, Fig. 3. At one edge of plate 14, there is secured a vertical support 15 to which is adjustably bolted a bracket 16. Plate 14 has a substantially central depression 17 in which is located a pin 18 mounting a roller 19, the latter extending up above the top surface of the plate.

A channel iron 20 is adjustably secured to the stationary base 3 by means of bolt and slot connections 21, and this iron extends vertically, having a platform 22 on its upper end to support the motor 23. Adjacent the central portion of the iron 20, there is secured thereto a bracket 24 which extends forwardly partially over plate 14. On its lower surface, bracket 24 is provided with a horizontal plate 25 which has a bottom slot 26 formed therein at an inclination to the direction of movement of the carriage 6, such direction being represented by the arrow B, Fig. 3. The roller 19 enters slot 26 and runs therein, and therefore it will be seen that plate 14 and its attached bracket 16 will be forced outwardly of carriage 6 upon movement of the latter to the right in Fig. 3.

Bracket 16 may be vertically adjusted by screw 27, and the bracket extends upwardly to mount a housing 28 having bearings 29 journalling shaft 30. Housing 28 is open at the bottom to allow a cutting range for the trimmer tool 31 mounted on the shaft. This tool is shaped to form the con-

figuration 1 in the brush bristles, and as diagrammatically shown in Fig. 2, it is provided with a stationary cutter 32 which coacts therewith to shear the ends of the bristles to desired form.

Shaft 30 extends rearwardly of bracket 16 to mount a V-pulley 33, connected by belt 34 to a like pulley 35 on the motor shaft. Inclined guards 36 depend from a pulley housing 37 to enclose the belt and yet allow for its movement relative to the stationary motor. The pulley 35 is provided with an axial extension 38 which mounts a fan shaft 39 for fan 40, while the pulley housing 37 mounts a fan housing 41 having a downturned spout 42. A spout 43 is formed in the housing 28 and a rubber hose 44 connects the spouts, this hose allowing for relative movement of the trimmer and fan.

As is well understood in the art, the carriage 6 reciprocates with each row, or each two rows, of bristles set in the brush back. The trimmer 31 reciprocates with the brush longitudinally thereof, as the trimmer is secured to the carriage, but the motor and fan are stationarily mounted, as well as bracket 24. Hence, due to slot 26 and roller 19, the trimmer will reciprocate transversely of the brush during each reciprocation of the carriage. Of course, the holder 11 is moved intermittently along slide 9, so that the bristled brushes move past the trimmer, but in the newer high-speed machines, a single passage of the brush under the trimmer may not be enough to ensure a thorough trim. However, the traverse of the trimmer across the brush on each reciprocation of the carriage 6 provides sufficient cutting action to accomplish the desired finished bristle configuration.

Having thus described our invention and the advantages thereof, we do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what we claim is:

1. In a brush bristling machine, a movable brush holder, and means to move the same in at least one direction, a trimmer mechanism for bristles previously set in a brush blank in said holder, said mechanism being mounted on said bristling machine and being constructed and arranged to travel with said holder in said one direction and relatively transversely thereto.

2. In a brush bristling machine, the combination of a movable holder adapted to receive a brush blank and means to travel said holder, with a trimmer for bristles set in said blank, means mounting said trimmer for movement with said holder and transversely across said brush blank, and means to so transversely move said trimmer.

3. In a brush bristling machine of the type adapted to set bristles in brush blanks, the combination of a carriage, a brush blank holder on said carriage and adapted to progress thru the machine; with a bristle trimmer mechanism mounted on the carriage for movement therewith, said mechanism being effective to trim the set bristles during the progress of said brush blank holder.

4. In a brush bristling machine of the type adapted to set bristles in brush blanks, the combination of a brush blank holder and means to travel said holder thru the machine to bristle blanks therein in a predetermined direction; with a bristle trimmer mechanism mounted on the machine adjacent the path of travel of said holder, said mechanism and said holder both being movable in the direction of travel of said blank holder

at different speeds to thereby trim bristles in said blanks.

5. In an apparatus of the class described, a base, movable means on said base supporting a brush holder, a trimmer mechanism slidably mounted on said movable means, and means to slide said trimmer mechanism relative to said brush holder during movement of said movable means.

6. In an apparatus of the class described, a base, movable means on said base supporting a brush holder, a trimmer mechanism slidably mounted on said movable means, and means on said base effective to slide said trimmer mechanism relative to said holder.

7. In an apparatus of the class described, a base, a carriage movable on said base, a brush blank holder slidably mounted on said carriage and adapted to travel brush blanks thru a bristling machine, a slide movably mounted on said carriage, a trimmer mechanism on said slide, and means to move said slide and its trimmer mechanism relatively to said brush blank holder during movement of said carriage.

8. In an apparatus of the class described, a base, a carriage movable on said base, a slide on said carriage, a brush blank holder on said slide, a trimmer mechanism on said carriage, said mechanism being mounted for movement transversely of said carriage, means on said base effective to move said trimmer mechanism relative to said brush blank holder during movement of said carriage.

9. In an apparatus of the class described, a base, a carriage mounted for reciprocable movement on said base, a brush blank holder on said carriage, a trimmer mechanism slidably mounted on said carriage for movement transverse of the carriage movement, means on said base operatively connected with said trimmer mechanism to move the same relative to said carriage and brush blank holder upon reciprocation of said carriage.

10. An apparatus as recited in claim 9 in which said means on said base comprises a cam track set at an inclination to the direction of movement of said carriage.

11. In an apparatus of the class described, a base, a stationary cam on said base, a carriage, a trimmer mechanism slidable on said carriage, and means on said mechanism engaging said cam.

12. In an apparatus of the class described, a base, a bracket on said base, a power source on said bracket, a carriage on said base, a trimmer mechanism slidable on said carriage, means connecting said power source and said mechanism to drive the latter, and means on said bracket operatively connected with said mechanism to move the same relative to said carriage and said base.

13. In an apparatus of the class described, a base, a carriage on said base, said carriage being mounted for reciprocatory movement, a slide on said carriage mounted for reciprocatory movement at an angle to said carriage movement, a trimming cutter on said slide, and cooperative means on said base and said slide effective to move said slide relative to said carriage and base when said carriage moves relative to said base.

14. In an apparatus of the class described, a base, a carriage reciprocably mounted on said base, a brush blank holder mounted on said carriage for movement therewith, a slide on said carriage, a trimmer mechanism on said slide, said slide and said trimmer being adapted to

move with said carriage, and means to move said slide transversely to the direction of said carriage movement.

15. In an apparatus of the class described, a base, a carriage on said base, a brush blank holder movable along said carriage and adapted to receive blanks to be bristled, a slide on said carriage mounted for movement parallel to said holder, a trimmer mechanism on said slide for trimming bristled brush blanks, cooperating means on said base and said mechanism to move said slide during the carriage movement, whereby said trimmer mechanism moves with said

blanks in one direction and relative to said blanks in another direction.

16. In an apparatus of the class described, the combination of a stationary base, an upstanding bracket on said base, and a horizontal cam track on said bracket; with a carriage reciprocally mounted on said base, a trimming cutter support on said carriage, said support being mounted for movement relative to said carriage, and a cam follower on said support and engaging in said cam track.

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