

March 30, 1943.

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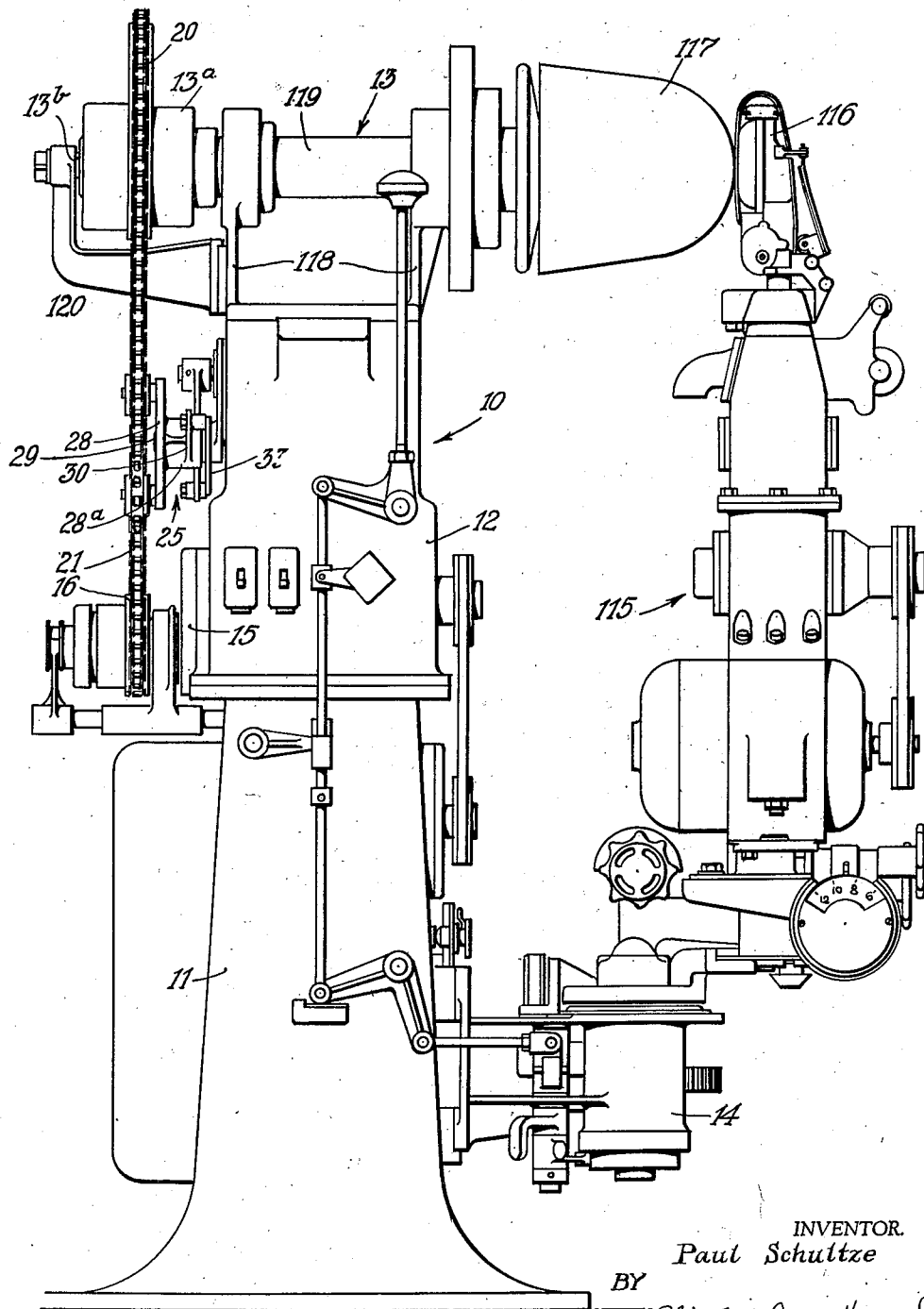
2,315,276

POUNCING MACHINE

Filed Dec. 19, 1939

3 Sheets-Sheet 1

Fig. 1



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FIG. 2

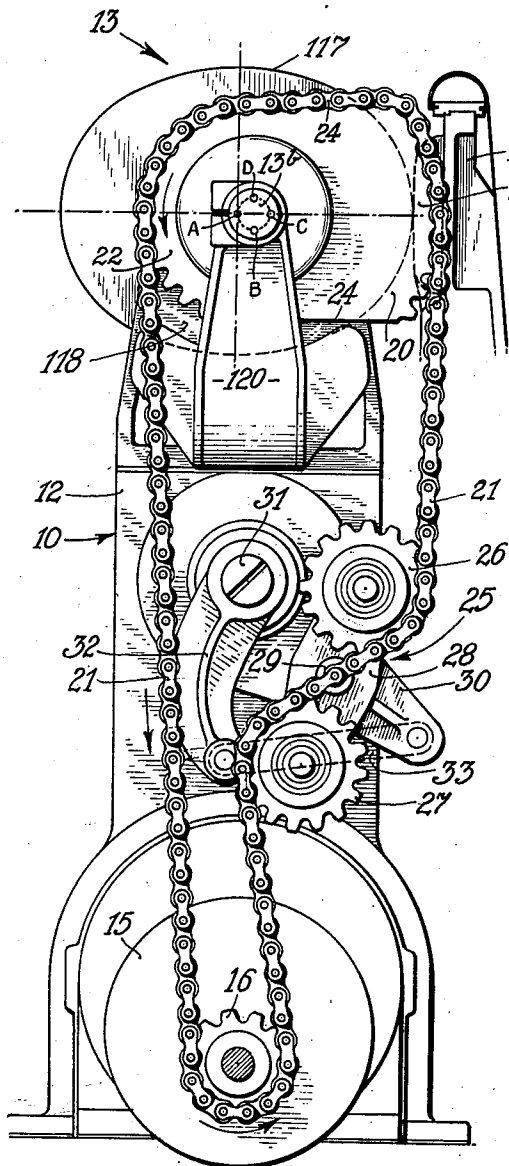
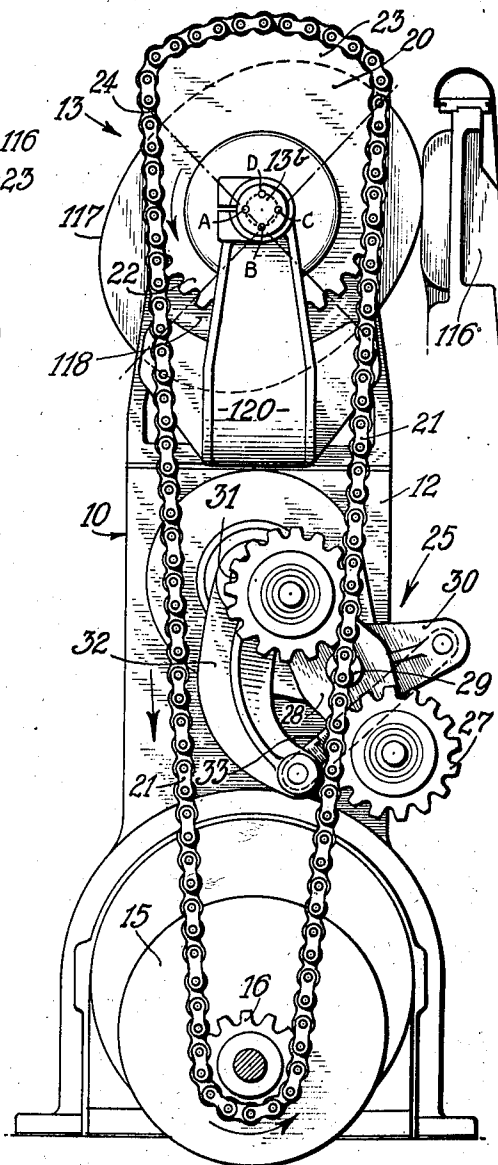


FIG. 3



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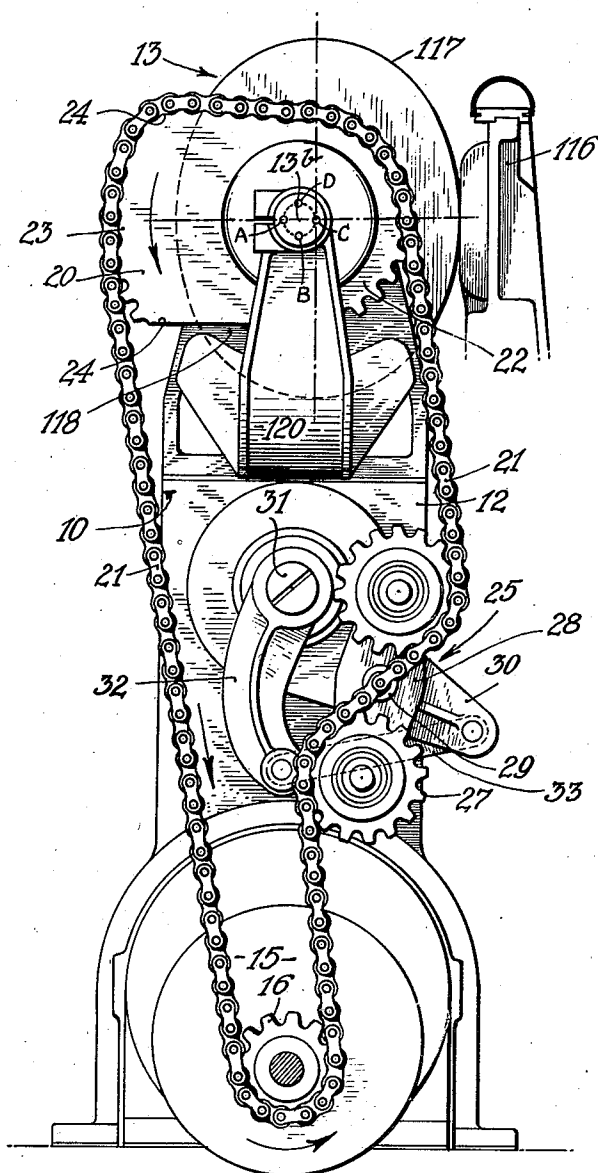
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Fig. 4



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UNITED STATES PATENT OFFICE

2,315,276

POUNCING MACHINE

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Application December 19, 1939, Serial No. 309,945

2 Claims. (Cl. 223—20)

This invention relates to a machine for finishing or pouncing hat bodies.

One of the objects of this invention is to provide a machine for finishing hat bodies which is simple in construction, efficient in operation, and sturdy and durable under conditions of rigorous use. Another object is to provide a machine of the above nature capable of imparting a uniform finish to all portions of the crown of an oval hat. Other objects will be in part apparent and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings in which is shown one of the various embodiments of my invention,

Figure 1 is an elevation of one side of my machine;

Figure 2 is an enlarged fragmentary elevation of the rear of my machine certain operating parts being shown in one position;

Figure 3 is an enlarged view similar to Figure 2 with the operating parts shown in another position; and,

Figure 4 is an enlarged view similar to Figure 2 but showing the operating parts in still another position.

Similar reference characters refer to similar parts throughout the various views of the drawings.

Certain types of hats, particularly better grade hats, require a uniform, smooth finish on the crowns thereof, and this finish is difficult to attain with conventional pouncing machines because the hat crown is oval in shape, and accordingly as it rotates during the pouncing operation, its circumferential velocity varies.

Because of the oval shape of the hat, the end portions thereof are of sharper curvature than the broader and flatter side crown portions, and where a relatively soft pouncing pad is used, the contacting surface of the pad on the end portions is less than that on the flatter side portions, resulting in a condition of greater pressure per unit area at the ends than at the sides. This obviously results in non-uniform finishing of the hat and accordingly derogates from its quality.

While various expedients have been resorted to, they have been characterized by mechanical and other difficulties resulting from the structural complexity of the machines utilized. It is

accordingly another object of this invention to obviate the above difficulties in a thoroughly practical manner.

Referring now to Figure 1 of the drawings, the pouncing machine comprises a column generally indicated at 10 formed by a base section 11, a middle section 12 forming a motor housing and a head generally indicated at 13. Extending from the lower portion of base 11 is a bracket 14 which pivotally supports a tool assembly generally indicated at 115 carrying at its upper portion a pouncing pad 116 arranged to operate on a hat mounted on a hat block 117 rotated by mechanism within head 13. Head 13 may, if desired, correspond to the head disclosed in my United States Patent No. 2,105,130, while the rest of the machine generally described herein may correspond substantially to the disclosure in my copending application, Serial No. 226,442, filed August 24, 1938, with the exception of the hat block driving mechanism, which will be described in detail hereinbelow, and certain features of which form the subject matter of my copending application Serial No. 276,039, filed May 27, 1939.

Thus, from my above-noted application, Serial No. 226,442, filed August 24, 1938, it will be seen that tool assembly 115 is traversed about block 117 in such a manner that pouncing tool 116 abrades the hat crown between the tip and the brim portions thereof as the hat block rotates. As described in my Patent No. 2,105,130, head 13 includes mechanism which rotates hat block 117, which is oval, in such a manner that the surface of the hat contacted by pouncing tool 116 follows a substantially circular, rather than oval path, to preclude any substantial variation in the pressure of contact between the pad and hat.

Head 13 (Figure 1) includes a bracket or spindle support 118 mounted on the top of section 12, and this bracket includes suitable journals which rotatably mount a spindle 119, the right-hand end of which (as viewed in Figure 1) carries hat block 117. Preferably the other end of spindle 119 has secured thereto a gear casing 13a or the like, housing reduction gears which effect a two-to-one increase in speed between hat block 117 and a driven sprocket 20 formed on casing 13a. With the exception of sprocket 20, the mechanism just described is both shown and described in detail in my above-noted Patent No. 2,105,130. The outer end of gear casing 13a is supported by a shaft 13b extending from the upper end of a bracket 120 secured to and extending from bracket 118.

Sprocket 20 is driven by a chain or the like 21 trained around a driving sprocket 16, which is in turn driven by a motor 15 housed in base section 12 of the machine column 10.

Illustratively, sprocket 20 (Figure 2) includes a pair of arcuate toothed portions 22 and 23 disposed substantially at 180° from one another with respect to the axis of rotation of sprocket 20 which is the axis of shaft 13b. Preferably the sides 24 of sprocket 20 have no teeth formed therealong. While toothed portions 22 and 23, as shown, are generated from the same axis, I do not intend to be limited to such a formation, as the peripheral contour of sprocket 20 may vary substantially, depending primarily upon the character of the oval of the hat being finished. Thus, regardless of the contour of sprocket 20, it will be clear that a constant speed rotation of drive sprocket 16 will impart a varying rate of rotation to driven sprocket 20, but at the same time will maintain the circumferential velocity of sprocket 20 at a constant value.

By reason of the irregular peripheral contour of driven sprocket 20, the slack in chain 21 will vary in accordance with the attitude of the sprocket. As shown in Figure 2, there is a substantial amount of slack in chain 21, whereas in Figure 3, wherein sprocket portion 23 is at the top of its travel, there is but a slight amount of slack in the chain. To accommodate the chain's slackness, and to maintain the chain's tension at a substantially constant value, I provide a slack adjuster mechanism generally indicated at 25 (Figure 2).

As this slack adjuster is described and shown in detail in my copending United States application Serial No. 276,039, filed May 27, 1939, it will suffice here to point out that the adjuster includes a pair of sprockets 26 and 27 which mesh with chain 21 on opposite sides thereof, and which are mounted on an arm 28 or the like pivoted at 29. The hub 28a of arm 28 (Figure 1) is also provided with an extending lever 30, the latter being connected to a lever 32 by means of the link 33 (Figure 2). The arm or lever 32, pivoted about an axis 31, is biased by a spring (not shown) in a clockwise direction so that lever 30 is constantly urged clockwise by reason of the link 33 which connects levers 30 and 32. Thus, sprockets 26 and 27 are constantly urged, with a substantially uniform pressure, against opposite sides of chain 21, regardless of the amount of slack in the chain.

As noted above, driven sprocket 20 (Figure 2) rotates at a varying rate by reason of its irregular periphery, but at a constant circumferential velocity. Also, as noted above, hat block 117 is so rotated by the mechanism in head 13 that the hat block periphery at its point of engagement with the pouncing tool 116 is always in substantially the same position in spite of the oval character of the hat block. Thus the axis A of the hat block describes a circular path A, B, C, D about the axis of shaft 13b, which is the same as the axis of spindle 119 (Figure 1). Also, the gearing in gear casing 13a effects two rotations of hat block 117 to one rotation of sprocket 20. Hat block 117 and sprocket 20 are so arranged relative to one another that when the sprocket is in the position shown in Figure 2, the hat block is positioned as shown, i. e. the right-hand end crown portion is being pounced by tool 116. At this position of the sprocket and hat block, however, the peripheral velocity of both is at a maximum, as it is desired to pass the end crown por-

tions of the hat past the pouncing tool at a higher rate than the side crown portions as the radius of curvature of the end crown portions is considerably sharper than that of the side crown portions which, of course, results in a greater pressure per unit area of the tool against the hat at the ends than at the sides thereof. By increasing the peripheral velocity of the hat end crown portions during pouncing thereof, the tendency of the tool cutting through the hat at these points is greatly minimized, if not precluded.

As sprocket 20 and hat block 117 move from the position shown in Figure 2, to that shown in Figure 3, two changes occur. The axis of the hat block shifts from point A to point B, and the peripheral velocity of the hat block begins to change until it reaches its minimum when the sprocket and hat block are in the position shown in Figure 4. At this point the axis of the hat is at point C, and pouncing tool 116 is working on one of the side crown portions of the hat which has a much larger radius of curvature than the end portion. As the side of the hat is much flatter than the end it offers a greater area for contact by the pouncing tool 116. This, of course, results in a smaller pressure per unit area than that at the end portion, and hence necessitates a reduction in peripheral velocity, so that the hat may be sufficiently pounced. It will also be noted that while the sprocket has moved 90°, i. e. from its position in Figure 2 to that in Figure 3, hat block 117 has moved but 45°. Hence, a complete revolution of the sprocket results in but a half revolution of the hat, and this by reason of the gear reduction in gear casing 13a (Figure 1).

As can be seen in Figures 2 and 4, the driving force is applied to sprocket 20 at the left-hand side thereof, as indicated by the arrow, and accordingly hat block 117 is so arranged relative to the sprocket that the end crown portions of the hat are presented to the pouncing tool when sprocket 20 is being driven at its shorter radius, in order that the peripheral velocity of the end crown portions may exceed that of the side crown portions.

While under certain circumstances it may be desirable that the sprocket and hat dimensions be substantially directly proportional, I have found it preferable in most instances for the short radius of the hat to exceed slightly that of the sprocket, and the long radius of the sprocket to exceed slightly that of the hat. These radii, however, depend on the density or softness of the pad. It accordingly will appear that where the pouncing pad is quite soft, the hat crown supported by the hat block will sink into the pad to a greater depth than it would were a hard pad being used. Hence, the pressure per unit area of the soft pad at the end crown portions of the hat is substantially greater than is the pressure at the side crown portions, and hence the variable peripheral velocity of the hat crown, as described above, is utilized to attain uniform pouncing of all portions of the hat crown.

It will accordingly appear that by the structure described above a uniform finish of high quality may readily be imparted to an oval hat in a manner which is thoroughly practical and which attains the various objects toward which the invention is directed.

As many possible embodiments may be made of the above invention and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth or shown in the accompanying

drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. A pouncing machine comprising, in combination, a base, a spindle rotatably mounted on said base, an oval hat block mounted on one end of said spindle and adapted to mount and rotate an oval hat, a pouncing tool for pouncing the crown portion of said hat, a driving sprocket mounted on said base, a driven sprocket, means forming an operative connection between said driven sprocket and said spindle, said driven sprocket being eccentric and mounted with respect to said hat block so that its longer radius is angularly displaced with respect to the longer radius of the hat block when said pouncing tool is operating on the side crown portion of a hat mounted thereon and the shorter radius of said eccentric sprocket being angularly displaced with respect to the shorter radius of the hat block when said pouncing tool is operating on the end crown portions of the hat, and a link belt connecting said sprockets.

2. A pouncing machine comprising, in combination, a base, a spindle rotatably mounted on said base, an oval hat block mounted on one end of said spindle and adapted to mount and rotate an oval hat, a pouncing tool for pouncing the crown portion of said hat, a driving sprocket mounted on said base, a driven sprocket, means forming an operative connection between said driven sprocket and said spindle, said driven sprocket being eccentric and mounted with respect to said hat block so that its longer radius is angularly displaced with respect to the longer radius of the hat block when said pouncing tool is operating on the side crown portion of a hat mounted thereon and the shorter radius of said eccentric sprocket being angularly displaced with respect to the shorter radius of the hat block when said pouncing tool is operating on the end crown portions of the hat, a link belt connecting said sprockets, and means for maintaining said belt taut.

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