

Oct. 31, 1939.

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2,178,154

HAT BRIM POUNCING MACHINE

Filed May 28, 1938

2 Sheets-Sheet 1

Fig. 1.

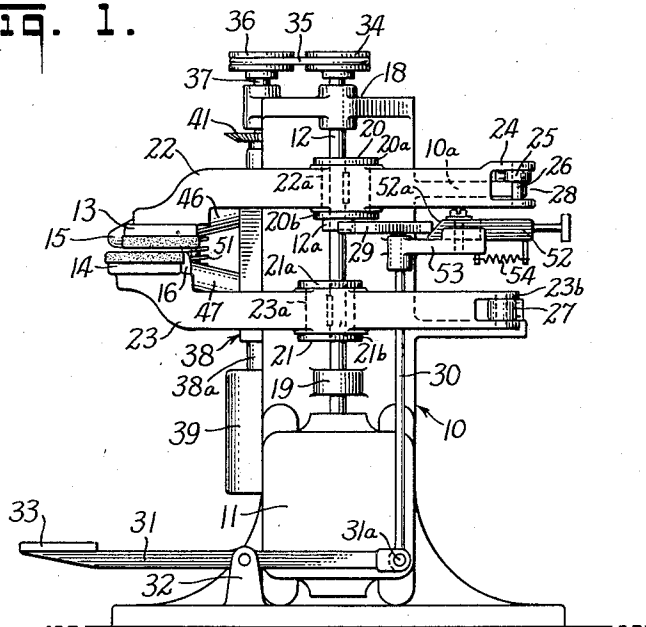
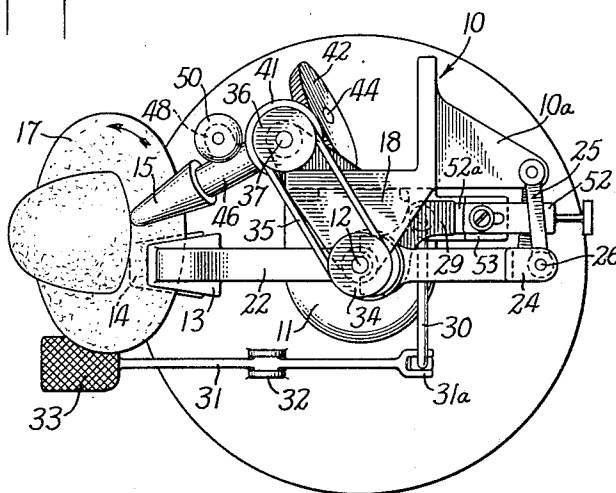


Fig. 2.



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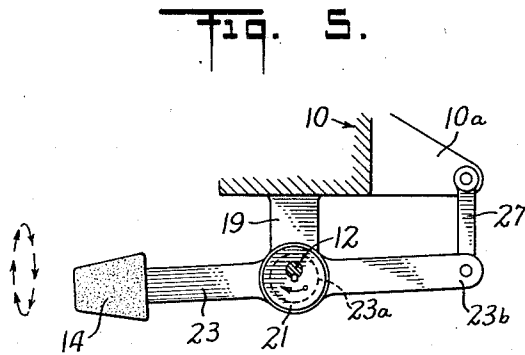
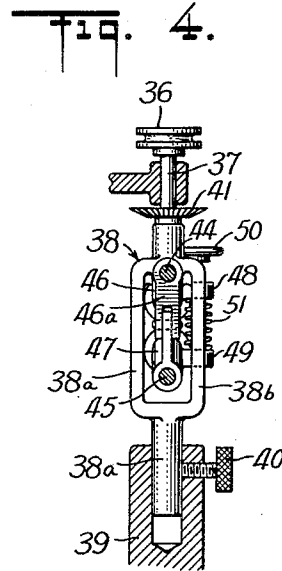
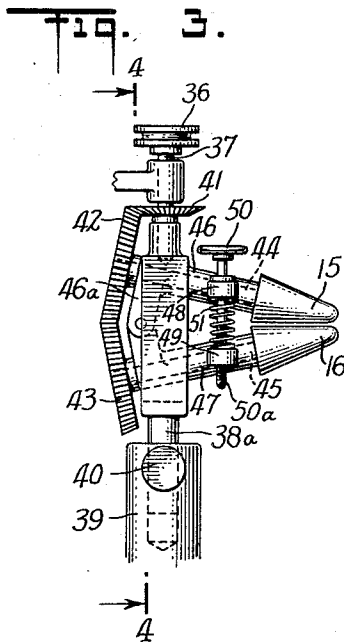
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2 Sheets-Sheet 2



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HAT BRIM POUNCING MACHINE

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Application May 28, 1938, Serial No. 210,634

5 Claims. (Cl. 223—20)

This invention relates to a hat brim pouncing machine.

One of the objects of this invention is to provide a hat brim pouncing machine which is inexpensive, simple and sturdy in construction, which is efficient in operation, and by which a hat brim may be efficiently pounced without the production of tool marks thereon. Another object is to provide a machine of the above nature which uniformly pounces all portions of the hat brim. 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 drawings, in which is shown one of the various possible embodiments of my invention:

Figure 1 is an elevation of my brim pouncer;

Figure 2 is a top plan view of my pouncer showing a hat brim being operated on;

Figure 3 is a sectional elevation of the feeding mechanism of my brim pouncer;

Figure 4 is a sectional elevation taken along the line 4—4 of Figure 3; and

Figure 5 is a diagrammatic plan view, partly in section, of one of the pouncing pads.

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

One of the final operations in finishing a felt hat consists in pouncing, i. e., abrading the opposite surfaces of the hat brim. It is important that the finish on the hat brim and the crown is uniform and that the finished hat brim is free of all tool marks and other indications of the finishing operations. Many brim pouncing machines are characterized by opposed reciprocating pads between which the hat brim is pounced, this pouncing motion often being different from the motion of the pouncing tool used on the crown of the hat. The finish on the crown and brim are accordingly not uniform and in many cases the reciprocating brim pouncers leave radial marks on the brim, removal of which is quite difficult.

Referring first to Figure 1, my pouncing machine comprises a frame generally indicated at 10, in which a motor 11 is mounted to drive a drive shaft 12, which in turn operates a pair of pouncing pads 13 and 14 and a pair of preferably conical feed rolls 15 and 16. As will be more fully described, pads 13 and 14 operate on op-

posite sides of a hat brim 17 (Figure 2) to abrade felt therefrom as the brim is pulled between the pads by feed rolls 15 and 16.

Referring again to Figure 1, drive shaft 12 is borne by bearings 18 and 19 which preferably are integral with and extend from frame 10. A pair of cams 20 and 21 are secured to and rotate with drive shaft 12, the cams being oppositely offset on shaft 12 with respect to one another, so that operation thereof causes pouncing pads 13 and 14 to rotate oppositely of one another. Preferably upper cam 20 is keyed to shaft 12 to permit axial movement of the cam on the shaft for a purpose to be set forth. A collar 12a is secured to shaft 12 to limit downward movement of cam 20 thereon.

Pouncing pads 13 and 14 have their adjacent faces replaceably covered with a suitable abrasive material and these pads are secured respectively to arms 22 and 23 (Figure 1). Arm 22 has a bore 22a in which cam 20 is revolvably disposed the cam having collars 20a and 20b between which arm 20 is held. Similarly cam 21 is revolvably held in a bore 23a in arm 23 by cam collars 21a and 21b. Arm 22 is also provided with a bifurcated end 24 between the bifurcations of which a lever arm 25 is pivoted as by a pin 26 (see Figure 2). The other end of lever 25 is pivotally secured to a projecting portion 10a (see Figure 5) of frame 10. Similarly end 23b (Figure 1) of arm 23 is bifurcated and pivotally carries one end of a lever 27, the other end of which is pivotally secured to frame 10 in a manner substantially similar to the pivotal mounting thereon of lever 25. Preferably the distance between the bifurcations of end 24 of arm 22 is greater than the thickness of lever 25 so as to provide a space 28 for a purpose pointed out hereinbelow. It may now be seen that as cams 20 and 21 are rotated by shaft 12, arms 22 and 23 rotate their respective pads 13 and 14. It should also be noted with reference to Figure 5 that any point on either pad describes an oval path of movement (as indicated by the arrows) the major axis of which equals substantially the throw of the cam or eccentric multiplied by the mechanical ratio of the lever system. It follows that the minor axis of the oval path equals the throw of the cam. Thus the pads have an oval path of movement during their operation on the hat brim, rather than a purely reciprocating motion, which effectively prevents the production of radial marks on the hat brim. The advantage of oval movement over rectilinear reciprocal movement lies in the fact that at a cer-

tain point in the reciprocal movement, pad and hat brim travel together at the same velocity with the result that at this point there is zero relative velocity between the pad and hat brim, hence a radial strip of the brim extending from the outer edge thereof to the hat crown is pounced less than other portions of the brim where the relative velocity is at a maximum, i. e., at that point where the pad and brim travel in opposite directions. When the pad has the described rotary or oval movement relative to the hat brim the relative velocity between the pad and brim is more nearly constant and consequently the abrasion of the brim is more uniform.

In order to expedite the insertion of the hat brim between pads 13 and 14 I provide an elevator plate 29 (Figures 1 and 2) mounted on the upper end of a rod 30 (Figure 1) pivotally secured to one end 31a of a foot lever 31 which is in turn pivotally connected to a boss 32 projecting from the base of frame 10. Lever 31 has a pedal 33 on its free end which may be depressed to raise elevator plate 29 against cam 20 thus sliding the cam upwardly on shaft 12 to lift arm 22 and pouncing pad 13 a substantial distance above pad 14. As noted above, the width of lever 25 is less than the distance between the bifurcations of arm end 24 which provides sufficient clearance for elevation of the arm when raised. Thus pads 13 and 14 may be easily separated to permit placing the hat brim therebetween.

To prevent injury to the operator's hands while he is placing or removing a hat brim from between pads 13 and 14, and to keep the pads apart when there is no hat brim between them I provide a latch 52 (Figure 1) slidably mounted on a projection 53 secured to or integral with frame 10. A spring 54 has one end secured to projection 53 and the other to latch 52 and constantly urges portion 52a of latch 52 under elevator plate 29. Thus when plate 29 is raised by depression of foot pedal 33, latch 52 is pulled under the plate by spring 54 and pouncing arm 22 is maintained in raised position until latch 52 is manually withdrawn from beneath plate 29.

As noted above, the brim of hat 17 (Figure 2) is fed between pads 13 and 14 by means of feed rolls 15 and 16 (Figure 1) which are driven in a manner now to be described. Drive shaft 12 has a pulley 34 mounted on the upper end thereof which drives, by means of a belt 35, a pulley 36 (see Figure 3) secured to the upper end of a shaft 37, the lower end of which is mounted in a bracket generally indicated at 38 (Figure 4). The lower end 38a of bracket 38 is secured in a fixture 39 (Figure 1) formed integrally with or secured to machine frame 10, bracket end 38a being held in fixture 39 preferably by a set screw 40. Referring again to Figure 3 a bevel gear 41 is secured to and rotates with shaft 37 to mesh with and accordingly rotate a bevel gear 42, which in turn meshes with and rotates another bevel gear 43. Bevel gears 42 and 43 are respectively secured to shafts 44 and 45 which are respectively rotatably borne in brackets 46 and 47. Bracket 46 (Figure 2) is preferably an integral part of bracket 38, whereas bracket 47 (Figure 3) is pivotally connected to an arm 46a of bracket 46. Bracket 47 (Figure 4) is accordingly movable relative to bracket 46 between sides 38a and 38b of bracket 38.

Feed rolls 15 and 16 (Figure 3) are mounted on the ends of shafts 44 and 45 and accordingly rotate in opposite directions when driven by

bevels 42 and 43. A projection 48 is formed on bracket 46, a substantially similar projection 49 being formed on lower bracket 47, these projections rotatably carrying an adjusting screw, the lower end 50a of which is threaded into lower bracket projection 49. Thus rotation of screw 50 pivots lower bracket 47 with respect to upper bracket 46 to adjustably position feed rolls 15 and 16. As the adjustment needed between the feed rolls is not great, adjustment thereof does not affect the mesh between bevels 42 and 43 to any serious extent. Preferably a spring 51 is disposed about adjusting screw 50 between projections 48 and 49 to maintain brackets 46 and 47 in their adjusted position.

It may now be seen that as pulley 36 (Figure 3) is driven, bevel 41 effects rotation of bevels 42 and 43 which in turn rotate feed drums 15 and 16 in opposite directions, and as the feed drums are preferably covered with a suitable material such as rubber, a hat brim embraced therebetween is fed thereby in the direction shown by the arrow in Figure 2. It may also be seen that the opposite surfaces of the brim of hat 17 are effectively pounced by pads 13 and 14 without the production of tool marks thereon because of the oval motion of the pads.

Accordingly, I have provided a hat brim pouncing machine which fulfills the several objects noted hereinabove in a thoroughly efficient and practical manner.

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. In a device of the character described, in combination, a frame, a rotatable shaft mounted in said frame, a pair of eccentrics mounted on said shaft, a pouncing arm disposed about each of said eccentrics, a pouncing pad on one end of each of said arms, means associated with the other ends of said arms and adapted to limit the movement thereof about the axis of said shaft, and means for rotating said drive shaft and said eccentrics whereby any point on either of said pads describes an oval path.

2. In a device of the character described, in combination, a frame, a rotatable shaft mounted in said frame, an eccentric mounted on said shaft, a pouncing arm disposed about said eccentric, a pouncing pad on one end of said arm, means associated with the other end of said arm and adapted to limit the movement thereof about the axis of said shaft, and means for rotating said drive shaft and said eccentric whereby any point on said pad describes an oval path.

3. In a device of the character described, in combination, a frame, a rotatable shaft mounted in said frame, an eccentric mounted on said shaft and rotatable therewith, a pouncing arm disposed about said eccentric, a second eccentric mounted on said shaft so as to rotate therewith, a second pouncing arm disposed about said second eccentric and carried thereby, a pouncing pad on one end of each of said arms, means associated with the other end of said arms and adapted to limit the movement thereof about the axis of said shaft, and means for rotating said drive shaft to operate said pads whereby any point on either of said pads describes an oval path, the throws of

said eccentrics being offset substantially 180° from one another so that the oval movements of said pads are out of coincidence.

5 4. In a device of the character described, in combination, a frame, a rotatable shaft mounted in said frame, an eccentric mounted on said shaft and rotatable therewith, a pouncing arm disposed about said eccentric, a second eccentric mounted on said shaft so as to rotate therewith but so as to be movable axially thereof, a second
10 pouncing arm disposed about said second eccentric and carried thereby, a pouncing pad on one end of each of said arms, means associated with the other ends of said arms and adapted to limit the movement thereof about the axis of said
15 shaft, means for rotating said drive shaft to operate said pads, and means for moving said second eccentric and accordingly said second arm axially of said shaft to facilitate insertion of a

hat brim between and removal of the hat brim from said pads.

5 5. In a device of the character described, in combination, a frame, a rotatable shaft mounted in said frame, a pair of eccentrics mounted on said shaft to rotate therewith, one of said eccentrics being movable axially of said shaft, a pouncing arm disposed about each of said eccentrics, a pouncing pad on one end of each of said arms, means associated with the other ends
10 of said arms and adapted to limit the movement thereof about the axis of said shaft, means for rotating said drive shaft and said eccentrics to operate said pads, and means for effecting relative movement between said eccentrics and accordingly said arms axially of said shafts to
15 facilitate insertion of a hat brim between said pads.

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