Sept. 14, 1926. 1,599,717

R. K. REYNOLDS

HAT BRIM POUNCING MACHINE AND THE LIKE

Filed June 18, 1925 2 Sheets-Sheet 1

Fig. 1.

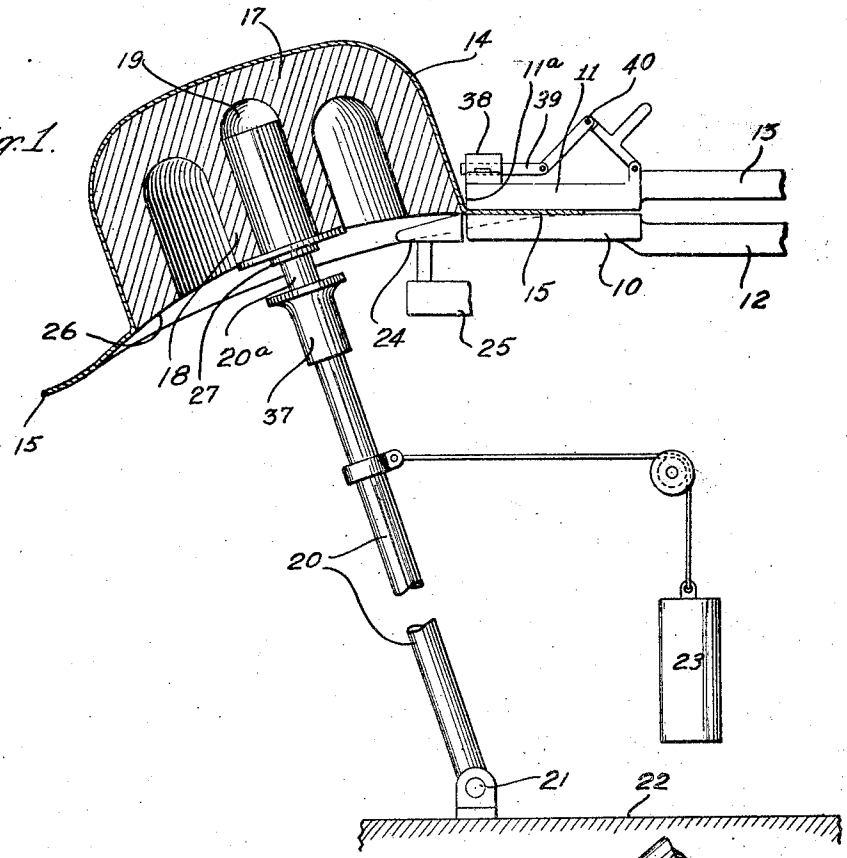
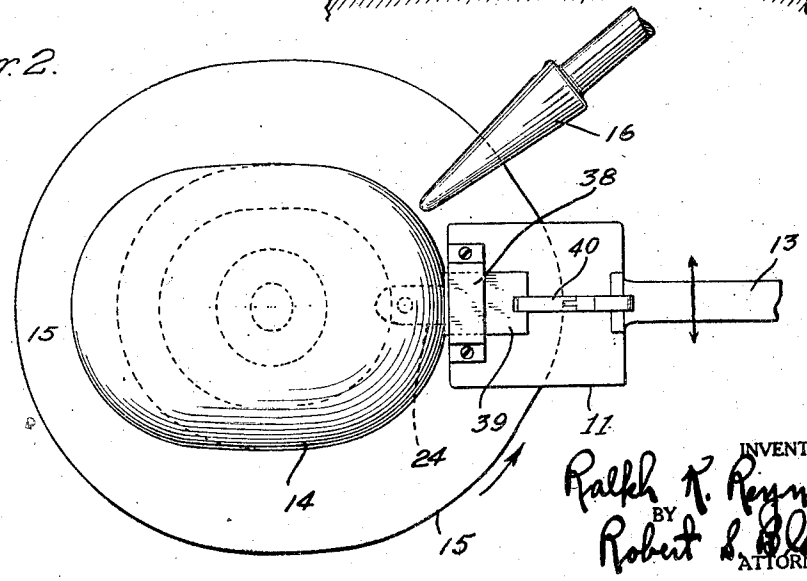


Fig. 2.



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Fig. 3.

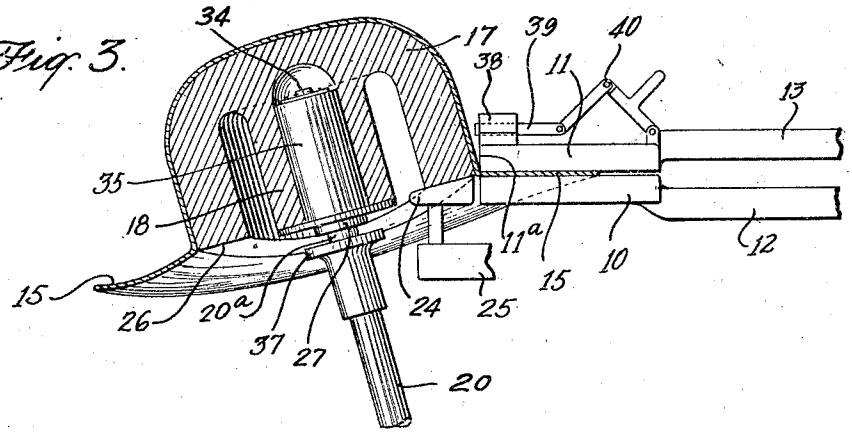
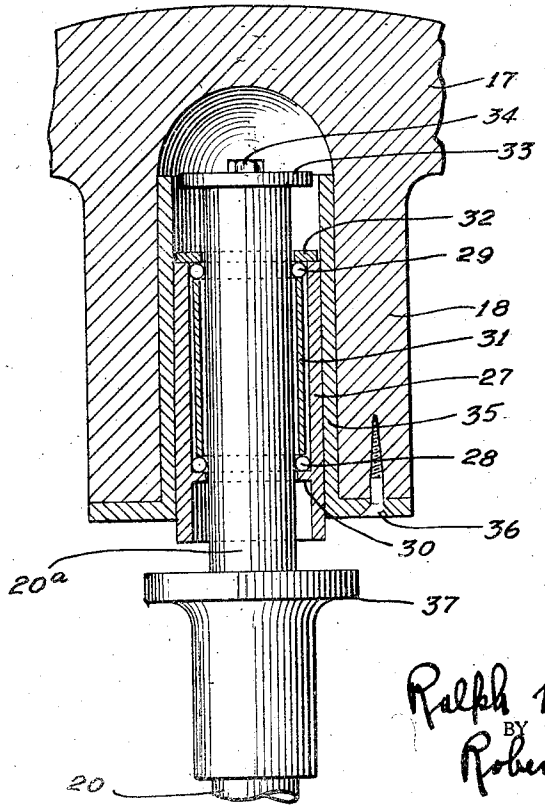


Fig. 4.



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UNITED STATES PATENT OFFICE.

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HAT-BRIM-POUNCING MACHINE AND THE LIKE.

Application filed June 18, 1925. Serial No. 37,953.

This invention relates to hat brim pouncing machines or machines of similar character.

One of the objects of the invention is to provide a machine of the above nature which is capable of thoroughly efficient and dependable operation. Another object is to provide a machine of the above nature which is productive of consistently uniform results of high grade on the hats being operated upon. Another object is to provide a machine of the above nature in which the parts of the hat intended to be operated upon are dependably brought into proper relation to the operating tool or tools. Another object is to provide hat brim pouncing apparatus by means of which all portions of the hat brims may be pounced with uniformity. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements 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 possible embodiments of this invention,

Figure 1 shows diagrammatically and in side elevation the pouncing pads of a hat brim pouncing machine and shows in section a hat supported in operative relation to the pouncing pads;

Figure 2 is a plan view of the construction shown in Figure 1;

Figure 3 is a view similar to Figure 1, the hat being turned to another position, and

Figure 4 shows on a larger scale a section through the center of the hat block and its supporting mechanism.

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

Referring now to Figures 1 and 2 of the drawings in detail, there is shown diagrammatically a pair of tools adapted to operate upon the brims of felt hats, the tools in this instance being the two pouncing pads 10 and 11 of a hat brim pouncing machine. These pouncing pads are shown as mounted upon the outer ends of arms 12 and 13 by means of which they are rapidly reciprocated, preferably in opposite directions, by any suitable mechanism. The driving mechanism of the machine is not shown herein since, of itself, it forms no part of the present invention. The pouncing pads are rapidly reciprocated in the directions indicated by the double-headed arrow in the plan view of Figure 2. The lower surface of the pad 11 and the upper surface of the pad 10 are covered with a suitable abrasive, such as a suitable grade of sandpaper, and these surfaces pounce both sides of the hat brim received therebetween.

A felt hat 14 is shown in operative relation to the pouncing pads, the brim 15 of the hat projecting between the pads 10 and 11. The hat is rotatably supported, mounted as will be described in detail, and the brim 15, in addition to passing between the pads, is gripped between a pair of feed rollers indicated at 16 in Figure 2. These feed rollers are driven by any suitable means and gripping the brim 15 they rotate the hat in the direction indicated by the arrow in Figure 2, drawing the brim 15 through between the pouncing pads to be operated upon thereby.

The felt hat 14, while being operated upon by this machine, is preferably mounted upon a hat block 17 fitted within the crown thereof. Referring now particularly to Figures 1 and 3, the inner edge of the brim of the hat 14 shown herein is not flat or level. This extreme inner edge of the brim, or the portion of the hat directly at the junction of the brim with the crown, is known as the "band" of the hat, and for the sake of convenience it will be referred to hereinafter as such. This hat 14 is "dished" at the band from end to end, the band being substantially higher at the sides of the hat than it is at the ends thereof. The bottom surface of the block 17 is correspondingly dished, this shaping of the block being ordinarily known as the "scope" of the block. The band of the hat closely follows the outer peripheral edge of the bottom surface of the block, the felt hat having been brought to shape upon this block or upon one substantially identical therewith.

Because of this "dish" or "scope" of the hat block and of the hat, whereby the band of the hat is higher at the sides of the hat than at the ends thereof, if the hat is simply rotated in a fixed path of rotation, the portion of the band passing by the pads 10 and 11 rises and falls as the hat rotates.

This results in a movement of the band or of the inner edge portion of the brim, at certain portions thereof, either above or below the proper position for engagement between the pouncing pads. For example, if the hat is so positioned that the band portions at the ends of the hat rotate through the proper point adjacent the pads, the band portions at the sides of the hat will pass above this point. Consequently the brim will not be pounced all the way up to the band at all portions thereof and the brim may be twisted and distorted by the pouncing pads. In order that proper pouncing of the entire brim may be had, it is thus important that the path of rotation of the hat or the path of movement of the band of the hat past the pouncing pads be controlled or adjusted so that all portions of the band of the hat are made to move substantially through a point directly in front of the brim-receiving space between the pouncing pads. If the portion of the band passing the pouncing pads at any instant rises above or falls below the level of the space between the pouncing pads, the brim at this portion may not be pounced all the way up to the band.

In addition, whether the hat and its block be dished or not, if the hat is supported and rotated about a vertical axis, the pouncing pads and particularly the lower pad may not dependably reach the inner regions of the brim. If the hat is vertically supported, the crown thereof may strike the end 11ª of the upper pad and prevent the brim from moving into the pads to a sufficient extent to permit the lower pad particularly to reach the innermost regions of the brim surface adjacent the band.

Referring now to Figures 1 and 3 of the drawings, the hat block 17, as is usual, is recessed from its bottom surface to provide a hub or hand grip 18. This hub is provided with a central bore 19. To support the hat block 17 and the hat 14 thereon, I provide a supporting member preferably in the form of a shaft or rod 20, the lower end of which is pivoted at 21, for example, to the floor 22. The upper end 20ª of this shaft enters the bore 19 of the hat block and the hat block is rotatably supported thereon. The supporting shaft 20, carrying the hat block and hat, is capable of swinging movement about its pivot 21 toward and away from the pouncing pads 10 and 11. Preferably the shaft 20 is inclined substantially as shown, for example, the pivot 21 being positioned substantially below and in line with the front ends of the pouncing pads. Suitable means, such as a weight 23 urges the support 20 to swing toward the pouncing pads, this movement being limited by engagement of the lower portion of the crown of the hat with the front end 11ª of the upper pouncing pad 11. The tilt of the shaft, it will be seen, permits the band of the hat to move closely into the pouncing pads, enabling the full width of the brim to enter between the pads and therefore enabling the pouncing pads to operate effectively upon the entire brim including the extreme inner portions thereof close up to the band and on both sides of the brim.

The hat with its block is thus free to rotate upon the supporting shaft 20 as the brim is drawn through the pouncing pads by the feed rollers 16. Moreover, the hat being urged against the upper pouncing pad 11 by the weight 23 as it is rotated, the oval shape of the hat causes a swinging of the hat and its supporting shaft 20 about the pivot 21 toward and away from the pouncing pads. As the sides of the hat approach the pouncing pads, the hat swings inwardly about the pivot 21, and as the ends of the hat approach the pouncing pads, the hat swings outwardly about the pivot 21. The angle of inclination of the shaft 20 is preferably such that the shaft does not reach the vertical when it swings inwardly, so that, as shown in Figure 2, the hat is still tilted when the side portions of the brim are being operated upon, enabling the pouncing pads to dependably operate upon the brim all the way up to the band at the side portions of the hat as well as at the ends.

The hat block 17, in addition to being rotatably carried upon the end portion 20ª of the inclined supporting shaft 20, is also slidable longitudinally thereof. Adjacent to the lower pouncing pad 10, and preferably directly in front thereof, I provide a stationary member 24 which may be carried upon a suitable bracket 25 secured to the frame of the machine. As the hat block and hat thereon are rotated, the outer annular portion 26 of the bottom surface of the hat block moves across the top surface of this member 24. The member 24 is preferably small and narrow, as indicated in Figure 2, so that it contacts only a small portion of the surface 26 of the hat block at one time. The surface of the member 24 is preferably inclined away from the pads, as shown, to accommodate the side portions of the annular dished surface 26 of the tilted hat block, as shown in Figure 3.

As the annular surface 26 of the hat block moves across the surface of the member 24, all portions of the band of the hat are made to move substantially through a fixed point directly in front of the brim-receiving space between the two pouncing pads. This point is such that the portion of the brim between the pouncing pads at any instant is so located with respect thereto that the pouncing pads may operate upon the entire width of the brim including the extreme inner portions thereof upon both its upper and lower surfaces. Regardless of the

shape or "scope" of the hat and its hat block, all portions of the brim move through the pouncing pads in position for proper operation thereon over the entire surface thereof.

The dished shape of the hat and hat block, whereby the sides thereof are higher than the ends thereof, tends to cause a rising and falling of the hat block and hat as the surface 26 moves across the member 24. This up and down reciprocation of the hat block is accommodated by a longitudinal sliding of the hat block upon the supporting shaft 20. The inner edge of the portion of the brim at any instant between the pads, or the portion of the band at any instant directly above the member 24, however, remains at substantially a fixed point, the surface 26 of the hat block always resting upon the surface of the member 24.

As has been mentioned above, and as will be understood from the drawings, the oval shape of the hat causes the supporting shaft 20 to swing outwardly as the ends of the hat approach the pouncing pads, and to swing inwardly as the sides of the hat approach the pouncing pads. Also, as the ends of the hat approach the pads, the surface 26 sliding upon the support 24 causes an upward sliding of the hat block upon the supporting shaft 20. Thus the hat block 17 moves upwardly upon the shaft at the same time that the inclination of the shaft increases. It is therefore highly desirable that the sliding of the hat block upon the shaft 20 take place with maximum freedom. Otherwise the hat may jam and the brim be distorted and ruined by the feed rollers 16. The use of lubrication is undesirable because of the danger of oil or grease gaining access to the felt hats and soiling them.

Referring now to Figure 4, anti-friction means are preferably provided between the shaft 20 and the hat block. Preferably, about the shaft portion 20^a I provide a sleeve 27 and, between this sleeve and the shaft, ball bearings such as 28 and 29. The sleeve 27 is substantially shorter than the length of the shaft portion 20^a, and is thus slidable upon the ball bearings longitudinally of the shaft. The ball bearings are preferably movable with the sleeve being held from dropping out at the bottom by a ring 30, the upper balls 29 being held up by a suitable spacer 31 and a top ring 32 preventing the balls from leaving the sleeve at the top. At the top of the shaft portion 20^a is provided an overhanging washer 33, held in place by a stud bolt 34, which limits the upward movement of the sleeve 27 upon the shaft.

The bore 19 of the hat block is preferably provided with a metal bushing 35 fitted therein and held in place as by screws 36. This bushing 35 fits easily and removably over the sleeve 27. On the shaft 20 below the part 20^a thereof is provided a projecting shoulder or flange 37. This flange 37, it will be seen, prevents the sleeve 27 from dropping down along the shaft 20 when the hat block is not mounted in position upon the device.

In operation the hat block with the hat thereon is slipped down over the sleeve 27, the bushing 35 slipping easily over the sleeve. When the hat block is now rotated about or moved longitudinally along the shaft portion 20^a, the relative movement takes place through the ball bearings 28 and 29, the sleeve 27 moving with the bushing 35 due to the frictional engagement of these two parts. Thus the rotation of the hat block and its axial reciprocation are permitted to take place with the greatest freedom, and the use of a lubricant such as oil or grease is avoided.

Frequently the brims of the hats being operated upon require less pouncing close up to the band than they require at the outer regions of the brim. I therefore provide adjustable means for limiting the movement of the hat into the pouncing pads under the urge of the weight 23, this limiting means being capable of being used or not as desired. Upon the upper surface of the top pouncing pad 11 is provided a bracket 38 which accommodates and guides a slidable member 39. In the drawings, this slidable member is shown at its innermost or inoperative position. By means of the toggle leverage 40 the member 39 may be moved outwardly to a position in which it engages the crown of the hat and limits the movement of the hat toward the pouncing pads. By the use of this arrangement, the hat may be given a few turns in the machine with the stop device 39 operative, to pounce only the outer portion of the brim, and then the stop may be moved back and the entire brim pounced all the way up to the band.

From the foregoing, it will be seen that there is herein provided an apparatus which embodies the features of this invention and achieves the objects thereof, including many practical advantages. A hat brim pouncing apparatus is provided which is dependable in action and by means of which the hat brims operated upon are pounced efficiently and thoroughly. Although the machine disclosed herein is a hat brim pouncing machine, and although certain features of the invention attain particular advantages in conjunction with such a machine, it is to be understood that the invention in its broader aspects is adaptable to hat manufacturing machines of different types employing tools other than pouncing tools.

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 as my invention:

1. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, a driven tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block and said hat thereon to feed said brim past said operating tool, and means supporting said rotating hat block adapted to permit reciprocating movement thereof substantially longitudinally of its axis of rotation and adapted to permit a bodily movement thereof toward and away from said tool in a direction substantially transverse to its axis of rotation.

2. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, the band of which is higher at the sides of the hat than at its ends, a tool adapted to operate upon the brim of said hat, means adapted to grip the brim and rotate said hat to feed said brim past said tool, and means adapted to adjust the position of said hat during rotation to cause all portions of said band to move substantially through a fixed point adjacent said tool.

3. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block and said hat to feed said brim past said tool, means mounting said hat block for reciprocating movement substantially lengthwise of its axis of rotation, and a stationary member adjacent said tool across which the bottom surface of said hat block moves as it is rotated.

4. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, the band of which is higher at the sides of the hat than at the ends thereof, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat to feed said brim past said tool, and means adapted to lift said hat and at the same time to swing said hat bodily away from said tool as the end portions of said rotating hat approach said tool, so as to cause all points along the band of said hat to move through a fixed point adjacent said tool.

5. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, the band of which is higher at the sides of the hat than at the ends thereof, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat to feed said brim past said tool, means mounting said hat for reciprocating movement substantially longitudinally of its axis of rotation and for bodily movement toward and away from said tool in a direction substantially transverse to its axis of rotation, and means urging said rotating hat toward said tool.

6. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, the band of which is higher at the sides of the hat than at the ends thereof, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat to feed said brim past said tool, means mounting said hat for reciprocating movement substantially longitudinally of its axis of rotation and for bodily movement toward and away from said tool in a direction substantially transverse to its axis of rotation, means urging said rotating hat toward said tool, and adjustable means for limiting the movement of said hat toward said tool.

7. In a hat brim pouncing machine or the like, in combination, a tool adapted to operate upon the brim of a hat, means adapted to grip the brim of said hat and rotate said hat to feed the brim past said tool, and means mounting said hat adjacent said tool for free rotation, for free reciprocating movement substantially longitudinally of its axis of rotation and for movement toward and away from said tool in a direction substantially transverse to its axis of rotation.

8. In a hat brim pouncing machine or the like, in combination, a tool adapted to operate upon the brim of an oval hat, means adapted to rotate said hat to feed the brim past said tool, a support for said hat arranged to swing toward and away from said tool in a direction substantially transverse to the axis of rotation of the hat, means urging said support to swing toward said tool, and means mounting said hat upon said support adapted to permit movement of said hat thereon and relative thereto substantially longitudinally of its axis of rotation as said support swings toward and away from said tool.

9. In a hat brim pouncing machine or the like, in combination, a tool adapted to operate upon the brim of a hat, means adapted to rotate said hat and feed the brim thereof past said tool, an inclined support upon which said rotating hat is slidably mounted arranged to swing toward and away from said tool, and means adapted to cause downward sliding of said hat upon said support as said support swings toward said tool and adapted to cause upward sliding of said hat upon said support as said support swings away from said tool.

10. In a hat brim pouncing machine or the like, in combination, a tool adapted to operate upon the brim of a hat, the band of said hat being higher at the sides of the hat

than at the ends thereof, means adapted to rotate said hat and feed the brim thereof past said tool, a support upon which said hat is slidably mounted for reciprocation in a direction substantially longitudinally of its axis of rotation, and means adapted to cause said rotating hat to slide upon said support in one direction as the end portions of said hat approach said tool and to slide upon said support in the opposite direction as the side portions of said hat approach said tool.

11. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, the band of said hat being higher at the sides of the hat than at the ends thereof and the peripheral portion of the bottom of said hat block being shaped to correspond to said shape of the band, a support upon which said hat block is rotatably mounted and slidable substantially longitudinally of its axis of rotation, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block to feed the brim of said hat past said tool, and means coacting with said bottom of said hat block adapted to adjust the position of said hat block upon said support during rotation to maintain said brim in proper operative relation to said tool.

12. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, the band of said hat being higher at the sides of the hat than at the ends thereof and the peripheral portion of the bottom of said hat block being shaped to correspond to said shape of the band, a tool adapted to operate upon the brim of said hat, a support for said hat block upon which said hat block with said hat thereon is removably mounted, means adapted to rotate said hat block and feed the brim of the hat past said tool, and means coacting with the bottom surface of said hat block adapted to adjust the position thereof and of said hat with respect to said tool during rotation.

13. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, the band of said hat being higher at the sides of the hat than at the ends thereof and the peripheral portion of the bottom of said hat block being shaped to correspond to said shape of the band, a support upon which said hat block is rotatably mounted and slidable substantially longitudinally of its axis of rotation, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block to feed the brim of said hat past said tool, and means adapted during rotation to adjust said support and said hat block thereon to cause all portions of the band of said hat to move substantially through a fixed point adjacent said tool.

14. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, the band of said hat being higher at the sides of the hat than at the ends thereof and the peripheral portion of the bottom of said hat block being shaped to correspond to said shape of the band, a support upon which said hat block is rotatably mounted and slidable substantially longitudinally of its axis of rotation, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block to feed the brim of said hat past said tool, and a fixed support adjacent said tool along which said peripheral portion of the bottom of said hat block moves during rotation.

15. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, the band of said hat being higher at the sides of the hat than at the ends thereof and the peripheral portion of the bottom of said hat block being shaped to correspond to said shape of the band, a tool adapted to operate upon the brim of said hat, a support movable toward and away from said tool and upon which said hat block is rotatably mounted, and upon which said hat block is slidable substantially longitudinally of its axis of rotation, means urging said support toward said tool, means adapted to rotate said hat block and feed the brim of said hat past said tool, and a fixed support adjacent said tool along which said peripheral portion of the bottom of said hat block moves during rotation.

16. In a hat brim pouncing machine or the like, in combination, a hat block fitted within the crown of a hat, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat block and said hat to feed said brim past said operating tool, a support for said rotating hat block upon which said hat block is slidable substantially longitudinally of its axis of rotation, and anti-friction means between said hat block and said support.

17. In a hat brim pouncing machine or the like, in combination, a support for a hat block comprising a supporting shaft entering the bore of said hat block, and anti-friction means held in place upon said shaft and interposed therebetween and said hat block.

18. In a hat brim pouncing machine or the like, in combination, a support for a hat block comprising a supporting shaft entering the bore of said hat block, a sleeve about said shaft removably fitting within said bore and held in place upon said shaft, and anti-friction means between said sleeve and said shaft.

19. In a hat brim pouncing machine or the like, in combination, a support for a hat block comprising a supporting shaft entering the bore of said hat block, a sleeve about said shaft removably fitting within said

bore, rotatable about said shaft and movable lengthwise thereof, and anti-friction means between said sleeve and said shaft.

20. In a hat brim pouncing machine or the like, in combination, a tool adapted to operate upon the brim of a hat having a hat block fitted within the crown thereof, means adapted to rotate said hat block and feed said brim past said tool, and a support for said hat block comprising a sleeve entering the bore thereof and frictionally engaging therewith, and a shaft upon which said sleeve is rotatable and movable longitudinally.

21. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, a tool adapted to operate upon the brim of said hat, means adapted to rotate said hat and feed the brim thereof past said tool, means urging said support and said hat thereon toward said tool, and adjustable means for limiting the movement of said hat and said support toward said tool.

22. In a hat brim pouncing machine or the like, in combination, means adapted to support a hat, a pair of pouncing pads adapted to receive therebetween the brim of said hat and to pounce said brim, means adapted to rotate said hat to feed said brim through between said pads, means urging said support toward said pads to urge said brim into position between said pads, and an adjustable stop for limiting the movement of said brim into said pads.

23. In a hat brim pouncing machine or the like, in combination, means adapted rotatably to support a hat, a pair of pouncing pads adapted to receive the brim of said hat therebetween to operate upon said brim, means adapted to rotate said hat to feed said brim through between said pads, means for urging said hat toward said pads adapted to hold the rotating hat in such position that said pouncing pads operate upon the brim close up to the crown, and a member movable into and out of operative position adapted when operative to engage the crown of the hat adjacent the band and limit the approach of said hat toward said pads.

24. In a hat brim pouncing machine or the like, in combination, a support for a hat block having a part adapted to enter a recess in the bottom of said hat block and center said hat block for rotation, a tool adapted to operate upon the brim of a hat carried by said hat block, means adapted to rotate said hat block with said hat thereon, and a narrow guiding member adjacent said tool across which the bottom surface of said hat block moves during rotation adapted to guide said hat block so as to bring all portions of said brim into proper engagement with said tool.

In testimony whereof, I have signed my name to this specification this 5th day of June, 1925.

RALPH K. REYNOLDS.