Oct. 26, 1926.

1,604,135

R. K. REYNOLDS

HAT BRIM IRONING MACHINE

Filed August 7, 1924

2 Sheets-Sheet 1

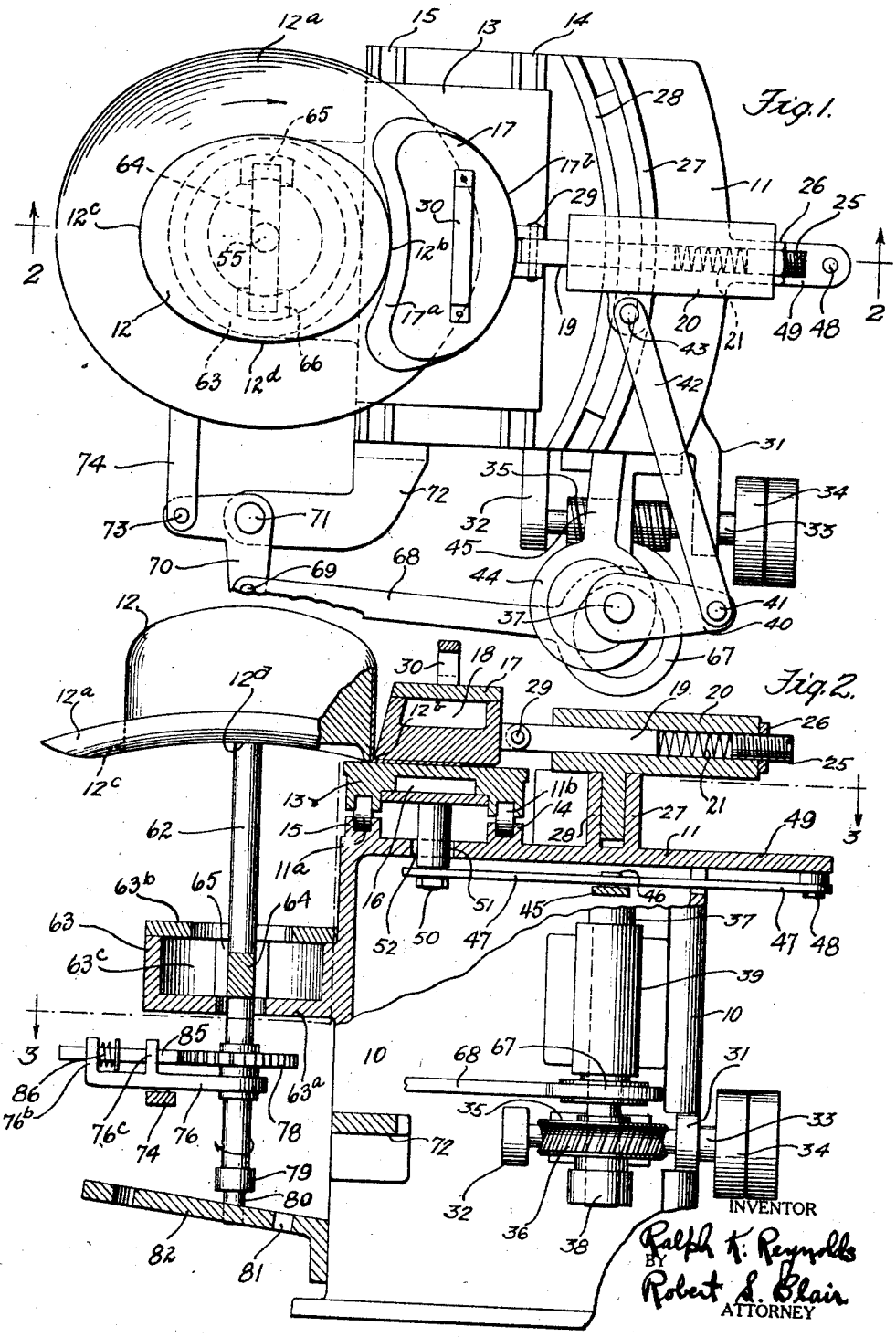


Fig. 1.

Fig. 2.

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2 Sheets-Sheet 2

Fig. 3.

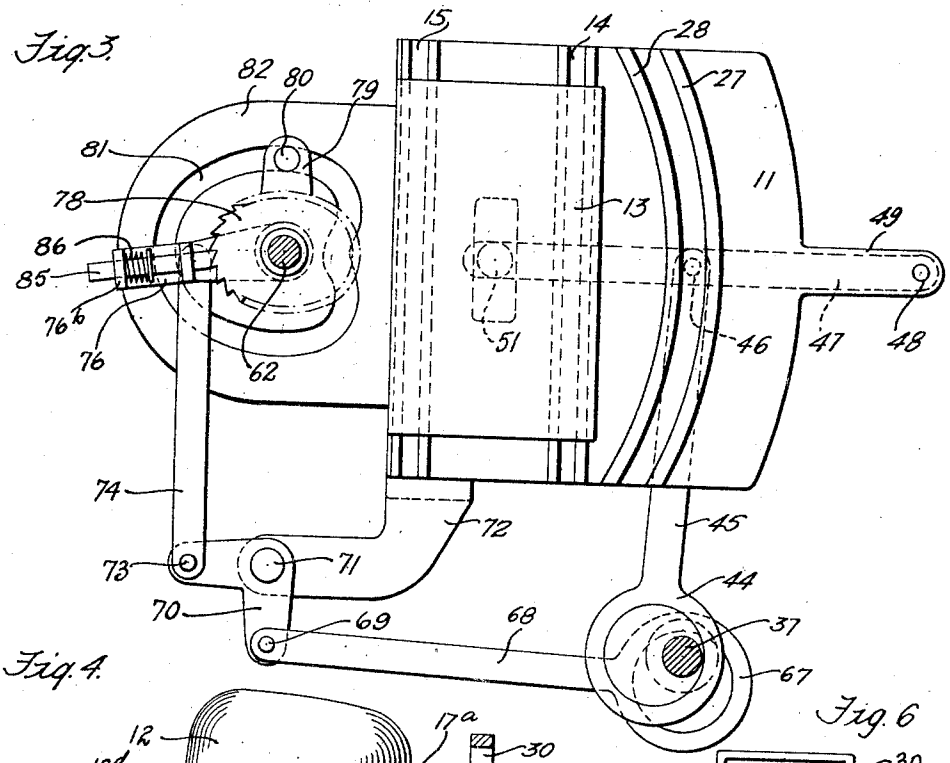


Fig. 4.

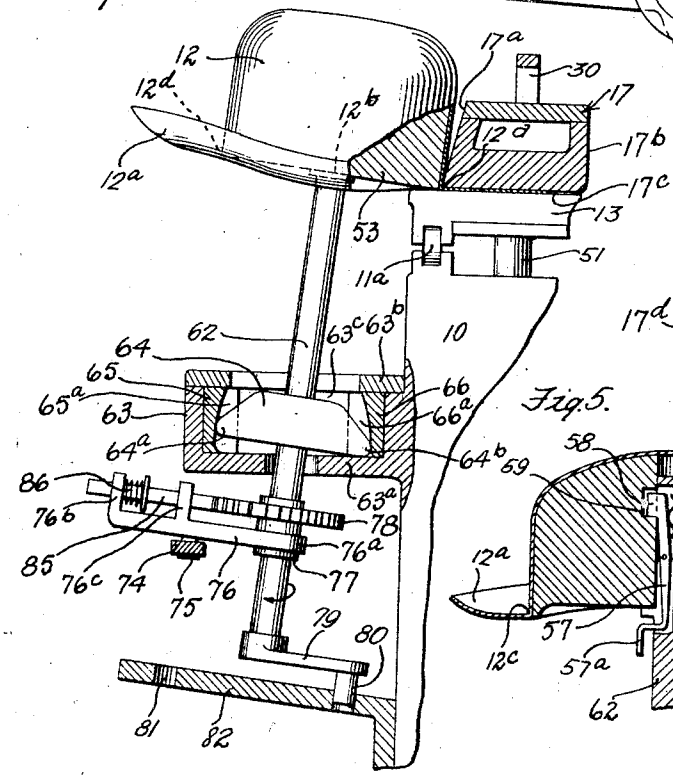


Fig. 6

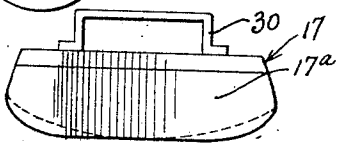


Fig. 7.

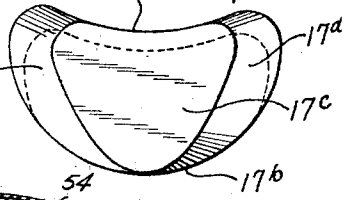


Fig. 5.

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Patented Oct. 26, 1926. 1,604,135

UNITED STATES PATENT OFFICE.

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HAT-BRIM-IRONING MACHINE.

Application filed August 7, 1924. Serial No. 730,581.

This invention relates to hat ironing machines and more particularly to machines for ironing the brims of hats.

One of the objects of the invention is to provide a hat brim ironing machine of practical construction and efficient action. Another object is to provide a machine of the above nature capable of operating dependably at all times to turn out a high grade of work in a rapid and thorough manner. Another object is to provide a machine of the above nature of strong sturdy construction adapted to withstand hard and long continued usage. Another object is to provide such a machine which is conveniently operated and readily adapted to varying sizes and shapes of hats. Another object is to provide a hat brim ironing machine wherein both surfaces of the brim are ironed in one operation. 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 is a top plan view of a brim ironing machine;

Figure 2 is a section taken substantially along the line 2—2 of Fig. 1, certain parts being shown in elevation;

Figure 3 is a section taken substantially along the line 3—3 of Fig. 2;

Figure 4 is a view corresponding to the left-hand portion of Fig. 2 showing the parts in another position;

Figure 5 is a vertical section through the hat supporting mechanism;

Figure 6 is a front elevation of an iron, and

Figure 7 is a bottom plan view of the iron shown in Fig. 6.

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, the mechanisms comprising this machine are supported upon a suitable base or frame 10, the upper surface of which forms a platform or table 11. The hat to be operated upon is shown at 12 and is supported and rotated in a manner which will be later described. The brim 12^a of the hat projects over the table 11, its under surface or face being adapted to coact with the flat surface of a support 13. This support 13 is supported by the table 11 and is movable transversely thereof, being carried by rollers such as 11^a and 11^b on a pair of parallel guides 14 and 15 secured upon the upper surface of the table 11. The support 13 is also preferably heated as by means of a suitable gas burner or electrical heating device situated in the cavity 16 therein. The support 13 is thus capable of a reciprocating movement upon its rollers back and forth along the guides 14 and 15, and being heated it assumes the character of an iron adapted to iron the under surface of the brim 12^a of the hat.

Resting upon the upper surface of the brim 12^a above the support 13 is an iron 17 which is heated, for example, by means of a suitable gas burner or electrical heating device positioned within the cavity 18 therein. This iron 17 is carried upon the forward end of a bar 19, which bar is slidably supported in a carriage 20. A compression spring 21 adjustable through a suitable set screw 25 and lock nut 26 urges the iron 17 toward the crown of the hat 12 thereby causing the iron at all times to operate upon the brim 12^a close up to the crown of the hat.

The carriage 20 thus carrying the iron 17 is slidably mounted in an arcuate groove formed between a pair of upstanding flanges 27 and 28 on the surface of the table 11. The carriage 20 and hence the iron 17 are thus capable of sliding back and forth along the guiding flanges 27 and 28, the iron operating upon the upper surface of the hat brim 12^a and being continuously urged toward the crown of the hat by the compression spring 21. The iron 17 bears by gravity upon the hat brim 12^a and preferably has a pivotal connection at 29 with the end of the slide bar 19, so that it may be swung upwardly out of

operative position by means of a handle 30, for example.

Secured to the side of the frame 10 are a pair of brackets 31 and 32 in which is rotatably supported a horizontal shaft 33. This shaft 33 carries a tight and looose pulley 34, through which it is adapted to be driven from any suitable source of power, and has thereon between its bearings 31 and 32 a worm 35. The worm 35 meshes with a worm wheel 36 upon a vertical shaft 37 supported in bearings 38 and 39 secured to the frame 10. The vertical shaft 37 is thus slowly rotated from the drive through the driving pulley 34.

Adjacent the upper end of the shaft 37 is secured a crank 40 to which is pivoted at 41 a connecting link 42, which link is pivoted at its other end at 43 to the slidable carriage 20 carrying the iron 17. Rotation of the shaft 37 thus through the crank 40 and connecting link 42 reciprocates the carriage 20 in its guides, and reciprocates the iron 17 across the surface of the hat brim 12^a. Upon the shaft 37 below the crank 40, is an eccentric 44, from which, as best shown in Figure 3, projects an arm 45 which is pivoted at 46 to the lever 47. The lever 47 is pivoted at its rear end upon a pin 48 mounted in an extension 49 of the table 11, and at its forward end has a slot connection through a pin 50 and stud 51 with the slidable support or lower iron 13. The stud 51 and the pin 50 thereon, as shown in Figure 2, project downwardly from beneath the support 13 through a slot 52 in the table 11. Rotation of the shaft 37 thus through the eccentric 44, arm 45 and lever 47 reciprocates the support or iron 13 back and forth along its guides 14 and 15.

From the above it will be seen that the portion of the hat brim 12^a interposed between the two irons 13 and 17 at any instant is ironed on its under surface by the reciprocating iron 13, and on its upper surface by the reciprocating iron 17. In this manner both the upper and lower surfaces of the hat brim are ironed at once. The crank 40 and the eccentric 44 are so arranged that the two irons, the lower iron 13 and the upper iron 17, move in opposite directions during their reciprocation.

Considering now more particularly the mounting of the hat 12, with reference particularly to Figure 5, the hat is supported upon a suitable block 53 having a central bore 54. The bore 54 of the hat block 53 is adapted to fit over a spindle 55, a flange 56 limiting the downward movement of the hat block thereon. Inserted in a slot in the spindle 55 is a small pivoted lever 57, the upper end of which forms a key 58 adapted to register with a recess 59 of the hat block 53. A spring 60 urges the lever 57 into engagement with the recess 59 and this engagement may be released by manipulation of the lower end 57^a of the lever 57. The key 58 registering with the recess 59 serves to connect the spindle 55 and the hat block 53 in rotating driving relation and also serves to correctly position the major and minor axes of the hat, as will be described. It will be seen that by manipulation of the small handle 57^a the hat may be conveniently placed in position upon the machine or removed therefrom.

The hat carrying spindle 55 is formed integrally with a shaft 62 extending downwardly beneath the collar 56. The shaft 62 passes loosely through enlarged openings in a hollow bearing bracket or box 63 projecting from the frame 11. Formed on or secured to the shaft 62 within the hollow bracket 63 is a transverse member 64, which is resting upon the base 63^a, supports the shaft 62 and is adapted to slide upon the base 63^a as the shaft rotates. Inserted loosely in the box 63 and held from moving upwardly therefrom by the cover 63^b, are a pair of metal blocks 65 and 66, respectively positioned at either end of the transverse member 64. These blocks 65 and 66 are provided with vertical grooves 65^a and 66^a, respectively, with which the respective rounded ends of the transverse member 64 register. The inner walls 63^c of the box 63 are circular and the blocks 65 and 66 are adapted to slide around the same, driven by the member 64, as the shaft 62 rotates. The shaft 62, it will be seen, is capable as it rotates of tipping from the vertical, the axis about which it tips being through either end 64^a or 64^b of the transverse member 64, which supports it upon the base 63^a. When tipping occurs about an axis through the end 64^b, for example, the shaft is supported by this end alone, and the other end 64^a moves upwardly in its groove 65^a (as shown in Fig. 4).

Referring again to Figure 3, upon the shaft 37 is an eccentric 67 from which projects an arm 68, which is pivotally connected at 69 with one arm of a bell crank lever 70. The lever 70 is pivoted by a pin 71 upon a bracket 72 projecting from the frame 10. Pivoted at 73 to the other arm of the bell crank 70 is an arm 74 which extends toward the shaft 62, and is connected at its end by a pin 75 with an arm or crank 76. The arm 76 is loosely supported at 76^a about the shaft 62 as by a collar 77 thereon, as shown in Figures 2 and 4. Slidably supported in a pair of lugs 76^b and 76^c on the arm 76 is a pawl 85 which is continually urged by a spring 86 into engagement with a ratchet wheel 78. The ratchet 78 is secured upon the shaft 62 below the hollow bearing 63, and through this ratchet and its pawl 85, actuated by the arm 74 from the eccentric 67, the shaft 62 and the hat 12 car-

ried thereby are intermittently rotated in the direction indicated by the arrows. The ratchet 78, as shown in Figure 3, is preferably elliptical or oval in shape to correspond with the oval shape of the hat 12, so that a substantially uniform amount of feed of the brim 12^a is had between the two irons 13 and 17 with each movement of the shaft 37. The key 58 above described coacting with the hat block 53 positions the major axis of the hat 12 to correspond with the angular position of major axis of the oval ratchet 78.

The hat brim 12^a is thus intermittently moved around between the irons 13 and 17 which respectively operate upon its lower and upper surfaces. The eccentric 67 is preferably so related to the crank 40 operating the upper iron 17 that movement of the hat brim through between the irons takes place when this upper iron 17 is moving in the direction that the hat brim itself moves. This facilitates the moving of the hat brim between the irons without danger of buckling or distorting of the brim.

As is best pointed out in Figure 2, all points of the inner edge of the hat brim 12^a do not lie in a single plane, the hat being dished so that the brim curves downwardly toward the front and rear from a point on each side of the crown. Thus, for example, referring to Figure 2, the points 12^b and 12^c of the hat brim are considerably lower than the point 12^d thereof when the shaft 62 is in the vertical position shown in this figure. Therefore, if the hat were rotated from the position shown in Figure 2 with the shaft 62 remaining vertical, the portion 12^d would not come down against the surface of the lower iron or support 13, and the brim would be distorted by the upper iron 17 bearing thereon. Furthermore, the distance from the points 12^b and 12^c to the center of the shaft 62 is substantially greater than the distance from the point 12^d to the center of the shaft 62, so that the iron 17 would not come up close to the crown at the point 12^d without a considerable movement toward the axis of the shaft 62 under the urge of the spring 21. In order to overcome these difficulties and others, the shaft 62 is tipped upon its supporting member 64, as shown in Figure 4, when the side portions of the hat brim move through between the operating irons. This tipping of the shaft 62 has the effect of moving the hat inwardly toward the irons, and of lowering the side portions 12^d of the brim at the proper times to move the inner edge of the portion of the brim being operated upon down against the surface of the lower iron 13.

This tipping is brought about preferably by means of a crank 79 secured at the lower end of the shaft 62 and carrying a pin or follower 80 which coacts with a cam groove 81 formed in a plate 82 projecting from the frame 10. This cam groove 81 is substantially heart-shaped, as shown in Figure 3, and acting through the follower 80 and crank 70 will be seen to tip the shaft 62 about the ends of the member 64 from the vertical to the position shown in Figure 4 and back again to the vertical as the side portions of the brim 12^a move through between the irons 17 and 13.

The tipping of the shaft 62 and the hat 12 carried thereon, as has been described, occurs about transverse axes through the ends 64^a and 64^b of the transverse member 64. Thus, the axes about which the shaft 62 and the hat tip are spaced laterally from the axis of the shaft 62. Thus, as is brought out in Figure 4, the tipping action results also in a lifting of the shaft 62 and the hat. If the axis about which the shaft tips extended through the axis of the shaft 62 there would be no lifting of the shaft and the hat, and it is found that tipping about such an axis to an extent to move the hat inwardly toward the irons the desired amount would lower the side portions 12^a of the brim to too great an extent. The lifting of the hat, as above described in conjunction with the tipping, offsets this too great lowering of the side portions 12^d of the brim and maintains the inner edge of the portion of the brim being operated upon always substantially at the surface of the lower iron 13. The combined tipping and lifting of the hat, therefore, causes all points along the inner edge of the brim to move through substantially the same point with respect to both the lateral and the vertical close against the upper surface of the lower iron 13.

It is to be noted that the brim 12^a shown in the drawings is not flat but is rolled up to some extent, being known as what is called a roll or turban-shaped brim. Difficulty is experienced in successfully ironing such a hat brim without a flattening effect upon the brim and ironing out of this roll. Considering now more particularly the shape of the upper iron 17 it is seen to be what might be termed on the order of "banana-shape." Its surface 17^a facing toward the crown of the hat is curved inwardly, and its opposite surface 17^b is curved outwardly while its end portions are gradually narrowed and rounded. Its lower surface, as shown in the bottom plan view of Figure 7, comprises a flat operating surface 17^c of relatively small area and upwardly sloping surfaces 17^d at either end thereof. Thus only a small portion of the brim is pressed flat at one time against the flat surface of the lower iron 13, so that the roll is not ironed out of the brim, and the curved sloping surface 17^d further assist in retaining the rolled shape of the brim. Moreover, the surface 17^a of the iron facing the crown of the hat slopes away from the hat so that the lower edge of this surface

may move closely up against the bottom of the crown and iron the brim all the way up to its inner edge.

From the foregoing it will be seen that there is herein provided a machine which is adapted to iron hat brims in a highly efficient and satisfactory manner. The machine is conveniently operated, readily adapted to varying conditions of practical use and attains many important and useful advantages.

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

I claim as my invention:

1. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the brim of said hat, a flat surface against which said brim is adapted to be ironed by said iron and adapted to support the brim against the thrust of said iron, means for rotating said supported hat to feed the brim across said surface and past said iron, and means adapted to give said iron a reciprocating movement along said brim substantially longitudinally of the direction of feed thereof.

2. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the brim of said hat, means for rotating said supported hat to feed the brim past said iron, and means adapted to give said iron a reciprocating movement along said brim in a path having a curvature in the same general direction as the curvature of said brim.

3. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the brim of said hat, means for giving said iron a reciprocating movement, and means including a curved guide for causing said reciprocating iron to travel in a curved path across said brim and longitudinally thereof.

4. In a hat brim ironing machine, in combination, means adapted to support a hat, and a pair of reciprocating and heated irons between which the brim of said hat is received adapted to iron the two sides of said brim.

5. In a hat brim ironing machine, in combination, means adapted to support and rotate a hat, and a pair of reciprocating and heated irons between which the brim of said rotating hat moves adapted to iron the two sides of said brim.

6. In a hat brim ironing machine, in combination, a support for a hat brim, a moving and heated iron adapted to iron said hat brim against said support, and means adapted to reciprocate said support beneath said hat brim.

7. In a hat brim ironing machine in combination, means adapted to support and rotate a hat having a brim curved downwardly from the side portions toward the end portions thereof, a support across which the under surface of said brim is adapted to move during rotation, means adapted to iron said brim against said support, and means adapted relatively to move said support and said hat during said rotation to cause substantially all points at the inner edge of said brim to pass through substantially the same point adjacent the surface of said support.

8. In a hat brim ironing machine, in combination, means adapted to support and rotate an oval hat, means adapted to iron the brim of said rotating hat, and means adapted relatively to move said hat and said ironing means during rotation to bring said iron close to the crown of said hat at substantially all points along said brim.

9. In a hat brim ironing machine, in combination, means adapted to support and rotate an oval hat having a brim curved downwardly from the side portions toward the end portions thereof, a support across which said brim is adapted to move during rotation, means adapted to iron said brim against said support, means adapted during rotation to control the position of said hat to lower said side portions of said brim as they approach said iron to bring the under surface of substantially the entire inner edge portion of said brim against said support as it moves thereby, and means adapted relatively to move said hat and said ironing means during rotation to bring said iron close to the crown of said hat at substantially all points along said brim.

10. In a hat brim ironing machine, in combination, a substantially upright shaft, means at the upper end of said shaft adapted to support an oval hat, means adapted to rotate said shaft and said hat supported thereby, means adapted to iron the brim of said rotating hat, means adapted to tip said shaft to move said hat toward said ironing means as the side portions of the brim approach said ironing means, and means adapted to lift said hat to counteract the lowering of the side portions of the hat as said tipping of said shaft occurs.

11. In a hat brim ironing machine, in combination, means adapted to support a hat, a reciprocating iron adapted to iron the brim of said hat, and means adapted intermittently to rotate said support to move said brim through said ironing means.

12. In a hat brim ironing machine, in combinaton, means adapted to support a hat, a reciprocating iron adapted to iron the brim of said hat, and a ratchet mechanism adapted intermittently to rotate said support to feed said brim through said ironing means.

13. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a reciprocating iron adapted to iron the brim of said oval hat, and means adapted intermittently to rotate said support to move said brim through said ironing means, said rotating means being adapted to impart a feed of substantially uniform length of said brim of said oval hat through said ironing means at each intermittent movement.

14. In a hat brim ironing machine, in combination, means adapted to support an oval hat, means adapted to iron the brim of said hat, and means comprising an oval ratchet adapted to rotate said oval hat to impart an intermittent feed of substantially uniform amount of said brim through said ironing means.

15. In a hat brim ironing machine, in combination, means adapted to support a hat, a reciprocating iron adapted to iron the brim of said hat, and means adapted intermittently to feed said brim past said iron, said feed occurring at the time of movement of said reciprocating iron in the direction of said feed.

16. In a hat brim ironing machine, in combination, means adapted to support and rotate a hat, an iron adapted to iron the brim of said hat during rotation thereof, and spring means urging said iron inwardly against the crown of said hat.

17. In a hat brim ironing machine, in combination, means adapted to support and rotate a hat, an iron adapted to iron the brim of said hat during rotation thereof, spring means urging said iron inwardly against the crown of said hat, and means for adjusting said spring means.

18. In a hat brim ironing machine, in combination, means adapted to support a hat, an iron adapted to iron the upper surface of the brim of said hat, and means adapted to move said iron in a curved path across said brim close up to the band of said hat to iron the entire width of the brim.

19. In a hat brim ironing machine, in combination, means adapted to support a hat, an iron adapted to iron the brim of said hat, and means adapted to reciprocate said iron in a curved path across said brim close up to the band of the hat to iron the entire width of said brim.

20. In a hat brim ironing machine, in combination, means adapted to support a hat, a pair of heated irons adapted to receive the brim of said hat therebetween and iron the two sides of said brim, and means adapted to reciprocate said two irons in directions substantially longitudinal of said brim, at least one of said irons moving in a curved path.

21. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the upper surface of the brim of said hat, means adapted to hold said iron and the band of said hat in engagement, and means adapted to reciprocate said iron over said brim in a path extending substantially longitudinally of said brim.

22. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the upper surface of the brim of said hat, means adapted to hold said iron closely in against the band of said hat, and means adapted to reciprocate said iron over said brim in a curved path having a curvature in the same general direction as the curvature of said band.

23. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower part of the crown, means adapted to feed said brim past said iron, and yielding means for urging said iron inwardly toward said crown to hold said portion thereof in engagement with said band portion.

24. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower part of the crown, means adapted to feed said brim past said iron, yielding means for urging said iron inwardly toward said crown to hold said portion thereof in engagement with said band portion, and means adapted to reciprocate said iron in a path having a general direction longitudinally of said band.

25. In a hat brim ironing machine, in combination, means adapted to support a hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower part of the crown, means adapted to feed said brim past said iron, yielding means for urging said iron inwardly toward said crown to hold said portion thereof in engagement with said band portion, and means for adjusting said yielding means.

26. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat, means for rotating said hat to feed the brim past said iron, and means adapted to move said rotating hat bodily toward said iron as the side portions thereof approach said iron and bodily away from said iron as the end portions thereof approach said iron, to enable said iron to operate on said brim close up to the crown at all portions thereof.

27. In a hat brim ironing machine, in com-

bination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower portion of the crown, means for rotating said oval hat to feed the brim past said iron, and spring means urging said iron toward said crown to hold said portion thereof in engagement with said band portion, said spring means permitting a movement of said iron in a direction away from the axis of rotation of said hat as the band portion at the ends of said oval hat approach said iron and a movement of said iron in the opposite direction as the band portions at the sides of said oval hat approach said iron.

28. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower portion of the crown, means for rotating said oval hat to feed the brim past said iron, and means adapted relatively to move said iron and the axis of rotation of said rotating oval hat to maintain said portion of said iron always in engagement with the part of said band portion moving thereby.

29. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower portion of the crown, means for rotating said oval hat to feed the brim past said iron, means adapted relatively to move said iron and the axis of rotation of said rotating oval hat to maintain said portion of said iron always in engagement with the part of said band portion moving thereby, and means adapted to give said iron a reciprocating movement in a direction substantially longitudinally of said brim.

30. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat, means for rotating said oval hat to feed said brim past said iron, spring means urging said iron inwardly against the crown of said hat, and means adapted to move said rotating hat bodily toward said iron as the side portions thereof approach said iron and bodily away from said iron as the end portions thereof approach said iron.

31. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower portion of the crown, means for rotating said oval hat to feed the brim past said iron, means adapted relatively to move said iron and the axis of rotation of said rotating oval hat to maintain said portion of said iron always in engagement with the part of said band portion moving thereby, and means adapted to lower the side portions of said brim relative to said iron as said side portions move into operative relation to said iron and adapted to raise the end portions of said brim relative to said iron as said end portions move into operative relation to said iron.

32. In a hat brim ironing machine, in combination, means adapted to support an oval hat, a heated iron adapted to iron the upper surface of the brim of said hat and having a part adapted to engage the band portion of the hat at the lower portion of the crown, means for rotating said oval hat to feed the brim past said iron, means adapted relatively to move said iron and the axis of rotation of said rotating oval hat to maintain said portion of said iron always in engagement with the part of said band portion moving thereby, means adapted to lower the side portions of said brim relative to said iron as said side portions move into operative relation to said iron and adapted to raise the end portions of said brim relative to said iron as said end portions move into operative relation to said iron, and means adapted to give said iron a reciprocating movement in a direction substantially longitudinally of said brim.

33. In a hat brim ironing machine, in combination, means adapted to support a hat, means adapted to rotate said supported hat, a heated surface across which the lower surface of the brim of said hat moves during rotation, a heated iron adapted to iron the upper surface of said brim and press said brim against said heated surface, and means for giving said heated surface a reciprocating movement.

34. In a hat brim ironing machine, in combination, means adapted to support a hat, means adapted to rotate said supported hat, a heated surface across which the lower surface of the brim of said hat moves during rotation, a heated iron adapted to iron the upper surface of said brim and press said brim against said heated surface, and means for giving said heated surface a reciprocating movement in a direction substantially longitudinally of the direction of movement of said hat brim thereover.

35. In a hat brim ironing machine, in combination, means adapted to support a hat, means adapted to rotate said supported hat, a heated surface across which the lower surface of the brim of said hat moves during rotation, a heated iron adapted to iron the upper surface of said brim and press said brim against said heated surface,

means for holding said upper iron close into the band of said hat, and means for giving said iron a reciprocating movement across said hat brim as the latter moves therebeneath.

36. In a hat brim ironing machine, in combination, means adapted to support a hat, means adapted to rotate said supported hat, a heated surface across which the lower surface of the brim of said hat moves during rotation, a heated iron adapted to iron the upper surface of said brim and press said brim against said heated surface, means for giving said heated surface a reciprocating movement, means for holding said upper iron close into the band of said hat, and means for giving said upper iron a reciprocating movement across said hat brim.

37. In a hat brim ironing machine, in combination, means adapted to support a hat, means adapted to rotate said supported hat, a heated surface across which the lower surface of the brim of said hat moves during rotation, a heated iron adapted to iron the upper surface of said brim and press said brim against said heated surface, means for giving said heated surface a reciprocating movement, means for holding said upper iron close into the band of said hat, and means for giving said upper iron a reciprocating movement across said hat brim in a curved path having a curvature in the same general direction as the curvature of said band.

38. In a hat brim ironing machine, in combination, means adapted to support a hat, an upper reciprocating iron adapted to iron one surface of the brim of said hat, a support against which said iron presses said hat brim, and means adapted to feed said brim across said support, said feed occurring at the time of movement of said upper iron in the direction of said feed.

39. In a hat brim ironing machine, in combination, means adapted to support a hat, an upper reciprocating iron adapted to iron one surface of the brim of said hat, a lower reciprocating iron moving in directions opposite to the directions of movement of said upper iron and against which said upper iron presses said hat brim, and means adapted to feed said brim between said irons, said feed occurring at the time of movement of said upper iron in the direction of said feed.

40. In a hat brim ironing machine, in combination, means adapted to support a hat in substantially upright position, ironing means adapted to iron the brim of said hat, means adapted to rotate said hat to feed said brim past said ironing means, means adapted to tip said hat to move the same toward said ironing means as the side portions of said hat approach said ironing means, and means adapted at the time of said tipping relatively to move said hat and said ironing means to offset the lowering of said side portions relative to said iron caused by said tipping.

41. In a hat brim ironing machine, in combination, means adapted to support a hat in substantially upright position, ironing means adapted to iron the brim of said hat, means adapted to rotate said hat to feed said brim past said ironing means, means adapted to tip said hat to move the same toward said ironing means as the side portions of said hat approach said ironing means, and means adapted at the time of said tipping to raise said hat bodily to offset the lowering of said side portions due to said tipping.

42. In a hat brim ironing machine, in combination, a substantially upright shaft, means at the upper end thereof adapted to support a hat, means adapted to operate upon the brim of said hat, means adapted to rotate said shaft to feed said brim past said operating means, means adapted to tip said shaft to move said hat toward and away from said operating means as the side portions and end portions of the hat respectively approach said operating means, said tipping occurring about axes transverse to and spaced laterally from the axis of rotation of said shaft and thereby effecting also a bodily lifting and lowering of said shaft and said hat thereon.

43. In a hat brim ironing machine, in combination, a substantially upright shaft, means at the upper end thereof adapted to support a hat, means adapted to operate upon the brim of said hat, means adapted to rotate said shaft to feed said brim past said operating means, means rotatably supporting said shaft at points spaced from the axis of rotation thereof, and means adapted to tilt said shaft about said last means to move said hat toward and away from said operating means during rotation thereof.

44. In a hat brim ironing machine, in combination, means adapted to support a hat, an iron adapted to iron the upper surface of the brim of said hat, a moving carriage carrying said iron, and means urging said iron inwardly relative to said carriage and against the band portion of the crown of said hat.

45. In a hat brim ironing machine, in combination, means adapted to support a hat, an iron adapted to iron the upper surface of the brim of said hat, a carriage carrying said iron, means for reciprocating said carriage to move said iron back and forth across said hat brim, and means urging said iron inwardly toward said hat relative to said carriage to hold said iron in against the band portion of said hat.

46. In a hat brim ironing machine, in combination, means adapted to support a hat, an iron adapted to iron the upper sur-

face of the brim of said hat, a carriage carrying said iron, means for reciprocating said carriage to move said iron back and forth across the brim of said hat in a curved path having a curvature in the same general direction as the curvature of said brim, and means urging said iron inwardly toward said hat relative to said carriage to hold said iron in against the band portion of said hat.

In testimony whereof, I have signed my name to this specification this 18th day of July, 1924.

RALPH K. REYNOLDS.