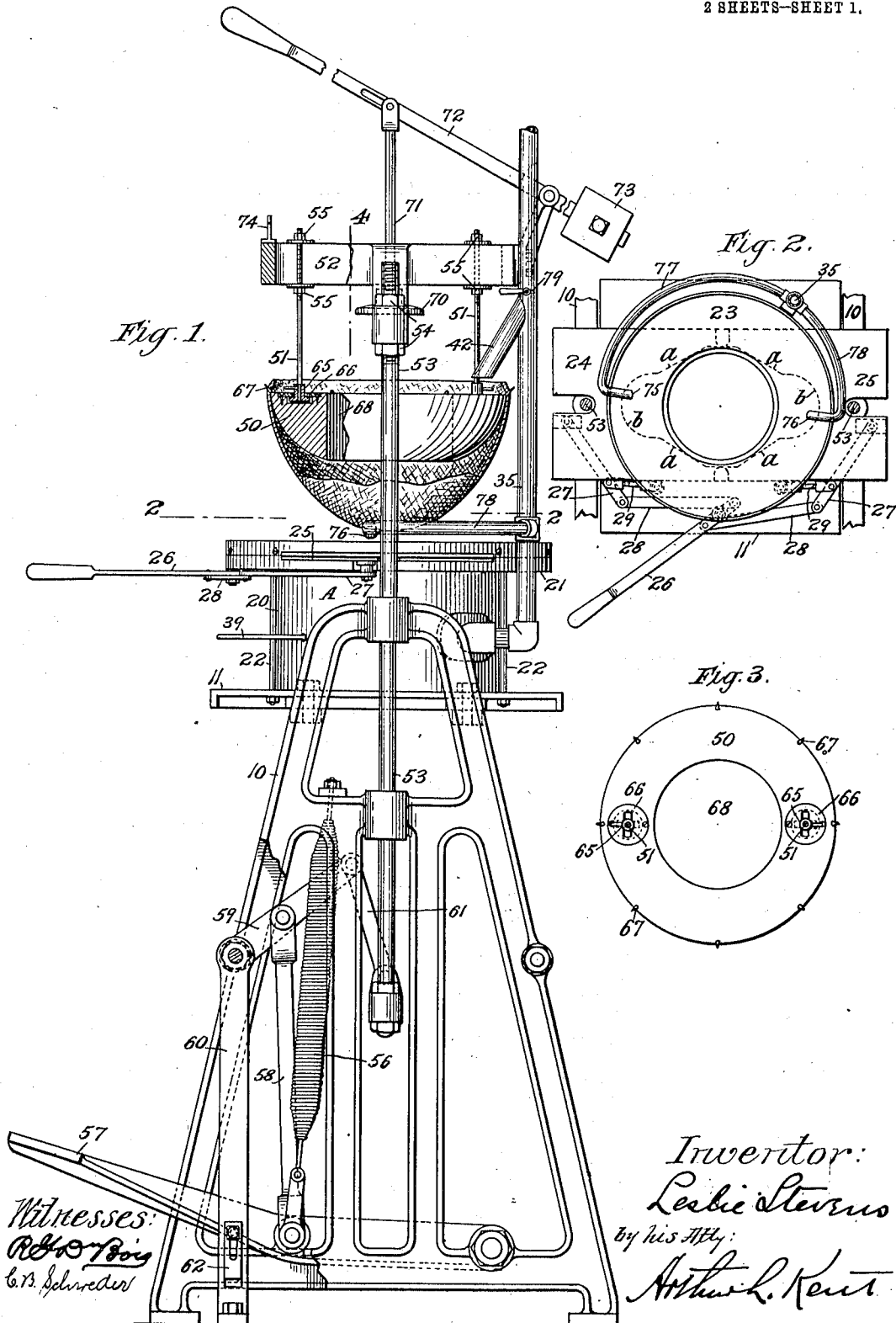


L. STEVENS.
HAT SHAPING MACHINE.
APPLICATION FILED FEB. 12, 1910.

1,053,668.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 1.



Witnesses:
R. B. Boy
C. B. Schneider

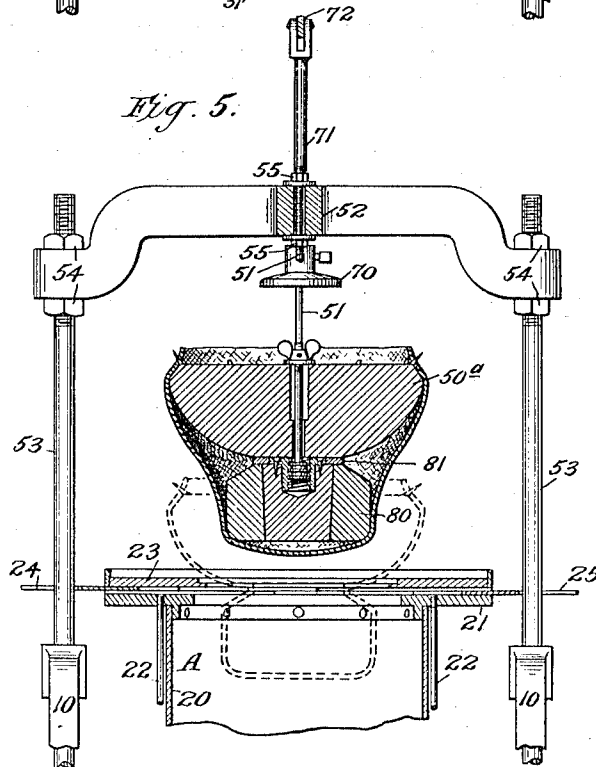
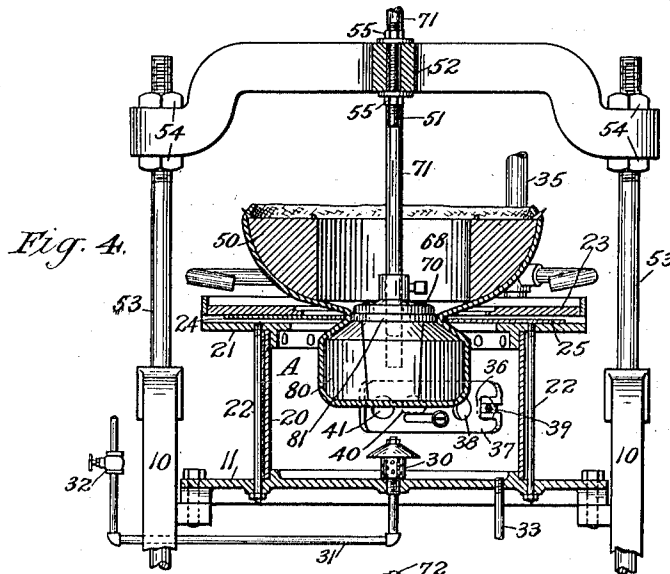
Inventor:
Leslie Stevens
by his Att'y:
Arthur L. Kent

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

LESLIE STEVENS, OF GLEN RIDGE, NEW JERSEY.

HAT-SHAPING MACHINE.

1,053,668.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed February 12, 1910. Serial No. 543,513.

To all whom it may concern:

Be it known that I, LESLIE STEVENS, a citizen of the United States, residing at Glen Ridge, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Hat-Shaping Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to machines for shaping hats from felt or other suitable stretchable and moldable material.

In my application No. 515,912, filed September 2, 1909, I have described a machine for shaping hats which, although useful for shaping hats of other forms, is especially adapted and intended for shaping one-piece hats of the class or general shape known as extension-crown hats, that is, hats having a head opening smaller than the lower part or base of the crown, such smaller head opening being formed by folding the felt or other material inward from the lower extremity of the crown and from the brim. Hats shaped in that machine used as shown in said application as they come from the machine have substantially flat brims or brims with a straight flare.

The present invention has been made especially with the idea of adapting the machine of said application to shaping at a single operation the brim and crown of hats, and especially extension-crown hats, having rolled or other flared or shaped brims.

While the special aim of the invention has been to provide a machine for shaping at a single operation one-piece hats having straight flared or rolled brims or other shaped brims as distinguished from a plain flat brim, and especially extension-crown hats of this kind, and while the invention in some of its features relates especially to machines for forming such hats, yet machines embodying features of the invention as claimed will be found adaptable to and may be used for forming hats having flat brims whether with extension crowns or crowns of other forms such as the well known bell-crown or an ordinary straight crown.

To the above ends, the invention consists in the construction, arrangement and combinations of parts as hereinafter fully described and specifically pointed out in the claims.

As a full understanding of the invention can best be given by a detailed description of a machine embodying the various features of the invention in the preferred form, such a description will now be given in connection with the accompanying drawings showing such a preferred construction and a modification thereof.

In said drawings:—Figure 1 is a side view of a preferred form of machine with the brim form raised and with parts shown in section. Fig. 2 is a section on line 2 of Fig. 1 on a reduced scale. Fig. 3 is a top or plan view of the brim form on the scale of Fig. 1. Fig. 4 is a sectional view of the upper part of the machine taken on line 4 of Fig. 1. Fig. 5 is a view similar to Fig. 4, but showing a slightly modified construction in which the crown and brim forms are secured together.

Referring to the drawings, and first to Figs. 1 to 4, the machine shown is of the same general form as the machine shown in my said application No. 515,912. The various operative parts of the machine are carried by two side frames 10. Supported between and near the upper ends of the side frames is a table or bed 11 on which is mounted a steaming and drying box or chamber A which is formed by a cylindrical shell 20 set on the table and a top plate 21, the shell and top plate being secured to the tube and held in place by means of tie rods 22. A cover plate 23 is mounted on the plate 21, and the plates 21 and 23 are each formed with a central opening of sufficient size to permit a hat body and a crown form or block of the largest size with which the machine is intended to be operated to be passed down through the openings into the chamber A. The plate 21 is also cut away on its upper face to form a guideway in which are mounted two oppositely reciprocating and overlapping stretching and shaping plates 24 and 25. These stretching and shaping plates are each cut away from their inner ends to form jaws having tapering or inclined edges *a* extending back from the inner ends of the plates, and having shaping edges *b* connecting the inclined edges *a*, which edges *b* when the plates are in their inner position form an opening corresponding to the outside dimensions of the head opening or head band of the hat which the machine is to shape. The stretching and shaping plates normally lie in their out-

ward position, as shown in Fig. 2, in which position the extreme inner ends of the plates overlap, as indicated by dotted lines in Fig. 2, but the jaw openings leave the top of the steaming and drying chamber open for the introduction of the hat body and the crown form. The stretching and shaping plates are reciprocated by means of a hand lever 26 through connecting levers 27 and links 28, the levers 27 being pivotally mounted on swinging links or supports 29. When the lever 26 is thrown over to the right from the position shown in Fig. 2, the plates will be moved inward to the position shown in Fig. 4, the force with which they are moved increasing as they approach the end of their inward or stretching and shaping movement on account of the toggle-like connection between the lever 26 and the levers 27.

In order that the machine may be used for shaping hats with head openings of different sizes and shapes, means are provided for varying the amount of inward movement of the stretching and shaping plates and the plates are mounted in the machine so as to be readily removable to permit plates having shaping edges *b* of different shapes to be used in the machine. For adjusting the inward movement of the plates, the links 29 are made adjustable in length as indicated in Fig. 2; and the plates are readily removed and replaced in the machine by simply disconnecting the levers 27 from the plates and removing the cover plate 23 so that the stretching and shaping plates may then be lifted out of the guideway in which they slide on the plate 21.

Steam for softening the hat body to be shaped is admitted to the steaming and drying chamber through a steam inlet 30 at the bottom of the chamber which connects with a supply pipe 31 controlled by a valve 32; and a drip pipe 33 serves to carry away any water of condensation which may collect in the chamber. An air supply pipe 35 serves to supply a setting and drying current of cool air to the chamber A through an inlet opening 36 in the side wall of the chamber indicated by dotted lines in Fig. 4, and the admission of air through the opening 36 is controlled by a valve or shutter plate 37 mounted to slide on the inner side of the side wall of the chamber and having an inlet port 38, and which may be shifted to bring the port 38 opposite the inlet opening 37 to admit air or to bring a solid portion of the plate opposite the inlet opening to cut off the air blast, as desired, by means of an operating rod 39 which extends through the side wall of the chamber in position to be reached by the operator. An air outlet opening 40 in the side wall of the chamber, indicated by dotted lines in Fig. 4, is also controlled by the shutter plate 37 which has a port 41 in position to reg-

ister with the outlet opening 40 when the port 38 registers with the inlet opening 36. The air circulating through the chamber serves to cool and dry the crown of the shaped hat, as hereinafter explained. For cooling and drying the inner portion of the brim of the hat, a blast of air is caused to blow downward from a branch 42 from the air supply pipe 35.

The parts of the machine so far described are substantially the same and operate in a similar manner to corresponding parts of the machine shown in my said application No. 515,912, and such parts are shown more fully in said application.

In the machine of my said application No. 515,912, the edges of the hat body which is to be shaped are clamped between the cover plate 23 and a vertically reciprocating upper clamping plate. In accordance with the present invention, the hat body is not clamped against the plate 23, but is secured at its outer edge to, or adjacent to, a brim form which at the time the stretching and shaping plates are moved inward is positioned relatively to the plates so that by the inward movement of the plates, the brim will be shaped as desired, and the head band of the hat will be shaped by the shaping edges *b* of the plates in proper relation to the brim; and for convenience in attaching the hat body to the brim form the brim form is mounted so as to be movable toward and from the stretching and shaping plates and chamber A.

As shown in the drawings, the brim form 50 is carried by rods 51 depending from a cross head 52 which is carried by a pair of vertical sliding rods 53 mounted in bearings in the side frames 10. The cross head is vertically adjustable on the rods 53 by means of nuts 54, and the supporting rods 51 are also secured to the cross head by means, such as nuts 55, providing for vertical adjustment of the rods for adjusting the brim form vertically relatively to the cross head. The rods 53 are normally held in the position shown in Fig. 1 with the cross head in its raised position by springs 56 and are moved downward against the tension of the springs 56 to lower the cross head and the brim form by means of a foot treadle 57 which is connected by a link 58 with a lever 59 pivotally mounted on a support 60 and having its free end connected by a link 61 with a cross bar extending between the lower ends of the rods 53. When the treadle has been depressed to carry the cross head and brim form down into operative position as shown in Fig. 4, it is held by an adjustable catch 62 to lock the cross head against upward movement.

The brim form 50 is supported by the rods 51 with its forming surface facing downward, and is fastened to the rods 51 by

means providing for the form being readily attached to or detached from the rods. As shown in the drawings, turn heads 65 on the ends of the rods 51 adapted to enter through slots in, and to be turned under, plates 66 secured to the upper face of the brim form are provided for this purpose. The brim form is provided with suitable means, such as the pins 67, for securing the edge of the hat body or blank to the edge of the brim form. As shown in Figs. 1 to 4, and as preferred, the brim form is made with a central opening 68 of sufficient size to permit the passage therethrough of the crown form or block about which the crown of the hat is to be shaped.

For depressing and positioning the crown form or block; as hereinafter described, a plunger head 70 is provided carried by plunger rod 71 mounted to slide vertically in bearings located centrally of the cross head 52. The plunger head 70 is preferably adjustable on the plunger rod, as by being secured in place thereon as by a set screw, as shown in Fig. 4, and is preferably provided with means for centering the crown block, such as the end of the plunger rod projecting downward below the bottom of the plunger head to enter a central hole in the base of the crown form as indicated by dotted lines in Fig. 4. The plunger rod is connected at its upper end to a hand lever 72 pivoted at one side of the cross head, and the plunger rod and lever are normally held in position to hold the plunger head in its raised position as shown in Fig. 1, by means of a weight 73 or other suitable means. The plunger is depressed to force the crown block downward by throwing the lever 72 downward, and is held in its downward position by means of a hook 74 under which the lever is adapted to be engaged.

Oppositely arranged nozzles or outlets 75 and 76 connected by branch pipes 77 and 78 with the air supply pipe 35 supply blasts of cool air for drying and cooling the brim of the shaped hat while it is held in shape on the brim form. A valve 79 of any suitable form in the air supply pipe 35 and having a handle within convenient reach of the operator controls the supply of air to the outlets 75 and 76 and also to the branch outlet 42 and to the outlet 40 to the chamber A.

In the operation of the machine, the parts being in the position shown in Figs. 1 and 2, a brim form of the desired shape is attached to the rods 51, and the hat body or blank is secured to the brim form, either before or after the latter is attached to the rods 51, by pressing its edge over the attaching pins 67. The hat body will then hang from the brim form as shown in Fig. 1, with its central portion over the opening in the top of the chamber A. A crown form or block 80 of suitable shape and size according to the

shape and size to which the crown of the hat is to be shaped, is inserted through the central opening 68 of the brim form in the hanging hat body, and the hand lever 72 is operated to depress the plunger head 70 so as to force the crown form down into the hat body to proper position relatively to the brim form. The cross head is then moved downward to carry the brim and crown forms and the hat body downward together to the position shown in Fig. 4, that is, to such position relatively to the plates 24 and 25 that when the head band of the hat is formed by the inward movement of the plates, it will occupy the proper position relatively to the crown and brim portions shaped about the crown and brim forms. After the hat body has been attached to the brim form, and preferably before the cross head is moved downward, the valve 32 is opened to admit steam to the chamber A. If the steam is admitted to the chamber A before the cross head is lowered from the position shown in Fig. 1, it will rise through the opening in the top of the chamber and come in contact with and soften all parts of the hat body even out to its edge which is fastened to the outer edge of the brim form, and the softening action of the steam will continue during and after the lowering of the cross head to carry the brim and crown forms down into the shaping position shown in Fig. 4. The openings in the top plate 21 and cover plate 23 should preferably be of sufficient size relatively to the size of the crown form to be used, so that even after the cross head has been lowered steam will escape freely around the hat body through such openings to effect the desired softening of the brim portion of the hat body. When the hat body has become sufficiently softened, the hand lever 26 is thrown from the position shown in Figs. 1 and 2 to move the plates 24 and 25 inward to the position shown in Fig. 4, thereby stretching the felt or other material of which the hat body is formed inward to stretch and shape the brim portion of the hat against the brim form and the crown portion of the hat about the crown form, and to shape or form the head band of the hat. The steam is then shut off, and the air supply valve 79 is opened and the rod 39 is drawn outward to open the inlet 36 to admit air from the pipe 35 to the chamber A and to open the outlet 40 to permit the steam in the chamber and then the air to escape. The opening of the valve 79 also starts the blasts of air from the outlets or nozzles 42, 75 and 76. The cool air circulating through the chamber A will quickly set and dry the crown portion of the hat, and the blast from the pipe 42 striking down through the central opening 69 in the brim form will at the same time set and dry the inner part of the brim and the head band,

and the blasts from the nozzles 75 and 76 will flow against the exposed side of the entire brim; and the hat will thus become quickly set and hardened while held in shape in the machine. After the hat has become sufficiently set and hardened, the air blasts are cut off and the stretching and shaping plates are retracted by throwing the hand lever 26 back to the position shown in Figs. 1 and 2, and the cross head 52 is allowed to rise to raise the brim form and the shaped hat with the crown block therein, and the hat with the forms therein is removed from the machine by disconnecting the brim form from the supporting rods 51. The hat will then be unhooked from the pins on the brim form, and the brim form and crown block will be removed, the hat being first further dried if desired.

It will be seen that in the operation of the machine of this application as above described, the brim and crown of a hat having a downwardly flaring brim are shaped simultaneously and by the single operation of the folding plates 24 and 25.

The size and shape of the brim of hats shaped in the machine will depend upon the size and shape of the brim form used, and a brim form for shaping a brim of almost any desired shape may be used in the machine. The brim form shown is made with a curved convexly inclined shaping surface so as to shape the hat with a so-called rolled brim. Obviously, a form shaped to produce a hat with a straight flared brim might equally well be used in the machine, and the inclination of the convexly inclined shaping surface of forms for shaping flared brims will be varied according to the amount of flare to be given to the brim whether of the rolled form or straight flare form, and if the hat is to be shaped with a flat brim it is only necessary to use a brim form of the desired size having a flat forming face, or hats with flat or straight flared brims may obviously be shaped without using any brim form whatever, although when no brim form is used, and even when a flat brim form is used, the brim will not be shaped so well and may, and with some materials usually will, need to be further shaped or treated to make it lie smooth. Flare brim hats will be shaped in the machine with the brim flared downwardly, as shown in Fig. 4, by using a brim form with a convexly inclined shaping surface, and if the hat is to be finally shaped with an upwardly flared brim, it is only necessary after the hat has been shaped to reverse the flare of the brim in any well known manner.

The shape and size of the crown also of hats shaped in the machine will depend upon the shape and size of the crown block or form used, and hats may be shaped with extension crowns, bell crowns, or crowns of

other shapes including the ordinary crown having a head opening of the full size of the largest dimension of the crown. The machine is particularly well adapted, however, as before explained, to forming one-piece extension-crown hats, and the forming of a hat of this kind is illustrated in the drawings, the stretching and shaping plates as shown moving inward over the outer face or base of the crown form to force an intermediate part of the hat body or blank inward over the outer face or base of the crown form and to stretch the brim portion of the material inward from the edge holding means or pins 67 and the crown portion about the crown form to shape the hat and to form the head band. For forming extension-crown hats or other hats in which the head opening is smaller than the largest part of the crown, a sectional forming block will, of course, be used, and such block may be of any suitable construction, as, for example, a block of the construction described in my application for U. S. Patent No. 495,898, filed May 14, 1909. The shape of the shaping edges *b* of the stretching and shaping plates and the amount of inward movement given to the plates, will determine the size and shape of the head opening of the hat, and a forming shoulder 81 is preferably provided against which the material of the hat will be pressed by the plates, and which forming shoulder will also aid in centering the crown block and insuring the proper relative position of the head band and crown of the hat. A crown block having a forming shoulder projecting from the outer face or base thereof as shown, and as shown and described in my said application No. 495,898, is preferably used. The particular crown block shown in Fig. 4 is of the shape disclosed in my application for U. S. Patent No. 499,904, filed June 3, 1909, having its outer face or base formed with a convexly inclined shaping surface extending inwardly from the sides of the block, for shaping the hat, in accordance with the method described and claimed in my last said application, with an outstanding head band and a crown base slanting downwardly from the crown to the head band, which outstanding head band and crown base, after the crown block is removed, will be forced inward toward the top of the crown to reverse the slant of the crown base, as fully described in my last said application.

Instead of using separate or disconnected crown and brim forms which are brought to operative position by different means, as shown in Figs. 1 and 4, a combined brim and crown form such as the one described in my said application No. 499,904, may be used in the machine, as shown in Fig. 5. As shown in this figure, the brim form 50^a

is detachably supported by the rods 51 in the same manner as already described, but the brim form is not formed with a central opening, but has a crown form 80 attached to it centrally of its shaping surface, the crown form being preferably detachably secured to the brim form as shown, and a forming shoulder 81 being secured to one of the forms for determining the size and shape of the head opening of the hat. The operation of the machine with such a combined brim and crown form will be the same as already described in connection with Figs. 1 to 4, except that the hat body or blank in being attached to the brim form will be stretched over the crown form, as shown by full lines in Fig. 5, and that the lowering of the cross head through the operation of the foot treadle will cause the positioning of both the crown and brim forms with relation to the stretching and shaping plates, and the plunger 70 will not be used. Dotted lines in Fig. 5 indicate the shaping position of the combined brim and crown form, and indicate also the hat shaped by the inward movement of the folding plates.

It will be understood that the invention is not to be limited to the exact construction, arrangement and combinations of parts as shown in the drawings and to which the foregoing description has been mainly confined, but that it includes changes and modifications thereof within the claims; and it will be understood also that features of the invention as claimed may be employed in machines differing widely from the machine shown in the drawings.

What is claimed is:

1. In a hat shaping machine, the combination of a brim form having a convexly inclined shaping surface, means for securing the edge of a hat body or blank to the brim form with the brim portion of the body or blank free to be stretched against the form, means for moving a crown form into position relatively to the brim form after the hat body or blank has been attached to the brim form, and stretching and shaping means movable to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the head band.

2. In a hat shaping machine, the combination of a brim form having a curved convexly inclined shaping surface, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion of the body or blank free to be stretched against the form, means for moving a crown form into position relatively to the brim form

after the hat body or blank has been secured in position about the brim form, and stretching and shaping means movable to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the head band.

3. In a hat shaping machine, the combination of a hat form comprising a brim form and a crown form, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched against said forms, and stretching and shaping means movable relatively to said forms to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the head band.

4. In a hat shaping machine, the combination of a hat form comprising a brim form and a crown form, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched against said forms, stretching and shaping means, means for causing a relative positioning movement between said forms and said stretching and shaping means, and means for operating the stretching and shaping means to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the hat band.

5. In a hat shaping machine, the combination of supporting means for supporting a brim form and a crown form, stretching and shaping devices, means for moving said supporting means to carry a brim form and crown form into position relatively to the stretching and shaping devices with a hat body or blank stretched over the brim form and crown form and held by its edge with the brim portion and crown portion of the body or blank free to be stretched against said forms, and means for operating said stretching and shaping devices to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the head band.

6. In a hat shaping machine, the combination of means for supporting a brim form and a crown form with a hat body or blank secured by its edge about said form with the brim portion and the crown portion of the body or blank free to be stretched

against the forms, and stretching and shaping devices movable inward past the outer portion of the outer face or base of a crown form carried by said supporting means to
 5 force an intermediate part of the hat body or blank secured about the crown and brim forms inward over the outer face or base of the crown form to stretch the brim portion of the material over the brim form and
 10 the crown portion of the material about the crown to shape the hat and to form the head band.

7. In a hat shaping machine, the combination of a brim form having a convexly
 15 inclined shaping surface, a crown form having a convexly inclined outer face or base, means for supporting the brim form and the crown form with their convexly inclined shaping surfaces facing each other,
 20 edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched against said
 25 forms, and stretching and shaping devices movable inward and between said shaping surfaces of said forms to force an intermediate portion of the hat body or blank inward over the inclined outer face or base
 30 of the crown form to stretch the brim portion of the material over the brim form and the crown portion of the material about the crown form to shape the hat and to form the head band.

8. In a hat shaping machine, the combination of a brim form and a crown form, a plurality of overlapping stretching and
 35 shaping plates, means for causing a relative approaching movement between said forms and said plates, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched
 40 against said forms, and operating means for moving said plates inward to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown
 45 portion about the crown form to shape the hat and to form the head band.

9. In a hat shaping machine, the combination of a plurality of overlapping stretching and shaping plates, means for supporting
 55 a brim form and a crown form and for moving said forms into operative position relatively to said plates with a hat body or blank secured by its edge about said forms with its brim portion and its crown portion free to be stretched against said forms,
 60 and operating means for moving said plates inward to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown
 65 form to shape the hat and form the head band.

form to shape the hat and form the head band.

10. In a hat shaping machine, the combination of a brim form and a crown form, means for securing the edge of a hat body or blank to the edge of the brim form with its
 70 brim portion and its crown portion free to be stretched against said forms, a plurality of overlapping stretching and shaping plates, and operating means for moving
 75 said plates inward to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and to
 80 form the head band.

11. In a hat shaping machine, the combination of a brim form, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form
 85 with the brim portion of the body or blank free to be stretched against said form, stretching and shaping means, means for moving a crown form into position relatively to the brim form after the hat body
 90 or blank has been secured in position about the brim form, means for thereafter moving the brim form and crown form with the hat body or blank stretched thereon into position relatively to the stretching and
 95 shaping means, and means for operating the stretching and shaping means to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown
 100 portion about the crown form to shape the hat and to form the head band.

12. In a hat shaping machine, the combination of a brim form support, a brim form detachably secured to the support and provided with means for securing the edge of a
 105 hat body or blank to the edge of the brim form with the brim portion of the body or blank free to be stretched against the brim form, stretching and shaping means, means for moving the brim form support to carry the brim form with the hat body or blank attached thereto into position relatively to the stretching and shaping means, means for
 110 moving a crown form into position relatively to the brim form after the hat body has been attached to the brim form, and means for operating the stretching and shaping means to force an intermediate part of the hat body or blank inward to stretch the
 115 brim portion of the material inward over the brim form and the crown portion about the crown form to shape the hat and form the head band.

13. In a hat shaping machine, the combination of a brim form having a central opening to permit the passage therethrough of a
 125 crown form and provided with means for securing the edge of a hat body or blank to the edge of the brim form with the brim
 130

portion of the body or blank free to be stretched against said form, means for moving a crown form through said opening in the brim form and into position relatively to the brim form after the hat body or blank has been attached to the brim form, stretching and shaping plates, means for moving the brim form with the hat body or blank attached thereto into position relatively to the stretching and shaping plates, and means for operating the stretching and shaping plates to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material inward over the brim form and the crown portion about the crown form to shape the hat and to form the head band.

14. In a hat shaping machine, the combination of edge holding means for holding the edge of a hat body or blank, form holding means for holding a crown form in position relatively to the edge holding means, stretching and shaping devices, means for moving the edge holding means and the form holding means with a hat body or blank into position relatively to the stretching and shaping devices, and means for operating the stretching and shaping devices to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material inward from the edge holding means and the crown portion about the crown form to shape the hat and to form the head band.

15. In a hat shaping machine, the combination of edge holding means for holding the edge of a hat body or blank, form holding means for holding a crown form in position relatively to the edge holding means, stretching and shaping devices, positioning means for causing a relative positioning movement between the stretching and shaping devices and the edge holding means and form holding means, and operating means for moving the stretching and shaping devices inward past the outer portion of the outer face or base of the crown form to force an intermediate part of the hat body or blank inward over the outer face or base of the crown form to stretch the brim portion of the material inward from the edge holding means and the crown portion about the crown form to shape the hat and to form the head band.

16. In a hat shaping machine, the combination with stretching and shaping devices, of edge holding means for holding the edge of a hat body or blank, form holding means movable relatively to the edge holding means to press a crown form into the central portion of a hat body or blank held by the edge holding means, means for thereafter moving the edge holding means and the form holding means into operative position relatively to the stretch-

ing and shaping devices, and operating means for operating the stretching and shaping devices to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material inward from the edge holding means and the crown portion about the crown form to shape the hat and to form the head band.

17. In a hat shaping machine, the combination with stretching and shaping devices, of edge holding means for holding the edge of a hat body or blank, form holding means for holding a crown form, means for causing a relative positioning movement between the edge holding means and the form holding means and for causing a relative positioning movement between the stretching and shaping devices and the edge holding means and form holding means, and operating means for operating the stretching and shaping devices to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material inward from the edge holding means and the crown portion about the crown form to shape the hat and to form the head band.

18. In a hat shaping machine, the combination of a hat form comprising a brim form and a crown form, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched against said forms, means for subjecting a hat body or blank held about said forms to the softening action of steam, and stretching and shaping means movable to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and form the head band, and means for directing currents of air against the shaped hat to set and dry the same while held in shape in the machine.

19. In a hat shaping machine, the combination of a brim form having a central opening, means for holding a crown form in position relatively to the brim form, edge holding means for holding the edge of a hat body or blank adjacent an outer portion of the brim form with the brim portion and the crown portion of the body or blank free to be stretched against said forms, stretching and shaping means movable to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and to form the head band; and means for directing a current of cool air through the central opening of the brim form against the head band and inner portion of the brim of the shaped hat.

20. In a hat shaping machine, the combination of a steaming and setting chamber open at one side, stretching and shaping devices arranged at the open side of the chamber, means for supporting a brim form and a crown form and for moving the same into operative position with the brim form adjacent said stretching and shaping devices and with the crown form within the chamber, means for securing a hat body or blank about said forms with the brim portion free to be stretched against the brim form and the crown portion free to be stretched against the crown form, means for operating said stretching and shaping devices to force an intermediate part of the hat body or blank inward to stretch the brim portion of the material over the brim form and the crown portion about the crown form to shape the hat and to form the head band, means for supplying steam to said chamber to soften the hat body or blank, and means for causing a current of cool air to circulate through the chamber for setting and drying the shaped hat.

25 21. In a hat shaping machine, the combination of means for holding a brim form and a crown form in position, stretching and shaping means for forcing an intermediate part of a hat body or blank secured by its edge about the crown form and the brim form inward to stretch the brim portion over the brim form and the crown portion about the crown form, and means for directing a current of cool air against the brim of

the shaped hat as it is held on the brim form by said forcing means. 35

22. In a hat shaping machine, the combination of a brim form provided with means for securing the edge of a hat body or blank thereto, means for holding a crown form in position in a hat body or blank secured to the brim form, a plurality of overlapping stretching and shaping plates, and operating means for moving said plates inward to stretch the material of a hat body or blank over the brim form and about the crown form to shape the hat. 40 45

23. In a hat shaping machine, the combination of a brim form provided with means for securing the edge of a hat body or blank thereto, means for holding a crown form in position in a hat body or blank secured to the brim form, a plurality of overlapping stretching and shaping plates, and operating means for moving said plates inward and over the outer face or base of the crown form to stretch the material of a hat body or blank over the brim form and about the crown form to shape the hat with a head band smaller than the lower part of the crown. 50 55 60

In testimony whereof, I have hereunto set my hand, in the presence of two subscribing witnesses.

LESLIE STEVENS.

Witnesses:

JEANNETTE STORK,
C. B. SCHROEDER.