Feb. 5, 1929. 1,701,160

S. J. MILLER

HAT STRETCHING DEVICE

Filed May 8, 1925

Fig. 1

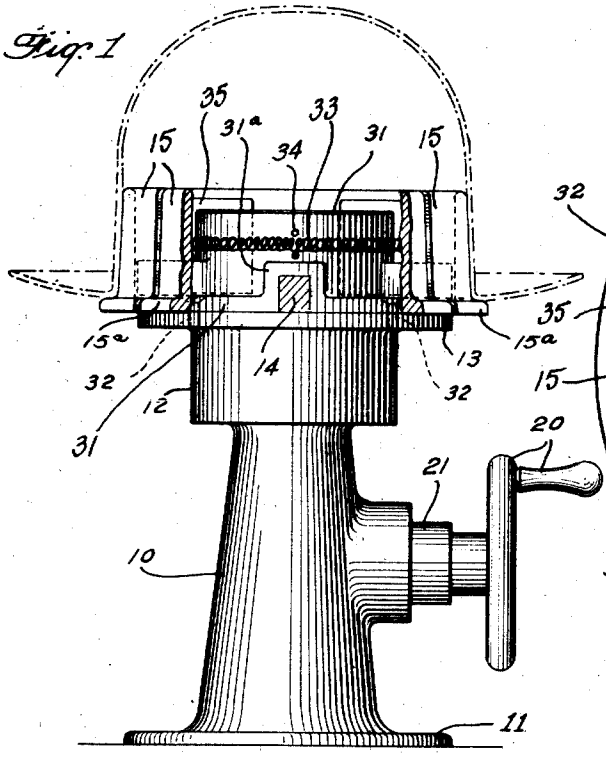


Fig. 3.

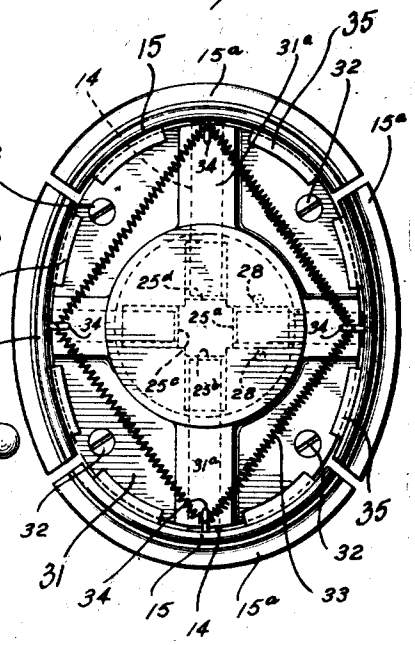


Fig. 2.

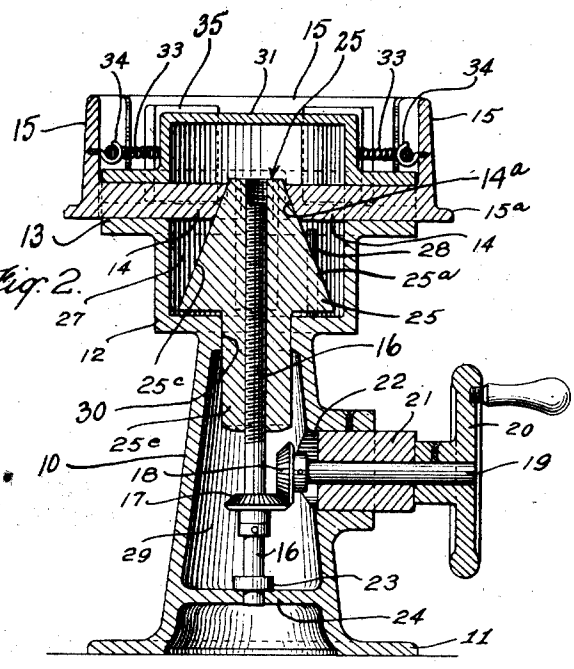
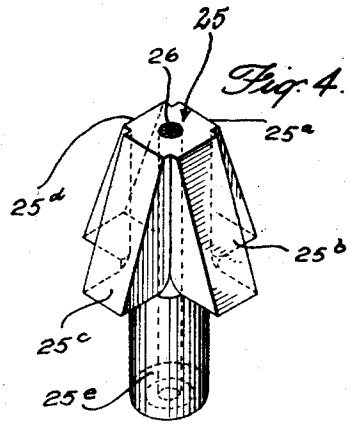


Fig. 4.



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HAT-STRETCHING DEVICE.

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This invention relates to devices for stretching hats. One of the objects thereof is to provide a hat stretching apparatus which is practical and efficient in action. Another object is to provide a device of the above nature whereby hats may be stretched accurately and dependably for convenient accommodation to the head of the wearer. Another object is to provide a hat stretching device which is adaptable to all sizes of hats and which procures the desired results in a uniform manner without distorting or misshaping the hat. Another object is to provide such a device which is simple in construction and inexpensive and yet strong and durable. 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 hereinater described and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing in which is shown one of the various possible embodiments of this invention,

Figure 1 is a side elevation partly broken away to better disclose the structure;

Figure 2 is a central vertical section;

Figure 3 is a top plan view, and

Figure 4 is a detail in perspective of one of the parts of the apparatus.

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

Referring now to Figures 1 and 2 of the drawing in detail, there is shown a hollow upright frame 10 provided with a widened base 11 by means of which the apparatus is adapted to be supported upon a suitable table or bench. The upper portion of this frame 10 is enlarged, as shown at 12, and above this part 12, the walls of the frame extend outwardly laterally providing a flat annular supporting surface or table 13.

Upon this table 13 are supported a plurality of members 14, in this instance four in number, which are independently slidable thereon in a radial direction toward and away from the center line of the frame. At their outer ends, these slidable members 14 are provided with curved up-standing flanges 15. When the members 14 are at their innermost positions, that is, when they are moved inwardly toward the center to their furthest extent, the ends of adjacent flanges 15 substantially abut, as shown in Figure 3, and the four flanges 15 combined describe an oval contour corresponding to the oval shape of a hat. Preferably the supporting table 13 is also oval in shape. In Figure 1 there is shown in dotted lines a hat in position upon the device, and it will be seen that the flanges 15 enter the crown of the hat and are adapted to engage the inner surface of the side walls of the oval crown. The flanges or sections 15 are provided at their bases with projecting ledges 15ª which, engaging the lower surface of the inner portion of the brim of the hat, limit the movement of the flanges 15 into the crown and support the hat in position for operation thereon as will presently be described. The flanges 15 are preferably of substantial height, entering the hat crown to a substantial distance, so that a substantial portion of the crown adjacent the band portion is acted upon by the stretching device. It is to be understood that by the term "band portion" is meant the area of the hat in the vicinity of the junction of the crown and brim, the size of this portion determining the head size of the hat.

A hat having been placed in position as shown in Figure 1, it will be seen that if now the members 14 with their flanges 15 are forced outwardly, the band portion of the hat is stretched and enlarged. Moreover, this stretching action takes place in four directions at once, the hat being stretched at the front and rear and also at the sides in a single operation.

Referring now again to Figure 2, inside the hollow frame 10 is a vertical threaded shaft 16 which carries adjacent its lower end a bevel gear 17. Mating with this gear 17 is a gear 18 fixed upon a horizontal shaft 19. This shaft 19 projects through the frame 10 and at its outer end is provided with a suitable hand wheel 20. The shaft 19, passing through the frame 10, is rotatably supported in a bushing 21 carried in an opening 22 of the frame, this opening 22 being of sufficient diameter to permit passage therethrough of the gear 18 for assembly or disassembly of the parts. The shaft 16, at its lower end. is supported by a suitable thrust collar 23 bearing upon a horizontal partition 24, forming part of the frame casting. By manipulation of the hand wheel 20, the screw-threaded shaft 16 may be rotated in either direction.

The inner ends of the slidable members 14

are beveled, as shown at 14ª, and these beveled surfaces are adapted to coact with a cam 25. This cam is shown in detail in Figure 4, and will be seen to be provided with four sloping surfaces 25ª, 25ᵇ, 25ᶜ and 25ᵈ which are adapted respectively to coact with the beveled inner ends of the four slidable members 14. The cam is provided with a vertical central bore 26 which is threaded and coacts with the threads of the threaded shaft 16. The upper portion of the cam 25 rests in the chamber 27 within the part 12 of the frame, and therein are provided a pair of upstanding pins 28 which hold the cam against rotation relative to the frame.

Thus by rotating the hand wheel 20, thereby rotating the threaded shaft 16, the cam 25 is raised or lowered. The cam is provided with a downwardly projecting part 25ᵉ which extends into the lower chamber 29 of the frame, and at the part 30 the inside of the frame is finished to provide a bearing surface for this part 25ᵉ so that the cam is guided and steadied in its up and down movement.

The sliding members 14 are held in place upon the table 13 by a cap 31 which is secured to the table 13 as by screws 32 (Figs. 1 and 3). This cap 31 closes the top of the frame, concealing the cam 25 and the inner ends of the sliding members 14 and is shaped as shown at 31ª (Fig. 1), to accommodate and guide the sliding members 14.

The members 14 are urged inwardly against the surfaces of the cam 25 by means of a spring 33. This spring 33 preferably takes the form of a continuous coiled spring which is hooked over suitable hooks 34 projecting from the inner sides of each of the flanges 15. In this manner a uniform restraining force is had upon each of the radially slidable members 14.

When the cam 25 is raised by turning of the hand wheel 20, the slidable members 14, with their curved upstanding flanges 15, are forced outwardly in unison, evenly and accurately stretching the band portion of the hat at all points. The slopes of the cam surfaces 25ª, 25ᵇ, 25ᶜ and 25ᵈ are substantially identical so that, with a given movement of the cam 25, the expansion of the oval stretcher is uniform in all directions. The hat is thus dependably stretched without undue distortion or misshaping thereof. Since the flanges 15 enter the crown to a substantial distance, an objectionable bulge where the stretching action ends, is avoided. In some instances, in order to satisfactorily stretch the hat, it may be found necessary to place the hat upon the stretcher and leave it there for an appreciable length of time. With this apparatus, this may be done, since the resistance of the screw threads and of the cam action is such that they will hold the members 14 outwardly in any position to which they are moved, against the action of the spring 33 and against the reaction of the stretched hat. The apparatus is capable of a wide range of action for accommodating varying sizes of hats and moreover, throughout its range of action, an extreme fineness of adjustment is attainable. The apparatus is sturdy in construction, capable of dependable service, and the moving parts are so enclosed that danger of grease or oil finding its way therefrom to the hat is avoided.

Preferably provision is made for heating the upstanding flanges 15 which engage and stretch the hat. The heating may be brought about by suitably formed and shaped electrical heating units 35, which are secured against the inner side of each of the curved flanges or sections 15. When the heat is employed the hat is more readily stretched and may more conveniently be given a permanent set in its stretched condition.

From the above, it will be seen that there is herein provided a device which attains the objects of this invention, including many practical and important 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, or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In a hat stretching device, in combination, a supporting frame carrying an upper housing, a plurality of radially movable members extending through said housing and adapted to receive thereover a hat and adapted to engage the inner surface of the crown of said hat adjacent the band, a cam slidably supported in said frame and within said housing and movable in a direction at right angles to the radial movement of said members, said cam being centrally positioned with respect to said members and coacting therewith adapted upon advancement in one direction to move said members outwardly in unison to stretch the band of said hat, a shaft rotatably supported in said frame, held therein against axial movement and having a threaded engagement with said cam, a shaft extending at right angles to said first shaft and geared thereto, and means including a crank for manually rotating said last shaft to advance said cam.

2. In a hat stretching device, in combination, an upright frame having at its upper end a horizontal supporting table, a plurality of radially extending arms loosely resting upon the surface of said table and having at their outer ends upstanding flanges outlining an oval adapted to engage the inner surface of the crown of a hat adjacent the band, a centrally positioned and vertically movable cam coacting with the inner ends of

said arms and adapted to force the same outwardly to stretch the band of said hat, means for moving said cam, and a cap member resting upon the surface of said table and secured thereto between said arms, said cap having upwardly extending parts fitting over and guiding said arms in their movement and holding them in position on said table, the central portion of said cap covering said cam.

In testimony whereof, I have signed my name to this specification this 29th day of April, 1925.

STEPHEN J. MILLER.