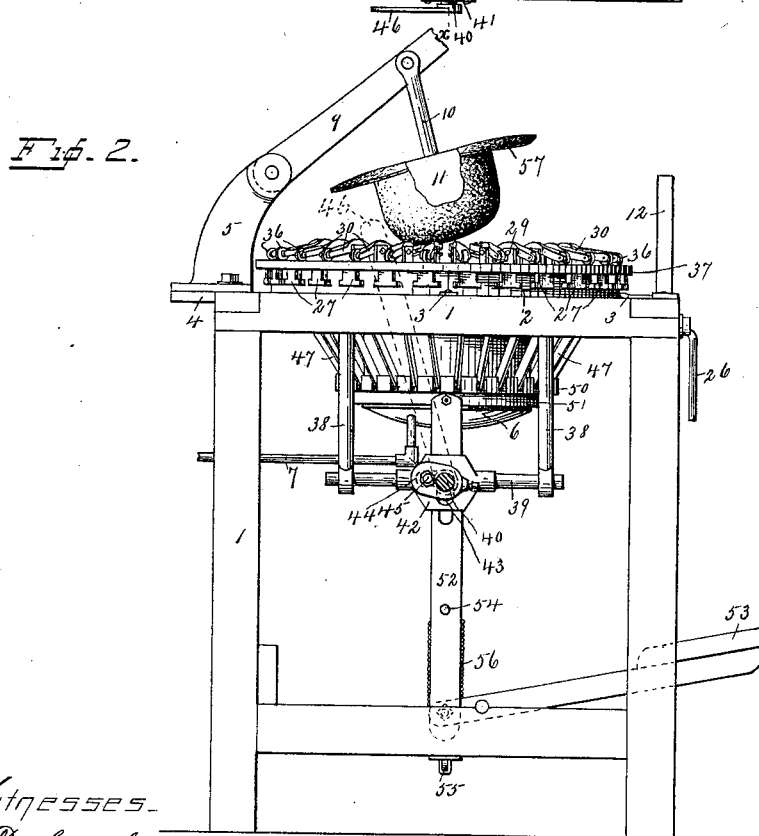
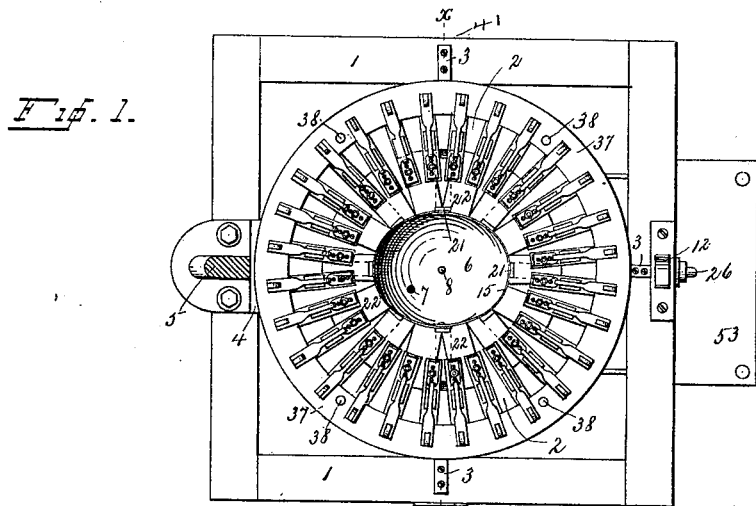


W. BECKERLE.

HAT STRETCHING AND BLOCKING MACHINE.

No. 386,955.

Patented July 31, 1888.



Witnesses.  
E. D. Smith,  
C. E. Ruggles.

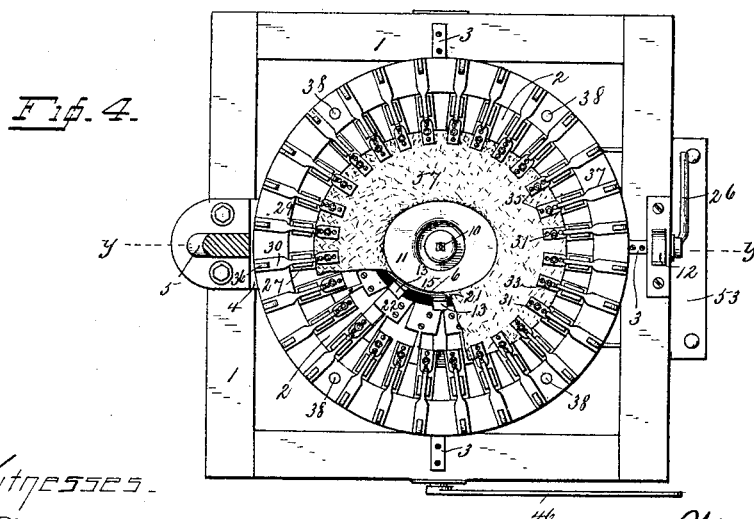
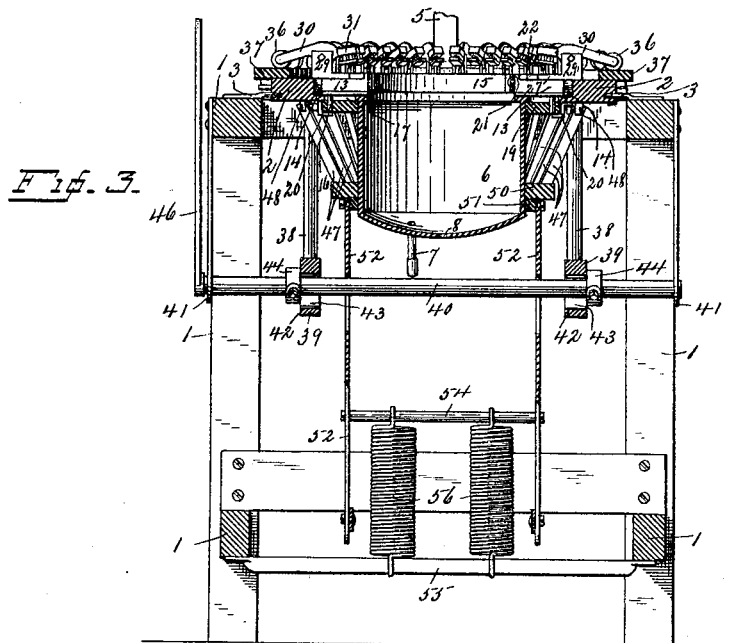
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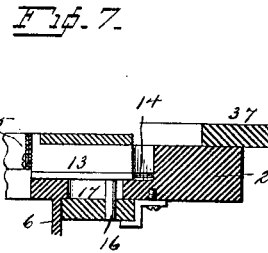
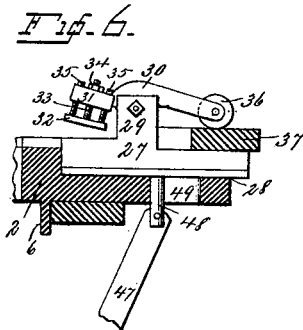
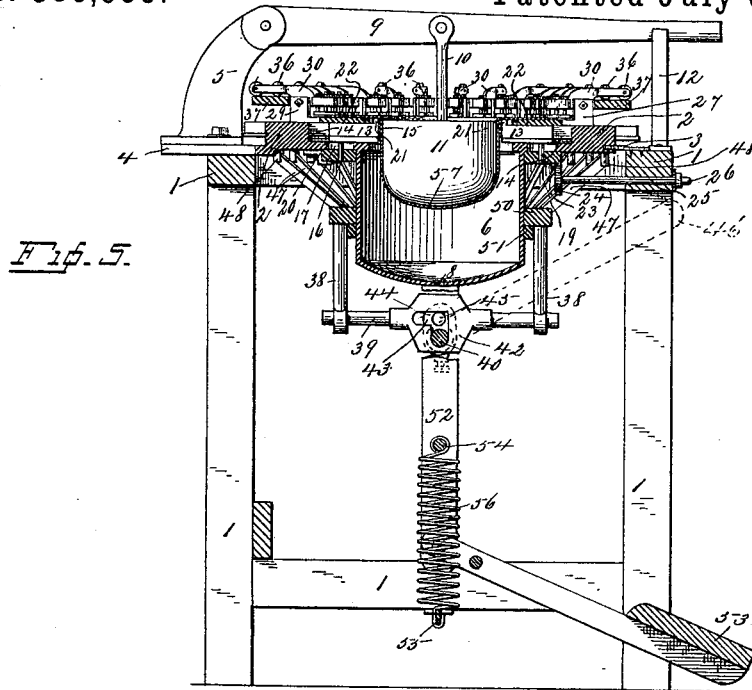
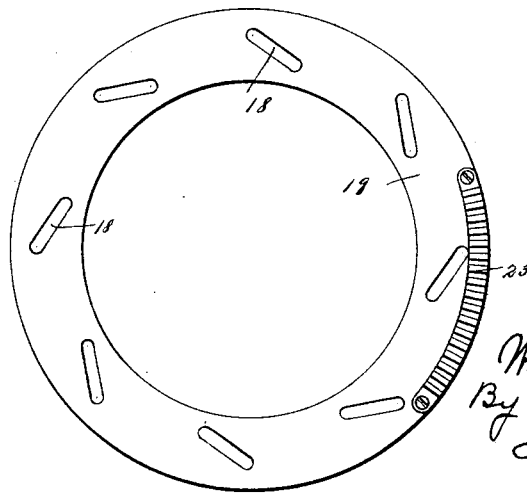


Fig. 8.



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# UNITED STATES PATENT OFFICE.

WILLIAM BECKERLE, OF DANBURY, CONNECTICUT.

## HAT STRETCHING AND BLOCKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 386,955, dated July 31, 1888.

Application filed August 24, 1887. Serial No. 247,707. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM BECKERLE, a citizen of the United States, residing at Danbury, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat Stretching and Blocking Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the manufacture of hats, and has for its object to reduce the amount of hand-labor, and thereby to lessen the cost of production.

With these ends in view I have devised a simple and novel machine for stretching and blocking hats—operations which, so far as I am aware, have heretofore been performed by hand, each hat having been placed over a block, tied there by a cord, and the brim stretched by hand and then ironed. This machine I have found in practice to be admirably adapted to the manufacture of all styles and kinds of hats, and it may be used at any stage of the manufacture at which stretching is required. I have found it admirably adapted for the stretching of hats after they have been sized.

In order that others may understand and use my invention, I will proceed to describe the same in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of the machine, showing the operative parts, the standard and carrying-arm being removed; Fig. 2, a side elevation of the machine complete, showing a hat upon the block ready to be operated upon; Fig. 3, a central section, the line being indicated by *x x* in Fig. 1; Fig. 4, a plan view showing the manner in which the hat is stretched, a portion of the brim being broken away to show the body-clamps; Fig. 5, a central section, the line being indicated by *y y* in Fig. 4; Fig. 6, a detail view, on an enlarged scale, illustrating one of the brim-clamps; Fig. 7, a detail view, on an enlarged scale, illustrating one of the body-clamps; and Fig. 8 is an inverted plan view on the same scale of

the ring for operating the body-clamps, detached.

Similar numbers denote the same parts in all the figures.

1 denotes the frame-work of the machine, which may be of any suitable construction, and 2 the bed, which is preferably made in the form of a ring, and is secured to the frame-work by brackets 3, or in any suitable manner.

4 is a projection at one side of the bed, preferably cast integral therewith, which rests upon or is let into the frame work, and to which the base of standard 5 is bolted, thereby giving firmness to all of the operative parts.

6 is a steam-box, which is cast integral with or rigidly secured to the bed. Steam is admitted thereto through a pipe, 7, and the water of condensation escapes through an opening, 8, in the bottom.

9 denotes the carrying-arm, and 10 a rod pivoted thereto, to which the block 11 is secured by a set-screw or in any suitable manner.

In use each hat is placed upon a block and the latter secured to rod 10, as in Fig. 2. The carrying-arm is then pressed down until stopped by rest 12. This places the hat in the position shown in Fig. 5, the operative parts, however, being still in the position shown in Figs. 1 and 2. The first operation is to clamp the hat firmly upon the block. This is accomplished by mechanism which I will now describe.

13 denotes slides adapted to move in ways 14 in the bed. (See detail, Fig. 7.) Any number of these slides may of course be used, eight being the number shown in the drawings. (See Figs. 1 and 4.)

15 denotes semicircular clamping-bands loosely secured at the ends of these slides—that is to say, each band is rigidly secured to one slide and secured by a slotted connection (not shown) to three of the other slides. These bands, or rather half-bands, lap over each other at the ends, as shown in Fig. 1. The slides are provided with pins 16 on their under sides, which pass through radial slots 17 in the bed and engage diagonal slots 18 in a ring, 19, which rests against the steam-box,

and is held in place on the under side of the bed by brackets 20. It will be noticed in Fig. 7 that the projection 21 at the forward end of each slide extends above the surface of the bed. 22 denotes plates secured directly to the bed, against which these projections strike to limit the outward movement of the slides. In use the hat-brim rests upon these plates, which are heated by steam rising from the steam-box, which escapes therefrom between the plates and saturates the brim with moisture. 23 denotes a rack at the edge of this ring, and 24 a pinion at the inner end of shaft 25, which engages this rack.

26 is an operating handle or crank for convenience in operating the shaft. The first movement of the machine after the hat has been pressed down into the steam-box, as in Fig. 5, is to turn handle 24 from the position shown in Figs. 1 and 2 to the position shown in Figs. 4 and 5, the action being to give a slight turn to ring 19, which, through the engagement of pins 16 with diagonal slots 18, moves the slides forward and causes the half-bands 15 to clamp the hat firmly upon the block. The second movement is to clamp the brim, the mechanism for accomplishing which I will now describe.

27 denotes another set of slides, (see detail, Fig. 6,) which move in ways 28 in the bed. Any number of these slides may be used. In the present instance I have shown twenty-eight.

29 denotes standards projecting upward from slides 27, and 30 levers pivoted to these standards. At the inner ends of these levers are blocks 31.

32 denotes clamping-plates carried by threaded rods 33. These rods pass through blocks 31, and the plates may be adjusted vertically by nuts 34 on said rods.

35 denotes set-screws in the blocks, the ends of which bear against the plates to hold them firmly, and by which the plates may be slightly tilted in either direction to enable them to grasp the brim firmly.

36 denotes wheels at the outer ends of levers 30, which rest upon a vertically-movable ring, 37. The outer ends of these levers and the wheels are sufficiently heavy, so that the clamps are held at their opened position, as in Figs. 1, 2, and 3, by gravity alone. This ring is carried by rods 38, which extend downward and are connected to cross-pieces 39.

40 is a shaft extending across the machine, which is journaled in brackets 41, depending from the frame-work. At the center of each cross-piece is a plate, 42, having an angle-slot, 43. Shaft 40 passes through these slots.

44 denotes crank-arms secured to shaft 40, each of which is provided with a pin, 45, also engaging slot 43.

46 is a hand-lever at one end of shaft 40 for convenience in operating said shaft.

The second movement of the machine may be thus described: Having clamped the hat firmly upon the block by half-bands 15, oper-

ated through rack, pinion, and shaft 23, 24, and 25, the brim of the hat is next passed under clamping-plates 32, and said plates are clamped down upon the brim of the hat by raising ring 37, through the instrumentality of shaft 40 and the pins engaging angle slots in plates 42, the operation of clamping being performed by simply turning hand-lever 46 from the position shown in Figs. 1 and 3 to the position shown in Figs. 4 and 5, ring 37 being caused to move upward, carrying the outer ends of levers 30 with it and thereby clamping-plates 32 down upon the brim. The third operation is that of stretching the hat, which is performed by moving slides 27 outward radially, carrying the brim-clamps with them, after the latter have been clamped down upon the brim. This operation is accomplished by means of links 47, the upper ends of which are pivoted to pins 48, which project from the under sides of slides 27 and pass through slots 49 in the bed. The lower ends of these links are pivoted to a ring, 50, which in the present instance is shown as resting upon a ring, 51. These two rings may of course be cast in a single piece, if preferred. Ring 50 is provided with notches, in which the ends of the links are pivoted. In the present instance I have shown these rings as held against lateral motion by the steam-box, over which they slide freely. The rings are supported by rods 52, the upper ends of which are pivoted thereto and the lower ends to a treadle, 53.

54 denotes a cross-piece between rods 52, by which they are supported and braced, and 55 a cross-piece, the opposite ends of which are secured to the frame work near the bottom of the machine.

56 denotes strong coil-springs, the opposite ends of which are secured, respectively, to cross-pieces 54 and 55, the action being to draw the rings downward and of course to hold slides 27, carrying the brim-clamps at their position farthest inward. The inward movement of these clamps is limited by the engagement of the inner ends of the slides with plates 22, and their outward movement by the engagement of standards 29 with ring 37.

In Figs. 2 and 3 the brim-clamps and the operating mechanism therefor are shown in their normal position—that is, not acting to stretch a hat. In Figs. 4 and 5 they are shown in operative position—that is, stretching a hat, the treadle being shown as pressed down against the power of springs 56.

57 denotes a hat which is being acted upon by the machine. It will be noticed in the plan views, Figs. 1 and 4, that in some instance slides 13 are directly under slides 27. Where this occurs, slides 27 are recessed out upon the under side, so as to permit slides 13 to pass under them. This being a mere detail of construction, has not been deemed of sufficient importance to require illustration, and has simply been referred to in order that the operation of the machine may be clearly understood. It will of course be apparent

that these slides act in opposite directions, slides 13 acting inward to clamp the body and slides 27 acting outward to stretch the brim. In practice these operations are performed in  
 5 very much less time than it takes to describe them. The steam-box is kept continually filled with steam, which saturates the body of the hat with moisture and passes out between plates 22 to heat and saturate the brim.

10 The general operation of the machine has already been so fully described that repetition would not make it clearer.

It will of course be apparent that the details of construction may be widely varied  
 15 without departing from the spirit of my invention.

I claim—

1. A hat stretching and blocking machine, consisting, essentially, of a bed, a steam-box, a  
 20 pivoted carrying-arm, a block for receiving a hat suspended from said arm, bands for clamping the hat upon the block, and radial slides by which the bands are carried and which act to compress them about the body of the hat.

25 2. The bed, the steam-box, standard 5, and carrying-arm 9, pivoted thereto, in combination with block 11, pivoted rod 10, by which it is suspended from the carrying-arm, rest 12 for limiting the downward movement of the  
 30 carrying-arm, and semicircular bands 15, by which the hat-body is clamped upon the block.

3. The bed, the steam-box, the carrying-arm, and the block suspended therefrom, in combination with semicircular bands which clamp  
 35 the hat upon the block when in the lowered position, radial slides by which said bands are carried and which are provided with pins 16 and ring 19, having diagonal slots to receive said pins, whereby said slides are moved  
 40 in or out when the ring is turned.

4. In a machine for blocking and stretching hats, the combination, with a block and semicircular bands for clamping a hat thereon, of  
 45 radial slides by which said bands are carried, whereby the hat may be grasped or released as the slides are moved in or out.

5. The block, bands 15, and slides 13, by which said bands are carried and which are provided with pins 16, in combination with  
 50 ring 19, having diagonal slots engaged by said pins, and a rack and pinion for turning said ring, whereby the slides are moved in or out to clamp or release the hat.

6. The bed having ways 14, slides 13, adapted  
 55 to move in said ways, and bands 15, carried thereby, in combination with a carrying-arm and a hat-block suspended therefrom, substantially as and for the purpose set forth.

7. The bed having ways 14 and slots 17,  
 60 slides 13, moving in said ways, and bands 15, carried by said slides, in combination with ring 19, having diagonal slots engaged by said pins, and a rack, 23, and a pinion engaging said rack, whereby the ring may be turned in  
 65 either direction to move the slides in or out, as and for the purpose set forth.

8. The bed, steam-box, and slides having

bands 15 and pins 16, in combination with ring 19, having diagonal slots engaged by said pins, a rack and pinion for imparting move-  
 70 ment to said ring, and brackets 20, whereby said ring is held in operative position.

9. The bed having ways 28, a block and bands for clamping a hat thereon, in combination with slides 27, moving in said ways, and  
 75 plates 32, carried by said slides for clamping the brim of the hat.

10. A block, bands for clamping a hat thereon, and slides 27, in combination with levers  
 80 30, carried by said slides, clamping plates upon said levers, and means whereby said plates are caused to engage the hat-brim.

11. In a machine for stretching and blocking hats, a bed having ways 28, and radial  
 85 slides 27, adapted to move in said ways, in combination with levers 30, pivoted to said slides, clamping-plates 32 at the inner ends of said levers, and a vertically-movable ring adapted to engage the outer ends of said levers, whereby the plates are clamped upon a hat-  
 90 brim.

12. The bed, steam-box, and plates 22, secured to the bed, in combination with radial slides carrying pivoted levers, plates at the  
 95 inner end of said levers, and a vertically-movable ring adapted to engage the outer ends of said levers, as and for the purpose set forth.

13. The block and bands 15, in combination with the bed, radial slides, and pivoted levers,  
 100 carried by said slides and provided with clamping-plates.

14. In a machine for stretching and blocking hats, the combination, with the bed, of  
 105 radial slides 27, having standards, levers pivoted in said standards and provided at their inner ends with clamping-plates and at their outer ends with rollers, and a vertically-movable ring adapted to engage said rollers to clamp said plates upon a hat-brim.

15. In a machine for stretching and block-  
 110 ing hats, a bed and radial slides adapted to move therein, said slides carrying pivoted levers having at their inner ends plates 32, carried by threaded rods, nuts for adjusting said plates vertically, and set-screws 35, where-  
 115 by they may be tilted in either direction.

16. The combination, with the bed, block, and bands 15, of radial slides 27, carrying brim-  
 120 clamps consisting of pivoted levers having at their inner ends adjustable plates 32.

17. The bed, block, and bands 15, in combination with radial slides 27, pivoted levers  
 125 30, carried thereby, plates at the inner ends of said levers, nuts for adjusting said plates, set-screws for tilting them in either direction, and a vertically-movable ring adapted to engage the outer ends of said levers, whereby  
 130 said plates are clamped upon a hat-brim.

18. The combination, with a block to receive a hat, of a bed, radial slides 13, adapted  
 130 to move therein and carrying bands which clamp the hat upon the block, and radial slides 27, moving in said block and carrying pivoted levers with plates adapted to clamp the brim.

19. The combination, with a block to receive a hat, of a bed, slides 13, carrying bands 15, to clamp the hat to the block, and having pins 16, ring 19, having diagonal slots engaged by said pins to operate said slides, slides 27, carrying levers with plates to clamp the brim, and a vertically-movable ring to operate said clamps.

20. The combination, with slides 27 and levers 30, pivoted thereto and carrying plates 32, of ring 37, rods carrying said ring, cross-pieces connecting said rods having plates with angle slots, and a shaft carrying cranks, and pins to engage said slots, whereby the ring is raised or lowered when said shaft is turned.

21. In a machine for stretching and blocking hats, radial slides 27, brim-clamps carried thereby, and pins on the under side of said slides, in combination with links 47, pivoted to said bands and to vertically-movable ring 50, whereby said slides are moved outward to stretch the brim.

22. The bed, radial slides 27, carrying levers 30, clamping plates 32 upon said levers, in combination with vertically-movable ring 37, to operate said clamps, vertically-movable ring 50, and links 47, pivoted to the slides and to ring 50, whereby the slides are moved outward, as and for the purpose set forth.

23. The bed having ways 28 and slots 49, and slides 27, moving in said ways, and having pins 48 passing through said slots, in combination with vertically-movable ring 50, and links 47, pivoted to said ring and said pins.

24. Slides 27, having pins 49, ring 50, and links pivoted to said ring and said pins, in combination with rods 52, treadle 53, whereby said ring is moved upward, and springs 56, acting to hold said ring at its normal position.

25. The combination, with a block to receive a hat, bands 15, to clamp the hat thereon, and radial slides 13, carrying said bands, of radial slides 27, clamps for the brim carried thereby, and mechanism, substantially as described, for operating said clamps.

26. The combination, with a block to receive a hat, bands 15, to clamp the hat thereon, and radial slides 13, carrying said bands, of radial

slides 27, clamps for the brim carried thereby, a vertically-movable ring for operating said clamps, and mechanism, substantially as described, whereby slides 27 are caused to move outward to stretch the brim.

27. The block, the bed having ways 14 and 28, radial slides 13 and 27, and body-clamps and brim-clamps carried by said slides, in combination with diagonally slotted ring 19, vertically-movable rings 37 and 50, and operating mechanism, substantially as described, whereby a hat is clamped upon the block and the brim clamped and then stretched.

28. The block, steam-box, bed, and plates 22, in combination with slides 13, carrying bands 15, and slides 27, carrying levers 30, and clamping-plates 32.

29. In a machine for stretching and blocking hats, a block to receive the hat, radial slides carrying bands to clamp a hat thereon, and having pins 16, in combination with ring 19, having radial slots engaged by said pins, a rack, 23, and a pinion engaging therewith, whereby the ring is turned to operate the slides.

30. In a machine for stretching and blocking hats, the combination, with a block to receive a hat, and slides 27, having standards 29, levers 30, pivoted in said standards, and plates 32, to clamp the brim, of vertically-movable ring 37, for operating said clamps, rods by which it is carried, cross pieces having plates with angle-slots, and shaft 40, having cranks with pins engaging said slots, whereby the ring is moved up or down.

31. In a machine for stretching and blocking hats, the combination, with a block to receive a hat, slides 27, carrying levers with plates to clamp the brim, vertically-movable ring 50, links pivoted to said slides and to said ring, and a treadle and rods for operating said ring, whereby the slides are moved outward to stretch the brim.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM BECKERLE.

Witnesses:

A. M. WOOSTER,  
W. E. WILDMAN.