(No Model.)

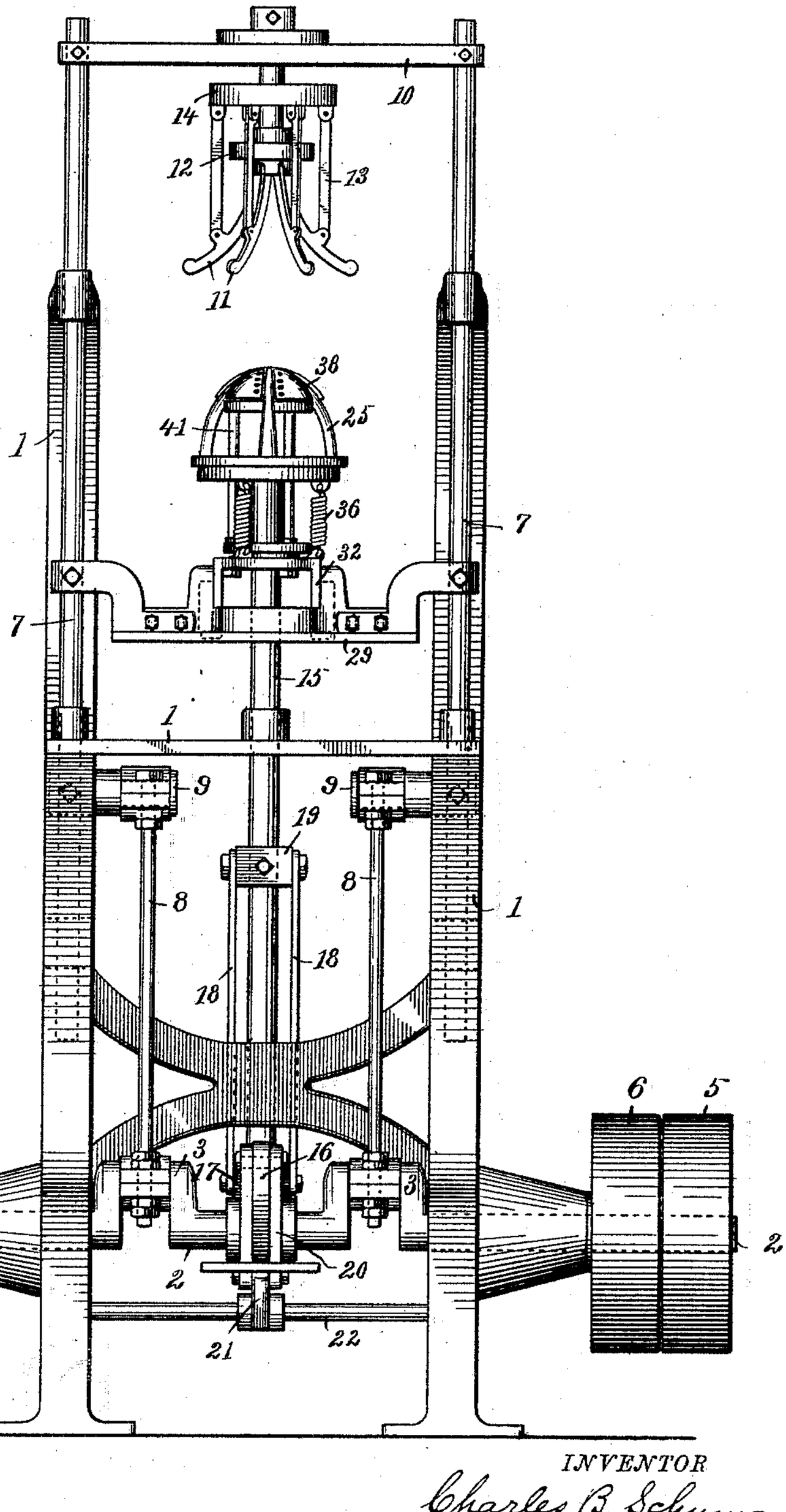
2 Sheets—Sheet 1.

C. B. SCHUMANN.

HAT TIP STRETCHING MACHINE.

No. 497,969. Patented May 23, 1893.

Fig. 1.



WITNESSES

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Atty.

(No Model.) 2 Sheets—Sheet 2.

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HAT TIP STRETCHING MACHINE.

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Fig. 2.

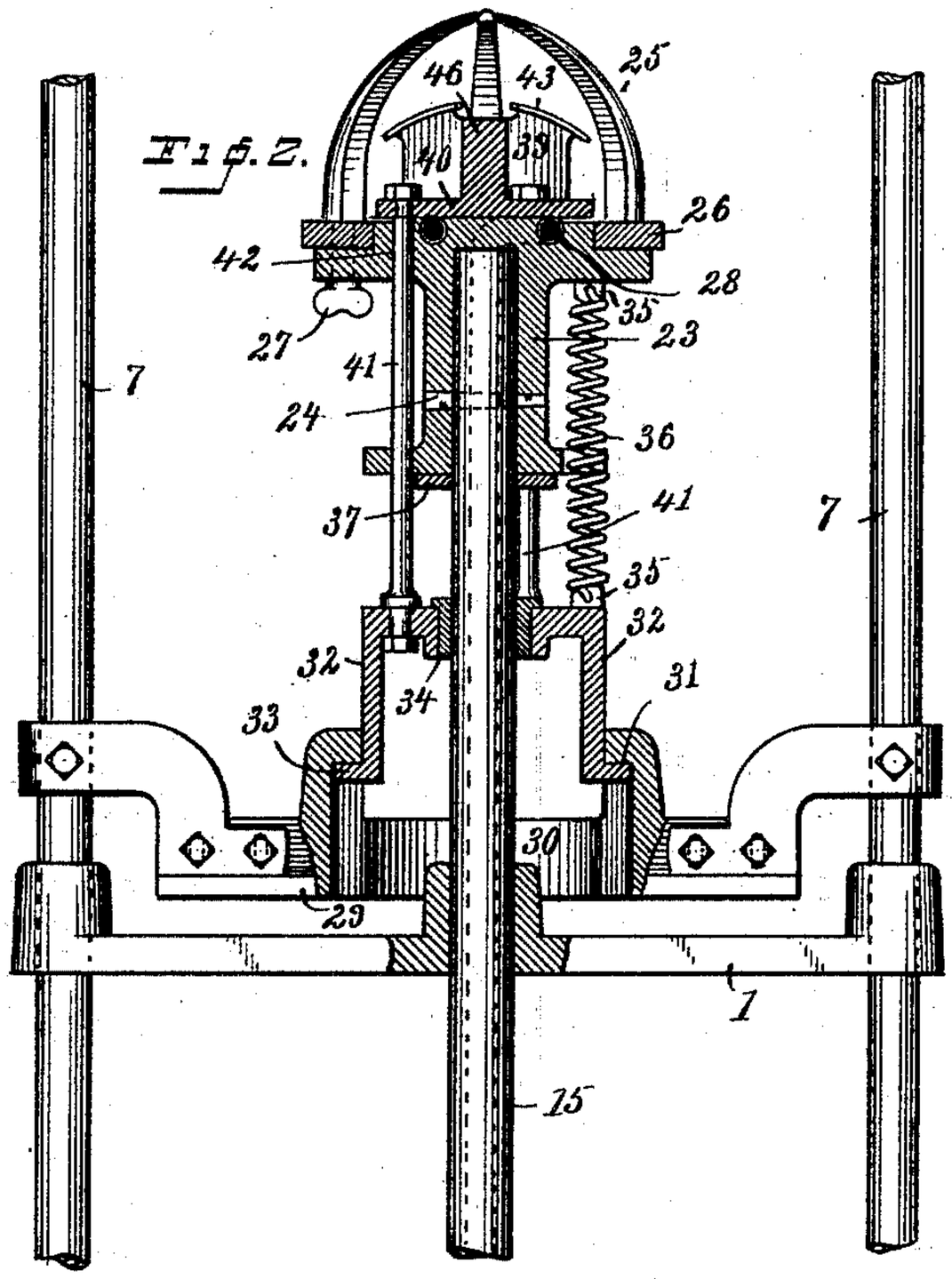


Fig. 7.

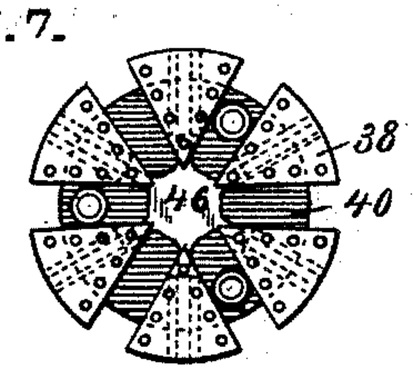


Fig. 8.

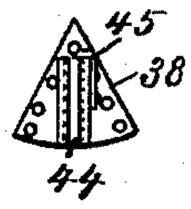


Fig. 5.

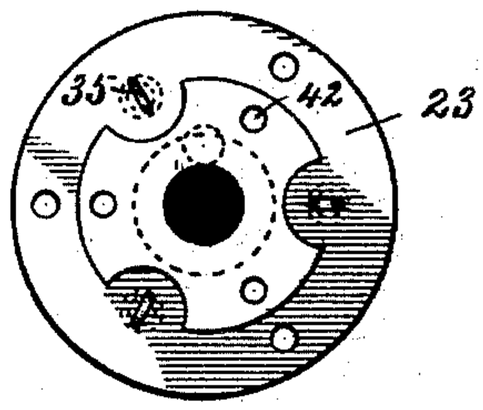


Fig. 3.

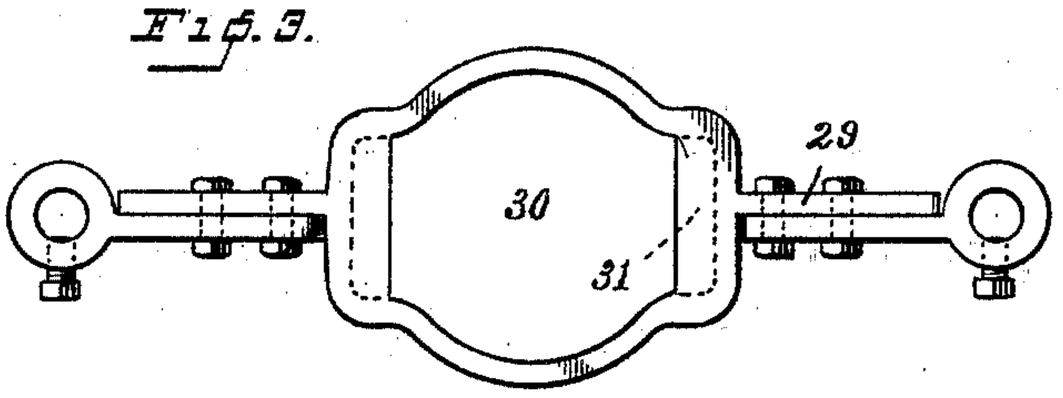


Fig. 6.

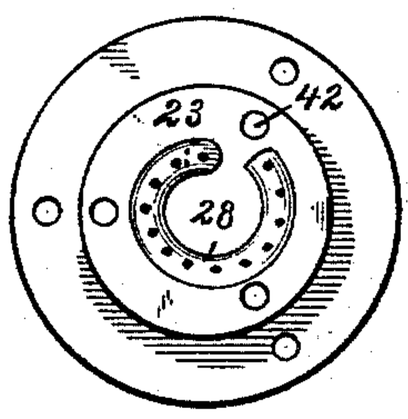
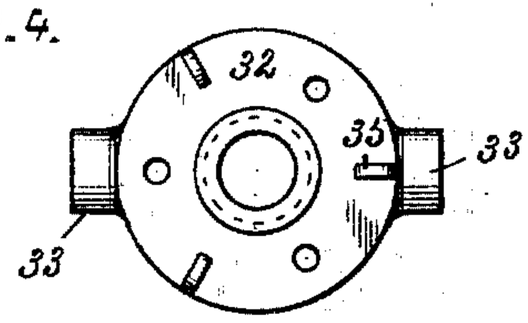


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES B. SCHUMANN, OF SOUTH NORWALK, CONNECTICUT.

HAT-TIP-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,969, dated May 23, 1893.

Application filed December 6, 1890. Renewed April 28, 1893. Serial No. 472,256. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. SCHUMANN, a citizen of the United States, residing at South Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Hat-Tip-Stretching 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 has for its object to so improve the construction of this class of machines as to greatly reduce the number of hats broken or otherwise injured by the operation of stretching the tips. It is of course well understood by those familiar with the art that this operation is performed after the hats have been stiffened, the stiffening having been softened by steam or hot water. In practice, however, there is a tendency for the stiffening to set during the operation of stretching so that even when the greatest care is taken by skilled workmen, quite a large per centage of hats are ruined and many others are so seriously injured as to reduce the grade of the finished hats thereby causing in the aggregate serious loss to the manufacturer. In order to prevent breakage or injury to the hats during this operation I provide a perforated steam pipe from which steam escapes into the hat, thereby preventing the stiffening from setting or becoming hard and in order to insure that the softened hat bodies will not stick to the arms of the star I provide a clearer consisting essentially of movable plates between the arms of the star which lift the stretched folds of the tip out from between the arms so that the body can be readily turned on the star.

In the accompanying drawings forming part of this specification, Figure 1 is a front elevation of a hat tip stretching machine embodying my novel improvements, the star being at the lowered position; Fig. 2, a view partly in elevation and partly in section on an enlarged scale illustrating the construction of the star, head, clearer, cross piece &c.; Fig. 3, a plan view of the cross piece detached; Fig. 4, a plan view of a part which engages the cross piece and is connected by springs to the head; Fig. 5, an inverted plan view; and Fig. 6, a plan view of the head detached; Fig. 7, a plan view of the clearer; and Fig. 8 is an inverted plan view of one of the clearing plates detached.

Similar numbers denote the same parts in all the figures of the drawings.

1 denotes framework; and 2, the shaft having cranks 3, a fly wheel 4 and fast and loose belt pulleys denoted respectively by 5 and 6, the belt by which power is applied not being shown.

7 denotes vertical rods which slide freely in the framework. Reciprocatory motion is imparted to these slides by means of connecting rods 8 the ends of which are pivoted respectively on the cranks and on studs 9 rigidly secured to and extending inward from the sliding rods.

10 denotes a cross bar extending between the sliding rods at the top which carries the usual stretching fingers 11. These fingers are pivoted to a plate 12 and are connected by links 13 with another plate 14.

15 denotes a central, vertical rod which slides freely in the framework and carries at its upper end the head, star, clearer, &c., presently to be described.

16 denotes the front arm and 17 the two rear arms of a bell crank lever fulcrumed on the shaft. The rear arms of this lever are connected by links 18 to a hub 19 on vertical rod 15. The front arm of the bell crank lever is connected by a link 20 to a foot lever 21 the rear end of which is pivoted to a cross bar 22 or any suitable portion of the framework. These parts are all of ordinary or any preferred construction and are not thought to require description in detail as they have been in common use on various machines for a number of years. At the upper end of rod 15 is a head 23 secured to the rod by a pin 24 or in any suitable manner.

25 denotes the arms of the star. These arms are ordinarily formed integral with or rigidly secured to a plate 26 which is secured to the head by means of screws 27 or in any suitable manner. In the top of the head is a recess to receive a perforated steam pipe 28 the continuation of which, that is the steam supply pipe, is indicated by dotted lines (see Fig. 2). The steam may of course be supplied through a flexible pipe or by

means of a jointed metallic pipe of ordinary construction.

29 denotes a cross piece, the ends of which are rigidly secured to sliding rods 7. This cross piece is preferably made adjustable to secure accuracy in fitting and is provided with a central opening 30 having at its ends overhanging shoulders 31.

32 denotes a part having at its lower end on opposite sides hubs 33 which engage the ends of opening 30 under shoulders 31, the hubs sliding freely in the part and the shoulders acting as stops, and at its upper end a central opening to receive a bushing 34 which slides freely on vertical rod 15. Head 23 is provided on its under side and part 32 on its upper side with ears 35 which are engaged by the respective ends of strong coil springs 36 (see Figs. 1 and 2).

37 is a cushion washer between the lower end of head 23 and part 32 to prevent shock should the parts come in contact in use.

In order to prevent the hat bodies in use from remaining between the arms of the star thereby rendering it difficult to turn the bodies upon the star, I provide a clearer consisting essentially of plates 38 which are carried by webs 39 formed integral with a plate 40. This plate is rigidly connected with part 32 by means of rods 41 which pass freely through holes 42 in the head. It will be seen in Fig. 2 that plate 40 serves additionally when the star is in the raised position to cover the perforations in pipe 28 so as to prevent waste of steam. The cut-away portions at the lower end of the head (see Figs. 2 and 5) are simply to accommodate the springs. The webs 39 in the clearer are preferably provided at their upper ends with flanges 43 which engage ways 44 on the under sides of the clearing plates (see Fig. 8). The clearing plates in practice are locked in position by means of spring catches 45 which engage under the inner ends of flanges 43 which project over the webs as clearly shown in Fig. 2. The catches engage the webs under the flanges and prevent the clearing plates from sliding off. The webs are preferably strengthened at the center by a solid portion 46 from which they radiate.

The general operation of the machine is similar to machines of this class in common use. The hat body to be stretched, after having been stiffened, is dipped in scalding water to soften the stiffening and is placed upon the star. The operator then places his foot upon the foot lever and raises the star with the hat body upon it into operative position against the power of springs 36, this position being indicated in Fig. 2. When the belt, not shown, is upon the fast pulley motion is of course imparted to the shaft which causes vertical rods 7 to slide up and down carrying the fingers with them. These fingers correspond in number with the arms of the star and are so attached in position as to alternate with said arms. When the star with the hat body upon it is raised into operative position, the fingers pass between the arms of the star thereby stretching the body upon it. After the tip has been stretched sufficiently in one place, the operator by relieving the pressure upon the foot lever allows the star with the hat body upon it to move downward, the downward movement of the star being produced by gravity, assisted ordinarily in practice by a weight, not shown, suspended from the rear arms 17 of the bell crank lever. As soon as the downward movement of the star commences springs 36 will contract which prevents the descent of part 32 thereby holding the clearer in a raised position relatively to the star, as shown in Fig. 1, so that the portions of the hat body that have been forced between the arms of the star by the fingers are pressed out again by the clearing plates. At the same time plate 40 and perforated steam pipe 28 are separated thereby uncovering the perforations so that steam is permitted to pass freely within the body of the hat which prevents the stiffening in the body from setting or becoming hard and retains the body in a pliable condition so that it may be easily manipulated by the operator and is not likely to be broken or injured by the fingers when the star is again raised into operative position. As soon as the clearing plates have loosened the body upon the star, it is turned more or less by the operator who then places his foot upon the foot lever again and lifts the star into operative position, these operations being continued until in the judgment of the operator the tip is thoroughly stretched. It will be seen from Fig. 2 that shoulders 31 upon the cross piece bear against part 32 and that hubs 33 bear against the ends of opening 30 below the shoulders thereby retaining said parts in their proper position relatively to each other. It will be apparent from what has been said and from examination of Fig. 2 that after the operator has removed his foot from the foot lever the cross piece and part 32 will remain in the position relatively to each other that is shown in said figure until the head carrying the star shall have dropped down until it rests upon part 32, the cushion washer between said parts preventing any shock to the machine. The clearing plates and the arms of the star will then be in the position relatively to each other that is shown in Fig. 1 in which relative position they remain, part 32 moving downward with the other parts from the position shown in Fig. 2 to that shown in Fig. 1, that is until the limit of movement of the foot lever is reached.

Having thus described my invention, I claim—

1. In a machine of the class described, the combination with the reciprocating fingers a vertically movable head having in its upper face a perforated steam pipe and a star attached to said head, of vertically movable part 32, plate 40 resting upon the head and covering the perforated steam pipe, clearing plates 38 attached thereto, rods 41 passing

through the head and connecting plate 40 with part 32 springs 36 extending between the head and part 32, and means for acting upon said part 32 in opposition to said springs 36 substantially as described.

2. In a machine of the class described, the combination with rod 15 the head secured thereto and having a perforated steam pipe in its upper face and the star attached to the head, of a plate 40 resting upon the head and covering the perforated steam pipe, the clearer attached to said plate, part 32 having hubs 33, cross piece 29 having a central opening the end walls of which are engaged by said hubs, rods passing loosely through the head and connecting the clearer with part 32 and coil springs the opposite ends of which are connected respectively to the head and part 32.

3. Reciprocating rods 7, cross piece 29 connecting said rods and provided with shoulders 31, cross bar 10 between said rods and the stretching fingers secured thereto, in combination with rod 15, the head and star carried by said rod, part 32 having hubs engaging shoulders 31, the clearer, rods 41 passing through the head and connecting the clearer and part 32, springs 36 the respective ends of which are connected to the head and part 32 and a foot lever and connections for raising rod 15 and with it the head and star into operative position against the power of the springs.

4. In a machine of the class described, rod 15 and a foot lever and connections for raising and lowering said rod, the head secured to the upper end of said rod and provided with a perforated steam pipe, and the star secured to said head, in combination with plate 40 covering the perforated steam pipe, the clearer secured thereto, part 32 having a central opening through which rod 15 passes freely, rods 41 passing freely through the head and connecting plate 40 with part 32, and springs 36 the respective ends of which are attached to the head and part 32, so that upward movement of rod 15 carries the star into operative position against the power of the springs, plate 40 resting upon the head and covering the steam pipe, and downward movement of said rod lowers the head and star, said springs contracting and the clearer remaining stationary until the head engages part 32, thereby uncovering the steam pipe and admitting steam inside the hat body, after which said parts move downward together.

5. The combination with rod 15, the head having a recess in its top to receive a perforated steam pipe, and the star carried by said head, of the clearer which in its lowered posision covers said steam pipe, part 32 having hubs 33, and the cross piece having a central opening, the ends of which are engaged by the hubs, rods passing loosely through the head and connecting the clearer and part 32, and coiled springs connected to part 32 and the under side of the head as and for the purpose set forth.

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

CHARLES B. SCHUMANN.

Witnesses:

A. M. WOOSTER,

ARLEY I. MUNSON.