(No Model.)

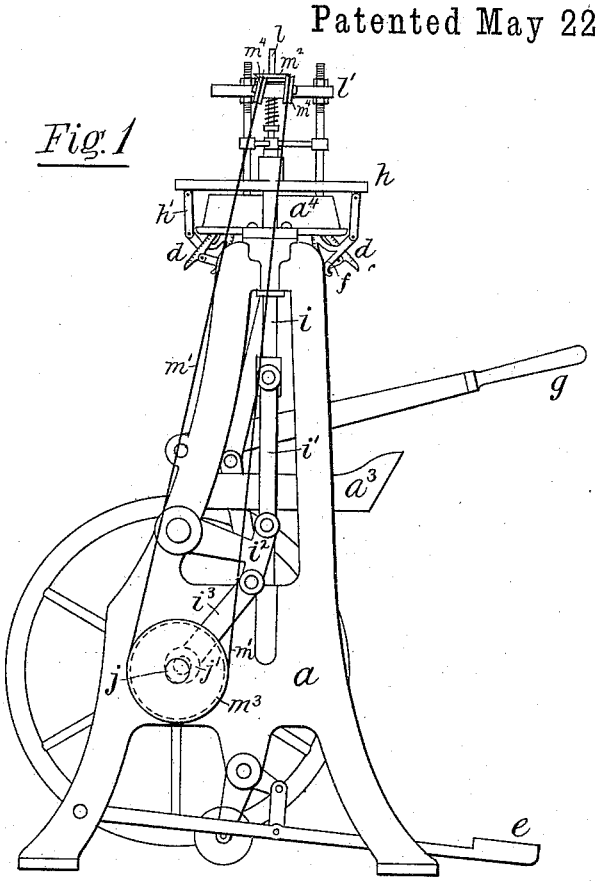
2 Sheets—Sheet 1.

W. SIMMONDS.

HAT STRETCHING MACHINE.

No. 383,254. Patented May 22, 1888.

Fig. 1



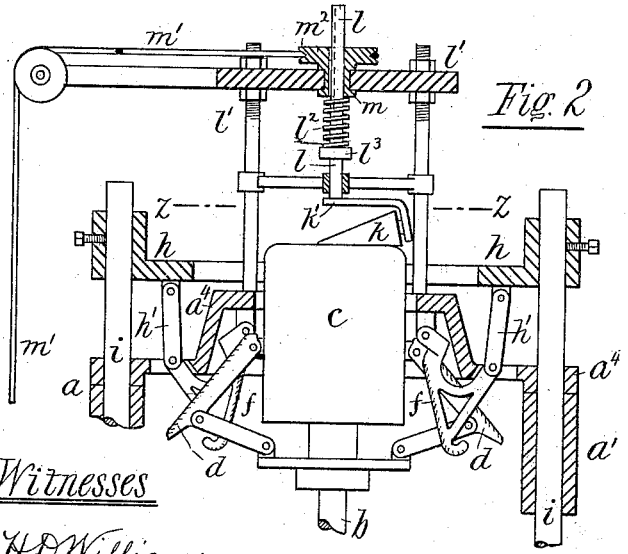
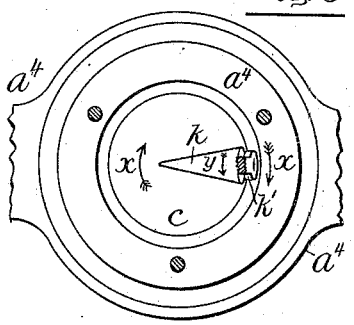


Fig. 2

Fig. 3



Witnesses

H. D. Williams

B. J. Mitchell.

William Simmonds,

Inventor

per Alfred Theobald.

atty.

(No Model.) 2 Sheets—Sheet 2.

W. SIMMONDS.

HAT STRETCHING MACHINE.

No. 383,254. Patented May 22, 1888.

Fig. 6

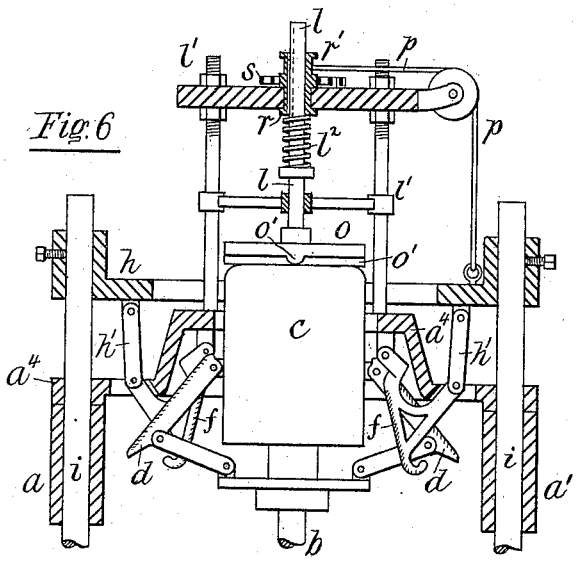


Fig. 7

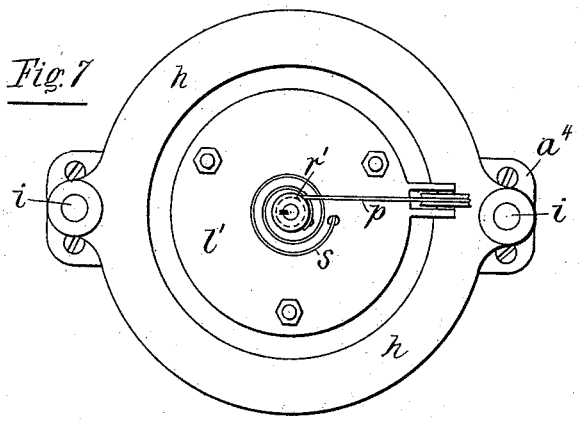


Fig. 8

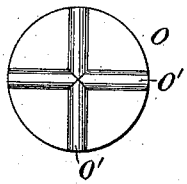


Fig. 4

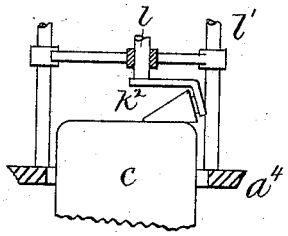
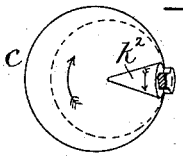


Fig. 5



Witnesses.

H. D. Williams.

B. F. Mitchell.

William Simmonds.

Inventor.

per Alfred Shewbrook.

atty.

UNITED STATES PATENT OFFICE.

WILLIAM SIMMONDS, OF YONKERS, NEW YORK, ASSIGNOR OF TWO-THIRDS TO LYDIA E. BELKNAP AND WILLIAM H. BELKNAP, OF SAME PLACE.

HAT-STRETCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 383,254, dated May 22, 1888.

Application filed November 29, 1887. Serial No. 256,417. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SIMMONDS, a citizen of the United States, and a resident of Yonkers, Westchester county, State of New York, have invented certain new and useful Improvements in Hat-Stretching Machines, of which the following is a specification.

In another application for Letters Patent, filed July 16, 1887, under Serial No. 244,447, I have described an improvement in hat-stretching machines, by means of which the finishing of the crown-tip of a felt hat is accomplished simultaneously with the operation of stretching and developing the brim; and I therein claim a crown-tip flattener so constructed and operated as to be automatically laterally reciprocated on the crown-tip of a hat held in the stretching-machine.

Now, this invention also relates to means for removing the marks of the tip-stretching machine from and flattening the crown-tips of hats; and it consists of a flattener arranged to bear on the crown-tip of a hat held on the former of a brim-stretching machine, and rotated or caused to move in circular paths on the crown-tip, and thereby roll or rub down the marks or irregularities due to the tip-stretching operation to which the hat has been previously subjected; but to describe my present invention more fully I will refer to the accompanying drawings, in which—

Figure 1 is a side elevation of a hat-stretching machine embodying my improvements. Fig. 2 is a central section of the upper part of the machine. Fig. 3 is a section on the line Z Z, Fig. 2. Fig. 4 is an elevation of a modification in the construction of the tip-flattener. Fig. 5 is a plan view of the same. Fig. 6 is a central section of the upper part of the machine, showing a rotating flattener of modified form and modified actuating mechanism. Fig. 7 is a plan view of the same, and Fig. 8 is an underneath view of the flattener.

The machine here shown to which my improvements are applied is similar to that shown in my before-mentioned application; so a brief description thereof will here suffice.

The main frame comprises side pieces, *a a'*, cross-plate a^3, and top plate, a^4. The central shaft, *b*, fitted to slide vertically in bearings in the frame, carries the hat holder or former *c* and stretching-ribs *d d*. This shaft *b* is raised up by the treadle *e*, and the ribs *d d* are spread out by means of the hand-lever *g*. The stretching-fingers *f f* are hinged to the top plate, a^4, and are actuated from the vertically-reciprocated plate *h* by means of the links *h'*. This plate *h*, supported by the rods *i i*, is actuated from the main shaft *j* through the medium of the link and lever system i' i^2 i^3 and eccentric *j'*.

The crown-tip-flattening device shown at Figs. 1, 2, and 3 consists of the conical roller *k*, carried by the arm *k'*, secured to the shaft *l*, which is held in a vertical position directly over the axis of the former *c* in the light frame *l'*, connected to the top plate, a^4, of the frame. The upper part of the shaft *l* passes through the sleeve-bearing *m*, and is caused to rotate therewith by means of an ordinary spline and groove. Said sleeve-bearing *m* receives motion from the main shaft *j* of the machine by means of the belt *m'*, which passes over the pulley m^2, formed on the sleeve-bearing, the pulley m^3 on the shaft *j*, and the guide-pulleys m^4 m^4.

The spring l^2 on the shaft *l*, between the collar l^3 and the under side of the sleeve-bearing *m*, holds the roller *k* down on the crown-tip of the hat with a yielding pressure.

The roller *k* is arranged on a radial line on the crown-tip, with its end extending beyond the center thereof, the object of which is to insure that all parts of the crown-tip shall receive a sufficient amount of rolling or rubbing action, and as the central part of the tip is generally the most deformed it receives from the roller *k* more rubbing action than the other parts, because the end of the roller which lies beyond the center of the tip will revolve in moving over the goods in an opposite direction to its direction of travel thereon, as said roller will be caused to roll on the goods in rotating by reason of the extent of its bearing on the radial line. The arrows *x x* indicate the direction of rotation of the roller and the arrow *y* the direction of rolling. A substantially similar result may be obtained by making the flattening-roller shorter than the radial line of the crown-tip, as shown at k^2, Figs. 4 and 5, and setting the vertical shaft *l* eccentric to the axis of the former *c*. In this case the path of

rotation represented by the dotted circle covers a part only of the crown-tip; but the roller is caused to act on all parts thereof, as the hat is turned around on the former *c* during the process of stretching the brim by the other parts of the machine; and it will be observed that the central part of the tip receives the most rolling action from the roller *k*, because said roller during each rotation passes over this part of the hat.

A trencher or other form of tip-flattener may be made to extend entirely across the crown-tip and be rotated thereon. Such a device is shown at Figs. 6, 7, and 8, consisting of a disk, *o*, having radial ribs *o' o'* connected at the center. This disk is carried by a shaft, *l*, held in the frame *l'* and provided with the spring l^2, in a manner similar to the beforementioned flatteners.

In these views, Figs. 6, 7, and 8, are shown means by which the crown-tip flattener is reciprocally rotated, the same consisting of the cord or chain *p*, connected at one end to the vertically-moving plate *h* and at the other end to the pulley *r'*, formed on the sleeve-bearing *r*, and a coil-spring, *s*, joined at one end to the sleeve-bearing *r* and at the other end to the frame *l'*. This spring acts to keep the chain *p* taut and to impart rotation to the shaft *l* and attached devices in direction opposite to that imparted by the downward movement of the plate *h*.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, substantially as set forth, with a machine for stretching hat-bodies, containing a former upon which the hat is held, of an automatically-rotated crown-tip flattener carried by the machine and arranged to bear and act upon the crown-tip of the hat, its axis of rotation being at right angles to the crown-tip.

2. In combination, a machine for stretching hat-bodies, containing a former upon which the hat is held, an automatically-rotated spring-acting shaft held in the machine perpendicular to the crown-tip of the hat on the former, and a roller carried by the shaft and arranged to bear on the hat.

3. The combination, with the former of a hat-stretching machine, of a conical roller automatically rotated on a center coincident with the axis of the former and arranged to bear on a radial line of the crown-tip of a hat held upon the former from the edge thereof to a point beyond the center, substantially as and for the purpose set forth.

4. In a machine for developing and stretching hat-bodies, in combination, a former upon which the hat is held, expanding ribs projecting therefrom, pivoted fingers for stretching the brim, a vertically-moving finger-plate connected to the fingers, a vertical shaft arranged perpendicularly to the top of the former, a roller carried by the shaft arranged to bear on the crown-tip of a hat placed upon the former, and a rotating shaft of the machine connected to the roller-shaft.

Signed at Yonkers, county of Westchester, State of New York, this 25th day of November, A. D. 1887.

WILLIAM SIMMONDS.

In presence of—

JAMES GOODYEAR,

WILLIAM H. BELKNAP.