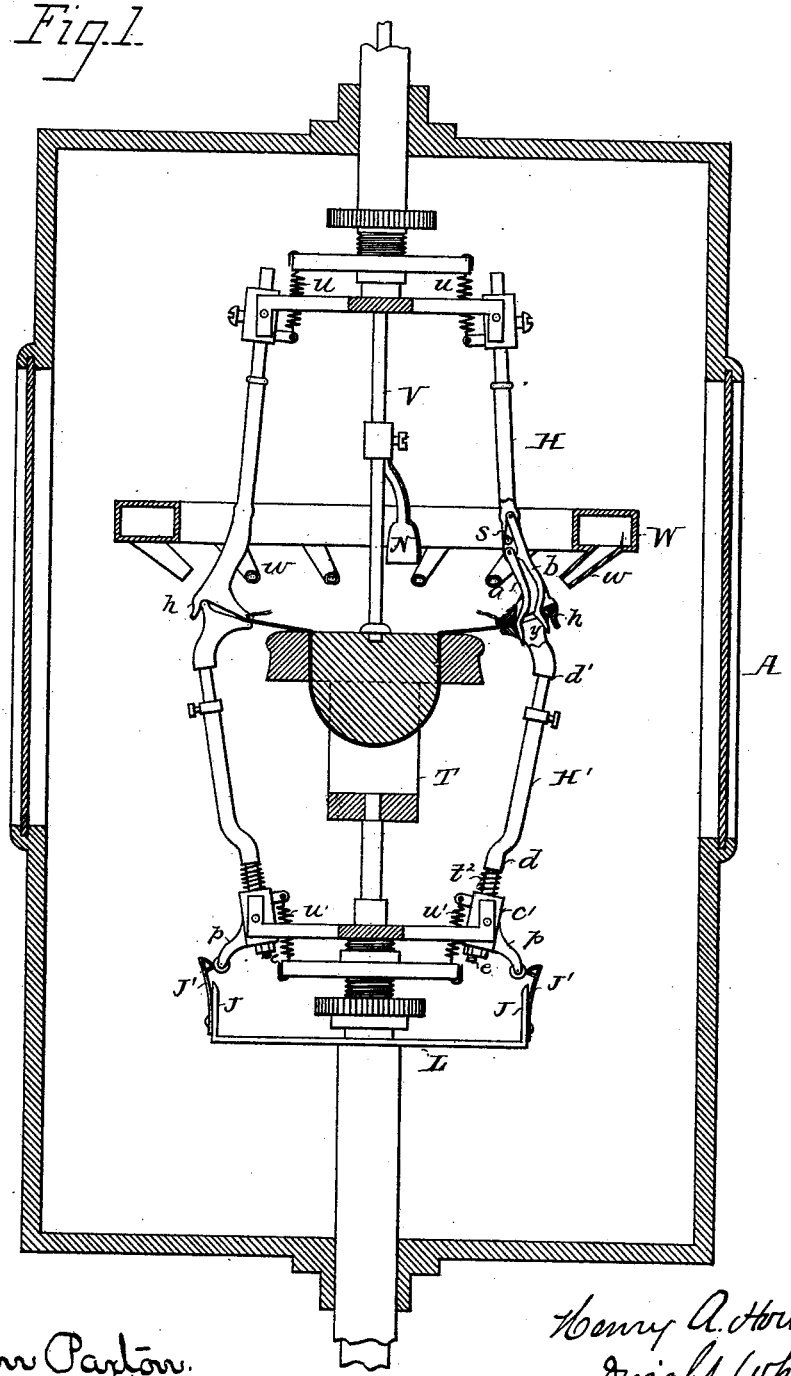
2 Sheets—Sheet 1.

H. A. HOUSE & D. WHEELER.

Stretching and Finishing of Felt-Hats.

No. 221,549. **Patented Nov. 11, 1879.**

Fig. 1.



Attest:
William Paxton.
Courtney A. Cooper.

Henry A. House
Dwight Wheeler
By their attorney
Charles E. Foster

2 Sheets—Sheet 2.

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Fig. 2.

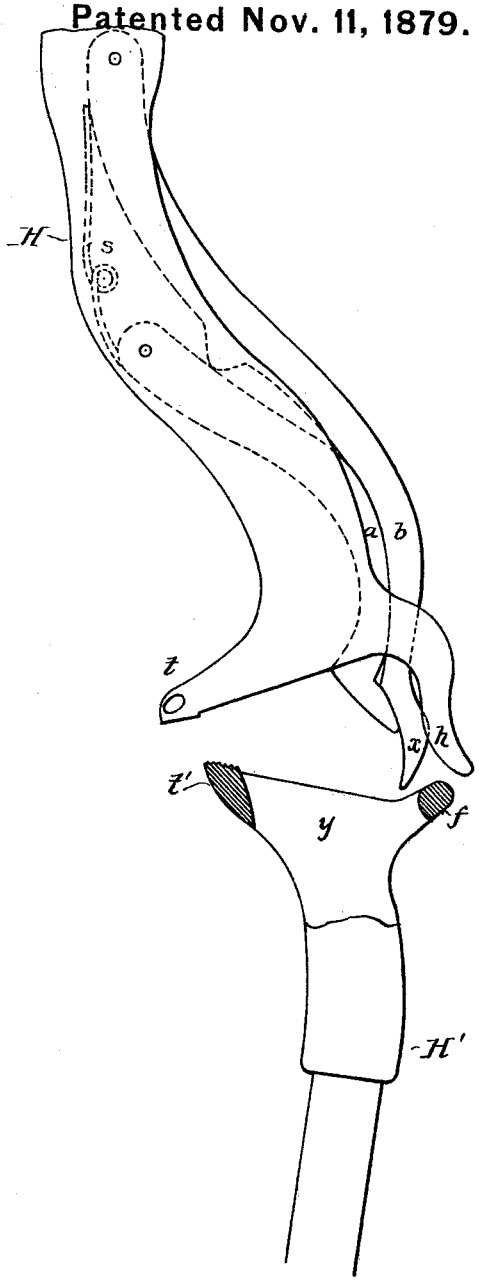
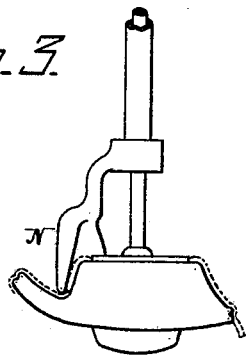


Fig. 3.



Attest:
William Paxton.
Courtney A. Cooper

Inventor
Henry A. House
Dwight Wheeler
By their attorney
Charles E. Foster

UNITED STATES PATENT OFFICE.

HENRY A. HOUSE AND DWIGHT WHEELER, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN THE STRETCHING AND FINISHING OF FELT HATS.

Specification forming part of Letters Patent No. **221,549**, dated November 11, 1879; application filed October 8, 1879.

To all whom it may concern:

Be it known that we, HENRY A. HOUSE and DWIGHT WHEELER, of Bridgeport, Fairfield county, Connecticut, have invented an Improvement in the Stretching and Finishing of Felt Hats, of which the following is a specification.

Our invention relates to improvements in the mode of and apparatus for steaming and forming hats set forth in the patent granted to us February 25, 1879; and our invention consists, first, in a mode of cooling the hats; secondly, in certain improvements in the stretching devices.

In the drawings forming part of this specification, Figure 1 is a longitudinal elevation of sufficient of the hat-forming machine to illustrate our improvements; Fig. 2, a detached view, enlarged, of the nippers; Fig. 3, a detached view, showing the appliances used for forming irregular hats.

The improved apparatus resembles in its general features that for which we obtained Letters Patent, there being an outer box or case, A, two series of arms, H H′, a bracket, T, for supporting the hat-blocks, cord carrying and winding appliances, and steaming apparatus, all substantially as set forth in said Letters Patent.

In our first process we depended upon the exhausting of the steam and consequent inflow of air to the case to cool and set the hat. This operation, while effective, is slower than in most instances is desirable. We therefore substitute for the exhaust apparatus a blast, the air passing from a suitable pump or blower into a pipe or case, W, provided with a series of nozzles, *w*, by which forcible currents of air are directed upon the hat as soon as it is shaped, thereby cooling the same much more rapidly and effectually than by the means heretofore employed.

The pipe or case W and nozzles, or their equivalents, may be arranged inside or outside of the case A, and may be of any suitable form, and one or more nozzles may be used.

Each arm H is provided with two levers, *a b*, the latter bearing against the former near its pivot, and having a curved end, *x*, in proximity to a finger, *h*, of the arm H. A spring, *s*, tends to maintain the arm *a* against the arm *b*, and to thrust both outward to the position shown in Fig. 2.

Each arm H′ consists of two portions, *d d′*, the former terminating in a rod, *e*, which passes through the pivoted block *c′*, and has a nut at the lower end, a spring, t^2, intervening between the block *c′* and a shoulder of the section *d*, so that the arm H′ may yield a little without breaking when pressed upon by the other appliances.

The section *d′* is adjustable vertically in or upon the section *d*, to vary the length of the arm, and has a slot, *y*, cross-piece *f*, and nipper-finger *t′*, as in the patented machine. Springs *u u′* tend to throw the arms H H′ inward.

When the arms H′ are carried upward the brim of the hat is brought between the nipper-fingers *t t′*; but before the latter close upon it the bars *f*, passing between the fingers *h* and ends *x* of the levers *b*, throw inward the latter levers to a slight extent, and cause them to thrust the levers *a* rapidly inward and push the brim with them, so that only the extreme edge is finally clamped between the fingers *t t′*.

It will be apparent that a very slight movement of the lever *b* is sufficient to throw the lever *a* inward to the required extent. The construction and arrangement of these levers may be varied. For instance, the finger *h* may be pivoted so as to bear against the lever *a* to throw the latter inward when said finger is struck by the arm H′, the lever *b* being dispensed with.

Each block *c′* has an arm, *p*, carrying a friction-roller at its lower end.

The requisite movements upon their pivots of the arms H′ are effected by one or more cams, J, and springs J′, carried by a frame, L. Thus the arms H′ having moved up until the edge of the hat-brim is grasped, steam is admitted and the hat softened, in which condition it is very tender. The frame L now rises until the springs J′ strike the rollers of the arms *p*, when the arms H′ will be thrown out-

ward, so that the blocks can rise without striking the nippers, but without tearing the felt. After the blocks have risen, and as the brim is bound by the chain or cord to the collar-block, the frame L drops, to permit the nippers to approach the blocks, while the crown-block is forced down. After the hat is cooled the chain relaxes, the arms H′ drop and the frame L rises until the cams J strike the arms *p*, when the arms H′ will be thrown out clear of the blocks.

There are many styles of hats which are irregular in form and which cannot be blocked by merely pulling the brims over the crown-block. We therefore propose to use supplemental blades, blocks, or formers, N, Figs. 1 and 3, which are secured to and slide on the shaft V, or are operated by independent shafts, such formers bearing down or up, as the case may be, upon any desired portion of the hat, to impart the required shapes, the blocks being correspondingly shaped, if necessary.

We claim—

1. In the blocking and stretching of hats by machinery, the mode described of cooling and setting the hat, the same consisting in subjecting the hat, while upon the blocks, to the action of an air-blast, substantially as described.

2. The combination, with the blocks and brim-drawing appliances, of supplemental blades or formers arranged and operating with the other appliances to form hats of irregular shape, substantially as set forth.

3. The combination, with the hat stretching and blocking devices, of an air tube or conduit provided with openings for directing a blast of air toward the blocks, substantially as set forth.

4. The combination, with the arms by which the brim is seized, of levers *a* and devices for operating them to push the brim to the points of the nippers, substantially as set forth.

5. The combination, with the arms H and their fingers *h*, of the levers *a b*, substantially as set forth.

6. The arms H′, made in sections *d d′*, adjustable, substantially as set forth.

7. The combination of the blocks *c′*, arms H′, and intervening springs t^2, substantially as set forth.

8. The combination, with the arms H′, of appliances for throwing out the arms and supporting them first with spring-bearings and then with positive bearings, substantially as set forth.

9. The combination, with the arms H′, of the cams J and springs J′, for the purpose specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY A. HOUSE.
DWIGHT WHEELER.

Witnesses:
ALFRED B. BEERS,
DAVID B. LOCKWOOD.