G. YULE.

Machine for Stretching Hat-Bodies.

No. 165,400. Patented July 6, 1875.

Fig. 1.

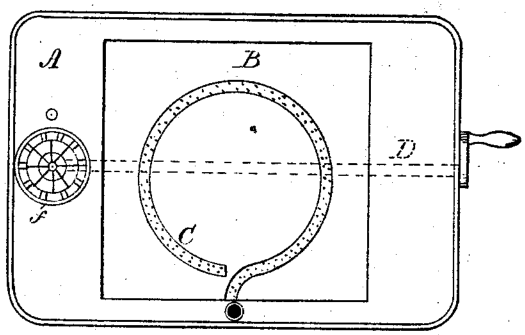


Fig. 2.

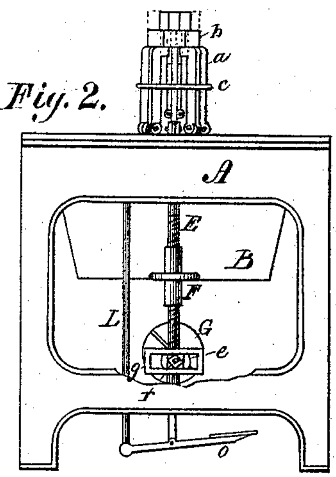
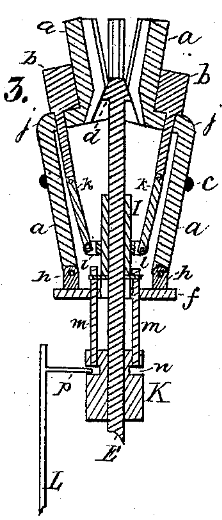


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE YULE, OF NEWARK, NEW JERSEY, ASSIGNOR OF ONE-HALF HIS RIGHT TO CHARLES CROSSLEY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR STRETCHING HAT-BODIES.

Specification forming part of Letters Patent No. **165,400**, dated July 6, 1875; application filed October 31, 1874.

To all whom it may concern:

Be it known that I, GEORGE YULE, of the city of Newark, county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machines for Stretching Hat-Bodies; and I do hereby declare that the following is a full, clear, and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and which form a part of this specification, in which—

Figure 1 is a top or plan view of my invention. Fig. 2 is an end view of the same, and Fig. 3 is a detail view.

Similar letters of reference occurring on the several figures indicate like parts.

My invention consists of a machine for stretching the conical caps of felted material of which hat-bodies are made previous to forming them upon the proper blocks, and of which the construction and operation will hereinafter be more fully shown and described.

Referring to the drawings, A represents the frame or body of the machine, having a tank or vat, B, situated in the upper central part of the same, said tank or vat being provided at its bottom with a coiled pipe, C, perforated on its upper surface. Through the lower central part of the frame A is placed a horizontal shaft, D, as shown in dotted lines in Fig. 1, arranged in suitable bearings. In one end of the frame A is also arranged a vertical rod, E, the upper end of which is provided with a cone-shaped head, *d*, and the lower end furnished with screw-threads, adapted to work in the screw-threads of the adjusting-wheel F. The vertical rod E is given a reciprocating motion by the action of the crank-pin *e*, arranged on the wheel G, which is secured to the inner end of the horizontal shaft D; said crank-pin *e* engaging with the sliding block *r*, arranged to work in the slotted opening of the arm *g*, attached to the lower part of the adjusting-wheel F. On the upper part of the frame A, and near one end, is arranged a stationary disk, *f*, around the periphery of which are secured lugs *h*, to which are pivoted the radiating stretcher-arms *a*, as shown in Fig. 3. These arms are provided with elbows *j*, through which the stems of the sliding blocks or formers *b* are allowed to play loosely, the lower ends of the stems being pivoted to the arms *k*, which, in their turn, are pivoted to the lugs *l*, arranged concentrically on the sliding cylinder I, which surrounds the upper part of the vertical rod E. To the sliding cylinder I are attached guides *m*, the lower ends of which are attached to the sliding block K on the vertical rod E, the sliding block K being provided with a slot, *n*, as shown in Fig. 3. A rod, L, arranged in suitable bearings, and provided with the treadle *o*, is attached to the end of the machine; said rod having a lug or pin, *p*, secured to its upper end, which engages in the slot *n* of the sliding block K; the radiating arms *a* and *b* being held in a closed position, when the machine is not being operated, by means of the rubber band or suitable spring *c*. (Shown in Figs. 2 and 3.)

In the operation of the hereinbefore-described parts, the hat-body, consisting of a conical cap of felted material, is first placed in the tank B, which is partially filled with hot water, and steam introduced into the same through the perforations in steam-coil pipe C, the steam being ejected into the water, and, coming in contact with the felted material, renders the same pliable and soft. The hat-body is then taken out, and drawn over the stretcher-arms *a* while in the position shown in Figs. 1 and 2. The shaft D is then set in motion by suitable power, which gives a reciprocating motion to the vertical rod E, the cone-shaped head *d* of which, in its upward passage, spreads the arms *a*, as shown in Fig. 3. The treadle *o* is now pressed down, which forces the sliding arms *b* to the upper part of the arms *a*, and on a level with the same, as shown in dotted lines in Fig. 2, in the operation of which the hat-body will readily and thoroughly acquire the requisite shape.

The usual plan of stretching felted hat-bodies upon the forming-blocks by hand is an operation requiring tedious manipulation on

the part of the workman; but by the employment of the above-described machine they may be quickly and thoroughly stretched previous to being formed upon the proper blocks.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the expansive hinged stretcher-arms *a* and sliding hinged stretchers or formers *b* with the vertical-acting shaft E, provided with a head, *d*, substantially as set forth.

2. The combination of the expansive stretchers and formers *a* and *b*, and the vertical shaft E, provided with an enlargement or head, and the adjusting device, consisting of a right and left thread and nut, substantially as and for the purposes set forth.

3. The treadle *o* and its connections, in combination with the stretching-formers *b*, for the purpose of vertically operating the latter, substantially as and for the purposes set forth.

4. In combination with the hinged stretchers *a* and sliding and hinged stretchers *b*, the sectional shaft E, provided with right and left left threads and adjusting-nut F, driving-shaft D, and a suitable device for connecting the shafts.

In testimony that I claim the foregoing, I have hereunto signed my name before two subscribing witnesses on this the 25th day of June, A. D. 1874.

GEORGE YULE.

Witnesses:

JOHN DANE, Jr.,

JOHN JACOB YUHL.