

Blocking Machine. A machine in which the crude cone-shaped hat-body is brought to shape.

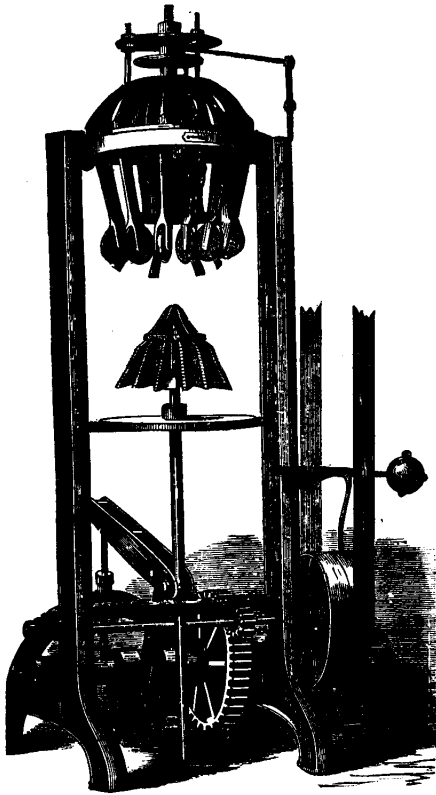
The operation consists in pulling out the edge to develop the brim, and widening out the upper part to form the tip and the side crown.

It is necessary, in order to stretch the hat, to soften the felt in boiling hot water, and the handling is exceedingly difficult.

The first machine for the purpose was invented by D. Beard, of Guilford, N. C., and patented May 28, 1816. It was a blocker made of a number of pieces hinged at their lower ends to a bench and spread from the center by a treadle, while the hat body was held on the block by the operator. This was the only invention in this part of the hat manufacture until that of W. A. Fenn, of Danbury, Conn., patented April 21, 1857.

In Fenn's machine, two pairs of conical rollers were put into a frame so arranged that the upper pair could be pressed upon the lower ones. The forward pair of these rollers revolved at a slightly faster speed than the other pair, and,

Fig. 335.



Eickemeyer's Hat-stretching Machine.

when the edge of a hat body was clamped between the lower and upper rollers, that part of it which was between the two pairs was drawn out, and the hat body thus gradually stretched around the edge until sufficiently flattened to form the brim. See also his patents, April 14, 1857; January 19, 1858.

A number of machines of this kind came into use, but, their action being slow and doing but part of the work, the machines did not prove of sufficient advantage to bring them into general use.

The first machine which performed the stretching of a hat body successfully, on wool as well as on fur hats, was the corrugation stretcher invented by R. Eickemeyer, and this machine in its various modifications to suit the different

kinds of work is now almost exclusively used in the hat factories of this country.

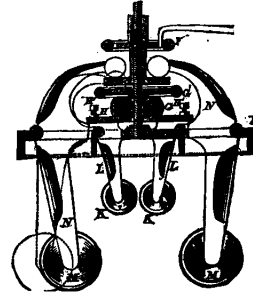
The machine illustrated in Fig. 335 represents a stretcher now in use in the wool hat factories.

A ribbed and recessed former is mounted upon an upright spindle, which receives motion through a walking-beam and connecting-rod from the crank-shaft. Upon the cast-iron side frames the head of the machine is supported; in this head the stretching devices are suspended. The details are more clear in some respects in the sectional view, Fig. 336.

A series of levers, *L*, corresponding in number with the recesses in the upper part of the former, *D*, is suspended upon bearings and held in position by a plate, *H*, upon which a rubber spring, *G*, is pressed by a screw-wheel, *G*¹. In the lower ends of the forked levers smooth rounded rollers have their bearings.

Another series of rollers, *M*, with levers, *N*, and corresponding in number with the ribs in the lower part of the former, is also suspended from this head, and these latter levers are adjustable by a hand-wheel, *F*, near to or farther from the center of the machine, as shown in dotted lines on one side of the sectional view.

Fig. 336.

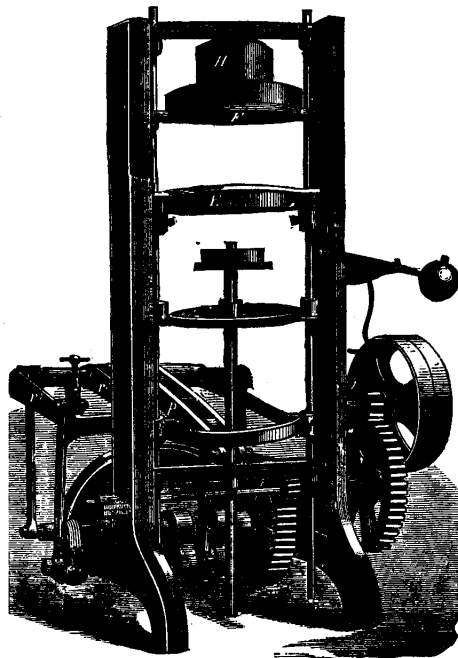


Head with Stretching Levers (Hat-stretching Machine).

A hat body properly wetted with hot water, or by steam, is placed upon the former while the machine is in motion. The former moving upward brings the hat body in contact with these rollers which enter the recesses between the ribs of the former, and the hat body is thus readily stretched. Five or six upward motions are required to develop the tip and brim fully, the operator shifting the hat body around the center every time the former is at its lowest position, to prevent other parts of the hat body for contact. The hat having been stretched, it now remains to make what is called in the trade the *band*, namely, the sharp angle formed by the junction of the brim and side-crown.

This operation is performed on the blocking machine, of which Fig. 337 is a perspective view, while in Figs. 338, 339,

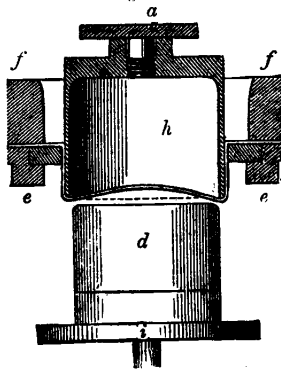
Fig. 337.



Wool-hat-body Blocking Machine.

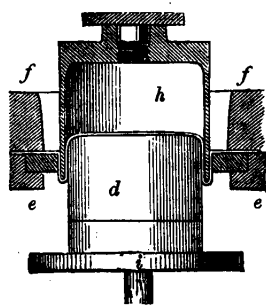
and 340 the action of the machine upon the hat is illustrated. The machine consists of a frame, in which an upright sliding-spindle is centrally mounted. Upon this spindle, which is operated from the crank-shaft by the walking-beam, is the block *d* (Fig. 338, etc.), upon which the hat to be drawn is placed. A supporting plate, *e*, which receives motion through two rods from a lever, *r*, from the adjustable crank on the side of the machine, receives the hat. When the plate *e* is raised, a plate, *f*, which rests upon brackets on the frame, clamps the hat brim, and the two, continuing to move up, draw the hat body over the banding shell *h*. The block-carrier *i*, with the block *d*, has in the mean time also moved up to position shown in Fig. 338.

Fig. 338.



Banding Machine. First Position. in the mean time also moved up to position shown in Fig. 338.

Fig. 339.



Banding Machine. Second Position.

are removed, and the operation repeated on the next hat.

With the use of the stretcher, Fig. 337, and one of the blockers here described, 20 dozen of wool hats can be stretched and blocked per hour by two operators.

To adapt the principle of stretching by corrugation to fur hats, a number of modifications were required. It was found advantageous to separate the *brim-stretcher* from the *tip-stretcher*, and to substitute round-edged bars for the round-edged rollers.

See BRIM-STRETCHER, TIP-STRETCHER.

For the finishing-blocker, see HAT-SHAPING MACHINE.

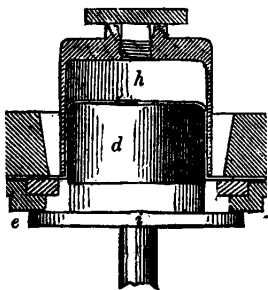
The clamping plates *e* *f* now commence to descend, while the block *d* continues to move up, and enters the banding shell, drawing the side-crown over the round edge of the shell *h*, as seen in Fig. 339. These motions continue until the plates *e* *f* rest upon the flange of the block-carrier *i*, and the hat is drawn perfectly smooth upon the block *d*, as shown in the last of the sectional diagrams, Fig. 340. The spindle now begins to move down, when the clamping-plate *f* is left upon the brackets of the frame, the hat and block are removed, and the operation repeated on the next hat.

The clamping plates *e* *f* now commence to descend, while the block *d* continues to move up, and enters the banding shell, drawing the side-crown over the round edge of the shell *h*, as seen in Fig. 339.

These motions continue until the plates *e* *f* rest upon the flange of the block-carrier *i*, and the hat is drawn perfectly smooth upon the block *d*, as shown in the last of the sectional diagrams, Fig. 340.

The spindle now begins to move down, when the clamping-plate *f* is left upon the brackets of the frame, the hat and block

Fig. 340.



Banding Machine. Third Position.