(No Model.) 2 Sheets—Sheet 1.

W. T. SMITH & C. R. HALL.

HAT SETTING AND CURLING MACHINE.

No. 264,420. Patented Sept. 12, 1882.

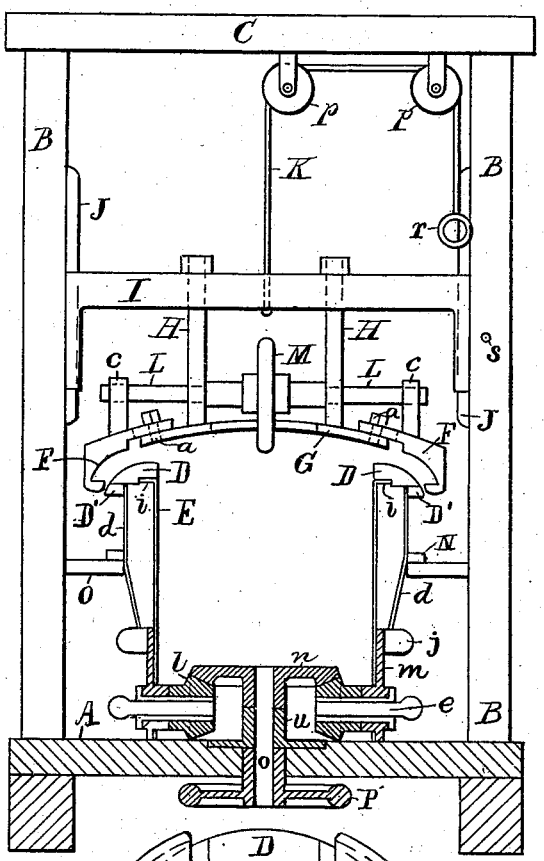
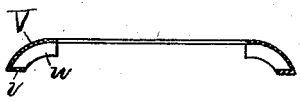


Fig. 1.

Fig. 3.



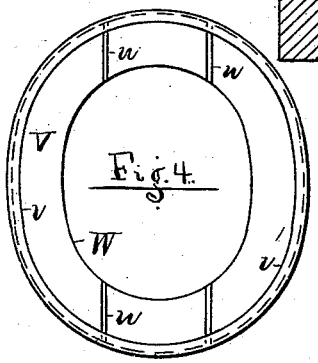


Fig. 4.

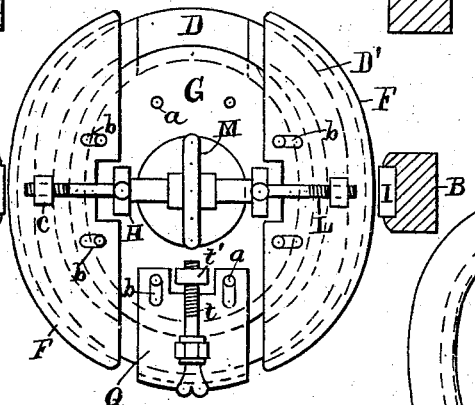
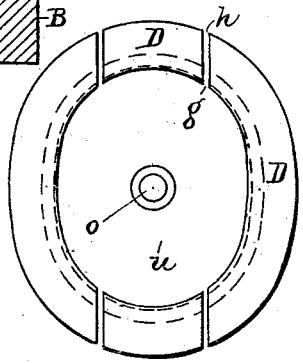


Fig. 2.

Fig. 5.



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(No Model.) 2 Sheets—Sheet 2.

W. T. SMITH & C. R. HALL.

HAT SETTING AND CURLING MACHINE.

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Fig. 6.

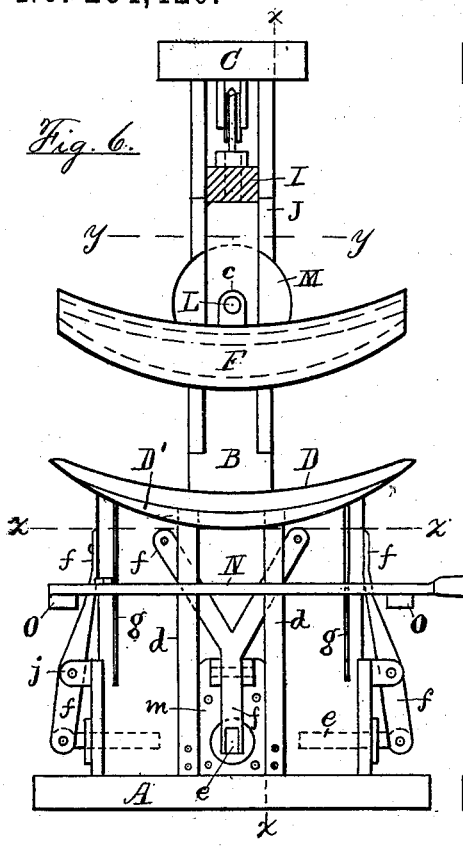
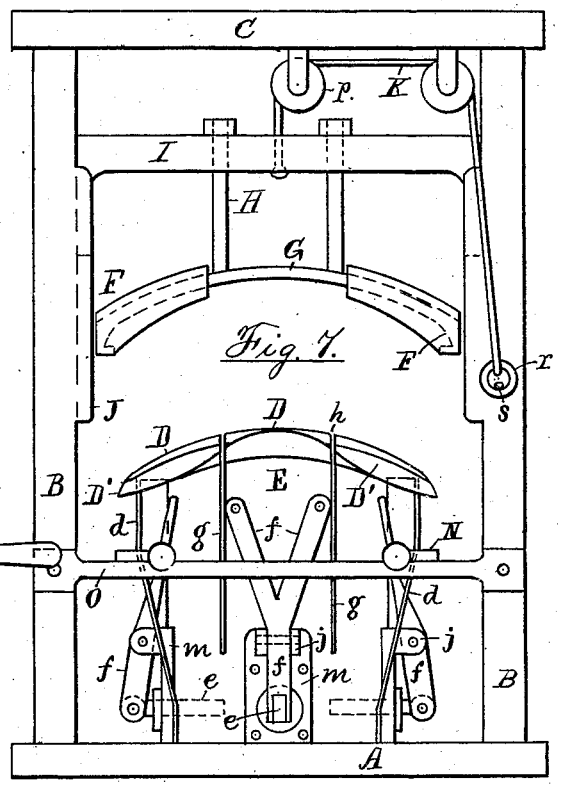


Fig. 7.



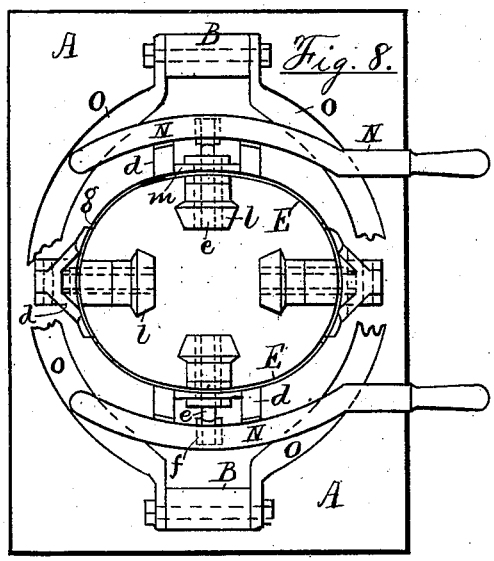
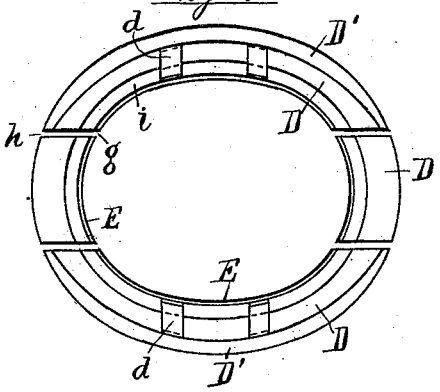


Fig. 8.

Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM T. SMITH AND CHARLES R. HALL, OF BLOOMFIELD, NEW JERSEY; SAID SMITH ASSIGNOR TO J. HUNT ADAMS, OF EAST ORANGE, NEW JERSEY, AND SAID HALL ASSIGNOR OF ONE-HALF TO SAID J. HUNT ADAMS.

HAT SETTING AND CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,420, dated September 12, 1882.

Application filed June 16, 1882. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM T. SMITH and CHAS. R. HALL, citizens of the United States, residing in the town of Bloomfield, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Hat Setting and Curling Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

Our improvements consist in the combinations of mechanism herein claimed for performing the operations of setting and curling a hat-brim at one operation. This we effect by mounting a metallic hat-flange upon a tubular support, providing a movable presser for setting and curling the brim by contact therewith upon the flange, and making the side or rolled edges of the flange movable toward the tubular support for removing the sides of the brim from the flange after it is shaped. The presser is also formed with movable dies for shaping the curl, so that the same may be cleared from the curl of the brim before they are removed from contact with the under side of the brim, which during the shaping operation lies uppermost upon the flange.

In the drawings annexed are also shown means for adapting the mechanism to operate upon several sizes of hats with one flange, and means for filling the openings formed in the flange by expanding it for such purpose, the latter consisting of an india-rubber cover to stretch over the flange, and formed with lugs or ribs to enter the openings and fill them for the time they are in use.

Figure 1 is a vertical section of the machine, taken on line *x x* in Fig. 6. Fig. 2 is a transverse section on line *y y* in same figure, only the presser and flange being represented with the section of the side bars of the frame. Fig. 3 is a cross-section of the rubber cover shown in Fig. 4, the latter view exhibiting the under side of the cover to show the ribs or lugs. Fig. 5 is a plan of the upper side of the flange. Fig. 6 is a side elevation of the machine with the nearer side bar, B, removed and the hand-crank omitted from the view. Fig. 7 is a front elevation of the machine. Fig. 8 is a section on line *z z* in Fig. 6, and Fig. 9 is a view of the under side of the flange attached to the tube E.

A is the bed-plate of the frame, B B its side bars, and C its top cross-bar. D D′ is the hat-flange, the latter letter referring to its movable curved edges.

E is the supporting-tube; F F, the dies forming the pressing-surface of the presser; G, a plate adapted to hold them together over the flange; H H, hanger-bars securing the plate to a cross-head, I; and J J are ways formed on the side bars, B B, to guide the cross-head and presser in a vertical movement over the flange.

When operating the presser rests with all its weight upon the hat on the flange, and is raised therefrom by a cord, K, passed over two pulleys, *p*, and provided with a ring, *r*, at its free end, to hook it upon a pin, *s*, secured in one of the side bars B, as shown in Fig. 7. The dies F and plate G are curved to suit the shape of the flange, which is intended to be made in any desired style for the prevailing fashion in hats, and the dies are secured to the plate by bolts *a*, operating through slots *b* in the dies, as shown in Figs. 1 and 2. In the same figures is shown a screw-shaft, L, mounted in the hangers H, and provided with a hand-wheel, M, to turn it for separating the dies, which are provided with nuts *c*, into which the ends of the screw-shaft fit.

In Figs. 1, 6, 7, and 9 are shown the movable edge D′ of the flange D, the same being entirely detached or loose from the flange, but held in contact with it in a suitable position by supporting-springs *d*, which are riveted to the edges and to the base of the tube E. Their length between the two ends affords sufficient elasticity and movement, and they are adjusted to naturally press the edges D′ outward, as shown in Figs. 1 and 7. To press them inward toward the tube E, levers N N are provided at each side of the tube, and supported by and pivoted to braces O, attached to the bars B. These levers are shown in plan in Fig. 8 and in elevation in Figs. 6 and 7, and operate by pressing upon the springs beneath the flange, thus holding them toward the tube whenever the operator is desirous to lift off the

presser, the movable portion of the flange being formed upon all that part of the edge covered by the curl on the sides of the brim, as seen in Figs. 6 and 9.

To operate the devices described, the hat is placed in the flange with its brim lying thereon, the presser is lowered with its dies F F separated, as shown in Figs. 1 and 7, and the dies are drawn together to curl the brim by the use of the hand-wheel and screw-shaft L after the brim has been set to the right shape by the pressure of the dies upon its upper side. When the brim is curled the springs *d* and movable edges of the flanges are pressed inward by the levers N, and the presser can then be removed from the hat by separating the dies, and the hat lifted from the flange without holding fast by its curled edges, as the curl is able to clear that part of the flange above the movable edge D′, as seen in Fig. 1. The other devices shown in the drawings are for adapting the flange to several sizes of hats, and consist in four levers, *f*, and screws *e* for bending or springing the top of the tube inward, four cuts being made in the same from the top nearly to the bottom, as at *g*, Fig. 7. The flange is also divided at four points, *h*, (see Fig. 5,) and the four sections secured to the four sections of the tube by a rim or flange bent at the upper edge of the tube, as shown in Fig. 1 at *i*, and secured to the pieces of the flange D by screws. By this construction the latter can be removed and replaced by others of a different style or size. For carrying the screws and levers rigidly I secure a casting, *m*, at the bottom of the tube, beneath the center of each of the separate upper sections of the same, and form the upper part of the same with ears *j* to carry the four levers *f*, and the bottom part with a boss bored to fit the hub of a bevel-gear, *l*. The four gears thus stand at equal distances around the center of the tube E, and are arranged in a suitable relation to a larger gear, *n*, to be driven simultaneously when the latter is turned. The gears *l* are secured loosely in the castings *m* by collars formed on their hubs, and, being threaded internally, are fitted to the screws *e*, which are pivoted at their outer ends to the levers *f*. The upper ends of the levers are forked to gain an extended bearing upon the yielding sections of the tube E, and the latter are preferably constructed to spring apart, so as to open the joints *h* in the flange D. The gear *n* is turned by a shaft, *o*, mounted in a bearing, *u*, in the bed A, a hand-wheel, P, being fitted to the lower end of the shaft, by means of which the operator can readily vary the size of the flange D D′ to fit hats varying slightly in dimensions.

As hats are commonly shaped to specific sizes, varying one-eighth inch each in diameter, the openings *h* must of course vary a specific amount in each case. To close these openings, I have devised the elastic cover V, (shown in Figs. 3 and 4,) its edge being provided with a rim, *v*, adapted to catch under the edge of the flange D, and ribs *w* being formed upon its under side to fit into and fill the openings *h*. Such a cover is best made of india-rubber molded in one piece, and adapts the flange shown to be used in shaping more than one size of hat.

It is obvious from the above description that some of the devices used may be replaced by others without affecting the operation of my invention, and that some of the improvements described may be used without the others—as, for instance, the movable edges upon the flange D for removing the brim from the flange after shaping.

In Fig. 2 is shown an alternative construction for the screw-fixture used in moving the dies F.

Dies Q are required at the ends of the flange D for the same purpose as those arranged at the sides—*i. e.*, to shape and curl that part of the brim. Only one such die is shown, the other being removed to show plainly a portion of the plate G and the location of the bolts *a* thereon. The die Q is provided with a short thumb-screw, *t*, which is fitted to a nut, *t′*, attached to the plate G at the inner end of the die. By turning the screw to the right or left the die may be moved to or from the edge of the flange as it lies thereon.

By the use of the above means the brim of the hat can be shaped as perfectly as by any other means and the edge curled at the same operation by merely turning the screws applied to the dies.

We are aware that it is not new to operate dies mechanically toward a hat-flange for curling and setting a brim, nor to hang the dies or pressing devices over the hat-flange and raise and lower them for the same purpose as is done in our machine. We do not therefore claim such devices as our invention, nor the use of dies divided into two parts and opened to apply to the brim of a flange, as such inventions have already been used, and are shown in United States Patents Nos. 30,791, of 1860, and 88,865, of 1869, and in other patents; but we consider it new to dispense with fixtures heretofore attached to the flange or its bed for operating on some part of the hat-brim which cannot be effectively set and curled by a presser merely divided into two parts, and to locate all such fixtures upon a single movable plate, as we have shown at G herein. Such a construction leaves us more opportunity to improve the hat-flange itself, which we have done in dividing it into four parts and mounting them upon a thin elastic tube capable of expansion at pleasure, and in forming the edges D′ loose from the main body of the flange D, so that they may be retracted for getting the hat-brim off the flange without injury.

We therefore claim as our invention as follows:

1. The combination, in a hat curling and setting machine, of a hat-flange, D, formed with movable edges D′, operated substantially as set

shaping and curling the brim of a hat, the dies being movable to clear the brim of the hat after shaping, substantially as shown and described.

2. The combination, with a sectional hat-flange having open joints between the sections, of an india-rubber cover provided with ribs or lugs to fill the joints, substantially as herein set forth.

3. The combination of the flange D, divided into sections, as described, the tube E, joined to the flange and cut at the same points, the levers *f*, pivoted upon the tube, and the screws *e* and gears *l* and *n*, operated as described for changing the size of the flange, substantially as shown and described.

4. The combination, with the flange D and movable edges D′, of the springs *d* and levers N for moving the edges D′, substantially as shown and described.

5. The combination, in a presser formed with movable dies at its sides and ends, of the plate G, dies F, provided with nut *c* and operated by the screw-shaft L and wheel M, and the dies Q, operated by screws *t*, the whole arranged and operated substantially as set forth.

6. In a hat curling and setting machine, the combination of the tube E, flange D, and frame composed of the parts A B C, as described, with the presser having the dies F mounted upon the plate G, and the plate suspended from a cross-head, I, working in guides J, substantially as shown and described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM T. SMITH.
CHARLES R. HALL.

Witnesses:
THOS. S. CRANE,
WILLIAM F. D. CRANE.