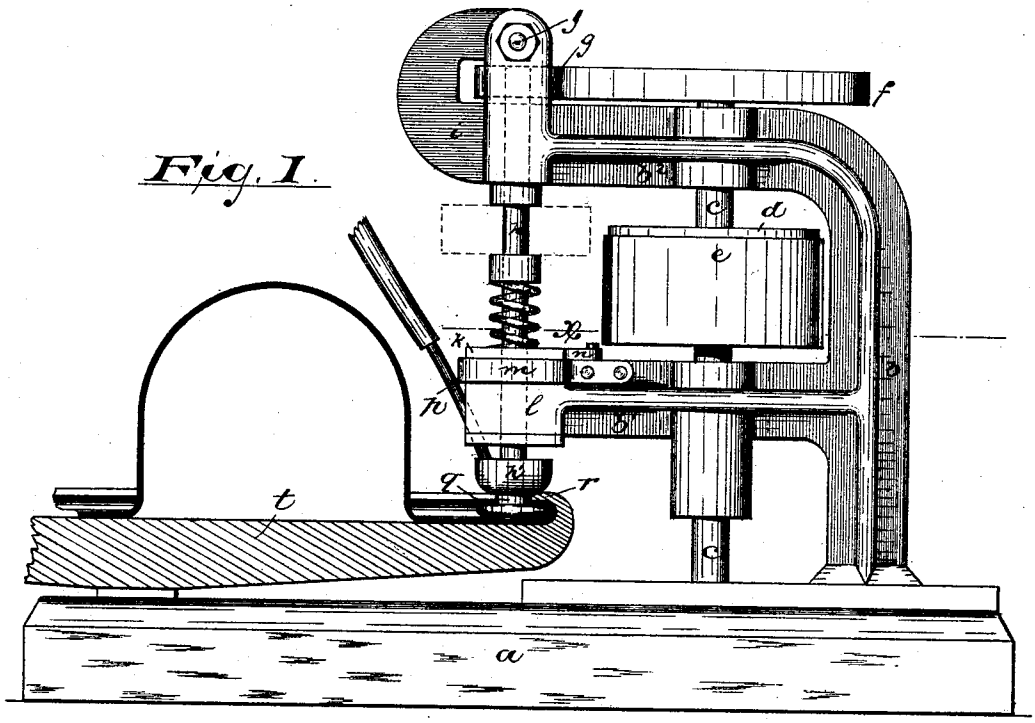
(No Model.)

W. J. McGALL.

HAT CURLING MACHINE.

No. 480,877. Patented Aug. 16, 1892.

Fig. 1.



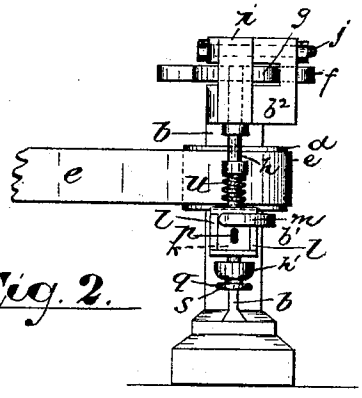


Fig. 2.

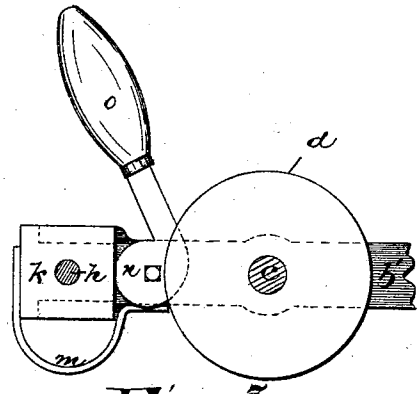


Fig. 3.

Witnesses

Oscar A. Michel.

H. B. Jud

Inventor

William J. McGall,

By Drake & Co. Atty's.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM J. McGALL, OF WEST ORANGE, NEW JERSEY.

HAT-CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,877, dated August 16, 1892.

Application filed January 25, 1892. Serial No. 419,111. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. McGALL, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Curling Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to curl the edges of hat-brims with increased ease and facility and with greater uniformity and perfection; and it consists in the improved hat-brim-curling machine and in the combinations and arrangements of parts substantially as will be hereinafter set forth, and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters indicate corresponding parts in each of the figures, Figure 1 is a side elevation of the improved machine, a certain rotary bearing or guide being shown in vertical section. Fig. 2 is a reduced end elevation of the same, and Fig. 3 is a horizontal section taken on line X of Fig. 1.

In said drawings *a* indicates a suitable bed-plate, upon which is formed or arranged a vertical standard *b*, having horizontal arms *b'* b^2, which provide bearings for certain of the curling-tools or operating parts.

c indicates a driving-shaft, and *d* a pulley thereon, which receives its power from any source over the belt *e*. At the upper end of the said driving-shaft is arranged a large gear-wheel *f*, which transmits motion to a small gear-wheel *g* on the tool-shaft *h*, having the curling and ironing tool *h'* at its lower extremity. The tool-shaft is preferably arranged in swinging bearings arranged at the ends of the arms *b' b²*, the upper bearing *i* being pivoted on the upper arm at *j*, and the lower bearing *k* having a sliding movement between the forks *l* of the arm *b'*. The said lower bearing *k* is held in its operative position by a spring *m*, fastened at the side of the arm *b'* and curved to bear on the end of the sliding bearing so as to hold it with sufficient firmness, but with some degree of elasticity. A cam or eccentric *n*, provided with a handle *o*, is adapted to throw the said bearing outwardly against the spring and the shaft and tool from its operative position.

The sliding bearing *k* provides a perforation or passage for gas, or a gas pipe or burner *p*, the said perforation or the said burner being so formed or arranged as to throw the jet of burning gas against the curling-tool *h'* to heat the same to the required intensity. The said tool is made cup-shaped or hollow to receive said gas-jet and prevent the flame from coming into contact with the fabric of the hat. Below the cup-shaped part, the tool is provided with an annular groove *q* to receive a guiding-flange *r*, and below this the said tool is provided with an annular bead or rounded flange *s* to enter beneath the said guiding-flange and press the hat-brim into the desired curl.

Beneath the heated ironing-tool is arranged the rotary plate or turn-table *t*, adapted to be turned on its central pivot by hand to facilitate feeding the brim to the ironing-tools. At the peripheral edge of the said turn-table is a raised and inwardly-extending flange *r*, preferably formed integral with the turn-table, so as to present a smooth seamless surface to the outside of the curl. This flange is so related to the flange *s* of the heated ironing-tool as that it overlaps said flange *s*. By resting the hat on the turn-table and pressing it toward the raised flange the brim is curled up, the flange serving to a certain extent as a guide. Said flange also acts as a bearing against which the felt is pressed by the heated ironing-tool.

By means of the overlapping flanges the brim is given the curl, and the said curl is made permanent by the heat of the tool *h'* and the pressure produced by the spring *u*, which causes the bead or flange *s* to press upward against the under or hidden side of the curled fabric. Thus the unsightly luster produced by the ironing will not be seen; but the exposed side of the curled brim, having received little or no frictional or rubbing pressure, will remain of the lusterless black or color desired. The turn-table may be turned by hand and

provides a convenient means for turning the hat as the brim edge is fed to the ironing and curling tool.

I am aware that the invention may be variously modified in its construction and operation, and equivalent constructions of parts may be substituted for those particularly and positively described, and I do not wish to be understood as limiting myself to the specific construction shown, although I deem it the more practical and convenient of those constructions contemplated. For example, I may dispense with gearing *f g* and driving-shaft *c* and arrange the pulley *d* upon the shaft *h*, as indicated in outline in Fig. 1, or otherwise.

In operating the device the tool is thrown out of its operative position by the cam and the uncurled brim adjusted in between the flanges. The cam is then pressed back and the spring *m* brings the flanges in proper relative positions, the brim being thus given the desired curl. The heated tool is then given an ironing movement, preferably a rotary motion, which gives permanency to the curl, as will be understood. By turning the turn-table and at the same time guiding the hat the brim is properly fed to the tools and the ends and sides of the hat-brim curled. The ends of the said brim are afterward cut down to the desired form.

Having thus described the invention, what I claim as new is—

1. The improved hat-brim-curling machine herein described, comprising a frame, a vertical tool-shaft having bearings in said frame and having a flanged and heated ironing-tool rotating with said shaft, means for rotating said shaft and tool, and means for heating said tool, and a table having a raised and inwardly-turned flange at the edge thereof, which overlaps the flange of the tool and holds the curled brim while the heated ironing-tool is pressing and rapidly rotating against the concaved side of the brim, substantially as set forth.

2. The improved hat-brim-curling machine, comprising a heated rotary tool having a cup at the upper part to receive a gas-jet and a flange at the lower part, means for rotating said tool, a gas-jet for heating the said tool, and a turn-table having a flange or bearing at the edge thereof, which extends inwardly over the flange of the heated tool, substantially as set forth.

3. The improved hat-brim-curling machine herein described, comprising a rotary table having at its peripheral edge a raised and inwardly-extending flange and a frame having arms b' b^2, providing bearings for a vertical tool-shaft *h*, said vertical shaft, a gear-wheel at its upper end and a heated and flanged ironing-tool *h* at its lower end, the flange of which underlies the flange of the turn-table and is adapted to present its heated and rapidly-rotating surface to the concave side of the curled brim, means for heating said rotary tool, and a spring *m* for raising the flange of the rotary tool against or toward the raised and inwardly-extending flange of the rotary table, and gearing for transmitting power to the gear-wheel or shaft *h*, all said parts being arranged and combined substantially as set forth.

4. The improved hat-brim-curling machine herein described, comprising a table having a raised and inwardly-turned flange at its edge and a frame having arms b' b^2, providing bearings for a vertical shaft *h*, said vertical shaft, means for transmitting rotary motion thereto and at its lower end having a cup-shaped and flanged ironing-tool adapted to extend under the flange of the table and present its heated ironing-surface to the concave side of the curled brim, means for heating said tool, a sliding shaft-bearing, and an eccentric or cam for throwing the shaft and rotary tool laterally away from the flange of the table, substantially as set forth.

5. In combination with the frame *a b*, a pivoted bearing *i*, sliding bearing *k*, shaft *h* in said bearings, means for rotating said shaft, and means for lifting the same upward, a tool *h'*, arranged on said shaft, means for heating said tool, and a guide to co-operate with the heated tool in giving shape to the fabric, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of January, 1892.

WILLIAM J. McGALL.

Witnesses:
CHARLES H. PELL,
OSCAR A. MICHEL.