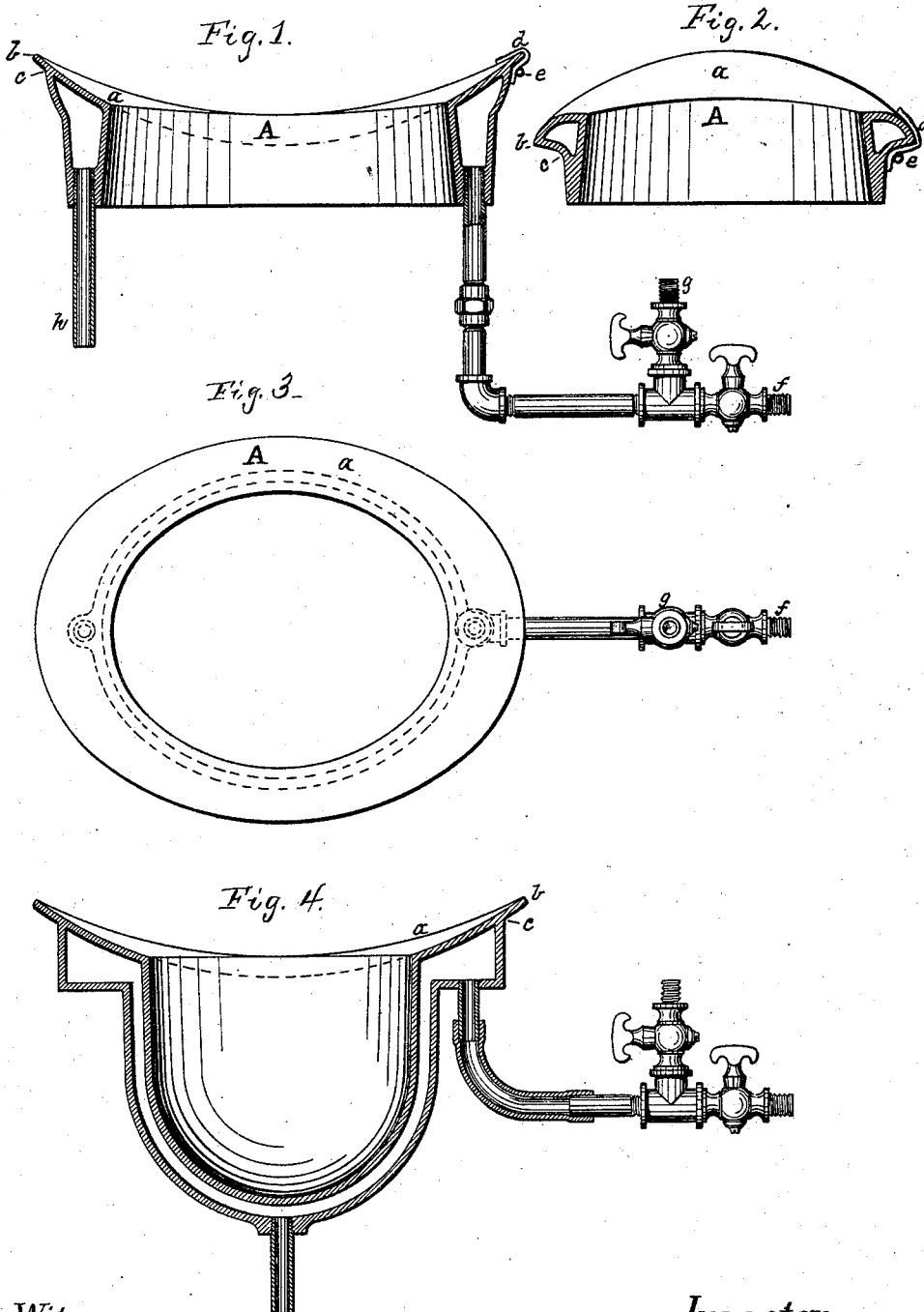


R. EICKEMEYER.
Art of Curling Hat-Brims.

No. 216,319.

Patented June 10, 1879.



Witnesses
Philip A. Larner.
Howell Bartle

Inventor:
Rudolf Eickemeyer.
By *Wm. Wood*
Attorney.

UNITED STATES PATENT OFFICE.

RUDOLF EICKEMEYER, OF YONKERS, NEW YORK.

IMPROVEMENT IN THE ART OF CURLING HAT-BRIMS.

Specification forming part of Letters Patent No. **216,319**, dated June 10, 1879; application filed April 21, 1879.

To all whom it may concern:

Be it known that I, RUDOLF EICKEMEYER, of Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in the Art of Curling Hat-Brims and in Molds employed therein; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

The objects of my invention are, first, those economic results which accrue from more rapid operation than has been heretofore attained, as well as from dispensing with the wooden brim-flanges heretofore used in large numbers, together with absolute non-liability of cracking or breaking the brims during the curling operation; secondly, superior results with reference to the attainment of the exact contour and curl desired, and also in an increased capacity for maintaining the curl in its original finished condition.

The main feature of my invention consists in the improvement in curling hat-brims by confining them upon and in close contact with a hot brim-curling mold, and, after they are properly heated and curled, cooling them by rapidly cooling the mold.

My invention further consists in a metallic brim-curling mold having an annular recess for receiving a portion of the periphery of the hat-brim when secured to the mold by a wire or cord, an interior chamber beneath the brim-surface of the mold, separate induction-pipes for steam and cold water, and an eduction-pipe, the mold being essentially constructed with special reference to a capacity for being rapidly heated and cooled, without liability of such injury as would ordinarily be incident to the rapid alternate expansion and contraction of the metal.

Referring to the main feature of my invention, I will state that brims have been permitted to cool on metal molds; but that is too slow an operation to be economical. They have also been secured upon wooden-flange molds, and been heated both before and after being so secured, and then permitted to cool thereon; but this involves a large number of

wooden flanges, and, the wood being a poor conductor of heat, the operation is necessarily protracted. In order to save time, artificially-induced currents of cold air have been applied to the exposed portion of the brim; but this sets the outer portion of the felt so rapidly in advance of that portion next the mold that it is liable to be cracked or broken by the time it is thoroughly cooled; and if, to obviate this, the hats are removed from the mold before the brims are fully cooled and well set, they are liable to lose the desired shape. In operating in accordance with my invention the outer surface of the felt is cooled, as heretofore, by atmospheric radiation, and meantime the inner surface next the mold is also cooled, not only enabling the brim to be rapidly cooled, but also obviating all liability of the injury incident to unequal cooling.

With reference to the second feature of my invention, I will state that hollow hat molds or dies have heretofore been provided with steam-pipe connections for heating them, and with an eduction-pipe, and also with a separate induction-pipe for the supply of a cooling-liquid, so that one portion of a hat could be heated more than another portion, and also so that the temperature of the mold could be regulated, and the liability of undue heating the hat obviated. So far as my knowledge extends, however, hat-molds have never heretofore been made capable of being used in the practice of the main feature of my invention, because my molds must embody as essential features a brim-curling edge and a peripheral recess, within which the periphery of the untrimmed hat-brim may be secured by a clamping-cord or its equivalent; and it must also be constructed of thin metal, which can be rapidly heated and cooled, and be capable of practically withstanding the liability of breakage usually incident to the rapid alternate expansion and contraction of the metal incident to the use of my mold.

To more particularly describe my invention, I will refer to the accompanying drawings, in which Figures 1 and 2 represent, respectively, in central longitudinal and lateral sections a brim-curling mold embodying my invention. Fig. 3 represents the same in top view. Fig. 4 rep-

resents in section a similar mold capable of use in pressing the crown simultaneously with the brim-curling operation.

The mold A in Figs. 1, 2, and 3 is an open mold, to be mounted on a suitable base, and it is specially intended for use on a work-bench. The surface *a* of the brim portion has the required curves, and the well-defined curling-edge or periphery *b*, over which the edge of the hat-brim may be tightly drawn, and a peripheral recess is essential for receiving the peripheral portion of an untrimmed hat-brim. In Figs. 1 and 2 this recess is shown at *c*, with a portion of a hat-brim, *d*, drawn over the edge of the brim-mold and firmly secured by the clamping or binding cord *e*, which encircles the mold.

As heretofore in hat-molds, I employ a steam-pipe, *f*, and cold-water pipe *g*, each having a cock, whereby steam may be admitted for heating the brim, then cut off, and cold water admitted for cooling the mold. The steam and water are discharged from the mold through the eduction-pipe *h*. In order that the alternate changes in temperature from hot to cold, and so on, may be rapidly effected, the metal adjacent to the brim is of as little thickness as is consistent with the strength required to withstand the maximum internal pressure of the steam employed, as well as such maximum external pressure as may be applied for securing proper contact of the brim with the mold. The liability of the mold to break or crack, on account of the rapid alternate expansion and contraction of the metal, is partially guarded against by the use of metal as thin as is practicable, and also by the use of cast-brass or other tough metal in the construction of the mold.

In the mold shown in Fig. 4 there is a curled-brim surface, *a*, a well-defined curling-edge, *b*, and a recess, *c*, as has been previously described in connection with the open mold. This mold shown in Fig. 4 may also be so mounted on a base as to be used on a bench; or either of said molds may be employed in a press, if desired, in which case flexible steam and water pipe connections may be used.

It will be seen that the recess *c* may be varied in its construction—as, for instance, it may be in the form of a peripheral groove, as heretofore in wooden flanges, into which the securing-cord *e* can force a portion of the hat-brim; but the annular surface beneath the edge of the brim portion of the mold, as shown, operates as a holding-surface for the brim of the hat, and the vertical surface of the mold adjacent thereto affords an abutting-surface, between which and the cord a portion of the brim is compressed, clamped, or confined.

The practical application of my invention varies according to the particular character of hats to be treated—as, for instance, in curling the brims of wool hats the mold is heated, a hat placed therein, the untrimmed edge of the

brim turned down over the curling-edge or periphery of the mold, and secured by a cord or equivalent means. A block is then placed within the hat for forcing the under side of the brim into proper contact with the brim-surface of the mold, and, after suitable time has elapsed for the “stiff” in the brim to be thoroughly softened and the proper form attained, the steam is cut off from the mold and cold water introduced, which promptly cools the brim, and so sets the stiff that the hat can be safely removed without liability of losing its curl.

In working on fur hats the brim is knife-trimmed and its edge covered with stitched binding, after which the hat is placed within the heated mold, and a cloth drawn tightly over the brim and secured to the mold for forcing the brim into proper contact with the curling-surfaces. Whether the hat be made of wool or of fur, if a full-curved brim be not desired, the cloth is employed, as described.

If the brim-curling operation be performed in a press containing the mold, a flexible diaphragm is used in connection therewith as the equivalent of the cloth and cord.

It will be seen that by thus cooling the mold the heat is free to leave the brim from both of its surfaces—externally by atmospheric radiation, and internally through the mold—and that therefore the two surfaces are cooling at the same time and with a sufficient degree of uniformity to obviate all liability of breaking or cracking. So far as my knowledge extends in connection with the curling of hat-brims, no provision was ever heretofore made for cooling both surfaces of the brim at once and with practical uniformity while the brim was so confined as to maintain it in the form predetermined by the contour of the curling-mold.

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

1. The improvement in the art of curling hat-brims by confining them upon and in close contact with a heated brim-curling mold, and, after they are properly heated and curled, cooling them by rapidly cooling the mold, substantially as described.

1. A metallic brim-curling mold essentially constructed to admit of its being rapidly heated and cooled, and to withstand the effects of alternate expansion and contraction, and provided with an annular recess for securing the edge of a hat-brim, an interior annular chamber beneath its brim portion, two induction-pipes, and an eduction-pipe, substantially as described, whereby hat-brims may be curled and cooled while confined upon the mold, as and for the purposes set forth.

RUDOLF EICKEMEYER.

Witnesses:

GEO. OSTERHELD,
J. GEORGE NARR.