J. J. TRACY.

MANUFACTURE OF HATS.

APPLICATION FILED APR. 7, 1913.

1,214,846.

Patented Feb. 6, 1917.

2 SHEETS—SHEET 1.

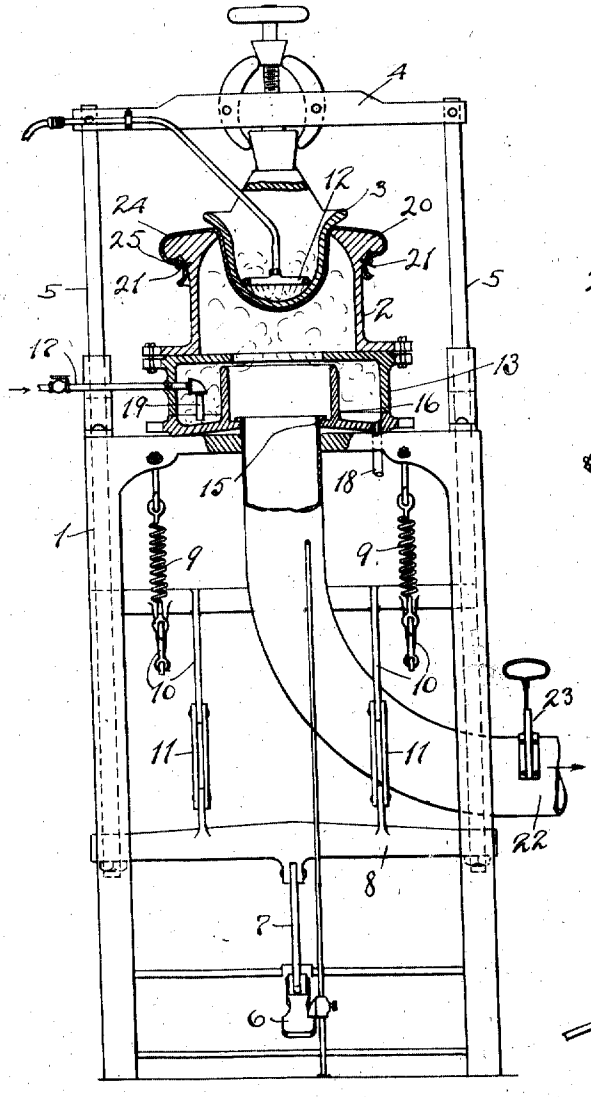


Fig. 1

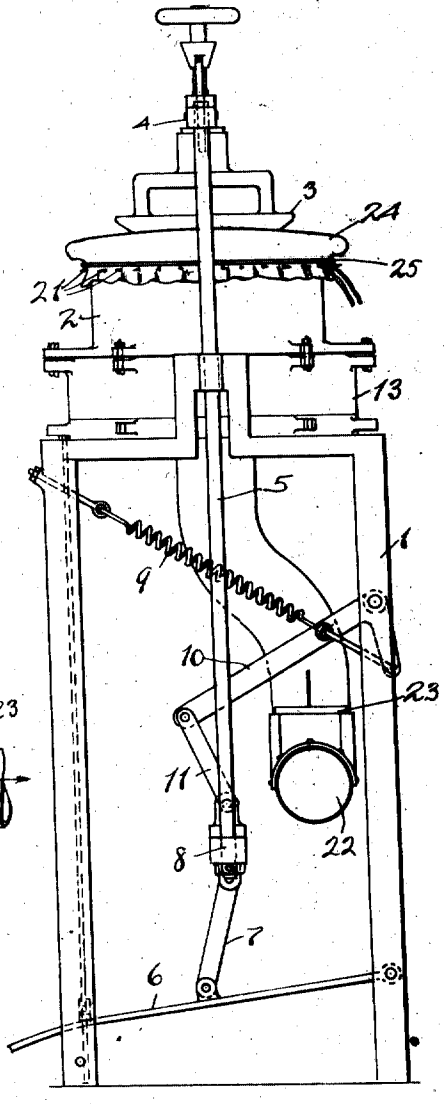


Fig. 2.

Witnesses=
Oliver M. Kappler.
Horace B. Fay

Inventor
James J. Tracy
by Fay & Oberlin
Attorneys—

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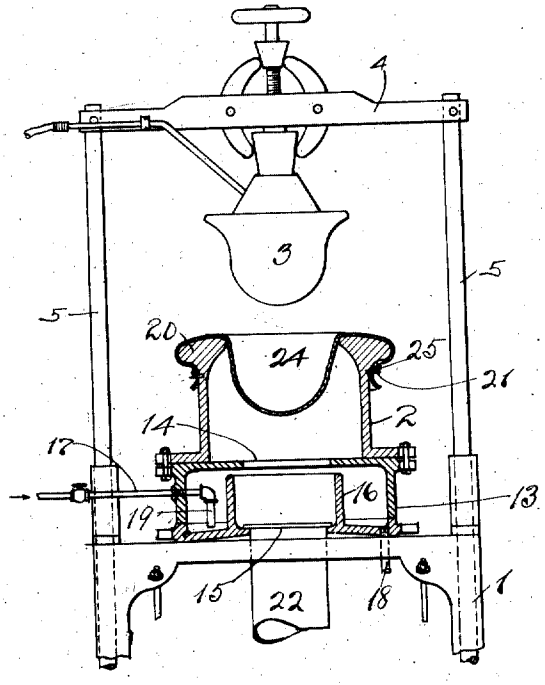


Fig. 3

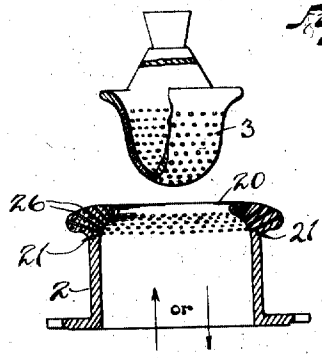


Fig. 4

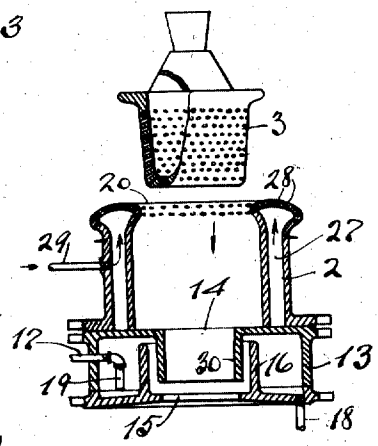


Fig. 5

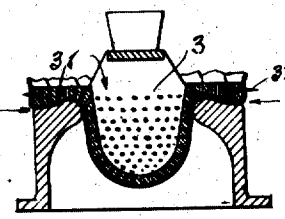


Fig. 6

Witnesses=
Oliver M. Kappler
Horace B. Fay

Inventor
James J. Tracy
by Fay & Oberlin
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES J. TRACY, OF CLEVELAND, OHIO.

MANUFACTURE OF HATS.

1,214,846. Specification of Letters Patent. Patented Feb. 6, 1917.

Application filed April 7, 1913. Serial No. 759,283.

To all whom it may concern:

Be it known that I, JAMES J. TRACY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in the Manufacture of Hats, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates more particularly to an improved process, and apparatus for use in connection therewith, for manufacturing felt hats. The object of the invention is to simplify the operation of forming, that is of blocking felt hats, and at the same time render possible the production of a machine-made product that will present certain desirable qualities now secured only by the old process of hand blocking over wooden blocks. To the accomplishment of the foregoing and related ends, the invention, then, consists of the steps and means hereinafter fully described and particularly pointed out in the claims. It should also be explained that the apparatus aspect of the invention forms the subject matter of a separate divisional application filed December 29, 1916, Serial No. 139,462.

The annexed drawings and the following description set forth in detail certain mechanism and one mode embodying the invention, such disclosed means constituting, however, but one of the various ways in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a front elevation and partial section of an apparatus arranged for use in connection with my improved method of manufacturing hats; Fig. 2 is a side elevational view of the same; Fig. 3 is a sectional view of a portion of the apparatus with the parts shown in a different operative position from that shown in Fig. 1; Fig. 4 illustrates a modification in construction of one of the members of the machine; and Figs. 5 and 6 illustrate still other modifications of the same member.

The general frame 1 of the machine presents no unusual features of construction, such frame serving to support the forming apparatus proper, consisting principally of a stationary member 2 and a movable member 3.

The latter, which is in the form and size of the interior of the hat being manufactured, will be cast of metal, preferably zinc, and is adjustably attached to a cross head 4, which is supported on two vertically reciprocable rods 5. These rods are adapted to be depressed by means of a foot lever 6 connected therewith by a link 7 and a cross bar 8, tension springs 9, connected with said rods through bell-crank levers 10 and links 11, serving normally to retain the form or mold 3 in the raised position illustrated in Fig. 3. This mold 3 is hollow, and means are provided for heating its interior, such means consisting either of a gas burner 12, as shown in Fig. 1, or steam connections, suitably disposed within the same.

The stationary member 2 of the forming apparatus proper rests on a chambered base 13 of general cylindrical form having central openings 14 and 15 in its top and bottom walls, respectively, the opening in its lower wall being surrounded by a circular flange 16 which extends upwardly within the chamber in the base, as shown. The bottom wall slopes from this flange to the outer cylindrical wall and is furthermore sloped from the one side of the chamber, where a steam-supply pipe 17 enters such outer wall, to the opposite side of such chamber, where a drip pipe 18 is connected through the bottom wall. The inner end of the steam supply pipe is provided with a downwardly bent portion 19, so that any water of condensation entering with the steam, together with that formed after the steam enters the chamber, will collect on the bottom wall and run around the same to the outlet pipe 18, and there be drawn off. Only relatively dry steam in other words will pass upwardly above the flange 16 and through the opening 14 in the upper wall of the chambered base.

The stationary member 2 is securely clamped to the top of the base but may be interchanged with other similar members of different forms corresponding with hats of different styles and sizes. The upper portion of such member 2 is provided with an opening of the same outline as the hat at the band or joint of junction of the crown with the brim. The portion 20 of the member or form, as it may be called, adjacent

this opening is fashioned to give the desired shape of brim whether simply turned, rolled, or otherwise. On the outside of the form is a circular series of pointed projections or pins 21, to which the edge of the hat being formed is attached, as will be presently described.

Connected with the opening 15 in the bottom wall of the chambered base 16 is a duct or pipe 22 leading to a suitable suction fan or force-draft blower (not shown), whereby air may be drawn, or forced, as the case may be, through such duct and through the forming member 2 attached to its upper end. A slide valve 23, located in the duct at a convenient point, serves to control the suction or forced blast that is applied to any particular forming apparatus.

In utilizing the specific form of apparatus just described above in carrying out my improved method of hat manufacture, the lower mold member 2 is heated to the proper temperature by admitting steam through pipe 17, while the upper member 3 is simultaneously heated by contact with the steam in chamber 2, or by means of the burner 12, or another steam supply pipe. With the mold parts thus heated, the hat 24 in its unformed condition, but having been previously sized and kept sufficiently damp and soft by placing it over a steam jet, to prevent it from becoming too stiff to handle, is slipped over the inner mold or forming member 3, while in the raised position shown in Fig. 3. Said member is then depressed, so as to force the crown of the hat through the opening in the lower mold member 3, but before the upper member is fully seated the edge of the brim is drawn over such lower mold member and secured to the pins 21 about its entire circumference. A tape or band 25 is also desirably passed around the brim, after it is thus pinned fast, in order to additionally secure the same. The upper mold member is then forced clear down. Steam may continue to be supplied to the interior of the base and thus to the lower mold member not only preliminarily, but during and following the step just described, as the result of which the hat is readily given the form of the mold part.

After the upper mold member has been seated, the air suction, or draft, is turned on by opening valve 23, and the mold member 3 thereupon raised, as soon as the crown of the hat is dry enough to retain its shape. The air instantly carries away any steam remaining in the lower mold part, and also assists in holding the hat in place thereon where suction is used. At the same time sufficient air will be passed through the crown of the hat to rapidly cool and dry the same, causing it to quickly set in the desired form.

With the form of construction shown in Figs. 1 and 3, the brim of the hat will require a slightly longer time to thus cool and dry than the crown, because the air is not drawn directly through such brim. The mold, however, can be arranged to permit this, by forming perforations 26 in the edge 20 of the mold part in question, as shown in Fig. 4, although this is not adaptable for use with felt hats having smoothly finished surfaces, since marks or impressions corresponding with the holes in the mold will be left, which are difficult to erase. This difficulty does not arise where the hats have a long nap or rough finish, nor where the air is forced through the hat. With the construction of mold part 2 shown in Fig. 4, it is possible to have the mold part 3 perforated, so that the air may be passed through both crown and brim, whether under suction or pressure, thus rendering it unnecessary to raise such last-named part until the operation is complete.

It is also possible to arrange the apparatus so that the air may be passed in one direction through the brim and in the other direction through the crown of the hat. This is the mode of operation for which the modification shown in Fig. 5 has been designed, wherein a separate annular chamber 27 is provided in connection with apertures 28 in the flange, or brim-forming portion, of the lower mold member 2. Air under pressure through a pipe 29 is supplied to this chamber at the same time, or just after the suction is connected with the main chamber of the mold, so that while such suction will hold the hat in place in the mold, and dry the crown of the hat, air may be blown through the brim by means of the connection to this annular chamber and the apertures leading from the upper portion of such chamber. Here again the mold-part 3 is desirably perforated in order that it may be left locked in place while the cooling and drying step is in progress.

In said Fig. 5, I also show a modification in the interior construction of mold-part 2 which has been found desirable in practice. This modification consists in the provision of a second flange 30 within flange 16 and depending downwardly. By the use of two such flanges in staggered relation a more perfect baffle is interposed in the way of any water of condensation getting into the interior of part 3.

This mold-part 3, finally, may be modified in construction as shown in Fig. 6, so as to provide for the securing of the hat brim thereto, instead of to the flanged edge 20 of part 2. In such event the flange 31 on said part 3 is somewhat extended, and provided with retaining pins 32, similar to the pins 21 on part 2 in the previously described constructional forms of the apparatus; moreover, both the portion of mold-part 3,

which fits the crown of the hat, and this flange 31, are perforated so that air may be drawn therethrough, when suction is applied to the interior of the lower mold-part. The upper part is raised just a trifle from this lower part, before the application of such suction, in order that the brim, as well as the crown, may be affected thereby.

By completing the operation of forming the hat in the fashion above described, viz., by either drawing or forcing air therethrough, instead of "baking" the material of the hat by the dry application of a heated mold as heretofore, the softness and pliability of the felt are not destroyed. This is particularly noticeable at the line of junction between the crown and brim. At the same time an equally permanent form, or "set," is given the hat when manufactured as above described, as where the prevailing method is utilized; while, with the forms of apparatus shown in Fig. 4 *et seq.* a considerable increase in the rate of production is obtainable of that secured with the present method of manufacture.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the steps herein disclosed, provided those stated by any one of the following claims or their equivalents be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In the manufacture of felt hats, the steps which consist in drawing the hat to be formed over a suitable mold, such hat being previously sized, but sufficiently damp to be soft; and thereupon passing a current of air through the same until it has dried and set.

2. In the manufacture of felt hats, the steps which consist in drawing the hat to be formed over a suitable mold, each hat being previously sized but sufficiently damp to be soft; withdrawing said mold; and thereupon passing a current of air through such hat until it has dried and set.

3. In the manufacture of felt hats, the steps which consist in drawing the hat to be formed over a suitable mold; steaming such hat; and thereupon passing a current of air through the same until it has dried and set.

4. In the manufacture of felt hats, the steps which consist in drawing the hat to be formed over a suitable mold; exposing such hat while on the mold to the action of steam; withdrawing said mold; and thereupon passing a current of air through such hat until it has dried and set.

5. In the manufacture of felt hats, the steps which consist in preliminarily heating a suitable mold; drawing the hat in damp, sized condition over such mold; and thereupon passing a current of air through such hat until it has dried and set.

6. In the manufacture of felt hats, the steps which consist in preliminarily heating a suitable mold; drawing the hat in damp, sized condition over such mold; withdrawing such mold; and thereupon passing a current of air through such hat until it has dried and set.

7. In the manufacture of felt hats, the steps which consist in drawing the crown of the hat to be formed over one mold member; similarly drawing the brim of such hat over another relatively movable mold member; exposing the hat, while held on said mold members, to the direct action of steam; and then passing a current of air through such hat until it has dried and set.

8. In the manufacture of felt hats, the steps which consist in drawing the crown of the hat to be formed over one mold member; similarly drawing the brim of such hat over another relatively movable mold member; exposing the hat while held on said mold members to the direct action of steam; separating said mold members to remove the first-named member from the hat crown; exhausting the steam from contact with the hat; and thereupon drawing air through such crown until it has dried and set.

9. In the manufacture of felt hats, the steps which consist in drawing the crown of the hat to be formed over one mold member; similarly drawing the brim of such hat over another relatively movable mold member; exposing the hat while held on said mold members to the direct action of steam; separating said mold members to remove the first-named member from the hat crown; exhausting the steam from contact with the hat; and thereupon drawing air through such crown and simultaneously forcing air through such brim, until the hat has dried and set.

Signed by me, this 31st day of March, 1913.

JAMES J. TRACY.

Attested by:—
HORACE B. FAY,
MARY GLADWELL.