

(No Model.)

2 Sheets—Sheet 1.

W. A. BAGLIN.
METHOD OF FORMING AND STICKING NAPPING BATS AND APPARATUS
THEREFOR.

No. 508,859.

Patented Nov. 14, 1893.

Fig. 1.

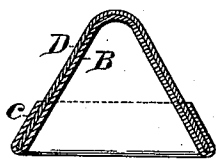


Fig. 2.

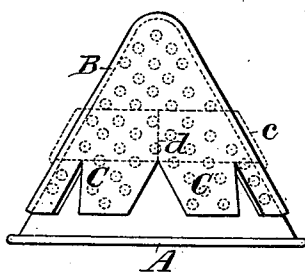


Fig. 9.

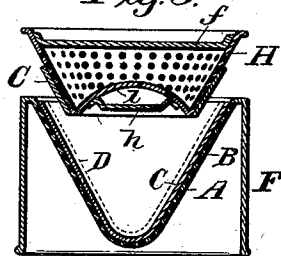


Fig. 5.

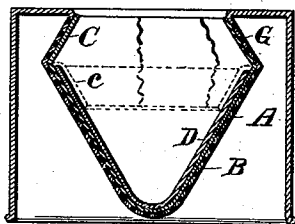


Fig. 8.

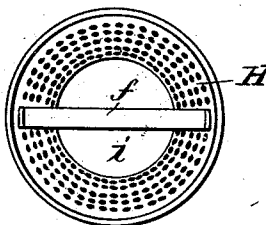


Fig. 3.

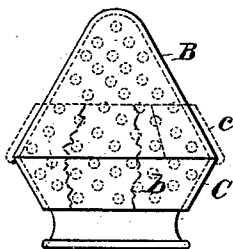


Fig. 6.

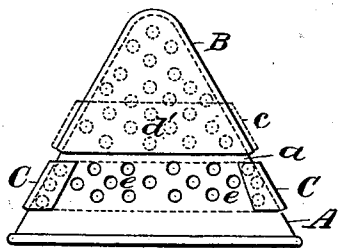


Fig. 7.

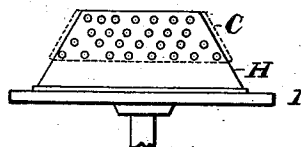
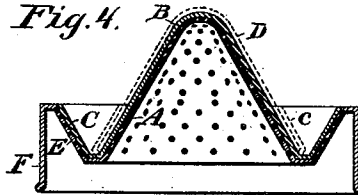


Fig. 4.



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(No Model.)

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W. A. BAGLIN.
METHOD OF FORMING AND STICKING NAPPING BATS AND APPARATUS
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Fig. 10.

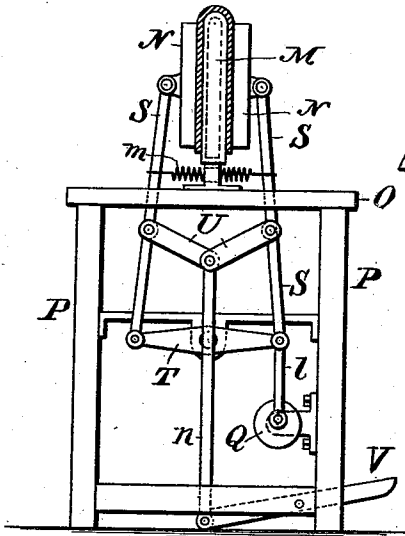


Fig. 11.

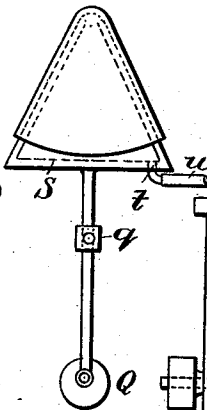


Fig. 12.

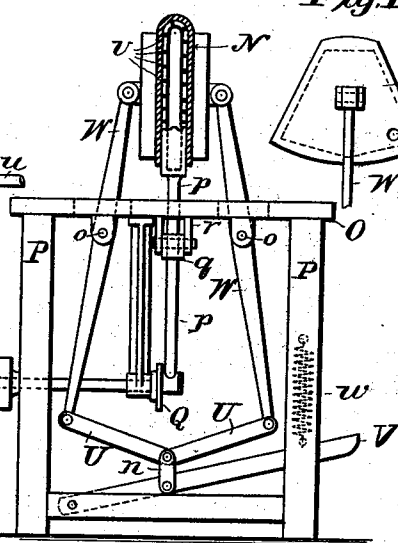


Fig. 13.

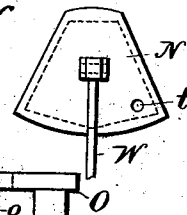


Fig. 14.

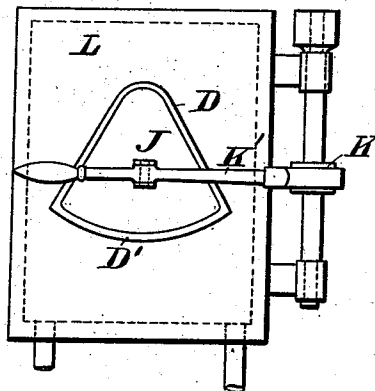


Fig. 15.



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UNITED STATES PATENT OFFICE.

WILLIAM A. BAGLIN, OF BROOKLYN, ASSIGNOR OF ONE-HALF TO TWEEDY & CO., OF NEW YORK, N. Y.

METHOD OF FORMING AND STICKING NAPPING-BATS AND APPARATUS THEREFOR.

SPECIFICATION forming part of Letters Patent No. 508,859, dated November 14, 1893.

Application filed March 10, 1882. Serial No. 54,838. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. BAGLIN, a subject of the Queen of Great Britain, residing in the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Methods of Forming and Sticking Napping-Bats and Apparatus Therefor, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to improvements in the manufacture of napped hats, and consists, first, in methods of forming and applying nap-bats to both sides of the brim as well as the body of the hat, before removing the body bat from its original forming cone; second, in forming in one piece a bat adapted to cover one side of the body and brim as well as the opposite side of the brim of a hat; third, in a cone adapted to form a bat for covering the body and both sides of a hat brim; fourth, in a method for sticking a napping bat to a previously felted hat body by supporting the hat body and napping bat together in a flattened condition, and subjecting the same to a combined pressing and rubbing action; fifth, in the combination with suitable flat rubbers for agitating and pressing both sides of the body at once, of an internal flat carrier to prevent the adherence of the folded bat, and to obviate the necessity of crozing, or refolding or rolling the hat body in a cloth.

The mechanism employed for forming the napping bats referred to herein, consists in a perforated forming cone adapted to receive the fur upon either its exterior or interior, and is shown in the drawings in modifications including either or both of such cones. The forming of nap bats in such cones being already well known, such a process is not claimed herein; but only the particular construction of the convex and hollow cones for the purpose specified, *i. e.* the covering of a hat body with a nap bat upon both sides of the brim in a single operation.

In the drawings annexed, Figures 1 to 9 illustrate the forming process, some of the views being in section as will be readily distinguished; while Figs. 10 to 15 exhibit de-

vices for sticking any bat whatever to a hat body upon a flat surface. Fig. 1 is a section of a conical hat body with a bat applied to the whole interior and to the exterior of the brim. Fig. 2 is an elevation of a forming cone with a bat thereon, the cone being wholly of conical shape. Fig. 3 is an elevation of a double cone with a bat thereon, the upper part of the cone being of conical shape, and the lower part consisting in an inverted conical frustum. Fig. 4 is a transverse section of a double cone with bat thereon, one part being of conical shape and the contiguous part consisting in an inverted conical frustum. Fig. 5 is a section of a forming cone adapted to receive the fur upon its interior and having the bat and a hat body therein, one part of the cone being of conical shape and the contiguous part consisting in a conical frustum. Fig. 6 is an elevation of a cone with bat thereon; Fig. 7 an elevation of a forming cone in the shape of a conical frustum. Fig. 8 shows the under side of the cone illustrated in Fig. 7. Fig. 9 is a transverse section of the same cone and a hollow inverted forming cone, with bats upon both of the said cones. Fig. 10 is an elevation of a sticking machine with a stationary carrier for the hat body and bat. Fig. 11 is a side elevation of the carrier and its driving connections illustrated in Fig. 12, which represents in elevation a sticking machine with a vibrating carrier. Certain parts are shown in section in Figs. 10 and 12 where hatched. Fig. 13 is a side elevation of one of the rubbers illustrated in Fig. 12. Fig. 14 is a plan, and Fig. 15 a side elevation of a flat table with a flat jigger applied to the same.

Fig. 1 shows a hat body D in section with a bat B applied to its entire surface upon the inside, and to the brim upon the outside; the view illustrating the mode in which the bats produced by me are applied when the bat is formed all in one piece. As such a body can be readily turned inside out, it is immaterial to which side the brim section of the bat is applied; and my devices are adapted to apply the bat upon either side, as may be preferred. Thus in Fig. 2, the forming device consists of a convex cone A perforated over its upper part sufficiently to form the body bat B.

Perforations are formed upon the cone (below those which are adapted to shape the body bat) to produce tongues or taper sections C upon the bat, which tongues when turned up toward the point or top of the cone form together a bat in the shape of a conical frustum. Such frustum and the body bat B may form a single piece as the fur is deposited simultaneously upon all the perforations in the cone. When a hat body felted in conical form like that shown at D in Fig. 1, is placed over the bat upon the cone, the flaps C can be turned upward over the lower edge of the hat body and serve to form a nap upon the brim, as shown at *c* in Figs. 1 and 2. The edges of the flaps are so shaped as to form suitable joints, as indicated in dotted lines *d*; and they thus unite to form a complete covering for one side of the brim. The hat body and bat can be stuck together, when thus joined or placed in contact, either upon the cone itself or apart therefrom; but as the sticking on a cone has been made the subject of an application, Serial No. 53,307, filed February 21, 1882, it is not claimed herein, but the method and means devised for sticking upon flat surfaces.

The bat shown in Fig. 2 has the brim piece continuous with the body bat; and another method of forming the same is shown in Fig. 3, to obviate the necessity for the notched edges upon the brim piece, which do not join permanently together so well as torn or ragged edges. In this figure, the body bat B is shown formed upon a cone of depth just equal to the bat, and the brim piece C is formed upon an inverted frustum of a cone joined to the first one, and perforated below their junction a depth equal to the width of the brim. When the hat body is placed over the bat B, the brim bat can be torn in several places, as at *b*, and turned up over the lower edge of the hat body, as shown at *c*.

In Fig. 4 another mode of forming the brim bat continuous with the body bat is shown; a frustum of an inverted hollow cone E being fastened around the base of the body-forming cone, and the brim bat being deposited in the said frustum of a cone, which would be perforated to form flaps C like those shown in Fig. 2. A hat body D is indicated in dotted lines, and the brim bat turned up from the hollow cone, to cover the edge of the hat, is also shown in dotted lines at *c*. A casing F is shown joined to the margin of the hollow frustum to fit it to the forming machine.

In Fig. 5 a hollow cone A is shown for forming the body bat B, and a frustum G of another hollow cone is shown joined to its base, a casing F being provided to lead the exhaust to the surface of both cones. The body cone A being inverted, the frustum G is supported with its open mouth upward, so that the hat body can be inserted therein after the bat is formed. The bat is shown at B and a hat body inside it at D, the bat for the brim being formed inside the section G, and shown

turned down over the edge of the hat body in dotted lines at *c*.

Figs. 6 to 9 show means for forming the brim bat apart from the body bat, and conveniently joining them to the hat body. Fig. 6 shows a cone A deep enough to form a body bat B upon its upper part and a brim bat beneath it; the latter being formed as an annular piece or ring, detached from the body bat by an unperforated space *a* upon the cone, and the continuity of the ring C being also broken by a section *e* unperforated in the line of the brim. The fur would be deposited upon all the perforated surfaces of the cone simultaneously and the hat body B then applied over the body bat D. The brim bat can be removed from the cone after the body D is placed over the bat B, and applied to the brim at *c* as before; the section *e* being proportioned so that the ends of the bat C may be joined together, as at *d'*. Fig. 7 shows a frustum of a cone H adapted for forming a similar brim bat in an unbroken ring, the same being indicated at C by dotted lines; and Fig. 8 shows the under side of such cone, provided with a cross bar *f* for handling it, when removed from the turn-table I upon which the cone would be set to deposit the fur. The same cone is shown in section in Fig. 9, its smaller end being closed by a concave plate *z*, and a handle *h* being fitted in the hollow of the plate for lifting the cone from the turn-table. In the same figure is shown a hollow cone A for forming the body bat B, the open mouth of the cone being held upward by a casing F secured to its base.

The hat body D and bat B are indicated in dotted and full lines respectively, within the cone, and the brim bat C upon the cone H is shown immediately over it, ready for insertion inside the brim of the hat body. By pressing the brim bat within the hat body, it soon adheres, and the cone H can then be removed, leaving the body D with both outer and inner brims properly covered with a napping bat.

From the above description it will be seen that the essential feature of my improvements, in forming the napping bats, consists in forming the body bat and brim bat of exactly the size required to fit the previously sized hat body. My improvements also consist in the mode of applying the napping bat to the outer surface of a hat body and the inner surface of the hat brim in a continuous operation, by applying the hat body to both bats upon the forming cone or cones where they were deposited. Some of the devices shown effect the formation of the bat in more suitable shape for application to both sides of the hat body. Thus, the bat formed in the double hollow cone shown in Fig. 5 can be applied to the body without any joints in the bat, or any rupture of its substance, as the hat body can be folded up before its insertion, to avoid contact with the brim bat, which can be turned down and fit perfectly inside

the brim of the body after the latter has been opened and pressed against the body bat.

I am fully aware that the forming of napping bats upon the outer and inner sides of cones, as described herein, has been previously practiced, and I do not therefore claim such processes, but limit my invention to the particular methods and means herein described. The sticking of such bats to the hat body has heretofore been effected by hand rolling and dipping in hot water; or by automatic rubbers working upon the inner or outer surface of the forming cone itself.

My invention accomplishes the sticking upon a flat surface, and where the hat body is in conical form it requires that the bat and hat body should be removed from the cone, and subjected to the mechanical action of flat rubbers or jiggers pressed upon one or both sides of the flattened or folded body. Such a jigger is shown in Figs. 14 and 15, and consists in a rubbing block J, of the same shape as the folded hat body D'; and an eccentric K and connection K' for vibrating the block to and fro over a table L. This table is shown as a hollow steam box, provided with inlet and outlet pipes; and thus imparts a dry heat to the hat body laid upon it. Such a device operates effectively, but the hat body requires a piece of paper or similar material placed inside it, as at g, to prevent the adherence of the adjacent new fibers.

By making the block J of the same shape as the hat body and applying it within the margin of the folded edges, as shown in the drawings, the formation of creases at each fold is prevented, and the need of frequent crozing prevented. The block would be made enough smaller than the folded hat body to permit its vibration without rubbing over the folds, and the folds would thus escape pressure, and the bat could be stuck to the body within such folds by removing the hat body, refolding it in a new position, and subjecting it again to the pressing and rubbing action of the block.

In all the methods for sticking upon a flat surface, the block or jigger must be applied to all parts of the hat body, so as to bring all parts of its surface under the frictional contact, in succession. A flat carrier M is shown in Figs. 10 to 13, shaped to fit inside the hat body, and presents opposite flat surfaces to a pair of opposed rubbers or jiggers N.

Fig. 10 shows a machine for vibrating the rubbers while the holder stands still; and Fig. 12 a machine for vibrating the holder itself in a peculiar manner between two stationary blocks N. In both views, O is the bed plate of the machine, and P its frame.

Q is a rotating crank for producing the vibrating motion; and S rods adapted to sustain the blocks N and remove them at pleasure from their contact with the body D.

In Fig. 10 the rods S are pivoted below the plate O to an oscillating lever T, the latter being operated by a connection l to the crank Q.

A spring m draws the blocks together and presses them against the body, and a toggle jointed link U and connecting rod n serve to separate the rods R and blocks N by their connection to a treadle V. By thus withdrawing the blocks from the hat body, the latter can be turned into a new position upon the carrier M, or replaced by another body if desired.

In Fig. 12 the blocks are sustained upon levers W which are jointed at o, and connected with a toggle and treadle as in Fig. 10, for separating the blocks at pleasure, a spring W' operating on the treadle to close the blocks on the body.

The holder is shown attached to a rod p which is connected directly to the pin of the crank Q and thus receives a circular motion at its lower end. The rod passes through a pivoted sleeve q between the crank and the holder, and slides therein as the crank rotates, thus imparting a similar circular movement to the holder itself.

In Fig. 11 the sleeve q is shown detached from the bearings r, r', which secure it to the bed plate O and the holder is shown apart from the machine with a hat body D stretched over it. The carrier is represented as formed with a recess s in its interior and is provided with an inlet t and pipe u for leading steam within the same.

In Figs. 10 and 12, the hat body is shown in section, and in the latter figure the holder is partly cut open to show the recess, and openings v leading steam therefrom to the interior of the hat body.

In Fig. 13, one of the rubbing blocks N is shown detached from the machine, with a part of its lever W. A pipe t is also shown upon this block, and by recessing and perforating the block, like the carrier, jets of steam can be applied to the outside of the hat body when required. As I find a partially dry heat preferable to hot water in the sticking operation, for reasons apart from the mere sticking of the bats, I prefer to employ superheated steam for the sticking process, and thereby avoid much of the condensation produced by the use of wet steam.

To secure the advantages of this improvement, the steam must be heated above 300° Fahrenheit, and pains taken to avoid chilling it in its passage from the superheater to the sticking machine. When thus heated, the steam may be projected against any part of the hat body during the sticking operation with the effect of greatly hastening the process. The heat supplied to the body by such steam tends to vaporize any water that may condense upon the fibers, and thus leaves the goods in the driest condition possible; consistent with the use of steam at all.

From the above description it will be seen that the greater part of the improvements may be effected with mechanism materially different from that described herein; which is shown chiefly to illustrate the processes de-

vised. Rotary rubbers may also be used for the purpose, as the improvement does not consist in any particular kind of rubber, but in sticking the bat between flat surfaces. It is
 5 obvious that the hat body might be laid upon a somewhat convex or concave surface, or even upon a corrugated surface; and rubbed with blocks of corresponding shape, as well as upon a perfectly flat surface. As all such
 10 devices would involve the removal of the body and its attached bat from the forming cone before sticking and the folding of the body into a flat form, and as such surfaces would operate substantially the same as a flat sur-
 15 face, upon the fibers, I consider my invention and claims to include such modifications.

I have not claimed broadly herein the sticking of a nap bat to a previously felted hat body by a combined pressing and rubbing
 20 action, as I have made such claim in my application, Serial No. 53,307, filed February 21, 1882. Such claim was allowed to me in my present application in interference proceed-
 25 ings with United States Patent No. 255,260, issued March 21, 1882, to W. E. Doubleday.

I am aware that previously felted hat bodies have been caused by pressure to adhere to a newly formed nap bat so that the bodies and bats might be "stuck" and "scalded" in the
 30 manner heretofore common, by hand-rubbing; but such adherence of a nap bat is altogether insufficient to prepare it for a scalding operation.

What I claim as my invention, and desire
 35 to secure by Letters Patent, is—

1. The combination, with a conical hat body, of a napping-bat of conical shape

adapted to fit the hat body and notched at its margin to form a conical frustum when folded over the edge of the hat body upon its oppo- 40
 site side, as set forth.

2. A forming cone having two sets of perforations to form a single bat, the first set being disposed upon the top of the cone to form a body bat in conical shape to fit the whole of 45
 one side of a conical hat body, and the other set being disposed below the first, and arranged to form a brim bat in the shape of a conical frustum, to fit upon the opposite side of the hat body around the edge thereof, sub- 50
 stantially as herein set forth.

3. The method herein described for sticking a napping bat to a previously felted hat body, which consists in first applying the nap- 55
 ping bat to the felted hat body, then supporting the hat body and the napping bat together in a flattened condition, and then subjecting the same to a combined pressing and rubbing action, as set forth.

4. The method herein described for stick- 60
 ing a napping bat to a previously felted hat body, which consists in first applying the napping bat to the felted hat body, then supporting the hat body and the napping bat to- 65
 gether in a flattened condition, and then subjecting both sides of the same to a combined pressing and rubbing action, as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM A. BAGLIN.

Witnesses:

THOS. S. CRANE,
 C. C. HERRICK.