(No Model.)

W. A. BAGLIN.

MAKING AND UNITING BATS TO HAT BODIES.

No. 251,759. Patented Jan. 3, 1882.

Fig. 3.

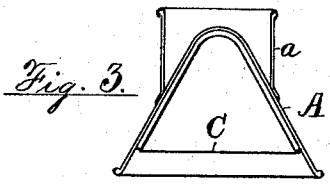
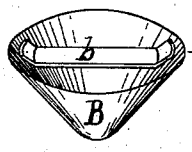


Fig. 2.



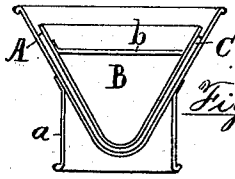


Fig. 1.

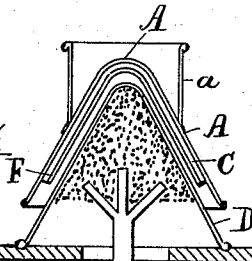


Fig. 4.

Fig. 5.

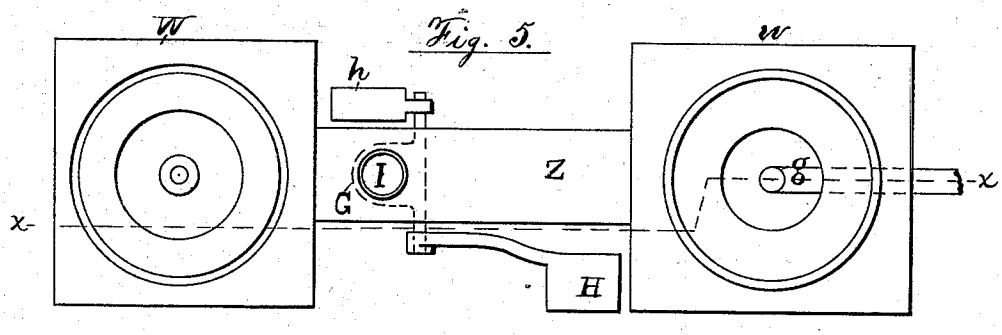


Fig. 8.

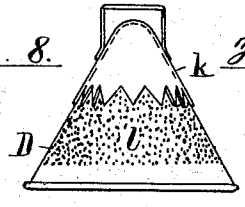
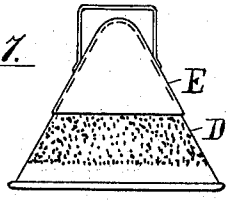


Fig. 7.



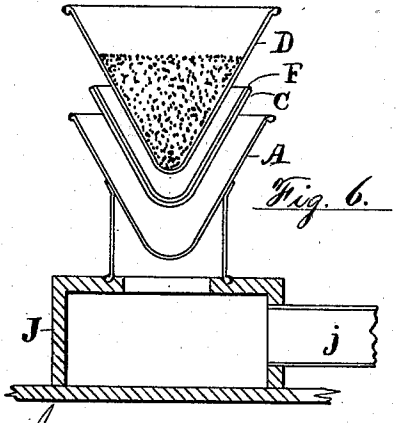


Fig. 6.

Fig. 10.

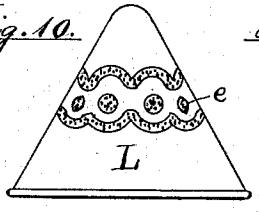
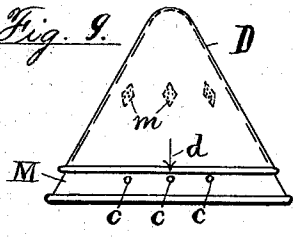


Fig. 9.



Attest:

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UNITED STATES PATENT OFFICE.

WILLIAM A. BAGLIN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-FOURTH TO GEORGE YULE, OF NEWARK, NEW JERSEY.

MAKING AND UNITING BATS TO HAT-BODIES.

SPECIFICATION forming part of Letters Patent No. 251,759, dated January 3, 1882.

Application filed September 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, W. 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 Making and Uniting Bats to Hat-Bodies, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

My invention relates to an improvement in processes and apparatus for making and uniting bats to hat-bodies, the process for which will be first described and then the apparatus for practicing the same.

My improved process for making bats for use either as the body or nap of a hat consists in forming the bat by several successive operations, the material of the bat being deposited upon different parts of the usual forming-cone at different times, in figures of any shape determined by the arrangement of the perforations in the cone.

My method of uniting a nap-bat to the body-felt of a hat consists, first, in forming the nap-bat upon a cone of suitable shape to match the body-felt; second, in applying the body-felt to the nap-bat while upon the forming-cone and pressing them both together; third, in removing the body-felt and nap-bat from the cone together, and, fourth, in sticking and scalding the same together in the usual manner.

In the drawings annexed, Figure 1 is a section of the carrier A, used for lifting the body, applying it to the nap-bat, and removing the bat from the cone on which it was formed. Fig. 2 is a perspective view of the presser B, used for pressing the body into shape in the carrier A. Fig. 3 is a sectional view of the carrier A and body C in location over the bat formed upon a cone, D. Fig. 4 is a vertical section of the forming and loosening apparatus on line *x x* in Fig. 5. Fig. 5 is a plan of the same, with the cone and its attachments removed. Fig. 6 is a sectional elevation of a suction-loosener; Fig. 7, a view of a cone provided with a tip-guard, E; Fig. 8, a view of a cone provided with a design-guard applied to its tip; Fig. 9, a view of a cone placed over an auxiliary design-cone, and Fig. 10 a view of a design-cone alone.

The process of forming a bat of different materials disposed in different parts of its texture is the same whether applied to a hat-body felt or nap-bat, and is described herein as applied to the formation of nap-bats, with the understanding that hat-body felts can be produced by the same forming apparatus and process.

Figs. 1 to 6 illustrate the forming of a plain nap-bat and its union with a body-felt, and will be first described, the body-felt referred to being one already prepared in any suitable manner to receive a nap, and to be scalded therewith and finished in any suitable or desirable manner.

The process of forming bats by blowing fur upon an exhausted perforated surface being well known in the art, only such part of a forming-machine is shown herein as is needed to illustrate my improvements. In Fig. 4 there is therefore only shown the revolving table of the machine and its accompanying fan for producing the exhaust, the devices for feeding, the picker-roll, and other essential attachments being omitted, and the blast outlet being shown combined with a wind-chest for blowing the bat from the cone when desired.

W is the suction-box; X, the fan; Y, the revolving table, and Z the blast-pipe leading the air away from the blower to a wind-chest, *w*. The latter is provided with an opening in the top, around which is formed a rib or bead or groove to center the cone D when placed thereon. In some cases the top of the chest may be plain and provided with a nozzle to lead the air or steam upward inside the cone.

The cone D is represented upon the forming-table Y in Fig. 4, with a nap-bat, F, formed upon it in the usual manner, the cone being shaped to fit the hat-body to which the nap is to be stuck and perforated just sufficiently to form a bat the size of the body. To unite the bat with the body the latter is wet in hot water and inverted in a perforated cone, A. A similar cone, B, provided with a handle, *b*, across its open end, is then pressed into the body to force it into close contact with the

cone A, the latter being preferably made with a ring-flange, *a*, to sustain it in an inverted position upon a work-bench, and a ring or eye, *a'*, to lift it. The presser B serves to shape the body so that it will fit the nap-bat neatly, and also secures sufficient adhesion between the body and the cone A to make the latter sustain it and carry it to the nap-bat in a reversed position, as seen in Fig. 3. The presser is shown in operation in Fig. 1, the body D lying between the cones A and B. The bat being formed and the hot moist body being pressed into shape in the carrier A, the latter is placed, with the body upon the forming-cone D, over the nap-bat, to which it immediately adheres by its outer surface to the inner surface of the body. A gentle pressure upon the carrier serves to stick the two together quite strongly, and if the forming-cone is entirely dry the body may then be removed with the nap adhering to it. As the cone D is often wet the nap is liable to be defaced by portions remaining upon the surface of the damp metal, and I therefore, in practice, remove the forming-cone from the table Y, with the nap, the body, and the carrier upon it, and immerse them all in scalding water to consolidate the tender nap-bat and to make it adhere closely to the body. As the nap then sticks still more to the cone D, I employ some means to produce a pressure upon the nap through the perforations inside the cone, and thus dislodge it from the latter. For such purpose I have used a sprinkler supplied with hot water, a blast of air, or a jet of steam, and have also exhausted the air from the outside of the carrier to produce an atmospheric pressure inside the nap-bat upon the cone D.

The blast apparatus is shown in Fig. 4, where G is a valve placed in the blast-pipe Z, and H is a treadle connected with the valve and operating to open it for throwing a puff of air into the wind-chest and cone D thereon. An open relief-pipe, I, is placed between the fan and valve G, and the latter is arranged to close the said pipe when it opens the passage in Z leading to the chest *w*, when, placing his foot upon the treadle, the operator seizes the carrier by its flange *a* or ring *a'* and lifts the same, with the body and its attached nap, as the air-pressure forces the latter from the cone D. The carrier is then inverted upon a work-bench and the hat-body removed from it and turned inside out to expose the nap to the sprinkling and rolling required to stick it fully to the body preparatory to scalding. The exact fit secured between the body and nap by my method of shaping each before uniting them makes their union very complete and free from air-blisters, and the pressure applied to them both when upon the cone D and the dipping in hot water before removal from the latter sticks them together so nearly that very little rolling and sprinkling suffices to fit them for the scalding process—less than a minute for each nap.

In Fig. 6 a box, J, exhausted of air by means of a pipe, *j*, is shown provided with a hole, *i*, in its top, over which is set the flange of a carrier, A, for inducing an air-pressure inside the contained cone D and nap F. In this view, as well as in Fig. 4, the nap is shown detached from the cone D by the air-pressure.

The treadle H is shown provided with a balance-weight, *h*, to keep the valve against the opening in pipe Z, the air from the fan thus finding a free opening through pipe I except when the treadle is depressed.

In the wind-chest *w* is also shown a steam-pipe turned upward, which may be provided with a valve and treadle and used in lieu of the air from pipe Z in the absence of means for supplying a blast thereto conveniently.

With the above apparatus it will be seen that a plain homogeneous nap-bat can be made and secured to the hat-body in much less time than by any previous method, and that the saving in the valuable fur employed for making naps is very considerable, for the reason that the naps require no cutting, tearing, piecing, or trimming to fit them to the bodies, but may be made of the exact size to suit any required bodies, as variations in the depth of the nap on the cone D are easily produced by pasting paper over the lower rows of holes or otherwise closing them.

By the use of the carrier described above it is obvious that a part of a bat could be united with a hat-body as readily as the entire nap shown upon the cone D in Fig. 4. I have therefore devised a means of forming and uniting a nap to the brim of a hat in cases where none is required upon the same side of the body, as is often the case with the lower side of a hat-brim. The means consists in a hollow conical guard or shell, made of imperforate material and placed upon the upper part of the bat-forming cone D, as at E in Fig. 7, the fur being then attracted only to the perforated band below the base of the guard. A nap perfectly adapted to fit the brim of a hat-body is thus formed in precisely the right location upon the surface of the cone D, and may be united to a hat-body at the precise point desired in the manner described above. By similar means a band of fur or figure of any desired shape may be formed upon any part of the cone D and transferred to a corresponding point upon the hat-body to produce a nap at such spot. By such means a nap of various colors or qualities may be transferred to different points upon the body in a series of operations; but I have devised a shorter method of producing variegated naps by the means shown in Figs. 8 to 10. This process is based upon the plan of covering portions of the forming-cone while the nap is deposited of suitable thickness upon the exposed perforations, which may be of such shape as to produce some ornamental design or effect. After such exposed parts have been covered with the required nap, a part or the whole of the remaining perforated surface is then uncovered, and as the exhaust will then operate only upon

such parts they alone will in turn receive a deposit of fur to form a nap adjacent at its margin to the other parts, and by which the whole will become integral when the operation is complete. By such means a nap may be formed of several colored bands, joined either by straight or curved boundaries, or of some design breaking through a uniform ground, the contrast being produced by different colors or qualities of stock.

Fig. 8 shows the means for producing a brim of different color from the crown, and consists in a guard, *k*, applied to the tip of the cone D, while the nap is deposited upon the brim portion at *l*. By removing the guard after the brim-nap is complete the nap for the crown will be deposited upon the upper part of the cone and the fibers of the fur thoroughly interlocked at the line of junction, so that the whole is a unit.

The guard in Fig. 8 is shown with a serrated margin; but it is evident that the edge may be made of any other pattern required, as a Grecian border.

Instead of applying a guard to the outside of the cone D, one may be shaped to fit the inside of the same, and perforated only at the points where the designed deposit is required. Such a guard is shown at L in Fig. 10, the design consisting of two scalloped bands with a row of dots between them at *e*. When the cone D is used in connection with such inside guard, as L, the latter is set upon the exhaust-table Y and the cone dropped upon it, when, of course, the nap will be first deposited in the form of such figures. By then removing the guard the remainder of the nap will be deposited between and around the first-formed figures, which may thus be made to appear, when transferred to the hat-body, as red figures upon a blue, black, white, or other ground.

By applying two or more guards in succession to either the inner or outer side of the forming-cone a design may be produced of three or more contrasting colors, and a multicolored design may also be produced by a single guard, if the latter be moved into different positions in relation to the cone D. Such an arrangement is shown in Fig. 9, where a row of diamond-shaped spots, *m*, is indicated in dotted outlines as formed in an inside guard, M, the same being represented with the cone D set upon it.

An index-mark, *d*, is provided upon the base of the cone D, and several marks or pins, *c*, are shown adjacent thereto on the base of the guard-cone M. It is obvious that if the pins *c* are placed at proper distances apart they will serve to set the cone D in a series of positions upon the guard M, in which a series of spots may be formed upon the outer cone of various different colors, adapted to contrast with one another and with the remainder of the nap, which could be deposited between and around the row of spots by removing the guard when all the spots were completed. Should the fur fibers last deposited overlap the others a little, the result is not serious, as the part of the nap which shows upon the hat is that in contact with the former, where, of course, the pattern is accurately defined by the guards employed.

From the above description it will be seen that I contemplate a variety of modes in which to employ a guard for protecting certain parts of the forming-cone, and that in cases where a nap is to be formed for only a portion of a body—as the brim—a cone may be constructed with perforations provided only at such part, the remainder being imperforate. Thus the guard E (shown in Fig. 7) may be made as a part of the forming-cone D, and in such case would require no handle, as shown at *e*, for removing it when desired; but in cases where an entire nap was desired of several colors or qualities it is obvious that the forming-cone and guard must be distinct from one another, and that the guard first used to protect a portion of the surface from the air-current which induces the deposition of fur must be so constructed and operated as to uncover in turn all the parts of the forming-cone which are perforated to produce a nap of the required size. It is therefore plain that guards may be made and applied in other modes than those described herein—as of flexible india-rubber, adapted to fit the tip of the cone like the guard E or *k*, or adapted to embrace and adhere to some other part of the forming-cone; and I do not therefore limit myself to the precise mode of constructing and applying the guard or guards employed to carry out my invention, but may modify the same as convenience or experience may suggest. Neither do I limit myself to any particular means for removing the nap-bats from the forming-cone, although there is a special advantage in the use of a steam jet or blast, by reason of the heat and moisture thereby imparted to the bat, whereas the use of air blast or suction tends to cool the hat-body, if previously steamed, and to impair the adhesion of the nap and body to some extent.

I have found in practice that a steam-jet issuing from several nozzles, as shown in Fig. 4 at *g*, is more effectual than any other means for joining the nap to the body before removal from the forming-cone, and for separating the bat from the cone by its pressure or impulse upon the inner side of the bat when supplied in sufficient volume.

The apparatus for forming or depositing the fibers upon the exhausted cone D is also unessential in its constructive features, as any means for supplying the fur regularly to the cone will suffice for performing my process.

I am fully aware that bats have been made upon cones heretofore for the purpose of applying to hat-bodies and making a nap thereon, as in Patent No. 222,891, granted to Ira Gill, December 23, 1879, and I do not therefore claim forming a nap-bat upon a cone as new in itself; but in such patented process, as in others in which naps are deposited upon a

foraminous surface, the nap has not been shaped to fit the hat-body by the forming operation, but has been subsequently torn, cut, or clipped into pieces of the required shape and stuck on the hat-body, usually in six sections, by hand labor. For such a process I am aware that bats have been made upon cones, cylinders, and disks of perforated metal; but as the principal object of my invention is to supersede such clipping and fitting of a bat in fragments to a hat-body, I consider as new the forming of a nap-bat in a suitable shape to fit the body to which it is to be stuck, and the securing of the bat to the body in one piece by any suitable means.

The means I have described above are the best with which I am at present acquainted; but as a nap-bat formed in one piece of suitable shape to fit a body-felt is a new article of manufacture, I do not restrict myself to the precise mode of making and transferring it herein set forth.

To practice my invention to the best advantage it is preferable to block the hat-bodies, and also to shrink them to a uniform size, that the precision attainable in the manufacture of the bats may be instrumental in securing a perfect fit between the margin of the body and bat and the utmost economy in the fur employed in forming the bats. Should such nice economy be disregarded, the body-felts may be shaped exclusively by the presser shown in Fig. 2, and the bats formed of sufficient size to compensate for slight inequalities in the dimensions of the bodies.

I am aware that the brim-felt for a certain kind of hat has been made upon a cone heretofore, and afterward shrunk and sized and finished up for use with a crown of light woven fabric. For this reason I do not claim the process of forming such a brim by the apparatus I have invented; but as prior to my invention no means was known for transferring a nap-bat of annular conical form (like the nap for a hat-brim) from the forming-cone to the hat-body, and as no such annular nap-bats have ever before been known or used, I regard the annular conical nap-bat formed in one piece as a new article of manufacture, and have claimed the same herein as my invention.

I claim—

1. The process herein described for making bats, consisting in forming the bat upon a cone at several successive operations, the material of the bat being deposited upon different parts of the cone at different times, in figures of predetermined shape, substantially as and for the purpose set forth.

2. The process herein described for removing a bat from the forming-cone, consisting in the application of steam or air pressure to the interior of the forming-cone, substantially as herein set forth.

3. The method herein described for securing or uniting a nap-bat to a body-felt, consisting, first, in forming the nap-bat upon an exhausted cone of suitable shape to fit the body-felt; second, in applying the body-felt to the nap-bat while upon the forming-cone and pressing them both together; third, in removing the body-felt and nap-bat from the cone together, and, fourth, in sticking and scalding the same together in the usual manner.

4. The process herein described for preparing hat-body felts for union with nap-bats formed in one piece, consisting in shrinking the felts to an approximately-uniform size and blocking them to secure an approximately-uniform shape, substantially as and for the purpose set forth.

5. As a new article of manufacture, a nap-bat formed in one piece of suitable shape to fit the body-felt to which it is to be applied, and adapted to be stuck thereto and scalded without any clipping or fitting, substantially as herein set forth.

6. As a new article of manufacture, the annular conical nap-bat herein described, formed in one piece and adapted to be stuck to the brim of a hat without clipping or tearing, substantially as herein set forth.

7. As a new article of manufacture, a nap-bat consisting of material of different colors deposited in different parts of the bat in distinct locations, patterns, or figures, substantially as herein set forth.

8. As a new article of manufacture, a nap-bat consisting of material of different colors disposed to form distinct figures appearing through a ground of uniform color, said ground being formed by the body of the bat, substantially as herein set forth.

9. The carrier for hat-bodies, consisting of a hollow cone, A, provided with means for carrying it, as flange *a*, a finger-ring at the apex, or equivalent device, as and for the purpose set forth.

10. In combination with the conical carrier A, the presser B, constructed and operated to press the hat-body to the shape of the carrier, as and for the purpose set forth.

11. In combination with the fan X, the blast-pipe Z, valve in the blast-pipe arranged and operated to admit air to the forming-cone D, and wind-chest *w*, or other suitable support for the forming-cone, substantially as herein set forth.

12. In combination with the steam-pipe *g*, a valve arranged and operated to admit steam to the forming-cone D, and a table or suitable support for such cone, substantially as herein set forth.

13. In combination with the forming-cone D, the guard-cone E, for covering the tip of cone D when forming an annular conical nap-bat, substantially as herein set forth.

14. In combination with the forming-cone D, the guard-cone *k*, shaped with a serrated, scalloped, or indented border, substantially as and for the purpose set forth.

15. The guard-cone L, perforated only at certain points in figures of ornamental shape, and

operated in combination with the forming-cone D by placing the guard cone inside the latter, substantially as herein set forth.

16. In combination with the guard-cone M, formed with holes arranged in ornamental patterns, as *m*, and provided with a gage mark or pin, as *c*, the forming-cone D, provided with gage or mark, as *d*, substantially as herein set forth.

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

W. A. BAGLIN.

Witnesses:
THOS. S. CRANE,
I. H. CRISSEY.