

L. H. CLEGG.

MEANS USED IN THE MANUFACTURE OR TREATMENT OF FELT AND OTHER FABRIC OR MATERIAL.
APPLICATION FILED SEPT. 1, 1910.

999,750.

Patented Aug. 8, 1911.

FIG. 1.

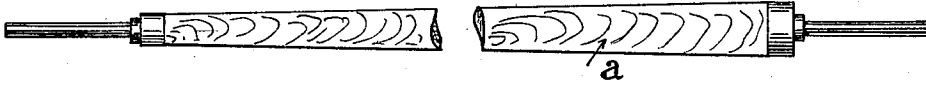


FIG. 2.

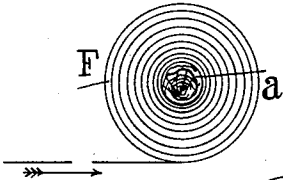


FIG. 3.

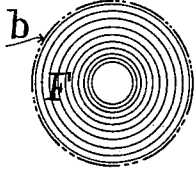


FIG. 4.

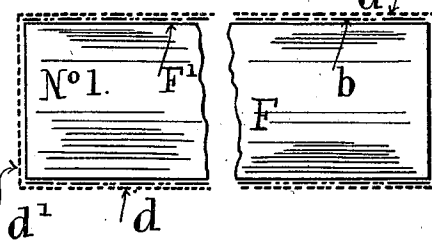


FIG. 3a.

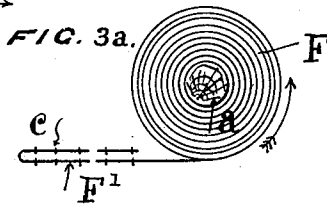


FIG. 5.

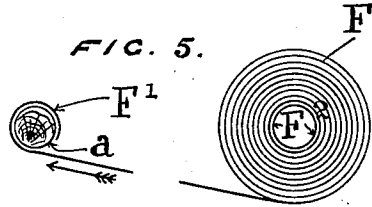


FIG. 6.

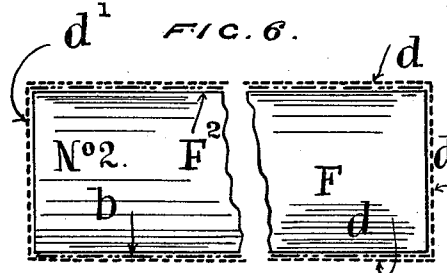


FIG. 7.

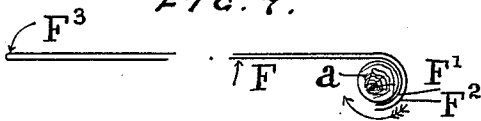


FIG. 9.

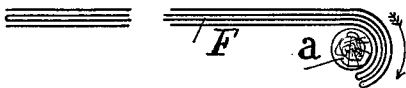


FIG. 8.

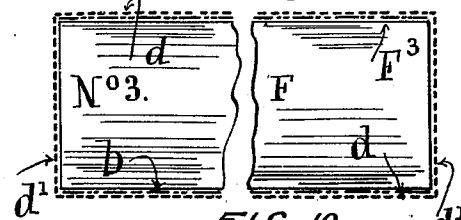
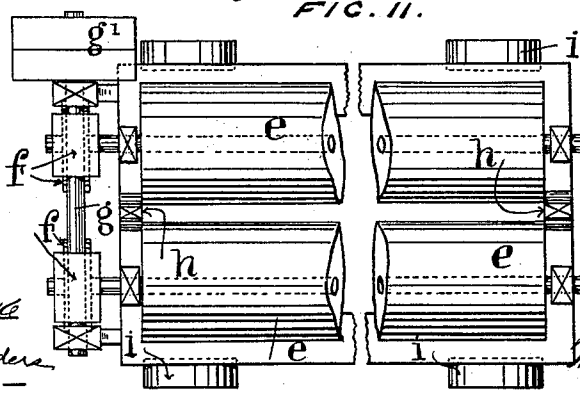


FIG. 11.



WITNESSES.

W. P. Burt
John Sanders

INVENTOR:

Lawrence Henry Clegg
By his attorney,
Wm. Hallam White

UNITED STATES PATENT OFFICE.

LAWRENCE HENRY CLEGG, OF BURY, ENGLAND.

MEANS USED IN THE MANUFACTURE OR TREATMENT OF FELT AND OTHER FABRIC OR MATERIAL.

999,750.

Specification of Letters Patent.

Patented Aug. 8, 1911.

Application filed September 1, 1910. Serial No. 580,103.

To all whom it may concern:

Be it known that I, LAWRENCE HENRY CLEGG, a subject of the King of Great Britain and Ireland, residing at Brookshaw View, Bury, in the county of Lancaster, England, manager, have invented new and useful Improvements in Means Used in the Manufacture or Treatment of Felt and other Fabric or Material, of which the following is a specification.

This invention relates to a new process or treatment of the woolen stuff or piece in the manufacture of felt whereby I can produce a uniform and even felt.

In the production of felt in the present process, and starting with the "hardening" treatment, the woolen stuff is taken from one or more "bats" and steamed or moistened and thereafter acted upon by a traversing or reciprocating hardening plate or plates, or by rollers or other means, the sheet so treated thereafter being formed into a "bat" or lap on a roller. In the present practice this bat or lap is "listed" or trimmed off with shears, and unwound, and in some cases treated with solution, but in any case the length or piece is subjected to milling or fulling treatment from milling or fulling or felting hammers or feet. These hammers or feet act on the width and length and effect the reduction and thickening of the felt. The usual way is to plait or fold the length of felt in huddled fashion, the selvages or edges being guided together and the length folded or plaited down into the milling apparatus and under the hammers or feet. It follows that the felt is not evenly acted on by the hammers, feet, or other beating appliances used for the felting, and that some parts are subjected to very severe treatment while other portions are not sufficiently acted on. Hence the piece is uneven.

My process is hereafter fully described and made clear with the aid of the attached sheet of drawings, in which:—

Figure 1 shows a withdrawal mandrel. Fig. 2 shows the felt wrapped on the mandrel. Fig. 3 shows a wrapping around the roll end. Fig. 3^a the end turned in. Fig. 4

shows the enveloped package broken in length. Fig. 5 indicates the re-rolling on the mandrel, and Fig. 6 the package. Fig. 7 a further winding on in doubled form. Fig. 8 indicates the wrapped package. Figs. 9 and 10 indicate re-winding stages in doubled form. Fig. 11 is a plan view of a winding on appliance which facilitates handling.

According to my invention I wind the "bat" or "lap" treated in, and coming from the hardening machine, upon a roller, support or contrivance which can be readily removed, caused to collapse, or be taken to pieces, or freed. Most convenient to use I find is a tapered roller such as *a* shown longitudinally in Fig. 1, but a roller with removable flange, a bayonet jointed roller, or socketed parts, are obvious alternatives, and I do not wish to restrict myself. As stated I first wind the bat or lap or piece *F* on the tapered roller *a*, see Fig. 2. This done, instead of unwinding the bat or lap *F* I simply withdraw or remove the roller *a*, or its equivalent, from the roll. I next apply a sheet or sleeve of Hessian, canvas, or other fabric or the like, about the width of the piece and which is wrapped around the roll *F* one or more times such sheet or sleeve being marked *b* in the drawings. This sheet or sleeve need not be fastened. In lieu of using such sheet or sleeve *b* I may, as shown by Fig. 3^a, tack the free end *F'* of the bat or lap by twine or thread *c* and then turn this stretch *F'* in to a sufficient extent, that is, I double the end of the roll of felt upon itself to a sufficient extent and then roll-up such doubled portion *F'* upon the roll *F*. The inclosing in by the sheet or sleeve *b*, or the tacking and turning in, is done to protect the roll and to prevent undue spreading in width of the felt about the end stretch. The wrapping in a sheet or sleeve *b* is the preferred plan. After this, the roll, say with the sheet *b* wound around (and minus the roller *a*), is wrapped up or enveloped entirely in a canvas or other wrapping *d*, and is preferably entirely so inclosed, the wrapping *d* covering the ends as shown at *d*, *d'*, whereupon the enveloped

roll or package Fig. 4 is introduced into the milling or fulling apparatus, or the like, and submitted to the action of the hammers, feet, or beating appliances, for a suitable time. It may not in all cases prove necessary to remove the roller as a roller might be devised of a type where part thereof might go with the roll of felt into the milling or fulling apparatus. When the felting or beating operation on the enveloped roll has continued for a sufficient length of time, the package No. 1 Fig. 4 is taken out and unwrapped and the felt is re-wound on the tapered roller *a* (or other device) the outside end *F'* being this time wound on next to the tapered roller *a* (see Fig. 5) and so what were outer wrappings or layers become inner ones. The sheet or sleeve *b* is again applied and the roll of felt re-wrapped in the Hessian or canvas wrapping *d*, and the wrapping sewn up, the package No. 2 as Fig. 6, being again introduced into the milling or fulling apparatus for further milling or beating treatment over an appropriate period of time. A small traveling vehicle on wheels *i* and with friction rollers *e*, *e* driven through worm gearing *f*, *f* from a cross shaft *g* with pulleys *g'*, and having brackets *h*, *h* to support the tapered roller *a*, may be used to wind the felt upon said tapered roller *a*, but this is obviously a detail and the rolling may be done on the floor, or by any convenient apparatus.

After the package has been sufficiently beaten it is withdrawn from below the hammers or feet, and again undone, and the length of felt *F* is doubled on itself and re-wound into a roll (see Fig. 7), and for preference on the tapered roller *a* or other device. In this case, the meeting or doubled ends *F'*, *F''*, are wrapped on the roller *a* first, as Fig. 7 shows, and so that the doubled portion or junction *F'''* comes last. When rolled up, the sheet or sleeve *b* is again applied, if necessary, and the roll is again made up in its wrapping *d*, which is stitched up, and the package No. 3 so obtained (see Fig. 8) again put into the milling or fulling apparatus and subjected to further beating or fulling treatment. On withdrawal of the package No. 3, the wrapping *d* and sleeve *b* are removed, and the felt subjected to washing, extracting or acid treatment, dyeing, drying, finishing, or any other requisite process, or processes, in suitable order, all as is known and with which I am not now concerned.

I obviate any unwinding process prior to the initial milling or beating, and keep the piece a better shape, prevent soft places, and the formation of waste lengths. Also the felt, in the form of a roll, can be better and

more quickly handled, while guiding and plating down is done away with.

By reason of the treatment in enveloped roll formation, a felt is produced with a smooth and even surface not obtainable by any other system, and, following the milling or beating treatment, the felt can be handled and dealt with freely without risk of collapse.

By dividing the fulling treatment and re-winding the length of felt and (or) doubling and re-winding I get greater uniformity. It must be understood that one re-winding or a doubling and re-winding may produce sufficiently good results. Also, as a modification, I may first double the felt prior to the first rolling up on the tapered roll, or the like, and, in treating certain thin felts or cloths it may be necessary to fold or divide the felt *F* from the hardener, say into four, or more or less equal stretches to get sufficient substance or thickness, and then to wrap the folded felt onto the tapered roller *a*, and this is shown by Fig. 9. When the doubled felt is rolled up it would be enveloped and sewn up in a wrapping *d*, with or without the sheet or sleeve *b*, and introduced into the milling or beating apparatus for treatment. On withdrawal the package would be undone and the felt unwound re-folded and again wound on the tapered roller *a*, see Fig. 10, made up in the sheet *b* and wrapping *d*, sewn up, and again introduced into the milling or fulling apparatus.

It is obvious that certain inversions in the steps or stages can be made without affecting the process of treatment of felt herein described.

I may deal with woven felts or other materials of similar kind by rolling same up, turning in, &c., or doubling, &c., and enveloping and wrapping for subsequent treatment, all as is obvious.

I declare that what I claim is:

1. In the treatment of felt or the like material in the piece, winding the "bat" or "lap" after leaving the hardening machine on a withdrawal device to insure proper winding, then withdrawing said device thereafter enveloping the roll of felt in a wrapping which shall contain the roll, then subjecting the enveloped roll to treatment in the milling or fulling appliance, then unwrapping and re-winding and re-wrapping and again treating in the milling or fulling appliance for the purposes and as set forth.

2. In the treatment of felt, or like material, winding the "bat" upon leaving the hardening machine on a withdrawable tapered mandrel for batching, then withdrawing said mandrel, then enveloping the rolled felt in a wrapping and making-up, and subsequently submitting the made up package

to the action of a fulling apparatus, then
undoing the roll, re-winding on the man-
drel in the reverse way, enveloping in the
wrapping and subjecting to further beating
5 treatment, and further winding, packing,
and beating treatment in sequence and in
enveloped roll form, as set forth.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

LAWRENCE HENRY CLEGG.

Witnesses:

RICHARD WEBSTER IBBERSON,
ALFRED STUART YATES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
