

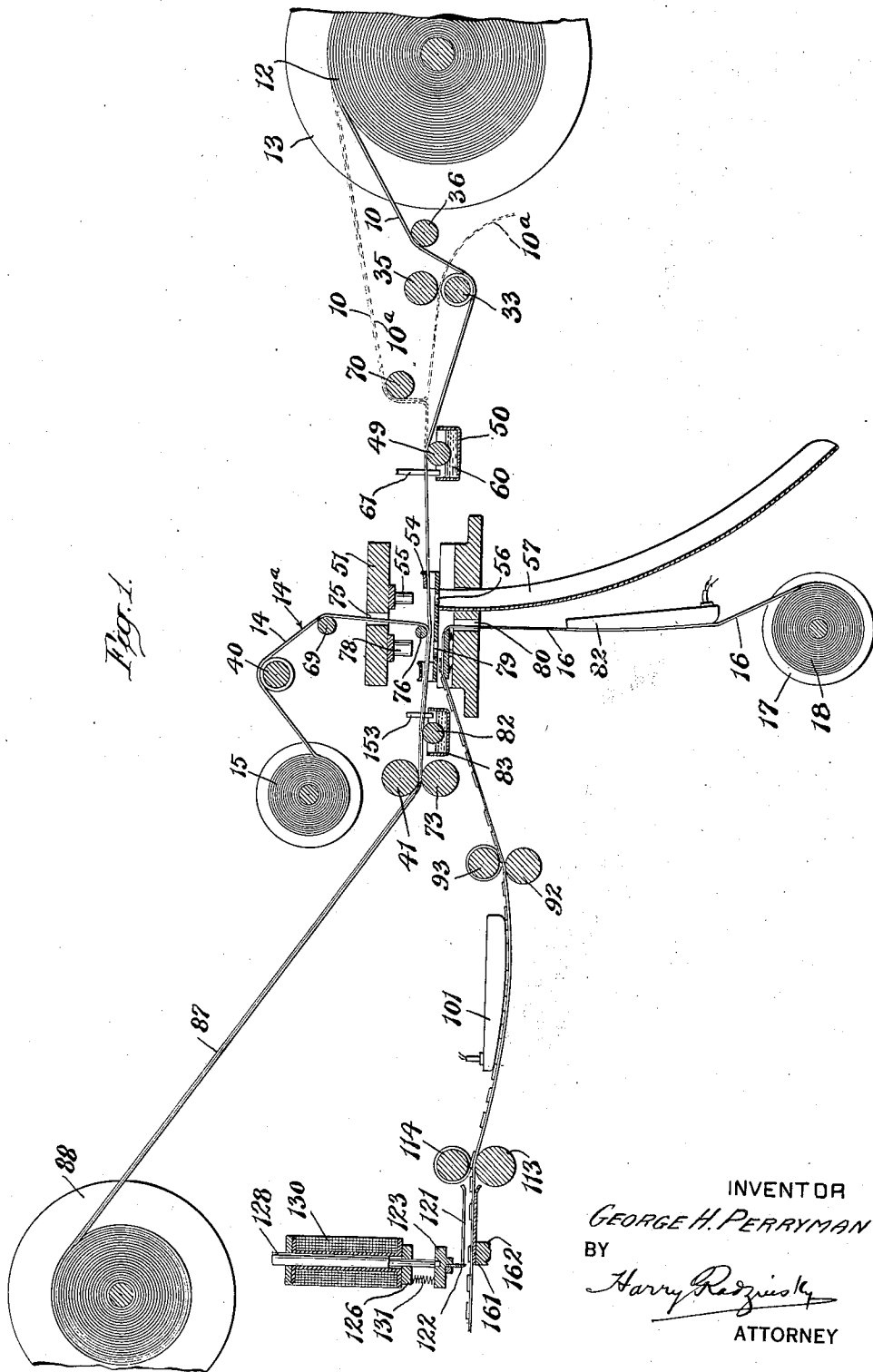
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METHOD FOR MAKING CORN PLASTERS

Original Filed Dec. 30, 1932 2 Sheets-Sheet 1



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Fig. 2.

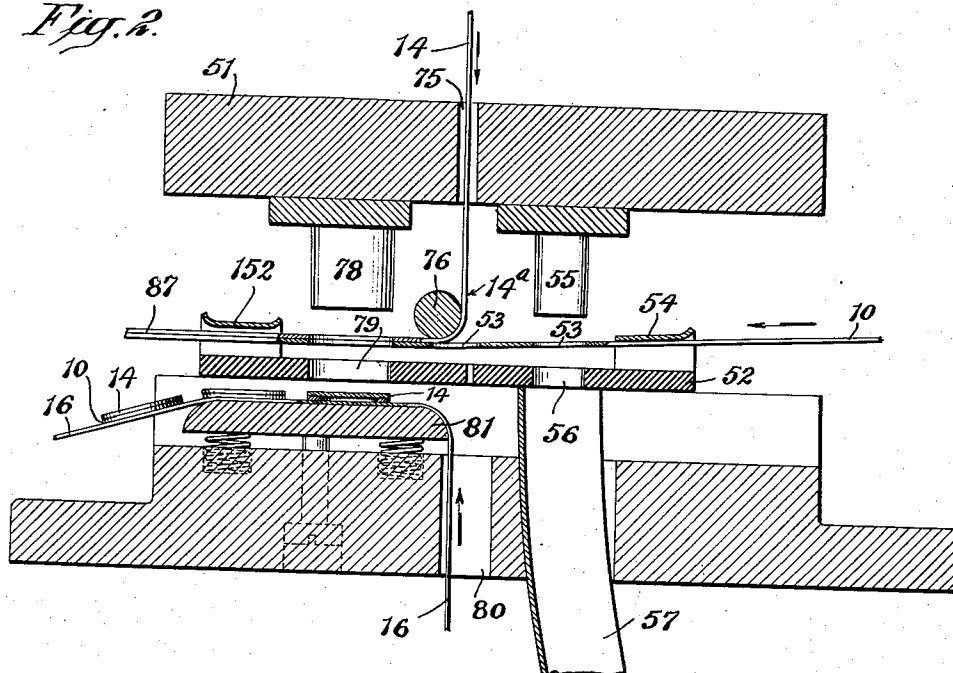


Fig. 3.

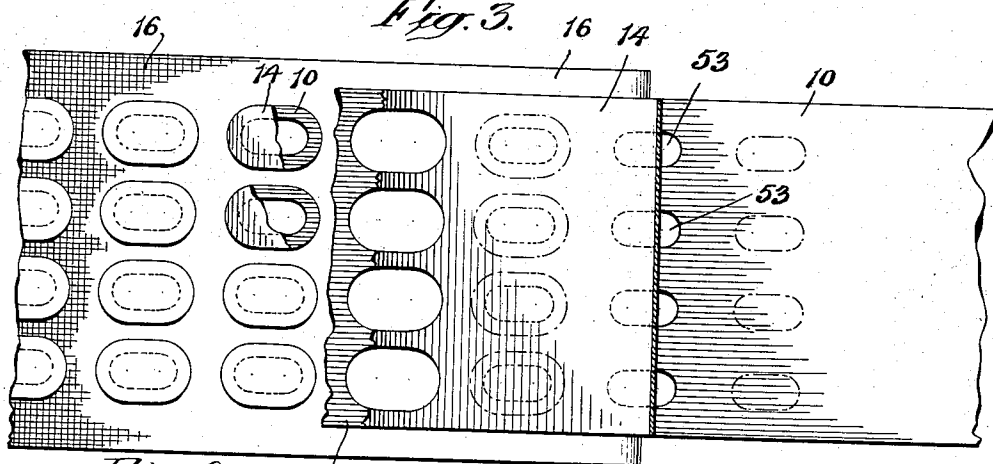


Fig. 4.

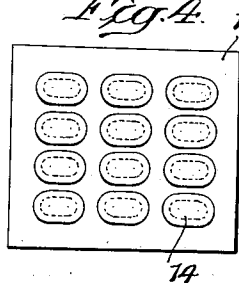
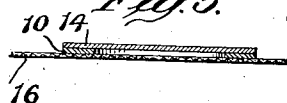


Fig. 5.



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METHOD FOR MAKING CORN PLASTERS

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649,577. Divided and this application May 19,
1933, Serial No. 672,449

12 Claims. (Cl. 154—2)

This application is a division of my co-pending application, Serial No. 649,577, filed December 30th, 1932.

This invention relates to an improvement in a method for making corn plasters or similar articles. One of the objects of the invention is to provide a method which will enable the rapid and expeditious production of corn plasters from several strips or webs by punching the same therefrom, and apply the corn plasters so produced on the surface of a strip or web of an open-mesh, foraminous material such as crinoline, thereafter cutting the crinoline strip into sections each of which contains as many corn plasters as may be required.

One of the obstacles encountered in corn plaster making machines and methods in the past, has been the inability to satisfactorily work on the sticky or adhesive materials from which corn plasters are made, so that it has been practically impossible to stamp or punch the plasters from a sheet or web and force out the waste material and the plasters from the web by punching operations. Various methods have been devised for cutting out the plasters while in the strip and then either manually picking out the center waste portions of the plasters, or else using some separate mechanical means for removing these waste elements. In such cases the production of the plasters has been greatly slowed up, and in cases where the waste portions of the plasters were manually picked out, the completion of the plasters wholly by machine operation was prevented.

My invention overcomes these and other deficiencies and defects found in present day corn plaster making methods and processes, because with my method the operation of making the plasters is wholly continuous from start to finish.

I have discovered that it is possible to punch the plasters completely out of the strip and remove the waste material simultaneously with the punching operation, by temporarily rendering the normal sticky and adhesive material of the web or strip, temporarily non-adhesive just prior to and during the punching operations. The result of this step is that when the materials are fed to the punch which punches out plasters and simultaneously removes the waste material, the strips from which the plasters are formed are rendered temporarily non-adhesive so that the punching operation satisfactorily operates to produce the plaster and remove the waste material simultaneously.

A further object of my invention is to provide

a process for making these plasters in which the adherence of the finished plasters to their backing strip is materially improved by the removal of the moisture from the backing strip just prior to the adhesion of the plasters to the strip, and also by increasing the adhesion between the plasters and the strip by the application of heat after the plasters have been applied to said strip.

More specifically, the invention contemplates the feeding of an adhesive-faced web toward a punching die. As it approaches the die, its adhesive face is rendered temporarily non-adhesive by the application of a suitable liquid. When the web reaches the die it is perforated thereby, the waste centers of the perforations being simultaneously removed by the die and forced out of the body of the web. Next, a textile fabric backing strip is adhesively attached to the perforated web so that a composite web is thus formed, out of which the annular plasters are punched and simultaneously forced out of the composite strip and into intimate contact with the face of a foraminous crinoline web which travels to a cutting device operating to sever the crinoline strip into required lengths.

In the accompanying drawings Fig. 1 is a diagrammatic view of the mechanism employed in carrying out the improved method of making corn plasters; Fig. 2 is a sectional view through the stamping dies; Fig. 3 is a plan view, with parts broken away and parts in section of the several layers or strips of material used in the manufacture of the plasters; Fig. 4 is a plan view of one of the finished sections of foraminous material containing twelve plasters, and Fig. 5 is a sectional view through one of the plasters and the foraminous crinoline backing therefor.

The corn plasters made by the method herein described, are shown in detail in Figs. 4 and 5. In the form shown, each plaster is in the shape of an annulus and is usually composed of two or more layers of material. The layer shown at 10 is that which constitutes the base or body of the plaster. This layer is stamped from a continuous web or strip drawn from the roll 12 that is wound on the reel 13. The layer 14 constitutes a textile fabric backing, which has an adhesive face that affixes it to the annular member 10. This backing 14 is fed through the machine from the roll 15 and is adhesively united with the strip 10 after said strip has been perforated as will be hereafter described. The adhesive face of the annular member 10 attaches it to a strip of open-mesh starched textile fabric 16 such as crinoline, which is fed from the roll

17, wound on the reel 18, and which acts as a carrier and protective sheet for the plasters affixed to it, the plasters being sold to the user while affixed to the crinoline and subsequently

stripped or peeled from the strip 16 when they are required by the user.

The plasters are thus formed from material passed through the machine in the form of three strips or webs 10, 14 and 16, and operated upon to produce the plasters, the final form of which is disclosed in Figs. 4 and 5.

The web 10 drawn from the reel 13 passes under the roll 33, as shown in Fig. 1, the web first passing over a tension roll 36 suitably mounted between the reel 13 and the feed roll 33. The roll 33 is provided with a roughened face which prevents slippage between it and the surface of the web 10. The roll 33 operates to drive other feed rolls 40 and 41 by means of a suitable chain drive not shown. Through such a driving arrangement, the several feed rolls 33, 40 and 41 are intermittently rotated at the same speed and in the same direction.

Sometimes the web 10 is provided with a protective fabric covering 10a (Fig. 1) extending over its adhesive face and before the web is ready for use, it is necessary to strip the protective web 10a from the adhesive face of the web 10. The manner in which this is done is shown in dotted lines in Fig. 1. There the web and attached covering 10a are shown in dotted lines extending from the reel 13 and passing over a roll 70. The protective web 10a is drawn rearwardly or toward the reel 13 and passes between the feed roll 33 and a co-operating upper feed roll 35 which draws it backward or toward the roll 12. While the protective web 10a is drawn in one direction, or to the right of Fig. 1, the web 10 is drawn in an opposite direction by the rollers 41 and 73, toward the punching die.

When a web 10 without a protective strip 10a is used as shown in Fig. 1, the upper feed roll 35 is not used.

The web 10 has a sticky or adhesive face, which, as the web is fed through the machine, faces downwardly. As the web progresses toward the left of Fig. 1, its sticky under face passes over a roll 49 mounted to rotate in a trough or container 50 holding alcohol, water or some other liquid or substance 60 adapted to render the sticky or adhesive face of the web 10 temporarily non-adhesive in order to facilitate the operation of perforating this web by a die and simultaneously removing waste material from the web. The roll 49 receives liquid from the container and applies a thin layer or film of the liquid to the sticky face of the web so that when the web is fed between the movable or male member 51 and fixed or female member 52 of the punching die, it is in a temporarily non-adhesive condition and can be easily punched, and the waste centers of the openings 53 punched in the web, easily removed by the dies. The amount of liquid in the container 50 is kept constant by a feed pipe 61 extending from a suitable drip-feed valve leading from a tank containing a supply of the liquid.

After passing over the roll 49, the web 10 then extends under a guide plate 54 and between the die members 51 and 52 where the co-operating die elements 55 and 56 on the respective dies punch out a row of the apertures 53 in the strip. In punching out the apertures 53, the die elements or stud portions 55 simultaneously force the waste centers of these openings

out of the body of the web and down into the chute 57 from which they pass into a suitable receptacle. Ordinarily it is impossible to perform this simultaneous punching and waste-removing operation with material possessing the sticky or adhesive characteristics of the material used in making corn plasters. However, due to the application of the alcohol, water or the like, which renders the sticky surface of the web relatively temporarily non-adhesive just prior to the stamping operation, the operation just described is easily performed.

After the web 10 has been perforated with the apertures or perforations 53 shown in Fig. 3, it is then adhesively united with the backing strip 14. This strip is fed from a reel containing the roll 15, and it extends over the feed roll 40. The roll 40 is preferably provided with a roughened face so that no material slippage between it and the backing strip 14 occurs. This backing strip has an adhesive face 14a which is uppermost as the strip passes over the roll 40. After passing over the roll 40, the strip extends downwardly around a tension roll 69 and thence passes through a slot 75 in the die 51. The backing strip 14 then passes under a roll 76 and then extends substantially horizontal, being thus brought co-extensive with the web 10 so that its adhesive face 14a is brought into intimate contact with the top or non-adhesive face of the web 10 to which it adheres, as shown in Figs. 1 and 2. The two-layer or composite strip made up of the perforated web 10 and attached backing strip 14, passes under a guide 152 and under studs or die elements 78 on the movable or male die 51, these elements 78 co-operating with complementary openings 79 in the fixed or female die 52 to stamp the annular-shaped plasters out of the composite strip and press them against the foraminous or crinoline web 16 to which they adhere and by which they are carried away to cutting means.

The strip or web 16 which receives the plasters is fed upwardly from the reel 18 and passes through the slot 80 in the base of the fixed die 52 and then extends horizontally over a resiliently mounted pressure pad 81. As the crinoline material 16 contains starch or some like stiffening material and is very hygroscopic it is found desirable to remove the moisture from it before the plasters are brought into adhesive contact with it to facilitate the adherence of the plasters to the strip. Accordingly, a heated plate 82 or other like heating element is mounted on the frame of the machine so that the web 16 is moved in contact with it on the travel of the web 16 to the pressure plate 81. This application of heat to the web 16 serves to dry out the moisture in the web so that a perfect adherence between the plasters and the strip 16 results.

As the movable die 51 descends, the die elements or studs 78 and co-operating apertures 79 stamp out the plasters from the composite strip, composed of the layers 10 and 14, and force the plasters out of the strip and against the foraminous web 16 to which they adhere. The composite strip out of which the plasters have been punched being then waste material, passes over a roller 82 mounted in a trough or container 83 from which it receives alcohol, water or some other liquid for the purpose of rendering the perforated composite strip of waste material relatively non-adhesive so that there is no material adherence between it and the

feed rolls 41 and 73 between which it next passes. A pipe 153 leading from a drip-feed system keeps the trough 83 supplied with the liquid. The speed of rotation of the roll 41 is correlated with that of the rolls 33 and 40 as was heretofore described. From between the two rolls 41 and 73 the composite strip of perforated waste material, indicated at 87 in Figs. 1 and 2, extends upwardly to a take-up reel 88 (Fig. 1) on which it is wound.

As the waste material 87 is being thus carried upwardly and away to its final disposition on the reel 88, the crinoline web 16 to which the plasters have been adhesively attached by the dies, is directed slightly downwardly and passes between a pair of intermittently driven feed rolls 92 and 93.

After the crinoline strip 16 bearing the plasters passes between the two feed rolls 92 and 93, it is moved under a heater in the form of a plate or like element 101 which applies heat to the backs of the plasters secured on the crinoline strip and serves to intimately and firmly attach them to the crinoline, at the same time fully drying out the alcohol or other liquid previously applied for the purpose of rendering the sticky faces of the strip from which the plasters were formed temporarily non-adhesive.

From beneath the heater 101 the crinoline strip and attached plasters next pass between two feed rolls 113 and 114 by which the strip and plasters are fed to the cutting knife indicated at 122. After passing between the two rolls 113 and 114, the web 16 and attached plasters are fed through edge guides 121 which present it to the cutting knife 122. The knife 122 is carried on a vertically guided cross-head 123. A vertical rod 127 extends upwardly from the cross-head 123 and is connected to or else forms the core 128, of an electro-magnet 129, the conventional windings of which are shown at 130. This magnet is connected to a suitable source of electric current and is energized intermittently to cause the knife 122 to be forced downwardly to sever a section of the crinoline strip bearing a required number of the plasters. Springs 131 extending between the cross-head 123 and the cross-piece 126 normally hold the knife raised while the circuit to the magnet is broken. The knife 122 on its descent co-operates with a shoulder 161 on a supporting plate 162 to sever the strip into lengths.

Briefly, the method of making the corn plasters is as follows:

The web 10, fed from the reel 13 extends under the feed roll 33 (or between the rolls 33 and 35 as shown in dotted lines in Fig. 1) and then passes over the moistening roll 49 which applies a thin film of liquid to the sticky face of the web, acting to render this face of the web temporarily non-adhesive. When the part of the web which has been so moistened reaches a position between the dies 51 and 52, the movable or upper die 51 descends, during a pause in the intermittent feed of the strip, and punches a row of the perforations 53 in the strip, at the same time forcing the waste centers bodily out of the strip and down into the chute 57. The backing strip 14 coming downwardly through the transverse slot 75 in the die head 62 moves co-extensively with the now perforated web 10 and adheres to the upper face of the same, covering the perforations 53 formed therein. The die elements 78, co-operating with the complementary openings 79, stamp out the annular corn plasters from the composite web made up of the adhesively united web 10 and strip

14. These plasters are forced bodily out of the composite strip and downwardly against the face of the warmed and dried crinoline web 16 by the die elements 78, and they adhere to said strip and are carried along on it. The composite strip shown at 87 is now waste material and it passes over a moistening roll 82 which moistens its adhesive face and it then passes between the feed rolls 41 and 73 which feed it to the driven take-up reel 88 on which it is wound. In the meantime, the strip 16 of crinoline, carrying the attached plasters are fed by the intermittently rotated feed rolls 92 and 93 toward the cutting knife 122. On its way to the cutting knife, the strip 16 passes under the heater 101 so that the backs of the plasters on the strip are brought into contact with the heater which acts to dry out the previously applied liquid and serves to firmly affix the plasters to the strip. From between the rolls 113 and 114, the strip 16 is fed to the intermittently operating knife 122 which severs it into sections, each of which bears a certain number of the affixed plasters.

In herein describing the method of making plasters, I have described it in connection with the manufacture of a certain type of representative corn plaster. However, I do not wish to be understood as limiting the invention to a machine and method for manufacturing that specific type, since there are several different types of corn plasters and other protective pads which can be easily manufactured by the method herein described.

What I claim is:

1. The method of making corn plasters consisting in feeding a fabric web having a sticky surface, applying a substance to the sticky surface of the web to render it temporarily relatively non-adhesive and then feeding the web to punching means for punching plasters out of the web.

2. The method of making corn plasters consisting in feeding a fabric web having a sticky surface, rendering the sticky surface of the web temporarily relatively non-adhesive, feeding the web to punching means for punching plasters out of the web, and restoring adhesiveness to the plasters after they have been punched out of the web.

3. The process of making corn plasters or the like consisting in feeding a fabric web provided with a sticky surface, moistening the sticky surface of the web to render it temporarily relatively non-adhesive, and punching plasters out of the web while its normally sticky surface is relatively non-adhesive.

4. The process of making corn plasters or the like consisting in moistening the surface of a normally sticky-faced fabric and stamping plasters out of said fabric and forcing them bodily away from the fabric while the normally sticky face of the fabric is rendered relatively non-adhesive by the moistening step.

5. The method of making corn plasters consisting in moistening the sticky face of a section of fabric, stamping openings therein and simultaneously ejecting the waste centers out of said openings, adhesively uniting another fabric section with the back of the punched-out section, punching out plasters from the composite fabric section and sticking them on the face of a foraminous fabric and bringing the backs of the plasters in contact with a heated member while said plasters are adhering to the foraminous strip.

6. The method of making corn plasters con-

sisting of punching the plasters out of a strip of sticky-surfaced material and forcing said plasters bodily out of and away from the strip by the punching operation, and applying a liquid to the sticky face of the strip before the punching operation to temporarily render said sticky face non-adhesive.

7. The method of making corn plasters consisting in applying a liquid to the sticky face of a section of fabric to render said face temporarily non-adhesive, punching plasters out of said section of fabric while its sticky face is in a temporarily non-adhesive condition, and restoring adhesiveness to the plasters after they have been stamped out.

8. The method of making corn plasters consisting in moistening the sticky face of a section of fabric, stamping openings therein and simultaneously ejecting the waste centers out of said openings, adhesively uniting another fabric section with the back of the punched out section, punching out plasters from the composite section, heating a foraminous fabric section, adhesively applying the plasters to the face of the heated foraminous section and heating the backs

of the plasters after they have been applied to the foraminous section.

9. In the method of making corn plasters, the steps of punching the plasters out of a sticky-surfaced strip, and applying a substance to the sticky face of said strip to render it temporarily non-adhesive before the punching operation.

10. In the method of making corn plasters, the steps of punching the plasters out of a sticky-surfaced strip, rendering the sticky face of the strip non-adhesive before the punching operation and restoring adhesiveness to the plasters after they have been punched out.

11. In the method of making corn plasters, the steps of moistening a sticky-surfaced strip, punching plasters out of the strip and heating the backs of the punched-out plasters.

12. In the method of making corn plasters, the steps of moistening a sticky-surfaced strip, punching plasters out of the strip, heating a foraminous strip, applying the punched out plasters to the face of the foraminous strip and heating the backs of the plasters after they have been applied to the foraminous strip.

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