R. P. PERRY.

CONSTRUCTION MATERIAL AND PROCESS OF PRODUCING THE SAME.

APPLICATION FILED OCT. 9, 1917.

1,369,186. **Patented Feb. 22, 1921.**

Fig. 1

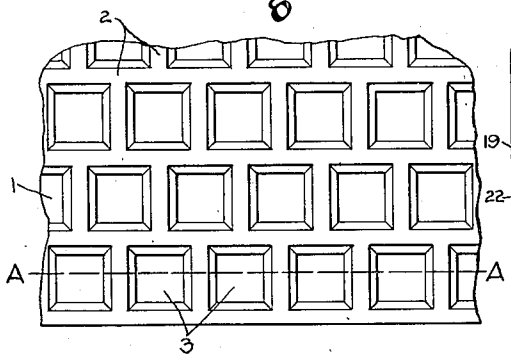


Fig. 6

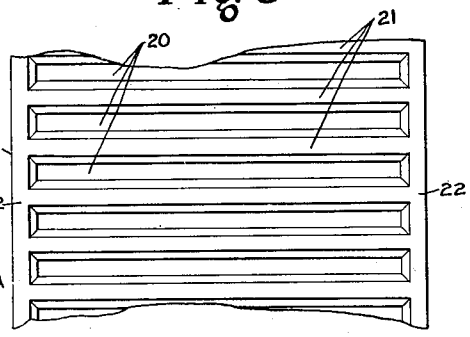


Fig. 2

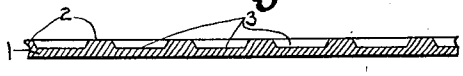


Fig. 3

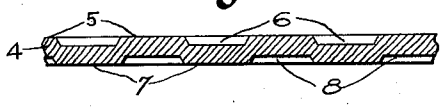


Fig. 4

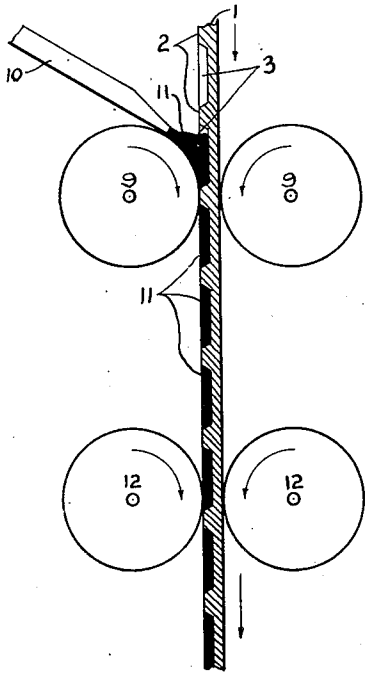
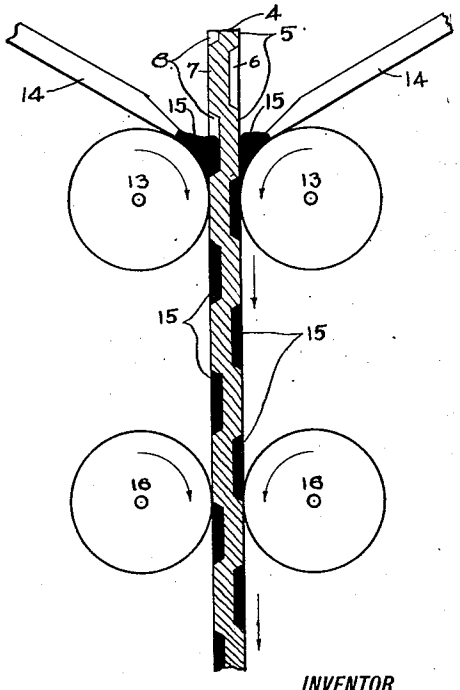


Fig. 5



INVENTOR

Ray P. Perry

BY

Edward M. Evarts

ATTORNEY

UNITED STATES PATENT OFFICE.

RAY P. PERRY, OF UPPER MONTCLAIR, NEW JERSEY, ASSIGNOR TO THE BARRETT COMPANY, A CORPORATION OF NEW JERSEY.

CONSTRUCTION MATERIAL AND PROCESS OF PRODUCING THE SAME.

1,369,186. Specification of Letters Patent. Patented Feb. 22, 1921.

Application filed October 9, 1917. Serial No. 195,655.

To all whom it may concern:

Be it known that I, RAY P. PERRY, a citizen of the United States, residing at Upper Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Construction Materials and Processes of Producing the Same, of which the following is a specification.

My invention relates to an improved form of "dry" or unsaturated felt or paper adapted to be saturated with a waterproofing material, to the saturated felt resulting therefrom, and in the saturating process. The so-called "dry felt" or unsaturated paper used in the manufacture of tarred or asphalt saturated felts and rubber roofings is ordinarily made in the form of plain sheets having a substantially uniform thickness througout, the sheets being generally put up in rolls. This dry felt is ordinarily saturated by passing it through a bath containing the water proofing material, such as tar or asphalt compositions, in hot liquid form and then through squeeze rolls to remove the surplus waterproofing material on the surfaces of the felt. The felt is then ordinarily wound into rolls for sale or use in further processes. The dry felt or paper heretofore made is ordinarily of varying porosity and varying absorbent capacity for the saturating material. This variation in quality obtains not only in different rolls but generally within the same roll, due in part probably to the uneven quality of pulp used and to the uneven felting or forming of the sheet, which factors cannot be absolutely controlled. The result is that the dry felt absorbs a varying amount of the waterproofing material and gives a product having less uniformity than is desirable.

In my product and by the use of my process I am enabled to secure a more easily controlled and more uniformly saturated felt or paper for use for roofing, sheathing, floor covering, etc., and I am enabled to predetermine with considerable accuracy the amount of waterproofing material to be absorbed by my felt or paper.

In working my process I provide a felt or paper provided with a plurality of depressions of substantially predetermined cubical content either on one or both sides of such felt or paper. Preferably the depressions on each side of the felt or paper, where such depressions are provided on both sides, are staggered with relation to each other and with relation to the depressions on the other side, though satisfactory results may be obtained without staggering such depressions. While the depressions may be made in the felt or paper while the same is still in a very moist condition, as shortly before it reaches the driers in the method usually employed in the manufacture of felt or paper, or after the sheet has been dried, I prefer to make such depressions after the felt has been partly dried and is in a somewhat moist condition, although satisfactory results are obtained by any of the modes of procedure suggested. The felt having received the depressions of predetermined cubical content on one or both sides of the same, is later led through the saturating device where the depressions are filled with the waterproofing material. Since the depressions are of predetermined cubical content, the amount of waterproofing material filling such depressions will also be predetermined, and in this way I am enabled to determine, with considerable accuracy, the exact amount of saturating material applied to the sheet. While several methods of filling the depressions may be used to advantage, I prefer to fill such depressions by passing the prepared sheet or strip of felt having the depressions on one or both sides thereof in a vertical position downward between two guiding rolls above which, on each side of the felt, there is provided a source of liquid waterproofing material. The waterproofing material covers both sides of the felt where both sides are depressed (but one side may be covered where only the one side is provided with depressions) and a pair of smoothing rolls may serve to remove any surplus of waterproofing material on the surface of the felt. By staggering the depressions on the other side where both sides are provided with such depressions, I effect a more uniform distribution of the liquid waterproofing material in the final saturated felt. This is especially true where the depressions have oblique sides, which permits the saturation to take place uniformly and with increased rapidity. The staggering of the depressions also leaves the felt as strong as possible, since forming the depressions at opposing points on the two sides of the felt would have a tendency to weaken the same.

Referring to the drawing, wherein I have illustrated several embodiments of my invention,

Figure 1 shows in plan view a portion of a strip of felt provided on one side of the same with depressions for the purpose set forth;

Fig. 2 is a cross-section of the felt shown in Fig. 1 along the section line A—A;

Fig. 3 is a sectional view of a strip of felt provided with depressions on both sides of the same;

Fig. 4 illustrates diagrammatically the means for applying liquid waterproofing material to a strip of felt having depressions on one side of the same;

Fig. 5 illustrates diagrammatically means for applying liquid waterproofing material to the depressions in a strip of felt, both sides of said strip being provided with depressions; and

Fig. 6 shows in plan view a further modification.

Referring particularly to Figs. 1, 2 and 4 of the drawing, 1 indicates a strip of felt provided with the depressions 3 which are defined by the raised portions 2. Preferably these depressions are provided with oblique or slanting sides, as illustrated, though other forms of depressions may be used to advantage. Furthermore, I prefer to stagger the depressions with relation to each other, thereby effecting a more uniform distribution of the saturating material. However, the invention may be practised to advantage where the depressions are in a straight line rather than staggered. Where the depressions are in a straight line, or in other desired arrangement of the same, they may consist of long "channels" extending across the sheet almost or entirely to the edges thereof, as shown in Fig. 6, where the strip of felt 19 has the depressions 20 defined by the transverse raised portions 21, and the end raised portions 22. As previously stated, I prefer to provide the sheet with the depressions after it has been partially dried, that is, after it has passed over some but not all of the heated drying rolls commonly employed in the manufacture of felt or paper. The strip 1, provided with the depressions as set forth, passes to the saturating device. I prefer to use the means illustrated in Fig. 4 for effecting a saturation of the dry felt by filling the depressions 3 with liquid waterproofing material, though other forms of filling means may be employed to advantage. Referring to the device diagrammatically illustrated in Fig. 4, the felt is fed horizontally or, preferably as shown, in a vertically downward direction at a predetermined rate between the guide rolls 9, 9. Immediately above one of the guide rolls 9 is the feed pipe 10 supplying liquid waterproofing material. The liquid waterproofing material 11 flows into the space between the guide roll 9 and the felt 1 and thereby functions to fill the depressions 3 with a predetermined quantity of liquid water-proofing material. In its further travel, the felt 1, the depressions 3 of which are filled with material 11, may pass between the smoothing rolls 12 which serve to remove any surplus of waterproofing material adhering to the strip of felt. After the depressions have been thus filled with liquid waterproofing material, the strip of felt is preferably formed into a roll, the heat of the liquid waterproofing material and the contact of the successive convolutions of the roll causing the saturation or absorption to become substantially complete, although if the sheet of felt is very "hard" or somewhat non-absorbent, or if the saturant is very viscous, a small amount of the saturant may not be absorbed and may remain on the surface of the sheet. After the saturation process is complete, the saturated felt may be used in any manner desired, as for sheathing or for other purposes, as for making the so-called "rubber" roofings of commerce.

Referring to the modification illustrated in Figs. 3 and 5, there is shown a strip 4 of felt provided on one side with the depressions 6 defined by the elevated portions 5, the depressions 6 being staggered with respect to each other, while the other side of the strip of felt has the depressions 8 defined by the elevated portions 7, the depressions 6 being staggered, not only with respect to each other, but also with respect to the depressions 8. The strip 4 is passed in a vertically downward direction between the guide rolls 13 immediately above which are the feed pipes 14 for supplying liquid waterproofing material 15 to both sides of the dry felt. The material 15 collects between the guide rolls 13 and the felt 4 and fills the depressions 6 and 8 in the material 15. The material in its further travel may pass between the smoothing rolls 16 which serve to remove any surplus of liquid waterproofing material adhering to the felt. After the felt has had the depressions thereof filled with the predetermined quantity of liquid waterproofing material, the same is preferably formed into a roll and the saturation process is completed in the roll as a result of the heat stored in the liquid waterproofing material and as a result of the contact between the successive convolutions of the roll. The liquid waterproofing material 15 is fed out of the feed tubes 14 into the depressions of predetermined cubical content, and in this way the amount of saturation material applied to the felt will be predetermined with considerable accuracy. The saturation of the felt is much facilitated due to the fact that the depressions provide added surface for absorption and distribu-

tion of the saturating material over and above what would be available if the sheet were smooth and unindented.

The "dry" felt of my invention, especially when made by the process described, finds its principal application in my saturating process. The saturated felt, being provided with depressions or indentations of substantially predetermined cubical content may be used generally as a construction material. The saturated felt finds particular applicability, however, in the manufacture of the so-called "rubber" roofings of commerce, since portions of the coating material will become lodged or "locked" in the depressions, with the desirable result that the coating will have less tendency to peel away from the saturated felt. This product and the process for making the same are claimed in my co-pending application entitled Coated construction materials and methods of making the same, Serial No. 195,656, filed October 9, 1917.

What I claim is:

1. The method of saturating "dry" felt with liquid waterproofing material which comprises providing at least one face of the felt with a plurality of depressions, filling the said depressions with the liquid waterproofing material, and causing said waterproofing material to be substantially entirely absorbed by said felt.

2. The method of saturating "dry" felt with liquid waterproofing material which comprises providing at least one face of the felt with a plurality of depressions of predetermined cubical content, filling the said depressions with the liquid waterproofing material, and causing said waterproofing material to be substantially entirely absorbed by said felt.

3. The method of saturating "dry" felt with liquid waterproofing material which comprises providing at least one face of the felt with a plurality of staggered depressions of predetermined cubical content, filling the said staggered depressions with liquid waterproofing material, and causing said waterproofing material to be substantially absorbed by said felt.

4. The method of saturating "dry" felt with liquid waterproofing material which comprises providing both faces of the felt with a plurality of depressions of predetermined cubical content, filling the said depressions with liquid waterproofing material, and causing said waterproofing material to be substantially entirely absorbed by said felt.

5. The method of saturating "dry" felt with liquid waterproofing material which comprises providing both faces of the felt with a plurality of depressions of predetermined cubical content, the depressions on each side being staggered with relation to each other and to the depressions on the other side, filling the said depressions with the liquid waterproofing material, and causing said waterproofing material to be substantially absorbed by said felt.

6. The method of saturating "dry" felt with liquid waterproofing material which comprises providing at least one face of the felt with a plurality of depressions of predetermined cubical content, filling the said depressions with the hot liquid waterproofing material, and arranging the felt in a roll to permit the saturation to become complete and the saturating material to be substantially absorbed by the felt.

7. The method of saturating "dry" felt with liquid waterproofing material which comprises providing both faces of the felt with a plurality of depressions of predetermined cubical content, filling the said depressions with hot liquid waterproofing material, and arranging the felt in a roll to permit the saturation to become complete and the saturating material to be substantially absorbed by the felt.

8. A construction material comprising a sheet of felt provided on at least one side thereof with a plurality of depressions of predetermined cubical content which depressions leave the other side of the sheet substantially unaffected, said sheet being impregnated with waterproofing material.

9. A construction material comprising a sheet of felt impregnated with a predetermined amount of waterproofing material, and provided on at least one side thereof with a plurality of depressions of predetermined cubical content, which depressions leave the other side of the sheet substantially unaffected, said sheet being impregnated with waterproofing material.

10. A construction material comprising a sheet of felt impregnated with waterproofing material, and provided on each side thereof with a plurality of depressions of predetermined cubical content which depressions on one side leave the other side of the sheet substantially unaffected.

11. A construction material comprising a sheet of felt impregnated with a predetermined amount of waterproofing material, and provided on at least one side thereof with a plurality of staggered depressions of predetermined cubical content which depressions on one side leave the other side of the sheet substantially unaffected.

12. A construction material comprising a sheet of felt impregnated with waterproofing material, and provided on each side thereof with a plurality of staggered depressions of predetermined cubical content which depressions on one side leave the other side of the sheet substantially unaffected.

In testimony whereof I affix my signature.

RAY P. PERRY.