May 28, 1929. O. A. FREDERICKSON 1,715,080

BUILDING FABRIC

Filed Jan. 3, 1927

Fig. 1

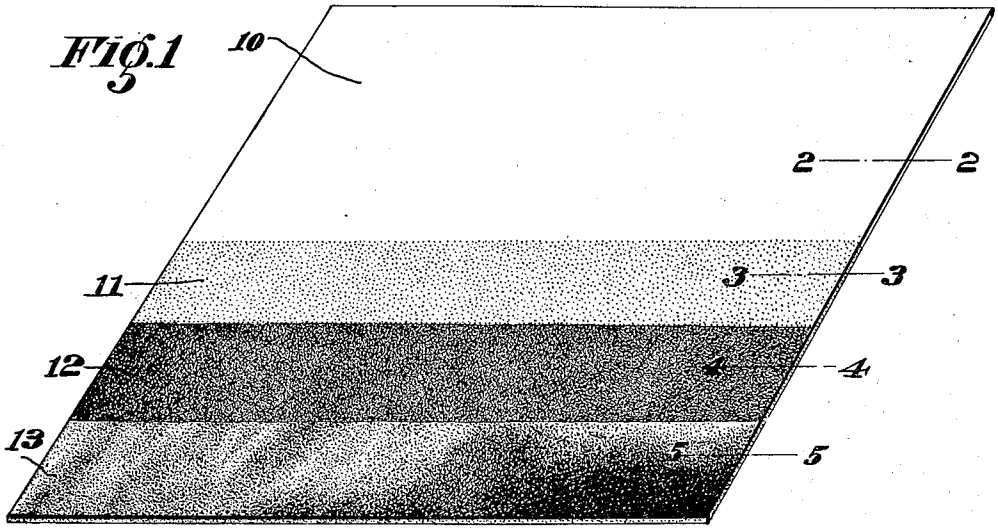




Fig. 2

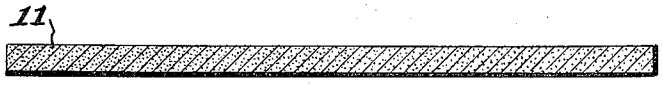


Fig. 3



Fig. 4



Fig. 5

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BUILDING FABRIC.

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This invention relates to roofing and building material composed of a flexible fabric such as paper which is usually rendered waterproof by the application of a waterproofing substance, and sometimes it is likewise treated for the purpose of rendering it fireproof; either or both treatments have heretofore been suggested.

Material of the general character stated is usually supplied in rolls, and much difficulty has been experienced in unwinding the rolls without injurious effect to the fabric itself. The reason for this is that the waterproofing or fireproofing material, either or both, presents an adhesive surface which is more particularly manifest when an attempt is made to unwind the rolls of such building material, and in order to avoid this difficulty it has been proposed to place upon the exterior surface of the treated building material or fabric, powdered mica, talc or the like. Such substances, however, while inherently capable of imparting to the treated surface of the roofing fabric a non-adhesive characteristic, have not in practice been satisfactory because if a relatively thin layer of talc, mica or the like is applied to the adhesive surface of the building material, it will not prevent the adjacent coils of the material from sticking, with the result that portions of the fireproofing or waterproofing material will be detached by sticking to another layer, thereby requiring that the defective section of the building or roofing material be cut out. If on the other hand the thickness of the layer of powdered substance is increased it readily escapes from the face of the paper to become scattered over the premises and soils the hands and clothes of the person laying the building material. This condition has been long recognized and various attempts have been made to provide a waterproofed and fireproofed building material having a smooth clean outer surface that will not stick to other coils when wound into a roll, with consequent loss of material.

In accordance with the present invention, the foundation fabric, whether of paper, or other sheet material, is treated with a waterproofing, and if desired with a fireproofing material, and over the outer layer portion of the treated fabric is applied a thin film of wax-like substance that imparts to the fabric a clean, non-sticky "slick finish" which does not detract from the fireproofing characteristic of the roofing or building material as a whole, provided the fireproofing material is employed.

The wax-like substance employed to produce the desired "slick finish" may be applied in various ways to the outer surface of the treated fabric whether the outer surface material be fireproofing or waterproofing substance, but it is important that the temperature of the wax be carefully controlled during its application to the fabric, because if the temperature is too high the wax will penetrate into the outer surface material further than is desired, while if the temperature is too low the wax will be applied in a thicker film than is desired.

If a wax-like material such as paraffine is mixed with a sticky, fire-repellent substance and then the mixture is applied to the fabric the coating formed of this mixture will not be fire-repellent since the presence of the wax makes the mixture combustible, and the same is true if the fire-repellent coating is applied first and then the wax is applied at such a high temperature that it penetrates deeply into the coating. But if the fire-repellent substance such as stearin pitch is applied to the fabric and is allowed to cool and then the paraffine wax is applied over the coating in a thin film and at a temperature considerably below the melting point of the pitch, the latter will be given a clean, non-sticky surface while at the same time its fire-repellent properties will not have been appreciably affected. This is due to the fact that the film of wax when properly applied does not alter the nature of the fire-repellent coating but merely forms a thin film over the same and the amount of wax required to form this film is so small that it will not support combustion.

In the following instance of the invention described in connection with the drawings, the foundation fabric is described as formed of paper which is treated with a waterproofing material and then has applied thereto a coating of fire-repellent material, to which the "slick finish" of paraffine wax is applied to produce a fire-proof fabric which has a smooth, clean, nonsticky, outer surface that differs from the powdered mica or talc employed heretofore in that the "slick finish" remains a permanent part of the

structure as a whole and permits unwinding of the roll of building or roofing material without injury thereto.

In the drawings:—

Fig. 1 is a perspective view of a sheet of paper having different portions of its surface shown as subjected to the different treatments.

Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1.

The treated paper forming the subject-matter of the present invention may be employed for various purposes but is particularly well adapted for use as a building paper or roofing paper. A relatively thick inexpensive grade of paper may be employed to form the sheet 10, and this sheet is rendered waterproof by applying to the same a moisture-proofing substance which may be a bituminous material, such for instance as asphalt, pitch or the like preferably of high penetrating properties. The moisture-proofing substance may be applied to the paper by passing the sheet through a bath of the heated material, or if desired the paper stock may be treated with the moisture-proofing substance before the stock is formed into the finished sheet 10. The moisture proofing substance 11 should have sufficient penetrating properties and should be so applied that it will impregnate all portions of the paper to exclude moisture from the same.

The moisture-proofed paper 11 is rendered fire-proof by applying a coating 12 to one or both faces of the paper, and while the fire-proof coating may be formed of different materials, it is preferably formed of stearin pitch, because this pitch is flame-repellent to a high degree due to its tendency to form protecting blisters, in the presence of fire, over the face of the surface to which it is applied. Stearin pitch has less penetrating properties than the waterproofing substance 11 and forms a protecting coating over the face of the paper, as will be apparent from Fig. 4. The fire-repellent coating such as stearin pitch or other form of fatty acid pitch may be applied to the moisture-proofed paper by passing the paper through a hot bath of the desired pitch and the excess pitch may be removed by passing the paper between squeeze rolls as it leaves the hot bath, or if desired rolls may be employed to apply the fire-repellent coating to only one face of the paper. In either case the fire-repellent substance should have a melting point considerably above the melting point of the paraffin or other slick finish coating, so that the former coating will not be melted by the application of the paraffin or the like in a melted condition.

The protecting coating 12, whether formed of stearin pitch or other fire-proof material, should have a more or less sticky, non-drying nature which will adhere firmly to the face of the paper and which will not dry out and crack when exposed to either hot or cold weather, but the use of a sticky, non-drying material as the protecting coating 12 will cause the adjacent coils of the paper to stick together when the paper is wound into a roll.

The manufacturers of fire-proofed building and roofing paper have endeavored for years to find a satisfactory finishing material that could be applied to the fire-proofing coating to prevent the adjacent coils of the treated paper from sticking together. But their efforts in this direction have met with difficulties because the application of an inflammable material to the fire-proofed coating would render the paper inflammable, or at least greatly reduce its flame repelling properties, whereas the use of powdered mica, talc or the like makes the treated paper dirty to handle, as above pointed out.

The above mentioned difficulties are overcome, in accordance with the present invention, by applying to the fire-proof coating 12 a thin film of wax material such as paraffine. The wax material is of course inflammable if applied as a coating of appreciable thickness, but it is found that a very thin film of paraffine wax 13 applied to the more or less sticky coating 12 will prevent the adjacent coils of the rolled paper from sticking together, and that it will also impart to the paper a smooth, clean, non-sticky surface that is highly desirable. Furthermore, when the wax material is applied to the fire-proof coating in a thin film and all excess wax is removed from the face of the coating, it is found that the presence of this small amount of wax does not appreciably increase the inflammability of the coated paper 12.

The melted wax material may be applied to the surface of the fireproofed coating 12 by any suitable means, but care should be taken to see that only a thin film of wax is applied and that all excess wax is removed. In some cases it may be desirable to subject the film of wax upon the paper to an ironing operation as this will increase the smoothness of the surface of the finished paper. The "slick finish" in addition to the desired properties above mentioned, increases the life of the treated paper since it excludes air from the fire-repellent coating and thereby prevents oxidation of the same.

Building or roofing paper constructed in accordance with the present invention is moisture proof and fireproof to a high de-

gree, and wears well under all weather conditions. Furthermore, it has a smooth, clean "slick finish" which is inexpensive to produce and the adjacent coil of which will not stick together when wound in a roll, and since the wax material is applied in an extremely thin film the flame repelling properties of the coating 12 are not appreciably affected.

I claim:

1. A waterproof and flame repellent building paper, comprising a relatively thick sheet of paper having a face thereof covered with a waterproof and flame-retarding coating of stearin pitch adapted to blister when exposed to fire and over which coating is applied a thin film of paraffin wax to impart to the pitch covered face of the paper a smooth, clean, non-sticky surface that is flame-repellent.

2. A waterproof and flame-repellent protecting sheet, comprising a sheet of paper having a face thereof covered with a waterproof and flame-retarding coating of a flame retarding pitch and over which coating is applied a thin film of wax material to impart to the pitch covered face of the paper a smooth, clean, non-sticky surface that is flame-repellent.

3. A flame-repellent flexible sheet, comprising a sheet of paper having a face thereof covered with a flame-repellent coating of a flame-retarding pitch and over which coating is applied a thin film of wax material which does not penetrate appreciably beneath the surface of said coating and which imparts to the coating a smooth, clean, non-sticky surface without rendering the coating inflammable.

In testimony whereof, I have signed my name to this specification.

OTTO A. FREDERICKSON.