UNITED STATES PATENT OFFICE.

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ROOFING FABRIC.

SPECIFICATION forming part of Letters Patent No. 348,996, dated September 14, 1886.

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To all whom it may concern:

Be it known that we, TRUMAN J. PEARCE and MELVIN W. BEARDSLEY, citizens of the United States, residing in the city of Oakland, Alameda county, State of California, have invented certain new and useful Improvements in Roofing Fabrics; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention relates to the production and manufacture of material or fabrics for covering roofs and sides of buildings and other exposed surfaces, as a substitute for metal, slate, and shingles.

As an improvement upon such class of fabrics commonly known as "roofing" and "roofing fabrics," our invention has for its object to produce an article in which certain desirable qualities and properties — of bending without cracking, of withstanding extreme heat and cold, of resisting acids and alkalies and the action of lime and ammonia—shall be secured and be present to a degree not attained in and by any of the modes of manufacture heretofore followed in producing such kinds of fabric, and in most if not all of which one or more of such qualities and properties are entirely absent.

It consists, accordingly, in a material for roofing and like purposes produced by impregnating and covering fibrous or textile fabric of suitably coarse or open body or texture with maltha, in such manner that the pores or interstices are filled and a close surface is formed to resist the action of acids and alkalies, and to withstand many other injurious and destructive agencies and influences to which the same is exposed when used for roofing purposes, as hereinafter described.

We proceed in the following manner to attain these ends and objects, and produce an improved article for roofing purposes.

The product and substance known under the name of "maltha," as generally obtainable, is mixed with dirt, sand, and other impurities, which should be eliminated before the substance is in a condition suitable for this purpose. It is therefore first refined to remove such impurities when they are present, and is then reduced to a degree of softness and a consistency sufficiently fluid to enable it to be evenly spread upon and to penetrate the pores or interstices of the fabric that is used for the basis or foundation. In this operation the maltha can be applied in either of two ways, which, for convenience, may be distinguished as the "hot" method and the "cold" method. In the one the maltha, being reduced by the application of heat, is kept at suitable consistency to be readily spread upon the fabric that is used for the basis or foundation and to penetrate the pores or interstices, while in the other method the maltha is reduced to a somewhat more fluid or thinner consistency by means of a suitable solvent—such as bisulphide of carbon—and is applied at normal temperature. The results may be said to be equally effective as regards the qualities and properties secured in the finished article; but the cold method has the advantage of producing a smoother and finer character of surface. This advantage, however, being offset by the additional expense attending both the preparation and the manner of applying the material, the hot method commends itself for general simplicity and cheapness of manufacture, and as being well suited for all ordinary purposes. Except, therefore, for a finer quality of roofing material, the hot method is used by us in carrying on this operation.

The maltha is applied to the basis or foundation of fabric by means of a suitable vat or receptacle having a furnace or heating apparatus beneath it and a set of rollers, to operate after the manner of such or similar apparatus used in coating paper and fabrics with different substances and compounds, only in the case of working with the maltha it requires the furnace or heater to keep the maltha at uniform temperature.

The fabric used for the basis or foundation is such coarse material as burlaps and coarse canvas, and it is passed through the maltha and between the rollers in such manner that the pores or interstices of the fabric are filled up and a body or surface of uniform thickness of the maltha is obtained in passing the fabric once through the apparatus, provision being

made for adjusting the rollers toward and from each other to regulate the thickness of the coating or covering.

In producing this roofing fabric under the cold method, where the maltha is used at normal temperature, as before stated, it will be found necessary to apply it in several coats laid in succession, one over the other, until the fabric is properly filled and a suitable surface obtained.

For most purposes for which this article of roofing is intended it is better to apply a backing of paper to the fabric, as with such addition it will not stretch or draw out of shape in being laid, and will be kept smooth and in form. We apply this backing to the fabric by causing it to pass between rollers after the maltha has been applied, in which operation the paper is placed against the fabric in strips or sheets with their edges properly lapped, if the width of the fabric requires more than the width of one sheet or strip, and by pressure of the rollers the two are firmly united. The adhesive quality of the maltha is sufficient to unite the paper and fabric, so that no cement or other agent is required to affix the backing. A coating of maltha may also be applied to the paper backing where a special grade of roofing is required for such purposes as to cover the buildings of acid-works and other works and factories where the under side of the roofing fabric, when laid, would be exposed to fumes and vapors arising in the course of the operations carried on below; but where not so exposed to destructive agencies from below the uncoated paper is suitable for all general purposes for which such roofing may be required. In applying such protective coating to the paper the maltha is used in the cold form at normal temperature, as before described, and may be applied at one of the several times of passing the fabric through the coating-rollers, at which time the paper will be brought against the fabric and caused to adhere by the pressure given by the rollers.

It should be noticed that fibrous material—such as felting of the kinds used in building operations and for roofing purposes—can be employed in place of the burlaps and like fabric, as it is susceptible of the same treatment; but the maltha would then be best applied according to the cold method. The product, moreover, having less elasticity than that formed with the burlaps and like material, could be laid without a paper backing; but we prefer to use coarse textile fabric for the foundation, because of the relative lightness and cheapness, and greater flexibility in the manufactured article. In such manner we produce an improved article for roofing, for covering sides of buildings and surfaces to be protected, and which is particularly adapted for use in situations exposed to destructive agencies more active than those of weather and ordinary changes of temperature.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

The improved roofing fabric herein described, composed of maltha and a basis or foundation of fibrous or textile fabric, with or without a backing of paper, as set forth.

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Witnesses:
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