

UNITED STATES PATENT OFFICE.

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COMPOUND FOR WATERPROOFING FABRICS.

SPECIFICATION forming part of Letters Patent No. 771,257, dated October 4, 1904.

Application filed November 28, 1903. Serial No. 183,023. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM MACDONALD MACKINTOSH, a subject of the King of England, and a resident of Anfield, Liverpool, in the county of Lancaster, England, have invented an Improved Manufacture of Compounds for Waterproofing Textile and other Fabrics, of which the following is a specification.

This invention has reference to proofing textile or other fabrics, strands, cords, string, ropes, and the like—that is, rendering them waterproof—the chief objects and effects being to provide such a proofing that the material will remain waterproof for a great length of time, even should it be folded for a long time or folded wet or have weighty things put on it or subjected to any harsh treatment, and a further object and effect has been to provide a proofing which is cheap, very elastic, and non-odorous and one which renders the proofing operation simple and inexpensive and quickly performed.

In the manufacture of the compound to serve as the proofing and with which the material to be proofed is impregnated or coated there is employed as the base material a wax—namely, paraffin-wax or an equivalent wax—which is a substance impervious to moisture or, in other words, waterproof, but which in itself furnishes little or no resistance against wear, rotting influences which waterproof fabrics are subjected to, and similar actions to which it would be generally subjected. With this wax a substance is used which furnishes lasting qualities and enables the proofed fabric to withstand harsh usage and, moreover, gives elasticity to the proofing, and it has been found that a certain gum known in Lancashire, England, as “almadina,” being a gum from a species of *Euphorbia* or *Tragia*, and sometimes as “alsadina,” provides these characteristics; but if this substance is not obtainable or obtainable only with difficulty gutta-percha may be used, but not with the same degree of advantage. As stated, this imparts lasting and resistant qualities to the proofing compound, as well as elasticity. Added to the above to impart to the compound an ingre-

dient which binds all the ingredients together resin-oil (refined) is employed, which, as time goes on, tends to increase in its binding action and effect, and so that there is no influence tending to dissolution of the ingredients, and this substance, moreover, does not interfere with the elasticity-promoting effect of the vegetable gum, but increases it and so assists in this respect also. To render the compound such that it will be a perfectly dry body—that is, a body without stickiness—the wax known as “carnauba-wax” is mixed with the other ingredients.

As above stated, one of the objects and effects of the invention has been to provide a compound which while possessing the characteristics just above referred to accomplishes the desideratum of enabling the fabric to be continuously proofed and on the completion of the proofing to be in such a condition that it can be handled, rolled up, stored, or used at once without further drying, thereby avoiding the requirement of a second or any further operation of drying or other treatment.

The most advantageous constitution of the composition and proportion of ingredients, particularly where the material is subjected to harsh wear, and one that will be found economical and generally effective are about as follows: paraffin-wax, sixty parts; almadina-gum, (or gutta-percha,) twenty parts; resin-oil, (refined,) ten parts; carnauba-wax, ten parts.

In the manufacture of this compound the following method is adopted: The paraffin-wax and almadina are heated to about 400° Fahrenheit, with the result that the almadina melts or dissolves in the wax, the materials being kept at this temperature until this takes place. Then to this is added ten parts of carnauba-wax and ten parts of resin-oil, (refined,) and the whole is kept at this temperature of about 400° Fahrenheit and mixed until the mixture is fully homogeneous. This is the proofing compound according to this invention, and it can be or is applied to the material to be proofed by impregnating or coating it with the compound while hot and in a molten state.

If it is desired to produce a proofed fabric which is sticky—as, for instance, a tape or wrapping, such as are employed for covering electric cables and wires—the carnauba-wax is omitted from the compound, or, again, by 5 omitting this carnauba-wax and reducing the proportion of resin-oil—say to five parts instead of ten parts, as above given—a nearly dry waterproof fabric is produced which for 10 many purposes, such as for a permanent covering or where it would not have to be subjected to the same harsh and trying treatment, would be satisfactory. As a further modification when the compound is made without 15 the carnauba-wax and the proportions of resin-oil, paraffin-wax, and almadina (or gutta-percha) are ten, sixty, and twenty parts, respectively, and pitch or the like is added to it for producing a black waterproof fabric, a 20 dry—that is, a non-sticky—waterproof fabric may be provided by adding to the compound some “asbestine”—say thirty parts. Asbestine is a very finely-powdered asbestos. A further modification of the above compound, 25 however, which may be used in combination with that just described consists of the following compound, (the two compounds being compounded together:) resin-oil (refined)—say twenty-seven parts—linseed-oil or like 30 vegetable oil, (about sixty-three parts,) and calcic oxid, the compound being produced by heating together the linseed-oil and calcium or equivalent alkaline oxid to a temperature of about 430° Fahrenheit and mixing them, 35 and then adding to these while in this condition the refined resin-oil, this addition being made immediately after the reaction of the lime with the oil. The compound is then complete and added to and mixed with the former 40 compound at the rate of equal proportions while heated and liquefied produces a good proofing compound, it being applied to the material, as already described, or, in some cases, where the proofed material is not sub- 45 jected to harsh usage or sharp bending or folding it may be used alone.

By this invention the proofed fabric is quite dry as it comes from the machinery, so that it can be handled and stored at once without 50 further drying and rolled up and sold, in-

stead of requiring several days for drying, as is usually the case.

The compound is free from chemicals which act detrimentally on the fibers of the material, and it is such that the fibers of the fabric are saturated through and through, so that 55 no moisture can enter and it is, in fact, water-repellent.

There may be combined with the compound pigments or coloring-matter or dye, including 60 pitch for making black proofing, and the compound binds the color, so that it will not rub off, but is fast in the compound.

Having now described my invention, what I claim as new, and desire to secure by Letters 65 Patent, is—

1. The waterproofing compound, for or employed in waterproofing textile or other fabrics, comprising a mineral wax; almadina- 70 gum; resin-oil, and carnauba-wax; substantially as set forth.

2. The waterproofing compound for or employed in waterproofing textile or other fabrics, comprising a mineral wax; almadina- 75 gum; and resin-oil; substantially as set forth.

3. The proofing compound for, or employed in waterproofing textile or other fabrics, consisting of paraffin-wax; almadina-gum; resin- 80 oil; and carnauba-wax; in the proportions substantially as specified.

4. The proofing compound for, or employed in waterproofing textile or other fabrics, consisting of paraffin-wax; almadina-gum; and 85 resin-oil; in the proportions substantially as specified.

5. The waterproofing compound for waterproofing textile and other fabrics, comprising a mineral wax; almadina-gum, and a drier; 90 substantially as set forth.

6. The waterproofing compound for, or employed in waterproofing textile or other fabrics, comprising a mineral wax; almadina- 95 gum; resin-oil; asbestine; and pitch; substantially as and for the purposes specified.

In witness whereof I have hereunto set my 95 hand in presence of two witnesses.

WILLIAM MACDONALD MACKINTOSH.

Witnesses:

S. GOODALL,

G. OKE.