

UNITED STATES PATENT OFFICE.

RUDOLF GRAF WESTPHALEN, OF VIENNA, AUSTRIA-HUNGARY.

METALLIC COVERING-PLATE.

SPECIFICATION forming part of Letters Patent No. 483,243, dated September 27, 1892.

Application filed June 9, 1891. Serial No. 395,698. (No specimens.)

To all whom it may concern:

Be it known that I, RUDOLF GRAF WESTPHALEN, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Province of Lower Austria, in the Empire of Austria-Hungary, have invented certain new and useful Improvements in Metallized Covering-Plates Made of Asbestos and other Fibrous Material and in the Process of Making the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to the manufacture of felted stuffs or fabrics used as a means for preventing radiation of heat or as a covering for walls to exclude cold or to exclude dampness or as a roofing material. Felted materials, especially when made of short fibers, are liable to wear rapidly, whether such fabrics are made of vegetable, animal, or mineral fiber, and they also have a great affinity for moisture, of which they absorb great quantities. Various means have heretofore been resorted to to render these fabrics waterproof and to a greater or less degree fireproof; but so far as I know no attempts have heretofore been made to render these fabrics more durable, and this is more especially the case with felted fabrics made of mineral fibers.

The object of this invention is to treat these fabrics in such a manner as to render them less liable to wear or disintegration when subjected to friction or by attrition with other hard substances or bodies and to provide the same with a wearing-surface which is capable of being ornamented for use as interior wall-coverings.

The invention further consists in rendering these improved or strengthened fabrics waterproof, so as to adapt them for use on exterior walls or for roofing purposes.

To these ends the invention consists in the mode of treating felted fabrics or materials, in a felted and metallized fabric or material, and in such a fabric or material rendered waterproof, as will now be fully described.

In carrying out that part of my invention which relates to the strengthening of felted fabrics or materials so as to increase their durability I provide the same with a metal-

lic coating by first rendering the material conductive by the application of a conductor of electricity, such as graphite. Heretofore the graphite has been applied to non-conductors of electricity, especially to woven fabrics, by simply dusting the latter with graphite, the result being an imperfect deposition of the metal. To avoid this, the felted material, after being thoroughly dusted with graphite, has its conductive coating burnished or polished by calendering or otherwise, not only to form a smooth conductive coating, but to more intimately combine the conductor of electricity with the fibers.

For the purpose of metallizing the materials referred to I preferably employ either copper or aluminium, the coating being obtained in the usual way by electroplating.

In case a binding or cementing substance or compound is used in the manufacture of felted fabrics, especially of such fabrics as are made of short fibers—as, for instance, fabrics of asbestos—in the manufacture of which it is desirable to use a binding material, and as the binding materials heretofore used—principally chloride of zinc, glue, starch, &c.—are decomposed by free acids, the galvanic bath should be so prepared as not to contain acid in a free state. Neutral copper solutions, for instance, result, however, in a brittle and more or less non-cohesive deposit, and in view of this it is preferable to employ solutions of sulphate of copper in which the free sulphuric acid is replaced by acid salts of metals—as, for instance, sulphate of soda or of zinc or of iron.

When these felted fabrics are designed for use as water and more or less fire proof materials, I make them of asbestos fiber in the following manner: I take fifty parts, by weight, of asbestos fiber, ten parts, by weight, of asbestos-felt waste, ten parts, by weight, of oxide of zinc, and from three hundred to five hundred parts, by weight, of water. These substances are intimately mixed in a suitable mixing-vessel, after which I successively add thereto, in the order named and while the mass is being stirred, first, seven parts, by weight, of a solution of chloride of zinc of from 50° to 60° Baumé; second, ten parts, by weight, of a soap solution, preferably one part, by weight,

of the best quality of soap to ten parts of water; third, twenty-one parts, by weight, of a solution of alum in the proportion of about three parts, by weight, of alum to twenty-one
5 of water; fourth, 0.3 parts, by weight, of an aqueous solution of soda, and, lastly, 0.8 parts, by weight, of a solution of sugar of lead in two parts of water. The subsequent addition
10 of the zinc chloride forms with the zinc oxide present an insoluble composition as the compound becomes concentrated or condensed, the soap, alum, soda, and sugar of lead serving
15 as fillers to fill the interstices between the fibers or the pores of the insoluble composition, the presence of soda promoting the chemical reactions which take place afterward. The composition, having been intimately mixed and rendered perfectly homogeneous,
20 is then converted by molding or otherwise into slabs or sheets of the desired size for wall or roof coverings, which sheets or slabs are afterward metallized, as above described.

The proportions of the substances above referred to may be varied within certain limits according to the nature of the fibrous substance or substances used, and I do not desire to limit myself thereto.

Felted materials made from animal or vegetable fibers, or both, or from a mixture of animal, vegetable, and mineral fibers, may also
30 be waterproofed in the manner above described and by means of the composition referred to. Such short fibers as are known as
35 "waste" in the manufacture of textiles may

thus be utilized for the manufacture of a valuable material.

Inasmuch as these fabrics are provided with a smooth coating of metal, they may be ornamented in almost any desired manner, either
40 by painting or otherwise, so that they may be used as coverings for the interior walls of buildings.

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

1. The herein-described mode of manufacturing water and fire proof materials made of non-conductive fibers, which consists in combining with the fibrous substances oxide of
50 zinc, chloride of zinc, soap, alum, soda, and sugar of lead, in or about in the proportions set forth, and sufficient water to form a composition adapted to be molded or otherwise
55 formed into slabs or sheets, converting the material into slabs or sheets, applying thereto a conductor of electricity, and electroplating the said slabs or sheets, for the purpose set forth.

2. As an article of manufacture, a water and
60 fire proof slab or sheet composed of mineral fibers, oxide of zinc, chloride of zinc, soap, alum, and sugar of lead, and an outer coating of metal, as set forth.

In testimony whereof I affix my signature in
65 presence of two witnesses.

RUDOLF GRAF WESTPHALEN.

Witnesses:

W. B. MURPHY,
A. SCHLESSING.