

(No Model.)

F. W. COOLBAUGH & N. M. GOODLETT, Jr.
ROOFING FABRIC.

No. 539,767.

Patented May 21, 1895.

Fig. 3,

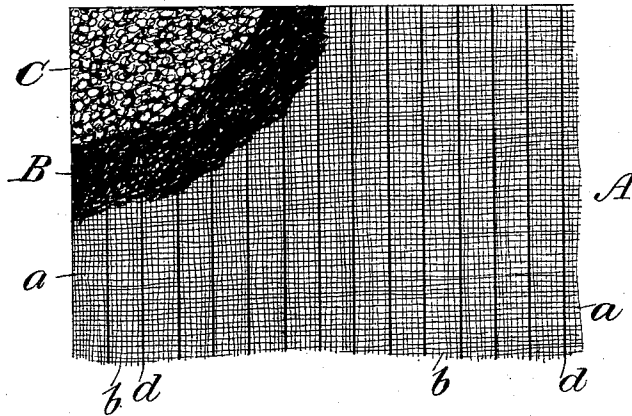


Fig. 1,

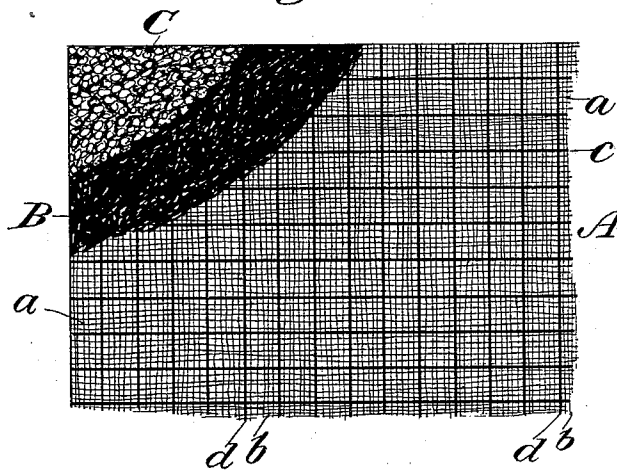
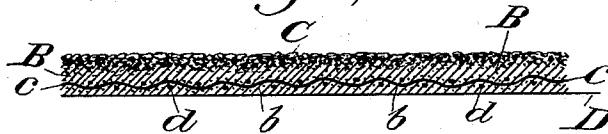


Fig. 2,



Witnesses:-

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UNITED STATES PATENT OFFICE.

FRANK W. COOLBAUGH, OF EAST ORANGE, AND NICHOLAS M. GOODLETT, JR., OF ORANGE, NEW JERSEY.

ROOFING FABRIC.

SPECIFICATION forming part of Letters Patent No. 539,767, dated May 21, 1895.

Application filed June 23, 1894. Serial No. 515,459. (No specimens.)

To all whom it may concern:

Be it known that we, FRANK W. COOLBAUGH, residing at East Orange, and NICHOLAS M. GOODLETT, Jr., residing at Orange, New Jersey, citizens of the United States, have invented certain new and useful Improvements in Roofing Fabrics, of which the following is a specification.

Our invention relates to protecting fabrics primarily designed for roofing and similar purposes.

The principal object of the invention is to provide a cheap, durable, flexible fabric, impervious to moisture and capable of resisting heat.

The invention consists of a cloth made of wire and fibrous material united with asphaltum.

In the accompanying drawings, in which like letters designate corresponding parts, Figure 1 is a plan view of a fabric embodying the invention, parts being broken away. Fig. 2 is a vertical sectional elevation of the fabric. Fig. 3 is a similar view to Fig. 1 and representing a modification.

In making roofing fabrics heretofore it has been proposed to embed a fibrous fabric in asphaltum and to unite to the fibrous fabric and asphaltum a netting of wire. In these fabrics there has been no way of securely attaching the wire to the asphaltum except the imperfect adhesion of the asphaltum to the wire, and the asphaltum was therefore always liable to split, crack or peel off. Moreover, in order to give the fabric the required strength furnished by the wire netting it has also been proposed to employ a woven fibrous fabric because the asphaltum would not adhere to the wire with sufficient firmness and in sufficient quantities. Thus two complete woven fabrics, one of wire and the other of fibrous material were essential in the production of a roofing fabric of the requisite strength and efficiency.

In accordance with the present invention one woven fabric is entirely dispensed with, the one employed being made up of part wire and part fibrous material. The asphaltum when combined with this fabric takes firm hold of the fibrous material and the fibrous material being itself united firmly, as by

weaving, to the wire strands, the asphaltum it is seen is bound closer to the wire and is not dependent for its adherence to the wire upon the weak adhesion of asphaltum to the wire. In other words, the asphaltum by adhesion clings to the fibrous strands; the fibrous strands are united as by weaving to the wire; and the asphaltum is therefore bound firmly and in sufficient quantities to the wire. It will therefore be seen that in this invention a step in advance has been taken in the art of making asphaltum roofing fabrics, the new fabric being not only stronger but being also lighter and less expensive, due to the omission of a second woven fabric.

The cloth A, as shown in Figs. 1 and 2, is woven of strands of fibrous material *a* and *b*, running in opposite directions and wire strands *c* and *d* running in the same direction as the strands *a* and *b* respectively. The strands of wire *c* may, if desired, be omitted as shown in Fig. 3. The fibrous strands are shown as woven rather closely together and the wire strands much farther apart, about five or six to the inch. The wire strands and fibrous material may, however, be woven or otherwise united in the form of a cloth in any suitable proportion and in any suitable manner. The wire strands might outnumber the fibrous strands and the strands in one direction might be all fibrous or partly fibrous and partly wire, and the strands in the other direction might be all wire or partly wire and partly fibrous. Moreover short tufts of fibrous material might be used in lieu of long fibrous strands. So long as there is a substantial amount of fibrous material combined with the wire in the form of a cloth our purpose will be subserved. We prefer, however, to employ loosely twisted strands of jute as the form of fibrous material to be made up with the wire into cloth. After this cloth is finished, it is combined in any suitable manner with the asphaltum B.

The asphaltum, when combined with the cloth, should be applied in plastic condition and the cloth could be passed through a vat containing the asphaltum, passing thence between rollers to smooth and press the asphaltum into more intimate relation with the cloth. The wire by itself as has been ascertained by

experiments, is not capable of securely retaining a sufficient amount of the asphaltum owing to the peculiar properties of asphaltum, but the fibrous material of the cloth takes
 5 firm hold of the asphaltum and binds it securely to the cloth, thus making a compact and homogeneous structure and it is only necessary to employ a sufficient amount of fibrous material to effect this result, although
 10 of course more might be used.

If our protecting fabric is to be employed where it will be subject to abrasion or laceration, it will be desirable to provide its upper surface with a coating or armor. This armor
 15 may be applied in any convenient manner and may consist of pebbles, sand, slag or other suitable granular material C. We preferably employ zinc slag. One way of applying the armor is by spreading it over the surface of the asphaltum B while the latter is in a plastic state. The armor then sinks partly into the asphaltum and when the latter hardens the armor is retained firmly in place and affords a durable protecting coating. The
 25 granular material might be applied by mixing it first with the asphaltum and then applying both at the same time to the cloth.

In order to keep the lower surface of our fabric clean and smooth and prevent it sticking to the hands of the workmen and whatever else may come in contact with it, we preferably coat the under side of the fabric with a layer of paper D. In our preferred form the cloth is embedded in the asphaltum
 30 B, as shown in the drawings.

This fabric is tough, durable, pliable and may be easily and cheaply made. It may be packed in rolls and when spread out quickly conforms itself to the underlying surface, and
 40 does not warp, split or curl up.

It has heretofore been proposed to make a waterproof fabric for clothing by first coating separate strands of wire with gums made of gutta percha, india rubber, or shellac. Then
 45 after the gum coatings have dried on the wires, weaving these gum-coated wire strands with fibrous strands so as to form a cloth, and, lastly, passing this cloth between hot rollers to melt the gum and cause it to adhere to the fibrous strands. Such a fabric is of course quite distinct from our invention. The coatings on the separate wire strands have no difficulty in adhering to the wire and the problem solved by our invention does not therefore arise. It would be impractical if not impossible to coat separate wire strands with asphaltum and then weave them into a cloth because the asphaltum would split off from the wire strands in the process of weaving.
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 60 It is of course old to construct walls or par-

titions in buildings of heavy wire woven in coarse meshes with a coating of plaster applied thereto on one side, the plaster passing through the meshes. When the plaster hardened it remained in contact with the wire by
 65 means of that part of the plaster which spread on the rear side and formed small heads, these heads operating as keys for the entire mass. It has been objected that more of the plaster passed through to the rear side to form
 70 these heads than was essential to key the mass in place, and it has been proposed to save part of the plaster thus unnecessarily employed by laying along one or both sides of the heavy wire netting a netting having a
 75 finer mesh or meshes in "reduction of area" of the coarse meshes so that less of the plaster should pass through the coarse meshes. Instead of using a separate fibrous fabric having fine meshes, it has been further proposed
 80 to weave fibrous strands in among the coarse wire meshes so as to make fine meshes.

The plaster in uniting itself to the wire netting, even where fibrous strands are woven in among the meshes of the wire netting, does
 85 so by reason of the fact that portions of the plaster pass through to the rear side of the netting and by spreading so as to form heads and hardening, key the entire mass in place, just as the head of a rivet holds two plates of
 90 iron together. The plaster does not remain in place by reason of its adhesion to the wire nor by reason of its adhesion to the fibrous material, but solely by reason of the plaster heads, operating as the heads of rivets.
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In our fabric the fibrous strands are firmly secured to the wire netting and also firmly adhere to the asphaltum, and the asphaltum must therefore necessarily be bound to the wire netting, and is of course quite distinct
 100 from this plaster wall.

What we claim as new, and desire to secure by Letters Patent, is—

1. A flexible protecting fabric composed of strands of wire and strands of fibrous material united together in the form of a cloth and a coating of asphaltum adhering to and embedding the cloth, substantially as set forth.
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2. A flexible protecting fabric composed of strands of wire and strands of fibrous material united together in the form of a cloth and a coating of asphaltum adhering to and embedding the cloth, the asphaltum being armor coated on its upper surface, substantially as set forth.
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