June 4, 1935. H. VON FORSTER ET AL 2,003,728

ROOFING MATERIAL

Filed June 19, 1928

Fig. 1.

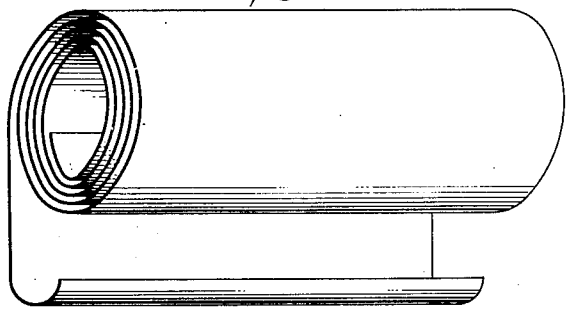


Fig. 2.

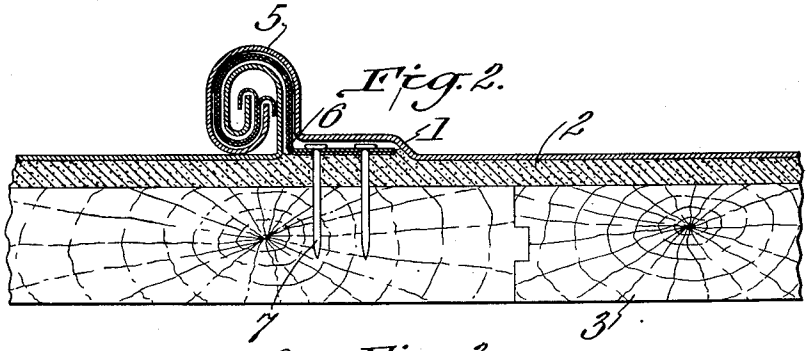


Fig. 3.

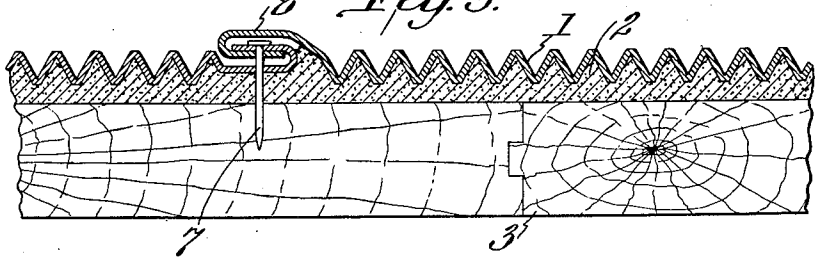
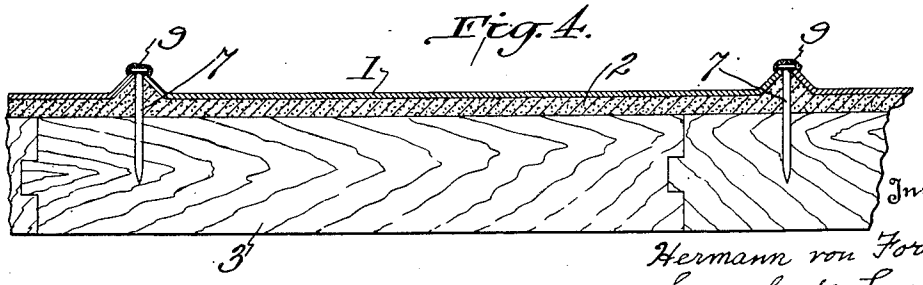


Fig. 4.



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ROOFING MATERIAL

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Application June 19, 1928, Serial No. 286,704
In Germany June 23, 1927

4 Claims. (Cl. 108—6)

This invention relates to the covering of roofs, walls and the like with metals or alloys which are proof against corrosion, especially copper, in the form of sheets of such a thickness that they may be applied in the same manner as wall paper, roofing paper and the like, for example by the use of adhesives, but still have sufficient mechanical strength and sufficient density against the entrance or passage of liquids, gases, air and the like.

The most beautiful and finest roof covering consists of cooper. Roofings of copper are absolutely water proof and stable and have a very fine appearance. Their outstanding disadvantage is their high cost, due to the fact that comparatively thick copper sheets of for example 0.6—1.2 mm thickness are customarily used. The roof construction bearing such a copper covering must, due to the weight of the copper, be very strong and the placing of the copper cover upon the roof is a very expensive work, as the copper sheets are applied as comparatively small plates of 0.7—1 m width and 1.5—2.5 m length, which are connected by soldering, folding or the like. Another disadvantage of copper roofings is their tendency in the course of time to show cross-splitting which tendency increases as the thickness of the roofing metal decreases.

According to the invention the expenses for making copper roofs are considerably decreased; as the weight of the metal to be placed upon the roof is diminished and the expenses for placing the metal upon the roof are decreased. Also the tendency to cross-splitting is practically eliminated. The new roof however has the advantages of the old copper roofs.

When making use of the invention the metal, for example the copper, is not applied in the form of plates but in the form of rolls similar to wall paper rolls. Thus the expenses for transporting and placing the copper roofing and the amount of joints in the roof are decreased. The use of rolls of sheet metal is possible, because the thickness of the metal is considerably decreased. A foil thickness of the metal, such as copper, between 0.1 and 0.2 mm (0.004 to .008 inches, approximately) is preferred. One may however also use thinner and thicker metal sheets, complying with the above mentioned requirements. Sheet metal having a thickness up to 0.5 mm or even somewhat greater may be used.

The manufacture of the copper sheets or the like may be carried out by rolling or by galvanic methods. In the galvanic methods metallic precipitates are continuously made upon drums or belts. When the precipitates have reached the necessary thickness, they are automatically removed from the anode and wound upon a drum.

The metallic, for example copper, sheets may be plain or provided with decorative ornaments of any kind. They may for example also be provided with grooves for improving the running off of water. The ornaments may be produced by rolling with rolls having the corresponding designs or in the galvanic methods by using negatives provided with corresponding engravings.

The thin metal sheets may be placed upon bases of any kind. Thus for example the roofs may first be provided with a roofing of roofing paper and the like, upon which the metallic roofing according to the invention is placed. It is however not necessary to use water proof bases below the metal, as the latter is absolutely water proof. One may therefore also use wood, plaster of Paris and the like for making the bases, upon which the metallic roof is placed. The metal sheets are then placed in the same manner as wall paper upon walls, by using suitable adhesives. Especially suitable adhesives for placing the metallic roofings according to the invention are asphaltic masses. The adhesive may be applied in any manner upon the base for example by spraying, brushing and the like and is preferably of the water proof kind. The adhesive may however also be in the nonfluid or sticky state upon the metallic sheet, which is then heated or treated with solvents before placing it upon the roof, in order to convert the adhesive into the fluid or sticky state.

As the metallic roofing material according to the invention is furnished from the manufacturer in the form of rolls, it is not difficult to place it upon the roof in the same manner as is the case with roofing paper. The rolls may be unwound either vertically or horizontally upon the roof. In the latter case it is advisable to place the lower rim of each sheet over the upper rim of the next lower sheet, thus avoiding the entrance of water. But the folding of two adjoining edges of metallic sheets is not difficult and may be done, as the sheet is nearly just as easily folded as paper. The adjoining edges may however also be connected by soldering or the like.

The new material may also be used as wall covering especially on ships and in tropical countries, where paper is not suitable. The placing of the metallic sheets upon the walls is done in the same manner as with wall paper. When using metallic wall coverings the formation of mold and the like behind the covering is impossible.

Moreover a metallic wall covering which may be provided with decorative ornaments, is light proof, may be easily rinsed and treated with liquid disinfectants.

The drawing which forms a part of this specification illustrates by way of example the subject-matter of this invention.

Fig. 1 shows a roll of sheet metal made in accordance with this invention;

Figs. 2–4 show cross-sections through a surface covered with sheet metal, in accordance with the invention.

In Figures 2–4 of the drawing, 1 represents a sheet of metal, 2 an asphalt layer and 3 a wood base. In Fig. 2, the edges of two adjoining sheets of metal are joined by folding them vertically as shown at 5, and by interfolding a piece of sheet metal 6, as shown. In Fig. 3 the edges of two adjoining sheets are joined by the horizontal fold 8, while in Fig. 4 this is accomplished by welding at 9. In these figures the numeral 7 represents a nail or pin. The surface of the sheet metal 1 in Fig. 3 is provided with grooves.

The metallic sheets according to the invention may also be used for covering other surfaces for example in automobiles, rail road cars, containers for liquids and the like.

Instead of using copper as raw material for making the metallic sheets one may also use brass, bronze and similar copper alloys and other corrosive proof metals and alloys of suitable ductility and mechanical strength.

I claim:

1. An object the surface of which carries a covering of corrosion proof metal in the form of a sheet of foil thickness and of sufficient mechanical strength to be handled without a supporting backing and to withstand the mechanical stresses to which it is subjected in normal use but of less thickness and mechanical strength than is required of sheet metal roofing applied without adhesive attachment to the under-structure, said covering being secured directly to said surface by means of an adhesive material, the metal covering having such inherent flexibility and the adhesive having such inherent plasticity as to be capable of relative movement under differential thermal expansion and contraction without separation from the surface or from the metal covering.

2. An object having a covering as defined in claim 1, in which the covering consists of sheet copper of a thickness less than 0.6 mm.

3. An object having a covering as defined in claim 1, in which the covering consists of sheet copper of a thickness of from 0.1 to 0.2 mm.

4. A protective covering for an object designed to prevent injury of said object by corrosion comprising a coating of plastic adhesive material covering the surface of the object and a sheet of resistant metal having a thickness greater than .0005'' and less than .010'' pressed into intimate contact with said coating and held thereto by the adhesive property thereof, said resistant sheet having such inherent flexibility and said adhesive coating having such inherent plasticity as to be capable of relative movement under differential thermal expansion and contraction without separation from each other or from said protected object.

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