

Sept. 26, 1944.

A. M. COWAN

2,359,205

METAL REINFORCED FIBROUS SHEET

Filed April 28, 1943

FIG. 1.

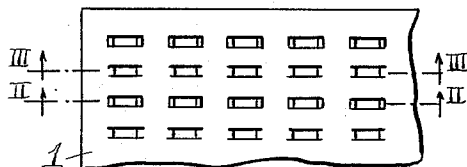


FIG. 2.

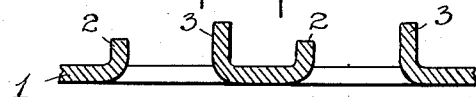


FIG. 3.

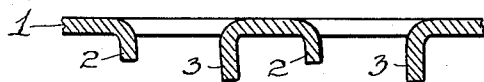


FIG. 4.

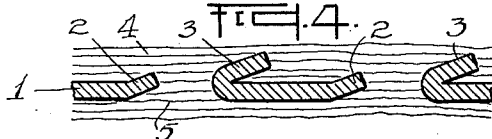


FIG. 5.

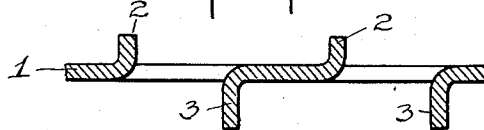


FIG. 6.

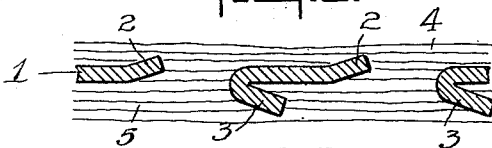


FIG. 7.

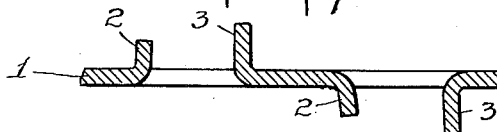
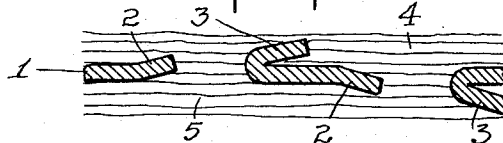


FIG. 8.



INVENTOR.

Albert Michael Cowan

By *Olaf H. Lund*
his ATT'Y.

UNITED STATES PATENT OFFICE

2,359,205

METAL REINFORCED FIBROUS SHEET

Alfred Michael Cowan, Addingham, England

Application April 28, 1943, Serial No. 484,941
In Great Britain March 14, 1942

6 Claims. (Cl. 154—45.9)

This invention relates to improvements in sheet metal cores or reinforcements of the kind associated with asbestos or other fibrous material in the production of layer sheet material.

It is already known to produce a metal core or reinforcement from which projections extending in opposite directions are stamped out and to cover such prepared sheet with asbestos, cardboard or other fibrous material which is caused to adhere to the metal core by the pressing down of the projections. The known material suffers disadvantage in failing perfectly to hold the fibrous material thereto.

Now, the object of the present invention is to improve the construction of the metal core or reinforcement so that it will securely hold the fibrous material.

According to the present invention, two projections are stamped from each aperture in the sheet and one projection is longer than the other. The two projections each extend substantially at right angles to the web. All the projections of a row extend in the same direction, whilst the projections of alternate rows extend in opposite directions when the core is to be covered on both sides.

In order that the invention may be clearly understood and readily carried into effect, examples of embodiments thereof are hereinafter more fully described with reference to the accompanying drawing which is given for purposes of illustration only and not of limitation.

Figure 1 is a plan view of the prepared metal core.

Figure 2 is a section on a greatly enlarged scale, taken on the line II—II of Figure 1.

Figure 3 is a section taken on the line III—III of Figure 1.

Figure 4 is a section through the core after positioning layers of the fibre on both sides and crushing of the projections.

Figure 5 is a section similar to Figure 2 of a modified form of core in which the projections forming a pair extend in opposite directions.

Figure 6 is the section of core of Figure 5 after positioning of fibre layers on both sides thereof and crushing of the projections.

Figure 7 is a section also similar to Figure 2 of another modified form of core in which alternate runs of pairs of projections extend in opposite directions, and

Figure 8 is the section of core of Figure 7 after positioning of fibre layers on both sides thereof and crushing of the projections.

Referring now to the said drawing throughout which like parts bear like reference numerals:

The core 1 is formed of sheet metal such as sheet steel. In this core 1 pairs of projections or tongues 2, 3, are stamped out from the same hole. The second projection 3 of each pair of projections is longer than the first projection 2. The pairs of projections 2, 3 are arranged in rows and adjacent rows may be aligned or in staggered relation as may be desired or convenient to provide a large number of pairs of projections in a given area of the core 1.

In the form of core illustrated in Figure 1 both projections cut from the same hole extend in opposite directions as will be appreciated by comparison of Figures 2 and 3. In a modified form of core illustrated in Figure 5 the shorter projection 2 of a pair extends in the one direction and the longer projection 3 in the opposite direction when the direction of projections is again reversed in adjacent rows. In another modified form of core illustrated in Figure 7 the projections 2, 3 form a hole both extending in the same direction and the direction of projection is reversed in adjacent holes in a run so that the longer projections alternate with the shorter in each run and each adjacent run.

The core 1 with the rows of projections formed in the manner set forth above is covered with layers of fibrous material 4, 5 on opposite sides and is then passed between rollers which compress the fibrous material and crush the projections 2, 3 to hold the material onto the core 1. The action of passing the material through the rolls is to force the one projection of each pair back toward its original position whilst the other projection is further bent to hold the material between itself and the web of the core. It is preferred that it is the shorter projection which is the one urged back towards its original position as is illustrated in Figures 4, 6 and 8.

The fibrous materials of the layers 4, 5, may be asbestos, natural or artificial fibrous material or other convenient materials in fibrous form.

The metal core is preferably steel and the projections therein are conveniently formed by passing the sheet through stamping rolls adapted in the one operation to cut and bend the projections which are desirably closely spaced.

The finished sheet may be treated with a chemical composition to produce a waterproof, petrol and weather-resisting composite sheet of durable character.

What I claim is:

1. Reinforced fibrous sheet material compris-

ing two compressed fiber layers, a sheet metal core provided with a plurality of slots arranged in parallel rows, and pairs of tongues stamped out from said sheet metal core to form said slots, the two tongues of each pair being integral with said sheet metal core at opposite ends of the corresponding slots and projecting into said fiber layers so as to anchor the same to said core, one tongue of each pair forming an acute angle with said core and the other tongue of each pair forming an obtuse angle with said core.

2. Reinforced fibrous sheet material, as claimed in claim 1, in which the two tongues of each pair are of unequal length, the longer tongue of each pair forming the acute angle with said core.

3. Reinforced fibrous sheet material, as claimed in claim 1, in which the two tongues of each pair are integral with said sheet metal core at opposite ends of one and the same slot.

4. Reinforced fibrous sheet material, as claimed in claim 1, in which both tongues of each pair project from said sheet metal core in the same direction and the tongues of the corresponding pairs in alternate parallel rows project in opposite directions.

5. Reinforced fibrous sheet material, as claimed in claim 1, in which all the tongues in each of said rows project from said sheet material core in the same direction, and the tongues in alternate parallel rows project in opposite directions.

6. Reinforced fibrous sheet material, as claimed in claim 1, in which the two tongues of each pair project from said sheet metal core in opposite directions and corresponding tongues of corresponding pairs in alternate parallel rows project in opposite directions.

ALFRED MICHAEL COWAN.