

A. P. WHITE.,
BUILDING MATERIAL.
APPLICATION FILED APR. 4, 1912.

1,049,631.

Patented Jan. 7, 1913.
2 SHEETS—SHEET 1.

FIG. 1.

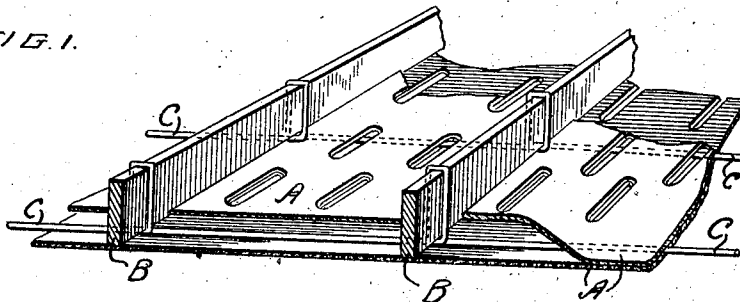


FIG. 2.

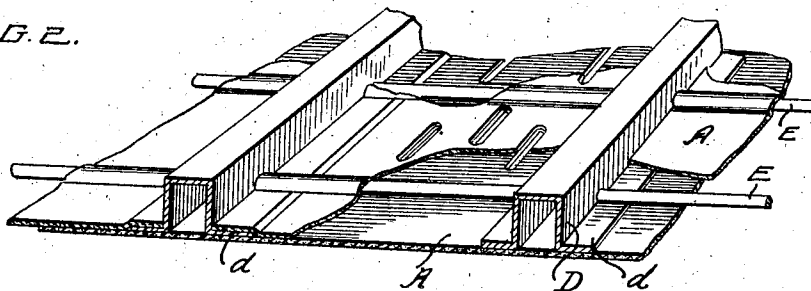


FIG. 3.

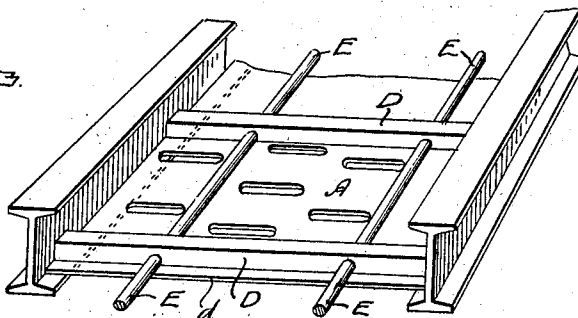
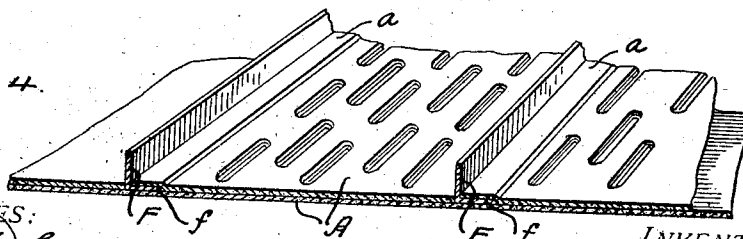


FIG. 4.



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FIG. 5.

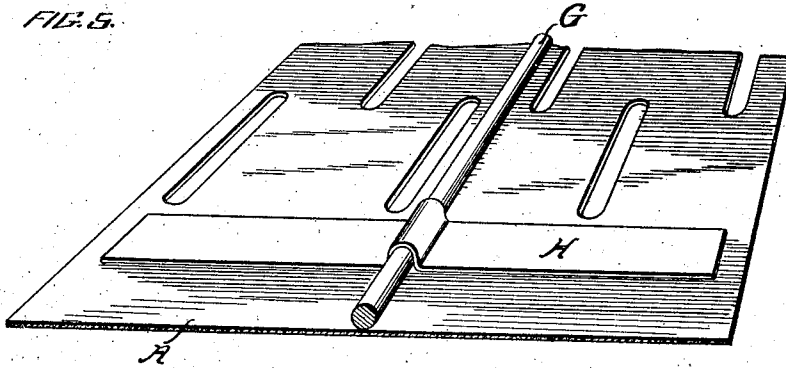
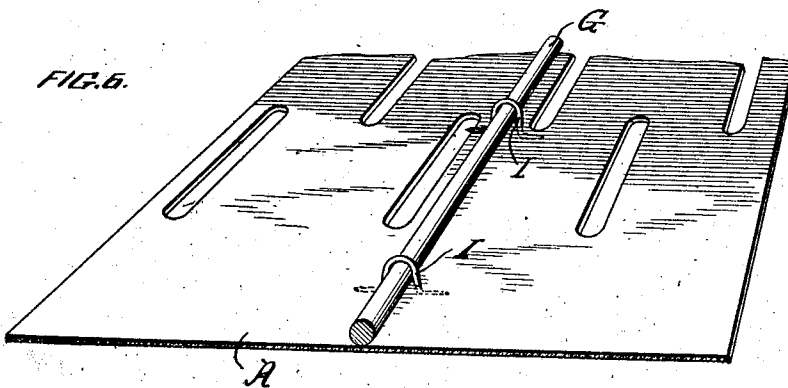


FIG. 6.



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ALEXANDER P. WHITE, OF CALDWELL, NEW JERSEY.

BUILDING MATERIAL.

1,049,631.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed April 4, 1912. Serial No. 688,490.

To all whom it may concern:

Be it known that I, ALEXANDER P. WHITE, a citizen of the United States, residing at Caldwell, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Building Material, of which the following is a specification.

This invention relates to a new and practical composite material for different uses in building construction, and more particularly for reinforcing concrete bodies, such as walls, floors, partitions, and other structural parts.

To this end, the invention has in view the production of a composite building material embodying in its organization a stone-permeated body sheet or sheets of fibrous material, and metallic members carried with the body sheet and projecting therefrom to constitute metal-ribs for reinforcing the concrete structure.

The object of the invention is to simplify, improve and cheapen building construction, by providing a new and substantial composite material of paper, artificial stone, and metal, which can be formed or produced in certain shapes, easily transported, and readily adapted to be put into position without special skill.

The present application includes subject matter divided from the parent copending application filed August 7, 1911, Serial No. 642,842.

Though susceptible of embodiment in various forms, and capable of use in different ways, certain preferred and practical forms of the invention are shown in the accompanying drawings, in which—

Figure 1 is a sectional perspective view of a section of composite building material embodying the present invention, and illustrating that form thereof, wherein the metal reinforce members constitute the ribs of the sheet and are arranged for engagement by a cementitious substance. Fig. 2 is a similar view of another form of the invention wherein the metal reinforce members are in the form of flanged channels through which extend secondary metallic rods to brace the structure. Fig. 3 is a perspective view illustrating the application of the invention, showing the design represented by Fig. 2 resting on the flanges of I beams, ready for the concrete to be poured in to form the floor. Fig. 4 is a detail view in perspective,

showing another form of the invention wherein angle pieces are employed to provide the metal ribs. Fig. 5 is a perspective view of another form of the invention wherein the projecting metal ribs may be held upon the fibrous body sheet by paper or equivalent retaining strips. Fig. 6 is a view similar to Fig. 5 illustrating the expedient of employing metal staples clenched to the fibrous body sheet and arranged to act as retainers for holding in place the projecting metal ribs upon the side of the sheet.

Like references designate corresponding parts in the several figures of the drawings.

In carrying out the invention, a fibrous body material A of suitable thickness and porosity is selected. This body material preferably consists of a sheet or sheets of paper which is subjected to treatment in a liquid form of artificial stone, thus to combine the stone and paper by permeation, and before the liquid form of stone sets or dries it is preferable and desirable to subject the stone-permeated fibrous material to pressure in a press, and thus by this instrumentality to effect an intimate union or amalgamation of the stone with the paper. In this connection, it is also preferable and desirable to maintain a pressure on the stone-permeated fibrous material while the same is drying. The artificial stone solution, by going into the paper causes the sheets, particularly when under pressure, to lose their identity, producing a body that has entirely new characteristics. Many artificial stone compounds are available for the treatment of this fibrous body material, it only being required that a composition of this character possess the ability to change, on drying or setting, from the plastic state to a hard crystalline body having the qualities of stone. As an example, one composition that may be utilized for this purpose is one consisting of a solution of silicate of soda, infusorial earth and oxid of zinc.

In the several illustrations, I have shown how the composite body formed of the stone and paper may be combined with metal to be specially available for use in reinforcing concrete bodies. Also, in the several illustrations, I have shown how the composite body formed of the stone and paper may be combined with metal to serve for other structural purposes. Many efforts have been made to find a suitable and economical substitute for the wooden forms or molds,

used in the installation of concrete floors. The custom is first to put in place, a false wooden floor to close the space between steel I beams. Steel rods, bars and steel in other shapes to provide for tensile stresses, are then placed on the wooden forms and the concrete poured over them, the woodwork being removed after the concrete has set and hardened.

In Fig. 1, I show how the tension members may be combined with the composite material and no other form will be required to hold the concrete. In this figure, A represents the paper and stone, B the tension member, and C a cross rod of metal to brace the composite structure.

By Fig. 3, I illustrate how the article of the invention may be placed on the flanges of parallel I beams preparatory to the pouring of the concrete. It is obvious that it can be placed on the top of the I beams, to serve the same purpose when it is desired to arrange the floor above the beams.

In Fig. 2, I show a type in which the main metallic members consist of channels formed of sheet metal. These channels have been provided with holes through which rods E have been passed to strengthen the product.

It is of course obvious that if additional or heavier reinforcement is required for the concrete body, other supplemental reinforcement can be supplied by laying bars, rods or other forms of metal on the composite material in the same manner as such reinforces are placed on the temporary wooden supports.

Especially when the material is to be used in connection with the installation of concrete, I prefer to carry the treatment another step further, by immersing the article in a solution of the same character described above, but preferably not so thick. The effect of this treatment is to superimpose on the stone-permeated paper a coating, of pure artificial stone, and strengthen the article.

Referring to additional structural details in certain forms of the invention, it will be observed that in the design shown in Fig. 2 of the drawings, the metal tension members or ribs, designated D, are in the form of hollow flanged channels, the flanges *d* of which provide tangs that are engaged by the body material so as to fasten the metallic members or ribs to such body material. Also, in this design, the supplemental elements, designated E, are in the form of rods that are passed through holes in the channels D above the tangs or flanges thereof, thereby acting as braces and also giving a desirable reinforcement to the structure.

In the form of the invention shown in Fig. 4 of the drawings, the metal tension members or ribs, designated F, are shown as

consisting of angle strips or bars, having tang parts *f* that are engaged by the body A, for instance by overlapping an edge portion *a* of such body upon the said tangs, and thus serving to cement them to the body by the stone composition.

In Fig. 5 of the drawings, there is suggested a modification in which the article may consist of a single sheet A of fibrous body material, containing the permeant of artificial stone and carrying, upon one side thereof, projecting metal ribs G consisting of metal rods which are held upon the stone-permeated sheet by paper or equivalent retaining strips H. A modification of this construction is illustrated in Fig. 6 and consists in the employment of metal staples I embracing the metal rod or rib G and clenched to the fibrous body sheet, said staples being arranged to act as retainers for holding the metal rods in place.

In both forms of the invention illustrated in Figs. 5 and 6 of the drawings, it is desirable to reinforce the article itself by supplemental dipping thereof in a solution of the stone substance after the rods have been attached to the fibrous sheet. In all forms of the invention, however, whether subjected to this supplemental treatment or not, the feature is preserved of having the metal or parts of it projected from the plane of the fibrous body or sheet.

Various other modifications may be resorted to without departing from the spirit or scope of the invention, and any suitable means may be employed for forming and assembling of the elements entering into the construction of the article.

I claim:—

1. A building form consisting of metal ribs and a body of fibrous material in sheet form, said body supporting the metal ribs and containing a permeant of artificial stone.

2. A building form comprising metal ribs and a body of fibrous material in sheet form supporting the said ribs and containing a permeant of artificial stone, the said body and its ribs having a coating or artificial stone.

3. A building form comprising a body of fibrous material in sheet form containing a permeant of artificial stone, and metal ribs projecting from said body and provided with portions engaged with the body.

4. As an article of manufacture, a structural element for buildings and the like, consisting of a body of fibrous material in sheet form containing a permeant of artificial stone, and projecting metal ribs having tang portions engaged by the body.

5. As an article of manufacture, a structural element for buildings and the like, consisting of a relatively thin body composed of fibrous material containing a per-

meant of artificial stone, and a metallic member having a tang part engaged by the body portion of the structure, and a rib part projecting at one side of the plane of the
5 body portion.

6. As an article of manufacture, a structural element for buildings and the like, consisting of a body of fibrous material in sheet form, metal ribs carried by the body,

and supplemental metal elements connect- 10
ing said ribs, the fibrous material containing a permeant of artificial stone.

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

ALEXANDER P. WHITE.

Witnesses:

J. B. DE WOLF,
G. A. MCGURK.