

Oct. 16, 1928.

1,687,952

J. STANDER

METHOD OF MAKING COMPOSITE PANELS FOR METAL FURNITURE

Filed June 28, 1928

Fig. 1.

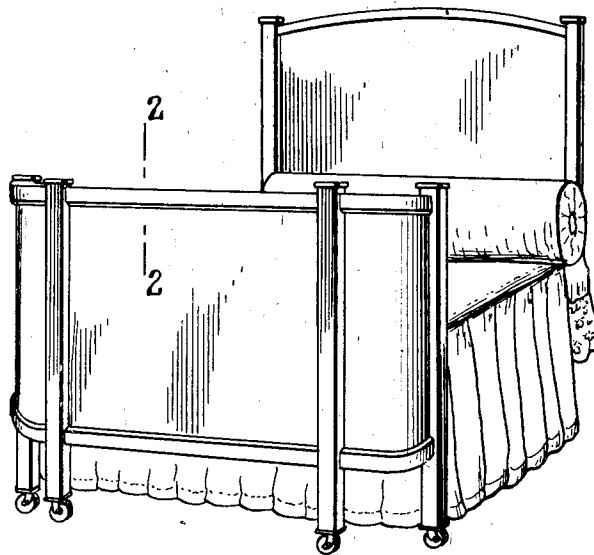


Fig. 2.

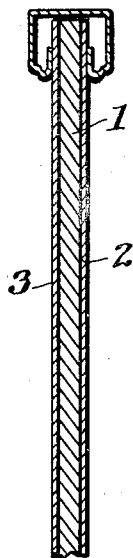
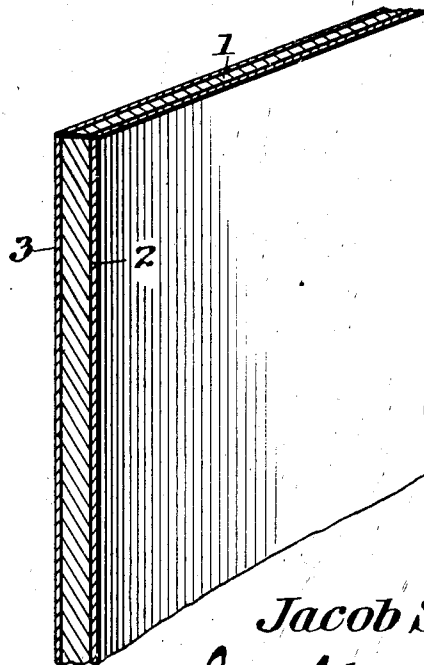


Fig. 3.



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Patented Oct. 16, 1928.

1,687,952

UNITED STATES PATENT OFFICE.

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METHOD OF MAKING COMPOSITE PANELS FOR METAL FURNITURE.

Application filed June 28, 1928. Serial No. 289,067.

My invention relates to new and useful improvements in materials for making metal furniture and office partitions and more particularly to a composite material or panel from which furniture may be produced and the method of making same, the primary object of the invention being to provide a product and means for making same which will utilize outer faces of metal between which is introduced a member of cellulosic material formed of any desired material such as wood, paste board, insulating board, beaver board or any other analogous material.

A further object of the invention resides in producing a material of the character mentioned which will be particularly well adapted for use in the production of metal furniture or office partitions by reason of the fact that the same will be noise-proof, fire-proof, water-proof and light in weight, and a further object resides in producing a composite material which will be no more expensive, if not less expensive, to manufacture than the ordinary metal panels and the like used for the manufacture of metal furniture.

A further object of the invention resides in the improved method by which the cellulosic material and the metal are secured together to produce the composite panel.

A further object of the invention resides in the production of a material which is capable of being produced in various shapes, forms and sizes.

A further object resides in providing a material which is simple and durable in construction, comparatively inexpensive to manufacture, and one which will be exceptionally useful in practice.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawing, forming a part of this application:

Figure 1 is a perspective view of a bed constructed of material formed or produced in accordance with my improved method;

Figure 2 is a fragmentary vertical section therethrough as seen on the line 2—2 of Figure 1; and

Figure 3 is a sectional perspective view of a segment of the material produced in accordance with my improved method.

In recent years, metal furniture has become

very popular by reason of the fact that it is quite sanitary and has been made in colors, shapes and designs which are more or less desirable, but it has been found that there are disadvantages connected with the ordinary metal furniture in that heavy metal is necessary and the sound of metal is undesirable to the user. Even though a piece of furniture may appear by reason of its shape and color to be constructed of wood, if when struck the sound of metal is discovered, it is most distasteful.

I have, after years of experience and experimental work, discovered a material and method of producing the same which will overcome the many difficulties encountered in the use of the ordinary metal used for the manufacture of furniture and in describing this product and the method of making the same, I shall refer to the drawing in which similar reference characters designate corresponding parts throughout the several views.

For convenience, I have illustrated in Figure 1 a bed which is constructed of my improved material, but, of course, it will be understood that any other piece of furniture or structure may be constructed of this material and in further describing the material, I shall refer to the same as a panel, inasmuch as the material is made up usually in sheets or panels. The numeral 1 designates a member formed of cellulosic material and it may be any one of a number of materials, such as wood, insulating board, paste board, beaver board or any other analogous products now known to the trade. In this connection, I do not wish to be limited to any particular material, inasmuch as I have found that any of the materials hereabove named may be equally well utilized for the purpose desired. To the opposite faces of this member 1 are applied the metal sheets or layers 2 and 3, respectively, which completes the material which is most well adapted for the purposes desired, but the particular method of applying and securing these sheets of metal to the central cellulosic member 1 is most important and essential to the effective operation of the invention and the method of accomplishing this will be described in detail herebelow.

Many efforts have been made to secure sheets of metal to some sound-deadening material, but this has not been effectively accomplished for the reason that no proper and effective means for securing the metal

to such materials had been produced. As stated above, I have discovered, after years of experience, the method and means for effectively securing metal to a cellulosic material which will not only withstand heat in a baking process but which will under such baking more effectively and positively secure the elements together.

In carrying out my method to bring about the results desired, the cellulosic material, such as insulating board, beaver board or any other material, is first treated with any desired chemical to harden the same as by applying silicate of soda to the surfaces of the material which closes the pores of the latter, the hardening step being particularly desirable when insulating or beaver board or the like is used, in order to cause the paper and other particles of which the same is formed to closely adhere to one another and harden in general. Following this treatment of the cellulosic material, the latter is allowed to dry thoroughly under normal conditions.

Sheets of thin metal, as for instance, 30 gauge metal or another gauge if desired, are provided and one face of each sheet, which becomes the inner face thereof when applied to use, is thoroughly cleansed with vinegar to remove all surface polish and other extraneous matter thereon. These sheets so cleansed are then allowed to dry under normal conditions.

I then produce a varnish known as a phenol resin varnish otherwise known under the trade name of "bakelite", composed of approximately 55% of synthetic resin, which is a condensation product of phenol and formaldehyde, 24% acetone, and 21% of denatured alcohol by weight. The cellulosic material and the inner cleansed faces of the sheets of metal are then treated with this phenol resin varnish by applying the latter with a brush thereto, both faces of the cellulosic material being covered with this varnish. While wet with this varnish, the sheets of metal are applied to opposite faces of the cellulosic material and placed under pressure with clamps or other similar devices and immediately placed in a baking oven. Heat of 250° to 300° F. is applied thereto and this baking process is continued for approximately one hour. This dries out the elements of the composite material and at the same time causes said elements to become adhered together and form one composite element.

The composite material is then removed from the oven, allowed to cool and is then manufactured into furniture or office partitions or otherwise, as may be desired, whereupon the same is painted or lacquered, as usual, and the finished product again placed in the baking oven with heat applied at 300° F. for approximately one hour. When removed, another coat of varnish may be applied and if necessary, additional baking

processes may be carried on as found desirable. It has been found that through the particular treatment given the elements forming my composite material, the method of applying said elements together enables same to withstand a series of baking treatments and it has been further ascertained that with each baking treatment, the material becomes stronger.

It may be here stated that my improved composite material may be of any desired thickness, from one-sixteenth of an inch to two inches in thickness and may be formed into any shape for any desired purpose. The metal sheets 2 and 3 are of very thin gauge metal and the thickness of the composite panel may be varied by increasing or decreasing the thickness of the cellulosic member 1. This cellulosic member produces a material which is sound-proof, and through the particular treatment of said member and the use of the metal sheets, the composite material is also water-proof, fire-proof and sanitary.

As stated above, the greatest difficulty has been encountered in efforts to produce a composite panel by reason of the fact that no effective method has been discovered for securing metal to a sound proof or cellulosic material. By my improved method, these difficulties have been definitely and positively overcome and it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention.

Moreover, the material produced under my improved method is so light in weight that a panel thereof which is one-fourth of an inch in thickness will weigh no more than a similar size panel of number 20 gauge regular sheet metal.

While I have particularly described the elements best adapted to perform the functions of my invention as set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the principles of the invention.

Having described my invention, what I claim is:

1. A method of making a composite panel comprising a member of cellulosic material and a metal facing, which consists in first treating the cellulosic member to harden the same, then treating one face of said facing and said cellulosic member when dry with a phenol resin varnish, applying under pressure said facing to the member while wet and baking the same at a high temperature.

2. A method of making a composite panel comprising a member of cellulosic material and metal facings, which consists in first treating the cellulosic member to harden the same, allowing the treated member to dry under normal conditions, then treating the

inner opposed faces of the metal facings and said cellulosic member when dry with a phenol resin varnish, applying under pressure said facings to the cellulosic member while wet and baking the same at a high temperature.

3. A method of making a composite panel comprising a member of cellulosic material and a metal facing, which consists in first treating the cellulosic member to harden the same, allowing the treated member to dry, then treating one face of said facing and said cellulosic member when dry with a phenol resin varnish composed of synthetic resin, acetone and denatured alcohol, applying under pressure said facing to the cellulosic member while wet and baking the same at a high temperature.

4. A method of making a composite panel comprising a member of cellulosic material and a metal facing, which consists in first treating the cellulosic member to harden the same, allowing said treated member to dry, then treating one face of said facing and said cellulosic member when dry with a phenol resin varnish, applying under pressure said facing to the member while wet and baking the same at a temperature of 300° F.

In testimony whereof I affix my signature.

JACOB STANDER.