

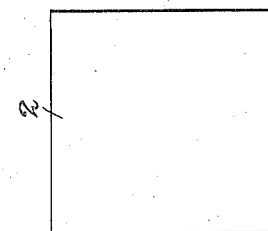
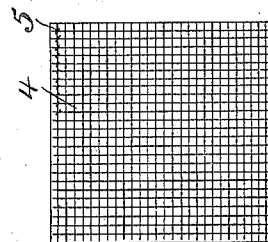
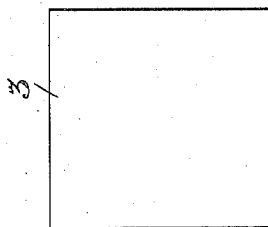
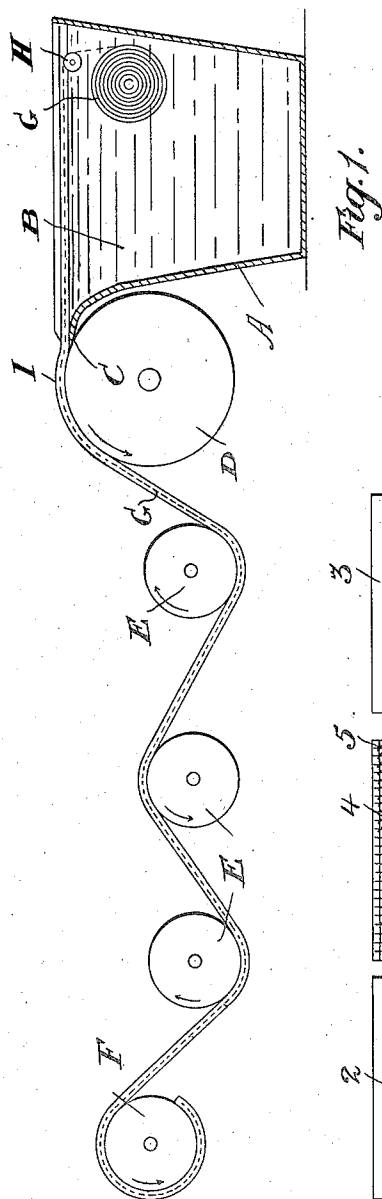
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1,550,041

E. C. NOONAN

REINFORCED FIBROUS MATERIAL AND METHOD OF MAKING SAME

Filed March 10, 1921



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UNITED STATES PATENT OFFICE.

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REINFORCED FIBROUS MATERIAL AND METHOD OF MAKING SAME.

Application filed March 10, 1921. Serial No. 451,337.

To all whom it may concern:

Be it known that I, EDWARD CORNELIUS NOONAN, a citizen of the United States, residing in the city of Toronto, county of York, Province of Ontario, Canada, have invented an Improved Reinforced Fibrous Material and Method of Making Same, of which the following is a specification.

My invention relates to an improved reinforced fibrous material, and method of making same, and the object of the invention is to reinforce or strengthen fibrous material such as paper, and paper board at the time of manufacture thereof in sheet form, so as to adapt the same for uses to which they cannot now be put, or to manufacture various articles therefrom, and in the following specification I shall describe my product, and the method of producing the same, and what I claim as new will be set forth in the claims forming part of this specification.

Fig. 1 is a side elevation, partly in section, of an apparatus adapted to mechanically produce my product. Figs. 2, 3 and 4 are plan views of the separated top, centre, and the bottom portion, of a sheet of fibrous material made according to my invention, and Fig. 5 is a cross-section through my fibrous material.

In the drawings, like characters of reference refer to the same parts.

Many durable articles can be made from suitable fibrous materials in various forms, if the said materials be properly reinforced, and broadly considered my invention consists in associating with suitable fibrous materials, such as paper, or paper board at the time of manufacture thereof in sheet form, wire netting in the manner herein-after more particularly explained.

In producing my product I show a vat A containing a pulp B. This pulp may be made of any desired suitable material or materials, and is prepared in any suitable way, and adjacent the lip C of the vat is a heated roll D, which is revolved by any suitable means in the direction indicated by arrow. Mounted within the vat A, and submerged in the pulp B, is a roll G of wire netting. The fibres will penetrate the roll of submerged wire netting and become lodged in the mesh or openings between the crossed wires, and as the wire is moved at the same rate of speed as the flow of the pulp B from the vat A over the roller H

and lip C, other fibres will be located in said mesh or openings in such manner that the wire netting will become an integral part of the sheet of paper or paper board ultimately formed. When the pulp B comes into contact with the heated roll D, it is formed into a sheet, and the said reinforcing material becomes permanently-associated therewith. The product is then passed alternately under and over a series of heated rolls E, and then finally stored as on a roll F.

It will be observed upon referring to the dotted line substantially midway the outer surfaces of the sheet I, that the reinforcing wire netting has been thoroughly incorporated therewith; and this is done in such fashion as to strengthen the said sheet both laterally and longitudinally. To effect the foregoing in the best manner, the strengthening or reinforcing material should preferably be in the form of wire netting, placed to the best advantage, obviously.

In Figs. 2, 3 and 4 I show a section of my reinforced fibrous material separated into three component parts, which may be named the two outer coverings 2 and 3, made of cellulose, such as paper, or paper board, and the interior reinforcing wire netting 4.

Fig. 3 shows the wire netting as interlocked where the wires cross each other at 5: this interlocking is accomplished preferably by twisting the overlying wires.

Although I prefer to use wire netting, still it must be understood that netting made of any suitable material, that can be incorporated with the sheet of fibrous material at the time of manufacture thereof, which will strengthen the same longitudinally and transversely must be considered as falling within the terms of my invention.

When I use wire netting, I prefer using that made of Monel metal, because this metal will not rust.

The mesh in the netting may be regular or irregular, as desired, and of any suitable size.

While I show the reinforcing material, as substantially in the middle of the product, in Figs. 1 and 5 these illustrations are merely exemplary. It is just conceivable that some articles of manufacture may be thicker on one side of the reinforcing or strengthening material than on the other.

Where the pulp consists substantially of cellulose, before strengthening it, or after-

wards, I may treat it to render the product waterproof or substantially so.

What I claim is:

5 The method of simultaneously manufacturing and reenforcing cellulose in sheet form, which consists in submerging a roll of netting in a body of pulp to fill the mesh

thereof, and then drawing said filled netting from said body of pulp at the same rate that a layer of said pulp flows from 10 said body, and passing the same over a rotating heated roll.

EDWARD CORNELIUS NOONAN.