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1,774,573

PROCESS OF MAKING CREPED PAPER LINED INSULATING MATERIAL

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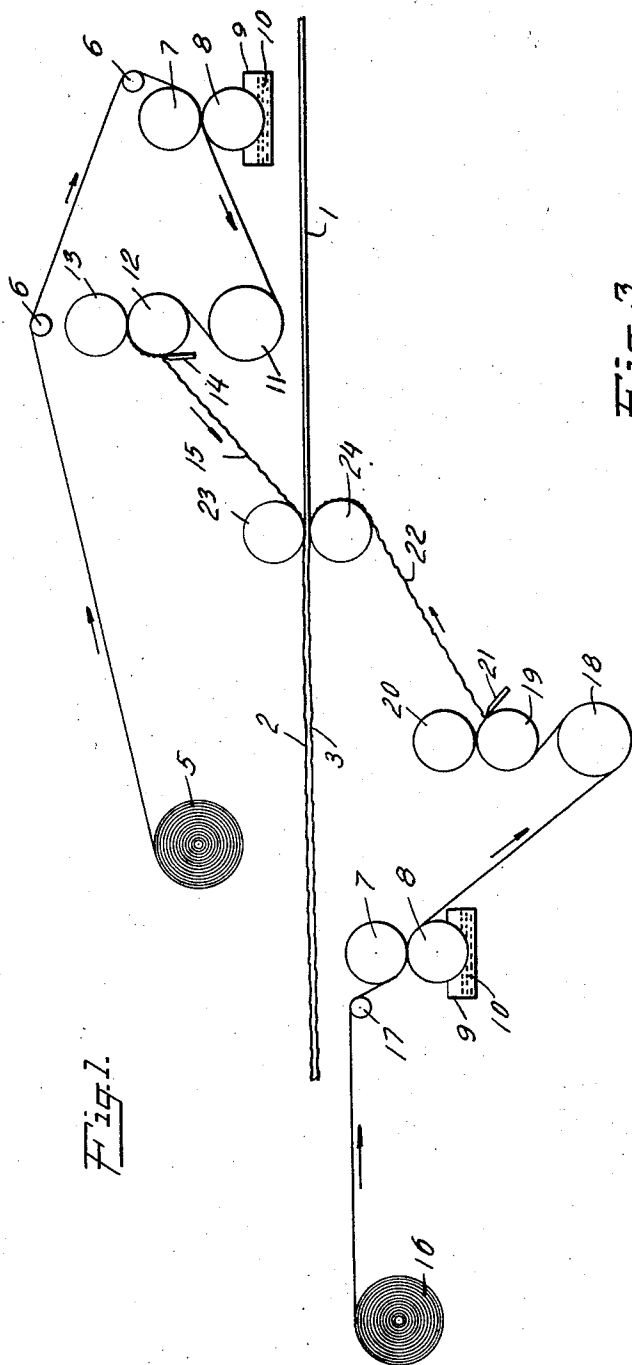


Fig. 1.

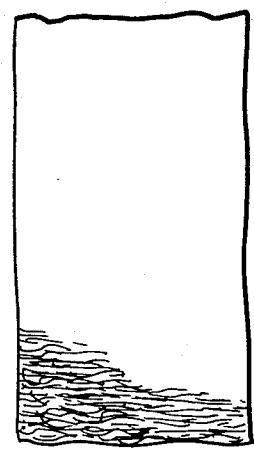


Fig. 3.

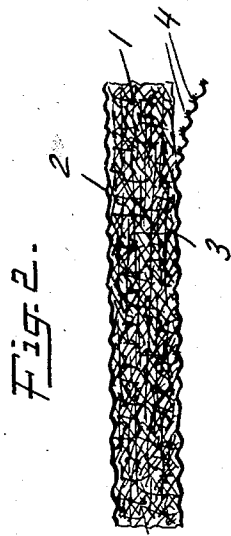


Fig. 2.

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PROCESS OF MAKING CREPED-PAPER-LINED INSULATING MATERIAL

Application filed May 9, 1929. Serial No. 361,648.

This invention relates to the manufacture of insulating material and more particularly to the method of making an insulating material consisting of an elastic fibrous core and an elastic covering sheet.

In a prior patent of Howard F. Weiss, No. 1,336,402, granted April 6, 1920 there is disclosed and claimed the production of mats of fibrous material in which wood or similar material is shredded to form a loose and flocculent layer of shredded fibers and these fibers are then deposited upon a support and sprayed with an adhesive to unite them to each other at their points of intersection. Such mats may be provided with covering sheets of paper or other similar material to produce an insulating material as is disclosed and claimed in the Weiss Patent No. 1,336,403. As disclosed in this patent the covering sheets may be united to the mat by an adhesive, thus, entirely eliminating the necessity of sewing the covering sheets to the fibrous mats.

For certain purposes, as for use in combination with a refrigerator car wall or other frame subject to racking, an elastic covering sheet is preferably employed so that the composite insulating material may give, without rupture, with the frame. Creped paper may be employed for this purpose as is disclosed in the patent to Edwin W. Davis No. 1,672,639 granted June 5, 1928.

My invention relates to a method of making insulating material of the type disclosed in the Davis patent. It has been proposed to produce creped paper by applying a layer of adhesive material thereto, conducting the coated paper over a roll and applying pressure thereto to cause it to adhere to the roll and then stripping it from the roll by a doctor. In this manner, the doctor or creping knife removes the paper from the roll and crepes it.

My invention consists in the unitary process of applying a layer of suitable adhesive to a sheet of paper, passing the sheet of paper over a roll to which it adheres, stripping it from the roll by a doctor to crepe it, and uniting the creped paper to a fibrous mat or core. I, thus, utilize the adhesive for

creping the paper and then, while it is still in a plastic condition, utilize the same adhesive to secure the covering sheet to the core.

The fibrous core may be of the type disclosed in the Weiss patents referred to above or other suitable fibrous cores may be employed. In preparing a fibrous core in accordance with the disclosure of the Weiss patents I may employ wood fibers or other fibrous material such as animal fiber, vegetable fiber and even mineral fibers may be used. Hair felts, flax fiber, eel grass and other materials commonly employed in the manufacture of fibrous mats may also be employed. The creped paper may be in single or multiple thicknesses and various adhesives may be employed for securing the creped paper covering sheets to the mat. I preferably employ a plastic, bituminous substance, such as asphalt, which does not require drying after it is applied to the paper. In the accompanying drawings I have diagrammatically illustrated one manner of practicing the process. In the drawings,

Fig. 1 is a diagrammatic side elevation of suitable apparatus for applying covering sheets to each side of a fibrous mat in accordance with my invention;

Fig. 2 is a side view of the product; and

Fig. 3 is a plan view of the product.

Referring to the drawings, the reference numeral 1 designates a fibrous mat which may be formed in accordance with the Weiss process or in any suitable manner. This mat is fed progressively forward in the production of the desired product by suitable means (not shown) and creped paper covering sheets 2 and 3 are attached to its upper and lower surfaces respectively. In Fig. 2 of the drawings the lower covering sheet 3 is shown partially removed to illustrate the adhesive coating 4 applied to the inner surface of the covering sheet to cause it to adhere to the core.

The paper for forming the upper covering sheet 2 is delivered from a roll 5 over suitable idler rolls 6 between a pair of asphalt coating rolls 7 and 8. The lower roll 8 dips into a tank 9 containing a quantity 10 of asphalt and applies a coating to one surface of the

paper. The paper then passes over a cooling drum 11 with its coated surface outwardly and then passes over a creping roll 12 with the coated surface against the roll. A pressure roll 13 is arranged over the creping roll to cause the coated paper to adhere to the creping roll. This pressure roll is preferably provided with a covering of rubber. At the far side of the creping roll there is provided a creping knife or doctor 14 which strips the paper from the roll and crepes it. The feed of the apparatus beyond this point is at a slower speed than the feed of the paper to the creping roll 12, and the relation of these two speeds governs the creping of the paper. The creped paper indicated at 15 is then fed downwardly toward the fibrous core or mat 1 which is being fed progressively through the apparatus.

Similarly, a roll 16 of paper is arranged beneath the plane of the mat and the paper from this roll passes over an idler roll 17 and is then provided with a coating of asphalt or other adhesive by means of apparatus similar to that heretofore described and to which similar reference numerals have been applied. To feed the paper from the roll 16 to the lower side of the mat, a slightly different arrangement of the creping roll and its associated parts is necessary. As shown, the cooling drum 18 of the lower mechanism is arranged below the creping roll 19 and the paper passes around these two rolls in the manner heretofore described with its uncoated surface in contact with the cooling drum and its coated surface in contact with the creping roll. A pressure roll 20 is arranged above the creping roll and a creping knife or doctor 21 is arranged tangentially of the creping roll as shown in the drawing. The creped paper 22 from the lower creping mechanism passes upwardly toward the mat and a pair of guide rolls 23 and 24 are arranged above and below the mat at the point where the two sheets of creped paper are brought in contact with the mat. As shown the uncoated sides of these sheets contact with the guide rolls and feed the sheets into position to cause the coated sides to contact with the upper and lower surfaces of the mat and adhere thereto by means of the adhesive already applied to the surfaces of the sheets for creping. Pressure may be exerted by means of the rolls 23 and 24 to cause the covering sheets to adhere to the mat.

I claim:

1. The method of making insulating material consisting of a fibrous elastic core and a covering sheet of creped paper which comprises applying a layer of adhesive to one surface of a sheet of paper, passing the paper over a roll with the coated surface of the paper in contact with the roll to cause it to adhere thereto, stripping the paper from the roll whereby the paper is creped, and then

uniting the paper to the fibrous core by means of the adhesive previously applied thereto for creping.

2. The method of making insulating material consisting of a fibrous elastic core and a covering sheet of creped paper which comprises applying a layer of plastic bituminous substance to one surface of the paper, passing the paper over a roll with the coated surface in contact with the roll to cause the paper to adhere thereto, stripping the paper from the roll whereby it is creped and then uniting the paper to said fibrous core by means of said layer of plastic bituminous substance.

3. The method of making insulating material consisting of a fibrous elastic core and a covering sheet of creped paper which comprises applying a layer of plastic bituminous substance to one surface of the paper, passing the paper over a roll with the coated surface in contact with the roll to cause the paper to adhere thereto, stripping the paper from the roll whereby it is creped, said plastic bituminous substance being applied to the paper in sufficient quantity to later serve as an adhesive, and then uniting said paper to a fibrous core by means of said plastic bituminous substance.

In testimony whereof I affix my signature.

ALLEN L. SPAFFORD