

June 19, 1934.

C. S. SMALLISH

1,963,177

SEALED QUILTED MATERIAL

Filed Aug. 8, 1931

Fig. 1

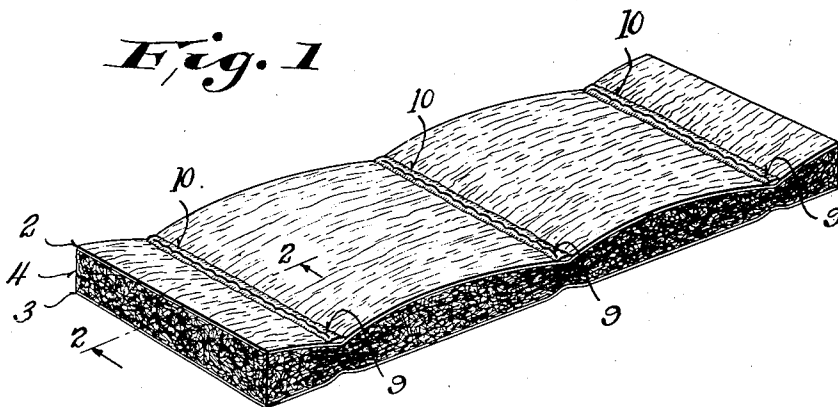


Fig. 2

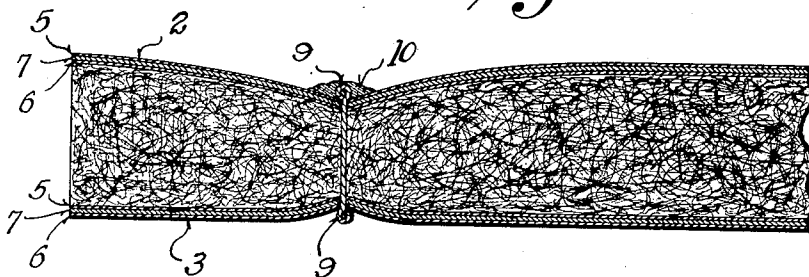


Fig. 3

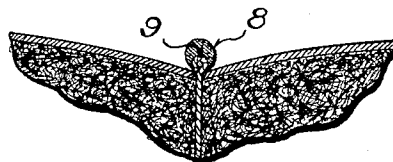
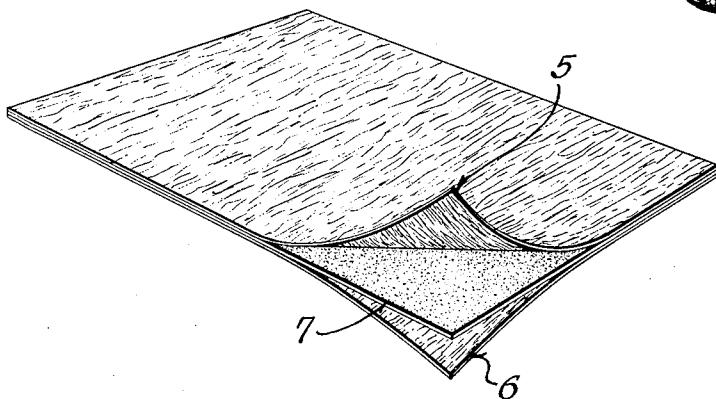


Fig. 4



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1,963,177

SEALED QUILTED MATERIAL

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Application August 8, 1931, Serial No. 555,942

1 Claim. (Cl. 154—54)

The invention relates to a new article of manufacture, a sealed, quilted material.

In the forming of quilted materials, such as structural insulating materials formed of a layer of fiber enclosed between two layers of sheet material united with stitches at spaced intervals, it is desirable to seal the said stitches to prevent air infiltration. In my copending application, Serial No. 547,527, I have disclosed a process for the formation of such sealed material. The present invention relates to certain material, made according to the aforesaid process, of superior quality, which can be manufactured with greater facility. Said material is made in the manner disclosed in said copending application or in any other suitable manner and consists of a layer of soft animal or vegetable fiber loosely matted together and faced on either side with a layer of special sheet material whose surface is specially adapted for the reception of a sealing compound. The layer of fiber and the facings are united with stitches at spaced intervals and the stitches are sealed with a composition of water and soluble sodium silicate or a composition of glue, either animal or vegetable, or any other suitable substance.

In describing the article of manufacture of this invention reference is made to the attending drawing in which

Fig. 1 is a perspective view of the article;
Fig. 2 is a cross-section thereof, taken at the line 2—2;

Fig. 3 is a partial section of old material;

Fig. 4 is a detail view of the sheet material employed with the various layers thereof separated and exposed.

The material as shown in Fig. 1 consists of the principal layers of sheet material 2 and 3 which enclose the other principal layer 4 of loosely matted fiber. The whole is united by the stitching 9 and sealed with the sealing substance 10.

The sheet material used for enclosures prior to this invention has been composed of heavy paper quite thoroughly impregnated with asphalt or other pitchlike material. The quilted article when formed with impregnated paper is not entirely satisfactory. Important mechanical properties of impregnated paper, such as tearing strength and pliability, vary with temperature and a compromise in the selection of the impregnating substance is necessary. The paper is only well suited for the purpose over a range of temperature—the selection of which range is a matter of judgment. In the manufacture

of quilted materials according to the method outlined in my copending application, Serial No. 542,527, wherein the stitches are sealed to prevent air infiltration, a further very important defect in impregnated papers occurs. This defect consists in the water-repellant nature of the pitch-impregnated surface. The application of the sealing substance to the immediate vicinity of the stitches, according to the process outlined in the aforesaid copending application, should be accomplished with great rapidity. The sealing substances most conveniently used contain water. The great rapidity of application where impregnated paper is employed often results in a condition such as is represented in Fig. 3. In this case the mass of the sealing substance 8, repelled by the impregnated surface, forms spherical droplets adhering only to the stitching fibers 9. This condition can be partially remedied by mechanically forcing the sealing substance against the impregnated surface, but the same is not entirely satisfactory and imperfect sealing results unless precautions of prohibitive cost are employed.

In contrast with the above the article of manufacture of this invention employs for the principal layers 2 and 3 a sheet material such as is shown in Fig. 4. This material is composed of the layers 5 and 6 of nonimpregnated, heavy paper united by the bituminous, asphaltic or cementitious layer 7. The paper employed is preferably of the crepe type, being made of ground, kraft process or any suitable pulp containing, if desired, goat hair or similar reenforcing material. The paper preferably is made with little or no sizing. The creping of the sheet may be accomplished by striking the wet sheet against the doctor knife during manufacture or by any other means. The two sheets of crepe paper thus united by a cementitious substance form a material which is relatively impervious to air infiltration and which has superior properties with respect to flexibility, tearing strength, etc., the properties being satisfactory over a wider range of temperatures. In addition, such paper, in direct contrast to the impregnated type, is thirsty or receptive with respect to sealing substances which contain water. Almost instantly upon contact of the sealing material with a row of stitches the sealing material spreads and adheres as indicated at 10 in Fig. 2.

The material of this invention exhibits a novel perfection of sealing for this class of quilted article. Great economy is possible in its manufacture, due to the fact that natural forces aid instead of hinder the fabrication thereof. It is known

that materials comprising paper facings inclosing matted fiber have been fabricated by uniting the same with fibers transversing the whole and that cementitious substances have been applied to the paper facing and uniting fibers. However, such material has been made with the cementitious substance spread over the entire surface of the paper. The article of this invention purposely avoids the same, confining the sealing material locally to only a small portion of the area. The confining of the sealing substance locally results in a material of far greater strength, pliability and flexibility.

The material of this invention is distinguished also from materials which comprise layers of loosely matted fiber cemented to sheet material in that greater independence of movement is possible in the quilted material, permitting a thickening or lofting of the fibers which adds to the heat insulating qualities.

The use of built up sheet material on both sides of the bat gives better results due to satisfactory pliability and other mechanical properties over a wide range of temperature. If desired, a some-

what less satisfactory material may be made by using ordinary impregnated paper for one of the faces, the seal being applied to the other face.

Herein the term "bat of fiber" is employed as meaning a lamella composed of one or more layers of loosely matted or felted animal or vegetable fibers.

It is desired that it be understood that this invention is not to be limited to any specific form or arrangement except insofar as such limitations are specified in the claim.

What I claim as my invention is:

A quilted material consisting in a bat of fiber faced on each side with sheet material, the sheet material on one of the faces being impregnated paper, the sheet material on the other face consisting in two layers of non-impregnated paper with cementitious material therebetween, spaced rows of stitches uniting the whole, and a sealing substance adhering to the portions of the stitches exposed on the non-impregnated paper side and to the contiguous surface of the non-impregnated paper.

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