Sept. 12, 1933. S. J. BLUM 1,926,737

LINING

Filed March 23, 1931

Fig. 1.

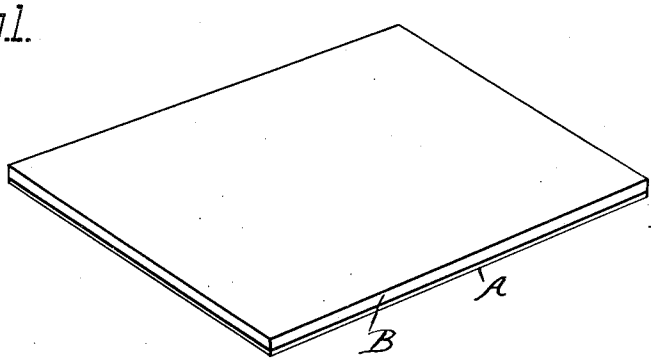


Fig. 2.

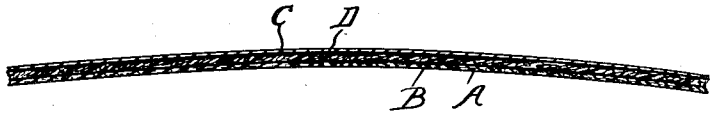


Fig. 3.

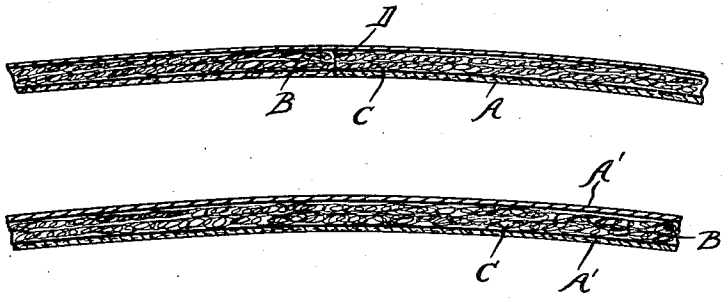


Fig. 4.

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LINING

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6 Claims. (Cl. 154—28)

The invention relates to linings more particularly designed for use in connection with metallic bodies for motor vehicles, and serving as both heat and sound insulation. Among the objects of the invention are first to obtain a product that is more efficient in its insulating properties; second, to facilitate the application of the same to the body which is to be insulated; third, to avoid certain detrimental features incidental to the use of such material as applied in the past. With these objects in view the invention consists first in the improved product; second, in the process for producing the same, and third, in the method of application to the body to be insulated.

In the drawing:

Figure 1 is a perspective view of a lining sheet as first prepared;

Figure 2 is a cross section through a portion of the wall of a motor vehicle body showing sections of lining applied thereto;

Figure 3 is a similar view after the heat treatment and expanding of the lining;

Figure 4 is a cross section through a modified construction of sheet.

Heretofore insulating lining material comprising a fibrous material and an asphaltum binder have been applied to automobile bodies. One very objectionable feature has been the danger of smearing the finished surface of the body with asphaltum and consequently the lining must be applied with great care. The effectiveness of the insulation is largely dependent upon the separation of the fibres from each other to produce intervening air cells but as an incident to the process of manufacture as heretofore practiced, the fibre body is more or less compacted.

With the present invention, I obtain a product in which the fibrous body is expanded and retained in this condition to produce better insulating qualities. I have also avoided the detrimental feature incident to the use of asphaltum by applying the lining to the body prior to the external finish of the same and I have utilized the heat treatment process which is a step in the external finish of the body for expanding the fibre body to increase its insulating properties as previously described.

While it is possible to form my improved liner separate from the vehicle body to which it is applied, there are so many advantages in carrying out the process in connection with the finishing of the body that this is preferable, and I shall specifically describe such process.

Automobile bodies have portions thereof which have double curved or warped surfaces. To apply a lining formed from flat sheets to such surfaces the lining material is cut in sections of suitable contour and which are sufficiently restricted in size to be capable of the necessary warping for conforming the same to the body surface. Heretofore lining material has been formed consisting of a fibre board preferably with an asphaltum binder and a body of loose fibre applied thereto with asphaltum as an adhesive. The material thus formed is cut in sections properly fashioned for application to the particular body and is then applied to the inner surface of the finished body by using an asphaltum cement. This as above described is objectionable because of the danger of smearing and injuring the finished surface of the body by the asphaltum. With my improved process the material is first formed in a similar manner by taking a board of paper or fibre stock, preferably an asphaltum board A, applying a coating of asphaltum to one surface thereof, and cementing therewith a layer of loose fibre preferably a jute felt B. This material is then cut to patterns corresponding to the vehicle body to which it is to be applied.

The patterned sections are then sent to the body factory where they are applied to the inner surface of the body prior to the finishing of the external surface thereof. The method of application includes the coating of the inner surface of the body with asphaltum C and then placing the sections thereagainst with the fibre side adjacent to the body. In performing this operation a sufficient quantity of the asphaltum will be squeezed out to seal the joints D between sections. After this, the external surface of the body is finished by the usual process which includes a heat treatment in an oven. During this heat treatment the moisture contained in the fibre and binding will be expanded so as to puff out the fibre body to a considerable increase in thickness. At the same time the softened asphaltum will penetrate to a sufficient extent so that after the body is removed from the oven and cooled the lining still retains its puffed out form as shown in Figure 3. Thus the insulating quality of the lining is very greatly improved by this heat treatment process.

While I prefer to carry out the process as just described, it is obvious that so far as puffing out the fibre is concerned, this might be accomplished by a treatment of the material separate from the body which it is to line. However, this would require the application of substantially impervious sheets A, A' on each side of the fibre body as shown in Figure 4, whereas in the

process above described such sheet is applied to only one side, the metal body forming the other side.

What I claim as my invention is:

1. The method of forming insulating linings having a loose fibre body and substantially impervious sheets upon opposite sides thereof which consists in cementing the fibre body to the sheets with asphaltum and heating to expand the fibre to impregnate the same with asphaltum and to increase the thickness of the lining.

2. The method of forming insulating linings having a loose fibre body and substantially impervious sheets on opposite sides thereof which consists in cementing the fibre body to the sheets with asphaltum and also sealing the edges therewith and in subsequently heating to expand the contained moisture to increase the thickness of the lining and to impregnate the fibre with asphaltum whereby it will permanently retain its expanded condition.

3. The method of applying insulating linings to metallic vehicle bodies which consists in cementing a loose fibre body to a relatively rigid and impervious sheet, cutting the combined sheet to sections to fit the body, coating the inner surface of the body with asphaltum and applying the loose fibre side of the sections in contact therewith, forcing the surplus asphaltum into the joints between sections and subsequently heating the body to a temperature which will expand the contained moisture to increase the thickness of the lining.

4. The method of insulating metallic bodies for vehicles which consists in coating the inner surface of the body with asphaltum prior to the finishing of the external surface thereof, applying a combined impervious fibre board and loose fibre body to said inner surface with the loose fibre in contact therewith, and in expanding the contained moisture during the heat treatment of the body incident to its external finish to expand said loose fibre body and to increase the thickness of the lining.

5. An insulating lining comprising a relatively impervious sheet of asphaltum board, a body of loose fibre cemented thereto by asphaltum, and an external impervious sheet to which the opposite side of said loose fibre body is cemented by asphaltum, said fibre body being expanded between said impervious sheets and impregnated with asphaltum to retain the same in expanded condition.

6. An insulating lining comprising a relatively impervious sheet of asphaltum board, an expanded loose fibre body attached thereto and an asphaltum binder impregnating said expanded fibre board for retaining the same in expanded condition.

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