Jan. 19, 1937. W. H. HORSMAN 2,068,180

INSULATING MATERIAL AND METHOD OF APPLYING AND SEALING THE SAME

Filed Oct. 23, 1935

Fig. 1.

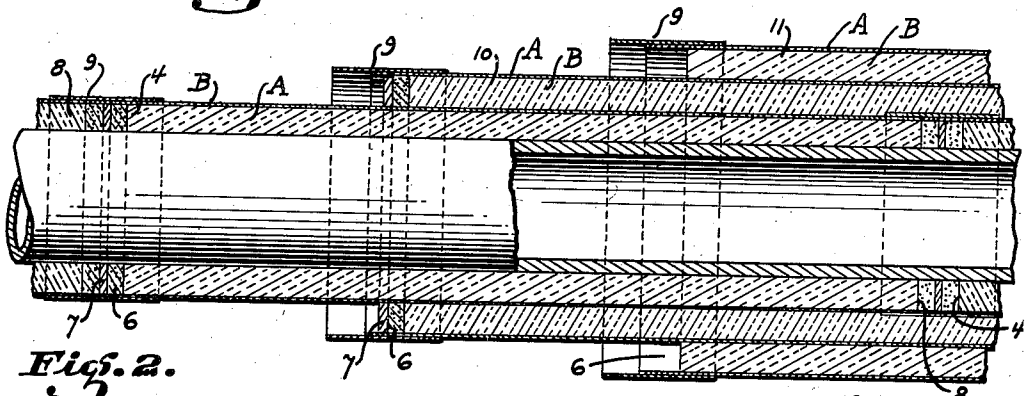


Fig. 2.

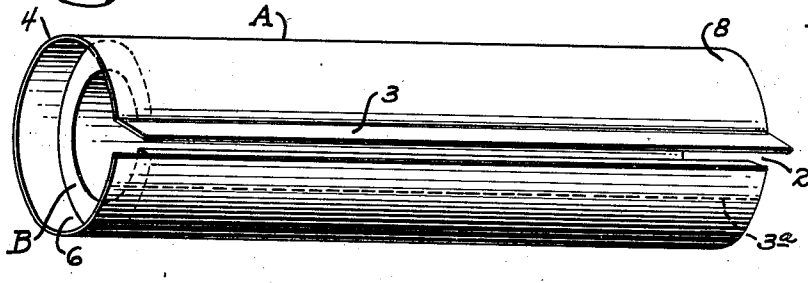


Fig. 3.

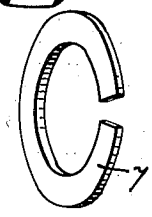


Fig. 4.

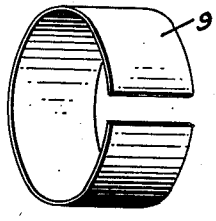


Fig. 5.

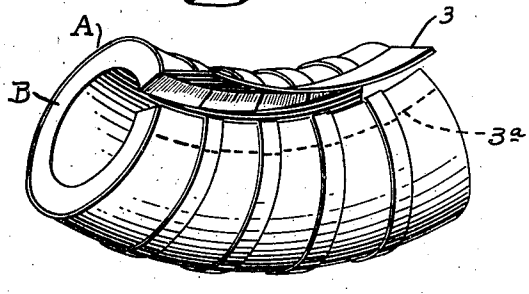
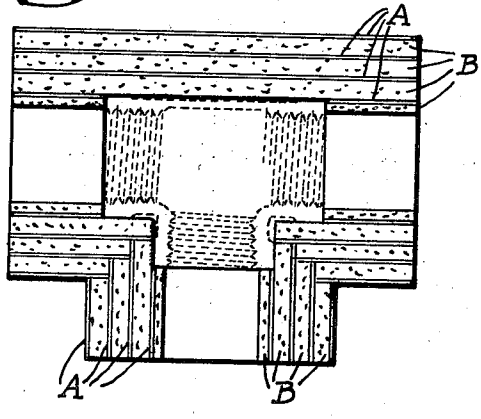


Fig. 6.



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INSULATING MATERIAL AND METHOD OF APPLYING AND SEALING THE SAME

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Application October 23, 1935, Serial No. 46,319

4 Claims. (Cl. 154—44)

This invention relates to an insulating material especially intended as a covering and insulation for pipes used in cooling and refrigerating plants, and particularly to the method of preparing the material and for applying and sealing the same.

Pipe lines carrying low temperature fluids, such as ice water, brine, ammonia, etc., must be covered with an insulating medium which will exclude both heat, air and moisture if anything approaching efficiency is to be maintained. A number of excellent insulating materials are available for this purpose but most of them have proven inefficient because of the methods employed in applying and sealing the material, or because of poor or careless workmanship. The purpose of the present invention is first of all to provide an insulating material which may readily be covered and sealed to exclude heat, air and moisture; secondly, to provide an insulating material which may be prepared and formed prior to application to a pipe line so that it may be quickly and readily applied and in such a manner that good workmanship will be insured; and, further, to provide an insulating material which is applied in sectional lengths and said sections forming a series of air and moisture-proof cells around and lengthwise of the pipe to be covered.

The invention is shown by way of illustration in the accompanying drawing, in which—

Fig. 1 is a longitudinal section of a pipe line showing the manner in which the insulating material is applied thereto;

Fig. 2 is a perspective view of a prepared section of insulating material ready for application to the pipe line;

Fig. 3 is a perspective view of a packing ring;

Fig. 4 is a perspective view of a tape to assist in sealing joints between adjacent sections of insulating material;

Fig. 5 is a perspective view showing a section of insulating material prepared and formed to cover a curved pipe;

Fig. 6 is a central sectional view showing an insulating covering formed and prepared for application to a T-shaped pipe fitting.

Referring to the drawing in detail, and particularly Fig. 2, A indicates a section of water-proof roofing felt, or similar material, to the inner surface of which is secured by means of asphalt paint, or a like cementitious material, a section B of hair felt. The two sections are split longitudinally along one side from end to end, as indicated at 2, to permit opening up or splitting apart of the section when applying it to a pipe line.

The roofing felt forms a water or moisture-proof covering for the hair felt and is provided with a longitudinally extending overlapping flap 3 and with an extended end 4, the purpose of which will hereinafter be described.

The insulating material is prepared in straight sections, as shown in Fig. 2, of suitable length where straight pipe lines are to be covered. Where bends or curves are encountered the insulating material is shaped accordingly, as shown in Fig. 5. Where fittings, such as a T, are to be covered insulating material in several layers is assembled, as shown in Fig. 6; also, it is made in two halves and placed on opposite sides of the joint so as to completely enclose the same. The method of shaping and assembling the several layers of insulating materials for other fittings, such as crosses, elbows, pipe hangers, valves, etc., will be the same.

In actual practice the manner of applying and sealing the insulating material will be as follows. If a straight pipe is to be covered, proper sections of material, such as shown in Fig. 2, will be employed. A section of this character will be grasped on opposite sides of the split 2 and opened up sufficiently to permit it to be applied to the pipe, or prior to placing thereon, asphalt or a suitable water-proof cement is applied to the flap 3 and this is folded over the longitudinal split 2 and sealed, a stencil line 3^a being provided on the cover A to which the flap is folded so as to maintain uniformity in size, after which cord or twine is wound tightly around the exterior cover A from end to end so as to maintain the insulating material in tight engagement with the pipe. A sealing medium such as water-proof cement, asphalt, or the like, is now introduced into the annular space 6 formed by the overlapping end 4 of the cover A and a split ring 7, see Fig. 3, made of roofing felt, or like material, is then slipped over the pipe and pressed into the annular space so as to thoroughly pack the sealing material and force it into every possible opening and space. Section after section is applied in this manner until the pipe is completely covered, care being taken that the end 8 of each section is pressed tightly against the end 4 of an adjacent section so that the sealing medium placed in the annular space 6 will also seal the end 8. A tape or ring 9, see Fig. 4, is finally applied around each joint or annular space 4 to make the final seal. A second layer 10, a third layer 11, or as many additional layers as may

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be required are applied in the same manner, care being taken that the joints are staggered, as shown in Fig. 1, the final layer being enclosed in a wear protecting cover of suitable character.

The material employed and the method of applying and sealing the same produces an insulating covering consisting of a series of sealed cells arranged both longitudinally of the pipe and in concentric layers around the same. The individual cells are sealed against the entrance of air and moisture, hence preventing sweating or frosting and at the same time excluding heat. The manner of preparing the insulating material prior to applying it to a pipe line and the method employed when sealing each section requires comparatively little, if any, skill, hence if instructions are followed good workmanship will be the result and long life and efficiency are assured.

Where fittings are to be covered, for instance a T such as indicated in dotted lines in Fig. 6, two half sections are employed. The adjacent faces are padded with asphalt waterproof cement, or the like, and placed on opposite sides of the fitting, after which they are pressed firmly together and wired in place. The ends are then smeared with cement and the end of a cover section, such as shown in Fig. 2, is pressed firmly into the cement or filler so as to insure perfect sealing of the joint formed between them. Thereafter, a tape of the type shown in Fig. 4 is applied. This forms a joint between the covering over the T-connection and adjacent pipe covering section sealed against air and moisture. The second, third and succeeding layers are applied and joined with a cover of the T-fitting in the same manner and an exterior cover may finally be applied.

While this and other features of the invention have been more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claims. Similarly, that the materials and finish of the several parts employed may be such as the manufacturer may decide, or varying conditions or uses may demand.

The insulating cover, as will be noted, forms a series of air and moisture-proof cells arranged in concentric layers around the pipe and extending longitudinally thereof. This is exceedingly important as breakage or leakage at any point in the pipe or insulating cover will only destroy the surrounding cell and no other cell, hence preventing frost or moisture from creeping along the pipe and destroying the rest of the insulation.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An insulating cover of the character described comprising a flexible elongated tubular member split at one side from end to end, said tubular member consisting of an inner layer of hair felt and an exterior layer of air and moisture proof material, said material being provided with a flap to cover the split extending longitudinally of the tube and having an extension at one end to form an annular end chamber for the reception of a sealing medium and packing member only.

2. An insulating cover of the character described comprising a flexible elongated tubular member split at one side from end to end, said tubular member consisting of an inner layer of hair felt and an exterior layer of air and moisture proof roofing felt, said roofing felt being provided with a flap to cover the split from end to end and having an extension at one end to form an annular chamber for the reception of a sealing medium and a packing member only, and a cementitious binder securing the layer of hair felt to the inner surface of the roofing felt.

3. An insulating cover for pipe lines to exclude heat, air and moisture comprising successive concentric layers of insulating material surrounding the pipe line, each layer consisting of short tubular shaped sections abutting end to end and each section having an inner layer of hair felt and an outer moisture and air excluding covering, and an annular space formed between the abutting ends of each section for the reception of a sealing medium and a packing member so as to completely enclose and seal each tubular section against air and moisture.

4. An insulating cover of the character described comprising a flexible elongated tubular member split at one side from end to end, said tubular member consisting of an inner layer of hair felt and an exterior layer of air and moisture proof material, said material being provided with a flap to cover the split extending longitudinally of the tube and having an extension at one end to form an annular end chamber for the reception of a sealing medium, a packing member consisting of a ring made from a flexible water-proof material treated with an asphaltum substance to give it a non-porous and frost resisting surface, said ring being insertable in the packing chamber, together with a sealing medium, and said sealing medium and ring completely filling the chamber.

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