

J. H. WHITE.
INSULATING MATERIAL.
APPLICATION FILED JUNE 30, 1911.

1,029,652.

Patented June 18, 1912.

FIG. 2.

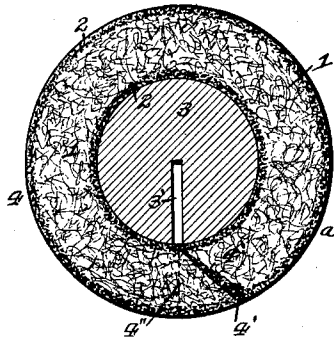


FIG. 1.

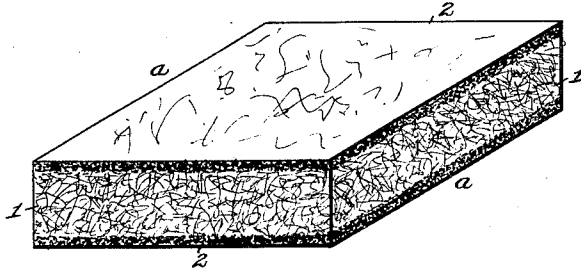


FIG. 3.

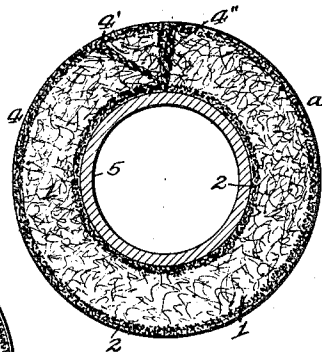


FIG. 4.

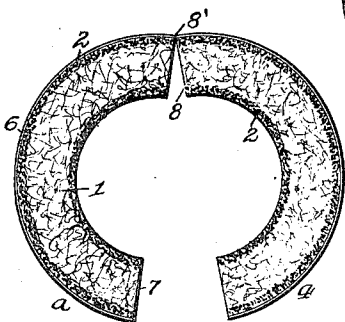
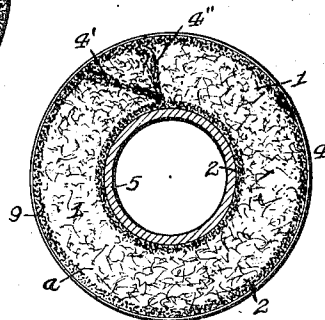


FIG. 5.



Witnesses:

T. B. Humphreys.
W. C. Cooke

Inventor:

John H. White
By J. C. Cooke
Attorney.

UNITED STATES PATENT OFFICE

JOHN HENRY WHITE, OF PITTSBURGH, PENNSYLVANIA.

INSULATING MATERIAL.

1,029,652.

Specification of Letters Patent.

Patented June 18, 1912.

Application filed June 30, 1911. Serial No. 636,284.

To all whom it may concern:

Be it known that I, JOHN HENRY WHITE, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Insulating Material; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an insulating material, and has special reference to a portable laminated material for use as a covering for pipes, boilers, etc., and in refrigerating, such as a lining for refrigerator cars, etc.

15 The object of my invention is to provide a cheap and efficient flexible insulating material, which is formed from a suitable fibrous material having a facing of waterproof material on the sides of the same, and
20 one in which such facing will completely cover and be secured to such fibrous material or body, as well as enabling the article when formed to be capable of easy bending for use around or against surfaces or for
25 being rolled up for shipment or handling.

To these ends my invention consists, generally stated, in the novel form and construction of an insulating material, as hereinafter more specifically set forth and described, and particularly pointed out in the
30 claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved insulating material, I
35 will describe the same more fully, referring to the accompanying drawing, in which—

Figure 1 shows a perspective view of my improved insulating material in its flat form. Fig. 2 is a cross-section of the insulating material showing the same as formed
40 around a mandrel for use on pipes. Fig. 3 is a like view showing the same in its finished form around a pipe. Figs. 4 and 5 are like views of other forms of the material.
45

Like symbols of reference herein indicate like parts in each of the figures of the drawing.

As illustrated in the drawing, *a* represents
50 my improved insulating material having the main body 1, which is formed of hair felt, such as cattle hair felt, and provided with the thick coating or facing 2 of flexible waterproof material on each side of such
55 body, which is formed of a suitable hydro-carbon material, such as hydro-lene, com-

posed of about ninety (90) parts of hydro-carbon and ten (10) parts of paraffin, and which is the residuum from crude oil after distillation and with a certain amount of the paraffin removed, or such hydro-carbon material can be composed of mineral rubber and paraffin in the same proportions, or other suitable materials. 60

The manner of forming my improved insulating material is as follows: A piece of the felt of the proper size and thickness for the main body 1 of the insulating material has the hydro-carbon material in a heated and liquid form, such as hydro-lene, to form the waterproof facing on such felt, applied in any suitable manner directly to one of the side surfaces or portions of such felt, and such material is spread evenly over such surface in any suitable manner, so that such material will be embedded, engaged or intermeshed in such surface and will be prevented from any further entrance into the body of such felt. After this is done the other side surface or portion of the felt body 1 is coated with the hydro-carbon material to form the other facing 2, in like manner and while these faces are in a heated state, pulverized steatite, silicate of magnesia, or other suitable material in powdered form is spread over such faces to close up the pores in such hydro-carbon material and thus form a smooth surface on said face, which will form a film on said material, and thereby confine the paraffin gas formed by the heated coating to prevent such coating from crystallizing, as well as prevent the sticking together of two of such coated surfaces, when placed together or rolled up for shipment. For the purpose of insulating pipes containing cold, refrigerant or other liquids, the felt so coated with hydro-carbon material on one of its side surfaces is cut to the required size and placed or enveloped over a mandrel 3 of the same size as the pipe to be insulated, and with such coated surface against said mandrel to form the inner coated surface on the envelop, as shown in Fig. 2, so that while so held upon such mandrel this felt envelop 4 has the hydro-carbon material in a heated liquid form applied to the outer surface of such envelop in any suitable manner, which material will impregnate, engage, intermesh or embed itself into such outer surface, and thus coat and form the outer waterproof facing on said envelop while in a cylindrical 110

form. This outer coating of the envelop 4 will also enter the space or opening, 4' formed between the side edges of the felt in forming such envelop, and after this is done and while still on the mandrel 3, the envelop 4 is coiled and then rolled in the pulverized steatite, silicate of magnesia, or other suitable material in powdered form to close up and smooth such outer coating, as before described. This envelop 4 is afterward slit open in any suitable manner adjacent the opening 4' and along the dotted line 4'', such as by a knife guided by an opening or slit 3' in the mandrel 3, so that said mandrel can then be removed and the cylindrical casing 4 so formed by said envelop is then ready for use.

When the casing 4 is applied to a pipe 5, as shown in Fig. 3, the space or opening between the side edges of the same as formed by the slitting at 4'' can be filled with heated liquid hydro-carbon and if necessary closed up and smoothed down by the steatite or other suitable material, as before described, to complete the covering for such pipe, which covering can also be supplied by suitable wire or other fastenings around the same or have other covering, such as paper or canvas placed around the same, and secured as described.

It will be obvious that irregular curved and other shapes of flat felt sheets can be treated with the waterproofing material in like manner, and when in flat form such material can be applied to both sides of the felt sheet in like manner, as that for one side, as heretofore described, while where extreme temperatures are to be met with in the use of the insulating material and such temperatures are desired to be contained, the felt can be subjected to a double treatment of the waterproofing material in the manner described.

In Fig. 4 my improved insulating material is shown as having its fibrous felt body 1 provided with the waterproof facing 2 on each side of the same, and with the outer facing when formed into the casing or covering 4 for pipes provided with a canvas or other textile covering 6 over the same, and through which covering 6 the material for the waterproof outer facing has passed in forming such facing when such material as the casing is held on the mandrel 3 is subjected to the said material. When the casing 4 is afterward slit, as at 7, through one side and through a portion of the covering at the opposite side, as at 8, the canvas 6 on such side containing the waterproof material within the same can act as a hinge, at 8', for the two semi-circular sections of the casing in opening and closing the sections around a pipe, and in the dropping of the same along a pipe or in shipping when closed.

In Fig. 5 the outer waterproof facing 2 on the casing 4 can be provided with a fire-proof covering over the same, such as the asbestos sheet 9, and if desired, when the felt material *a* is used in certain cases for the covering of pipes, the waterproof inner facing thereon can be dispensed with in order to make such covering more flexible to bend around such pipes.

Various other modifications and changes in the manner of forming and construction of my improved insulating material may be resorted to, without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that my improved insulating material will provide felt having a facing thereon which will waterproof the same, as well as stop the progress of air through the material, so that the material will not only be waterproof, but air-tight and will in a high degree prevent the transmission of the energy contained in heat and cold. The adaptability and flexibility of my improved insulating material for withstanding the torsion strain of rolling stock on railroads is of great value, especially in overcoming the present method of using waterproof paper on each side of the naked or plain hair felt to protect the same in linings for refrigerator cars, etc., which forms three units, such as two layers of paper and an intermediate layer of felt, while in the use of the present material, one unit is formed with a waterproof coating on each side of the same and impregnated or intermeshed therein, so that the circulation of air is brought to a minimum by the coated felt as against felt and paper.

The body of the felt in my improved insulating material being thicker than the coating of waterproof material thereon will enable the fibers of the felt to slip on each other in bending the material for any purpose and so permit the flexibility desired and the non-separation of the material.

My improved insulating material has the effect of self containing the dead air spaces contained in the fibrous felt employed, which would otherwise be channels of conduction, so that it thus increases the efficiency of such material to a greater measure, and the composition of the waterproof facing employed is not of a flammable nature like other bituminous by-products.

What I claim as my invention and desire to secure by Letters Patent is—

1. An insulating material comprising a body portion of hair felt having a thick coating of flexible waterproof material intermeshed with the outer portions only of such felt, thereby leaving a thick flexible center in said insulating material.

2. An insulating material comprising a body portion of cattle hair felt having a

thick coating of flexible waterproof material intermeshed with the outer portions only of such felt, thereby leaving a thick flexible center in said insulating material.

5 3. An insulating material comprising a body portion of hair felt having a thick coating of flexible hydro-carbon material intermeshed with the outer portions only of such felt to form a waterproof facing thereon, thereby leaving a thick flexible center in
10 said insulating material.

4. An insulating material comprising a body portion of cattle hair felt having a thick coating of flexible hydro-carbon material
15 intermeshed with the outer portions only of such felt to form a waterproof facing thereon, thereby leaving a thick flexible center in said insulating material.

5. A pipe covering comprising a body
20 portion of hair felt having a thick coating of flexible waterproof material intermeshed with the inner and outer portions only of such felt, thereby leaving a thick flexible center in said covering.

25 6. A pipe covering comprising a body portion of cattle hair felt having a thick coating of flexible waterproof material intermeshed with the inner and outer portions only of such felt, thereby leaving a
30 thick flexible center in said covering.

7. A pipe covering comprising a body portion of hair felt having a thick coating of flexible hydro-carbon material intermeshed with the inner and outer portions of
35 such felt only to form a waterproof facing thereon, thereby leaving a thick flexible center in said covering.

8. A pipe covering comprising a body portion of cattle hair felt having a thick
40 coating of flexible hydro-carbon material intermeshed with the inner and outer portions of such felt only to form a waterproof facing thereon, thereby leaving a thick flexible center in said covering.

45 9. A pipe covering comprising a body portion of hair felt having a thick coating of flexible waterproof material intermeshed with the inner and outer portions only of said felt, thereby leaving a thick flexible
50 center in said covering, and said material being also between the side joining edges of such felt and intermeshed therewith.

10. A pipe covering comprising a body portion of cattle hair felt having a thick
55 coating of flexible waterproof material intermeshed with the inner and outer portions only of said felt, thereby leaving a thick flexible center in said covering, and said material being also between the side joining
60 edges of such felt and intermeshed therewith.

11. A pipe covering comprising a body

portion of hair felt having a thick coating of flexible hydro-carbon material intermeshed with the inner and outer portions only of said felt to form a waterproof facing thereon and thereby leaving a thick flexible center in said covering, said material being also between the side joining edges of such felt and intermeshed therewith. 70

12. A pipe covering comprising a body portion of cattle hair felt having a thick coating of flexible hydro-carbon material intermeshed with the inner and outer portions only of said felt to form a waterproof
75 facing thereon and thereby leaving a thick flexible center in said covering, said material being also between the side joining edges of such felt and intermeshed therewith. 80

13. A pipe covering comprising a body portion of hair felt having a thick coating of flexible waterproof material intermeshed with the inner and outer portions only of said felt, thereby leaving a thick flexible
85 center in said covering, a slit in said felt and said material being also between the side joining edges and the slit of such felt and intermeshed therewith.

14. A pipe covering comprising a body portion of cattle hair felt having a thick coating of flexible waterproof material intermeshed with the inner and outer portions only of said felt, thereby leaving a thick flexible center in said covering, a slit in
95 said felt and said material being also between the side joining edges and the slit of such felt and intermeshed therewith.

15. A pipe covering comprising a body portion of hair felt having a thick coating
100 of flexible hydro-carbon material intermeshed with the inner and outer portions only of said felt to form a waterproof facing thereon and thereby leaving a thick flexible center in said covering, a slit in said
105 felt and said material being also between the side joining edges and the slit of such felt and intermeshed therewith.

16. A pipe covering comprising a body portion of cattle hair felt having a thick
110 coating of flexible hydro-carbon material intermeshed with the inner and outer portions only of said felt to form a waterproof facing thereon and thereby leaving a thick flexible center in said covering, a slit in
115 said felt and said material being also between the side joining edges and the slit of such felt and intermeshed therewith.

In testimony whereof, I, the said JOHN HENRY WHITE, have hereunto set my hand. 120
JOHN HENRY WHITE.

Witnesses:

J. N. COOKE,

T. B. HUMPHRIES.