Sept. 6, 1938. J. M. WEAVER 2,129,110

HEAT INSULATING TAPE

Filed April 26, 1937

Fig. 1.

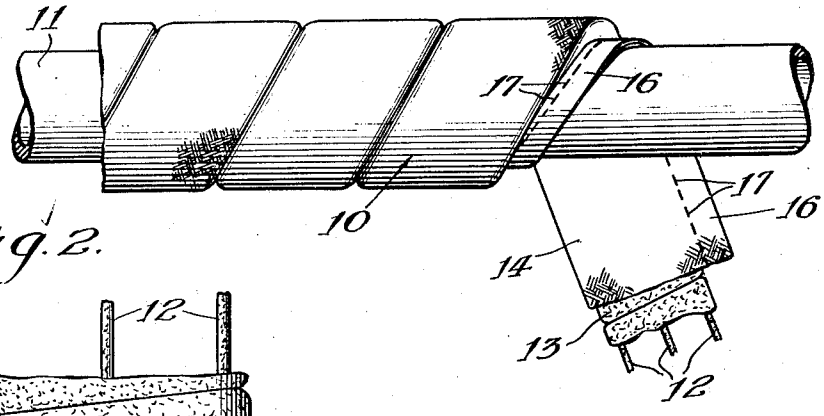


Fig. 2.

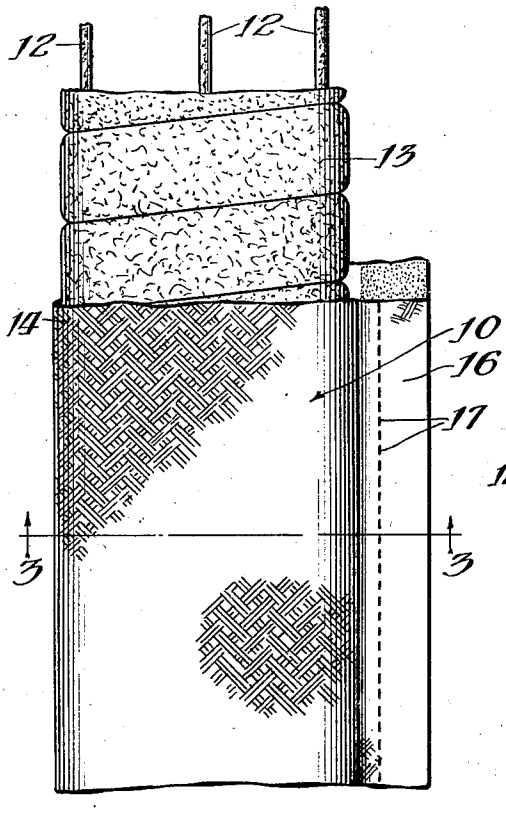
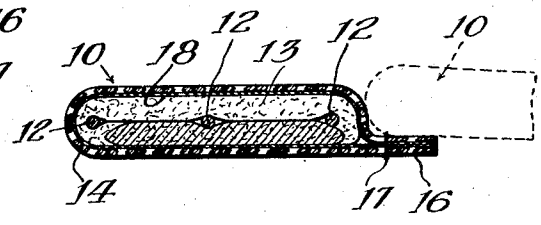


Fig. 3.



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HEAT INSULATING TAPE

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6 Claims. (Cl. 154—44)

This invention relates to improvements in thermal and waterproofed insulation and method of making same, and more particularly to a heat insulating tape or wrapping, adapted to be applied to pipes, conduits or containers, such as employed in heating, refrigerating and other fluid systems in or through which fluids pass or are retained while maintained under relatively high or low temperatures.

Various forms of wrappings or tapes have heretofore been employed for this purpose. These tapes usually comprise a body or core of insulating material enclosed in a jacket or sheath of fibrous textile material such as asbestos. Most of these tapes are so constructed that when the jackets are usually applied with overlapping edges adhesively united or stitched together, the completed tape is rendered somewhat inflexible and does not permit it to properly adapt itself to wrapping around pipes of small diameters without buckling. Moreover, there is a tendency for the tape to buckle due to the inability of the jacket or sheath to conform to the curvature of the pipe. This results in a very inefficient insulation due to leakage between adjacent convolutions of the tapes, and the possibility of seepage of moisture between the tape and pipe or container. Furthermore, it is recognized as almost a physical impossibility to wrap insulating tape around a pipe of small diameter so that adjacent convolutions abut sufficiently tight to provide a seal against leakage of heat and also prevent moisture from seeping under the tape.

One of the objects of this invention is to provide a novel and improved insulation of the character indicated, that effectively eliminates the foregoing difficulties.

Another object is to provide an improved insulating tape that is flexible and capable of readily adapting itself to contours of pipes of small diameters without buckling.

A further object resides in the provision of an improved insulating tape characterized by a sheath or jacket of fibrous fabric cut on the bias to permit the tape to readily adapt itself to proper use on pipes of small diameters.

Still another object is to provide an improved insulating tape having a jacket of fibrous fabric formed with overlapping edges to form a lateral extension to serve as a sealing flap upon which the next convolution of tape is wrapped, to effectively prevent leakage of heat and seepage of moisture to the interior of the tape.

As a still further object of this invention, the body of the tape includes a plurality of spaced-apart longitudinally extending strands of asbestos yarn or cord around which is wrapped adhesively united thereto, a soft flexible asbestos roving. This construction is such as to prevent collapsing or displacement of the component parts either in the process of being encased in a jacket or sheath, or during its application to a pipe, conduit or container.

Other objects and advantages will be apparent from the following description, taken in connection with the accompanying drawing in which:

Fig. 1 is an elevational view of a section of pipe covered by the insulating tape constituting the present invention.

Fig. 2 is a fragmentary face view of a piece of the tape, parts being broken away to show details of construction.

Fig. 3 is a transverse section through the tape, taken as indicated at line 3—3 on Fig. 2.

In the illustrated embodiment of my invention the tape designated at 10, is shown spirally wrapped around a section of pipe 11, containing fluids of relatively high or relatively low temperatures. Although the tape is shown applied to a pipe, it is to be understood that it is equally suitable for use with containers, and various forms of receptacles.

The tape comprises a flat elongated body composed of a plurality (herein shown as three) spaced apart substantially parallel, longitudinally extending strands 12, of asbestos yarn or cord around which is spirally wound a soft asbestos roving 13. The roving is adhesively united to the asbestos strands to produce a firm but flexible body, and which facilitates the application of an encasing jacket or sheath 14.

In forming the body the strands 12 of yarn or cord are drawn through a receptacle containing suitable adhesive, such as liquid rubber latex, or a rubber compound, or silicate of soda, and the coated strands then engage suitable means for removing the excess quantity of adhesive. While the adhesive is still in tacky condition they are maintained under tension in parallel spaced-apart relation, and constitute the core around which is spirally wound the soft loosely fashioned asbestos roving 13 which becomes adhesively attached to the strands. An insulating body thus formed possesses the characteristic of firmness, and flexibility which permits it to be helically wound in a manner that avoids distortion by compression and buckling.

The sheath 14, is formed from a strip of asbestos cloth, wrapped around the insulating body and is of such size that marginal edges are over-

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lapped beyond the longitudinal edge of the body, and adhesively united together to form a sealing flap 16. To positively insure against separation of the marginal edges, due to excessive heat, said edges are additionally secured together by a row of stitching 17, with asbestos thread. When the tape provided with this form of jacket is applied, the sealing flap 17 of one convolution of the tape overlaps the next adjacent convolution, as seen in dotted outline in Fig. 3, to form an efficient seal against the escape of heat, and also prevents seepage of moisture under the tape. This construction facilitates the application of the tape and due to the novel form of insulating body permits it to readily conform to curved surfaces of pipes of even relatively small diameter.

In some tapes as heretofore constructed, the sheath is stitched intermediate the longitudinal edges, which result in needle punctures in the fabric. It has been found that in such constructions capillary action would conduct water through the needle punctures and thereby cause the body of the tape to become moist; this occurs particularly when the pipe or container is out of service, and becomes cold and wet. This difficulty is completely obviated by the form of sheath above described.

The asbestos cloth forming the sheath is cut on a bias so as to further enable the tape to readily adapt itself to a pipe, container, etc., as it avoids stresses being set up in the sheath.

When it is desired that the tape also possess waterproofing characteristics, the asbestos cloth constituting the sheath 14, may be coated on one side with waterproofing material, such as rubber compound, such as indicated at 18, on the inner side of the sheath, or the asbestos strip may be cut from asbestos cloth so coated. It is to be understood, however, that I do not intend to restrict this invention to the form of sheath herein disclosed, as manifestly a variety of sheaths or jackets may be employed, such as a sheath woven or braided directly around the insulating body, or a sheath folded or wrapped around the body.

The insulating body constituting this invention, due to its firm, flexible character, may also be used as an insulating tape without being encased in a sheath. For such purpose the insulating body, which in itself becomes the tape may be spirally wrapped around the pipe, container, etc., and if desired may be protected by a suitable covering, which may consist of asbestos woven tape, a jacket of asbestos cloth, a sheet metal jacket, or it may be covered by a cloth sewed or otherwise secured thereon. If desired, such a covering may be coated or painted to render it impervious to moisture.

Although I have herein disclosed certain embodiments of my invention, manifestly it is capable of modification and rearrangement without departing from the spirit and scope thereof. I do not, therefore, wish to be understood as limiting the invention to the precise disclosures herein, except as it may be so limited in the appended claims.

I claim as my invention:

1. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising a plurality of spaced-apart longitudinally extending strands or cords, and soft asbestos material wound around said strands.

2. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising a plurality of spaced-apart longitudinally extending strands or cords, and soft asbestos material spirally wound around said strands.

3. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising a plurality of spaced-apart longitudinally extending strands of asbestos yarn or cord, and soft asbestos material wound around and adhesively united to said strands.

4. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising a plurality of spaced-apart longitudinally extending strands of asbestos yarn or cord, and soft asbestos material wound spirally around and adhesively united to said strands.

5. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising an elongated body including a plurality of spaced apart longitudinally extending strands and soft asbestos material spirally wound around said strands, and a jacket for enclosing the body formed of asbestos cloth having its edges extending laterally beyond the edge of the body in overlapping relation and adhesively united together, said overlapping edges of the jacket being additionally secured by stitching with asbestos thread.

6. An insulating tape adapted to be wrapped about a pipe, conduit or container, comprising an elongated body including a plurality of spaced-apart longitudinally extending strands of asbestos yarn or cord, and a soft asbestos roving wound spirally around said strands, and an asbestos jacket enclosing said body, said jacket being formed of cloth cut on a bias.

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