March 21, 1933. G. V. WILSON 1,902,794

HEAT INSULATING COVERING

Filed May 18, 1932 2 Sheets-Sheet 1

FIG. I.

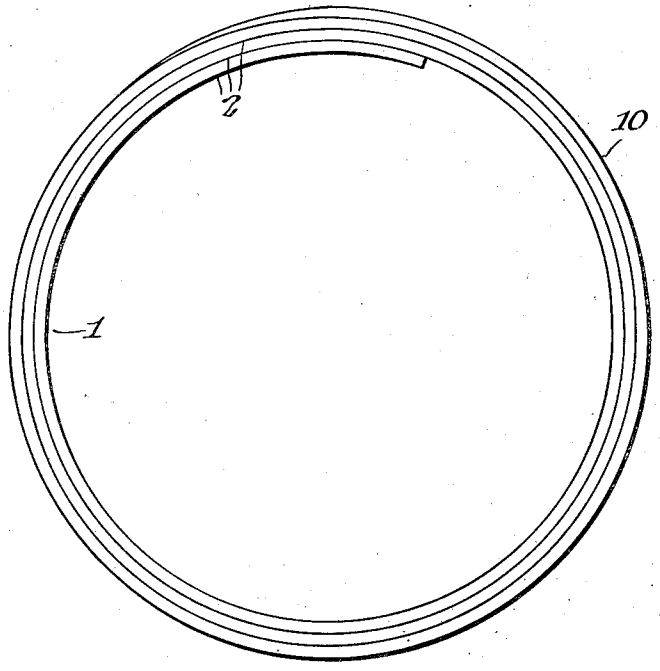
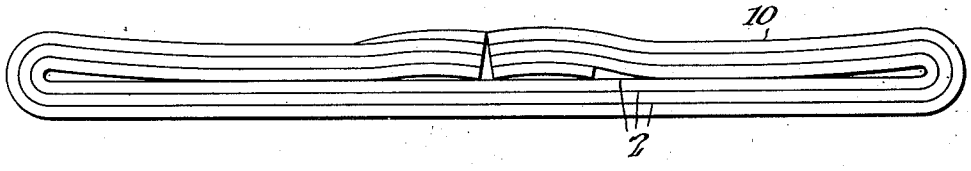


FIG. II.



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FIG. III.

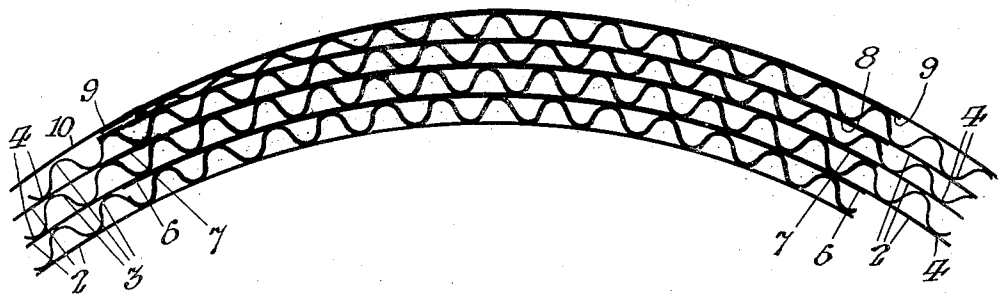


FIG. IV.

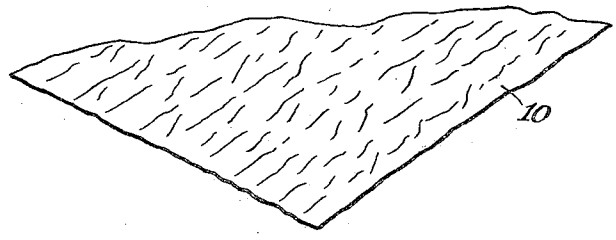
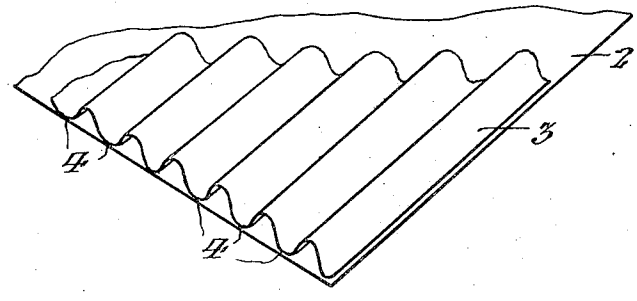


FIG. V.



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Patented Mar. 21, 1933 1,902,794

UNITED STATES PATENT OFFICE

GRANT V. WILSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO NORRISTOWN MAGNESIA & ASBESTOS COMPANY, OF NORRISTOWN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

HEAT INSULATING COVERING

Application filed May 18, 1932. Serial No. 611,987.

My invention may be advantageously employed in covering steam and hot water conduits and boilers and other containers in installations for heating buildings, and for other purposes, and, as hereinafter described, includes pre-formed cylindrical tubes of alternately plane and corrugated sheets of asbestos paper, which tubes are slit longitudinally so that they may be opened to be fitted around the containers which they are to insulate, and may be detachably secured thereon by encircling bands. Ordinarily, such coverings have all of the crests of the corrugated sheets cemented to the primarily plane sheets so that the structure is a substantially rigid cylindrical tube which must be slit diametrically so that it may be opened to be fitted around the containers. Such coverings, particularly if for large diameter containers, not only require a wastefully large amount of car space for their transportation but are apt to be crushed during such transportation, as the cost of supporting them in their cylindrical form would be practically prohibitive.

Therefore, it is the principal purpose and effect of my invention to form coverings of such paper which may be compactly disposed for shipment in a substantially flat form in the minimum amount of space, which is a fraction of the space required for storing the cylindrical coverings aforesaid, and without liability to crushing by any ordinary handling to which they may be subjected. It is characteristic of my invention as hereinafter described that the several laminations of the covering which are evolutely disposed with respect to the container are disconnected from each other except at their abutting ends; so that said laminations may slip upon each other as they are folded flat for transportation, but are certainly held in proper relative position for encircling a cylindrical container.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In said drawings, Fig. I is an end elevation of a cylindrical tubular covering embodying my invention.

Fig. II is an end elevation of said covering folded substantially flat for transportation.

Fig. III is a fragmentary end elevation, on a larger scale, showing the means for reinforcing the covering tube at the region where it is to be slit longitudinally.

Fig. IV is a perspective view of a fragment of the creped asbestos paper which forms the outer lamination of the coverings aforesaid.

Fig. V is a perspective view of a fragment of the single web composed of a primarily plane sheet and a corrugated sheet of asbestos paper which is evolutely wound upon a mandrel to form the cylindrical tubular body of the covering.

Referring to Figs. I and III; a web 1 formed of a primarily plane sheet of asbestos paper 2 and a corrugated sheet of asbestos paper 3 with each of its crests 4 cemented to said plane sheet, is evolutely wrapped on a cylindrical mandrel of the size of the container to be covered, and a narrow strip 6 of the same double webbing is cemented on both sides and placed at the initial edge of the first convolution of said web 1 but with its corrugations in reversed position with respect to said web so that its corrugations intermesh with the corrugations of said web at that edge and present a plain cemented surface outward. A similar cemented strip 7 is placed in such reverse relation, in the corrugations of the second convolution of said web 1, in the same circumferential position as the strip 6. A similar cemented strip 8 is placed in such reversed relation in the corrugations of the third convolution, in the same circumferential position as said strips 6 and 7. A similar cemented strip 9 is placed in such reversed relation in the corrugations of the short convolution forming the overlap, in the same circumferential position as said strips 6, 7, and 8. Thereupon, the convolutions of said web 1 are covered with a web of creped asbestos paper 10 with its abutting edges parallel with the axis of the mandrel and central over the reinforcing strips 6, 7, 8, and 9; the abutting ends of said creped paper 10 being cemented to the underlying paper to the circumferential extent of said rein-

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forcing strip 9. When dry, the cylindrical tube thus formed is slit parallel with its axis intermediate of the reinforcing strips, leaving a portion of said strips securely holding the opposite abutting edges of the convolutions of the web 1 in proper assembled relation, so that they will precisely fit a cylindrical container of the size of the mandrel upon which the covering has been formed, but, said convolutions being separate from each other intermediate of their ends cemented together with said reinforcing strips, the entire covering may be compactly folded in substantially flat form for transportation, as indicated in Fig. II.

Although I have found it advantageous to have three convolutions forming respective laminations in the covering as adequate for such heat insulation as is ordinarily desired; it is obvious that more or less of such laminations may be used. Moreover, although I have found it convenient to preform the cylindrical tubular coverings as aforesaid from such a double web 1 which is primarily continuous throughout the entire extent of the covering and only severed as described after the covering is completed; it is obvious that a plurality of separate pieces of such a web may be cut of such respectively different lengths as to be of respective circumferential extent of respective circles radially spaced and in coaxial relation with the body to be covered to thus properly cooperate to form such a covering when their severed ends are cemented together as indicated in Fig. II. However, such a method of manufacture is not as economical as that first above described, as it requires more precise measurements and handling.

I have found it convenient to form the outer lamination of said covering of creped paper, because it is elastic and, being stretched when the covering is applied, prevents sagging of the covering, and is not only cheap but affords a pleasing appearance. However, the outer lamination may be formed of other elastic material, as canvas or other textile fabric, or plain paper.

Therefore, I do not desire to limit myself to the precise details of construction and arrangement herein described, as it is obvious that various modifications may be made therein without departing from the essential features of my invention, as defined in the appended claims.

I claim:

1. In a laminated heat insulating covering for a cylindrical body; the combination with a plurality of plain webs, forming respective laminations, which are loose and separate except at their ends; of means separating said webs, in spaced relation, radially with respect to the axis of the body to be covered; said laminations being of different length circumferentially with reference to the body to be covered; and means reinforcing the ends of said laminations and holding said ends even, including cement between said laminations and the means separating them; whereby said laminations are maintained of the relatively different circumferential extent of respective concentric circles in radially spaced relation, and for coaxial relation with the body to be covered, but said covering may be folded substantially flat for convenience of transportation; wherein the separating means are corrugated webs, between said plain webs, and the crests of each corrugated web are cemented to but one adjoining plain web.

2. In a laminated heat insulating covering, for a cylindrical body; the combination with a plurality of double webs, each including a plane web and a corrugated web cemented together at the crests of the corrugations; said laminations being of the relatively different circumferential extent of respective concentric circles in radially spaced relation, and for coaxial relation with the body to be covered; of means reinforcing the ends of said laminations, and holding said ends even, including cement between said laminations.

3. A covering as in claim 2; including reinforcing means at the ends of said laminations, consisting of strips of such double webs reversed with respect to the laminations and with their corrugations intermeshed with the corrugations of the laminations, and cemented thereto.

4. A covering as in claim 2; wherein the plain member of each web is preseneted inwardly with respect to the body to be covered; and an outer lamination is formed of elastic material, which is stretched when the covering is bent in cylindrical form and prevents sagging of the covering.

5. A covering as in claim 2; wherein the plain member of each web is presented inwardly with respect to the body to be covered; and an outer lamination is formed of elastic creped material, which is stretched when the covering is bent in cylindrical form and prevents sagging of the covering.

6. In a laminated heat insulating covering for a cylindrical body; the combination with a plurality of plain webs, forming respective laminations, which are loose and separate except at their ends; of means separating said webs, in spaced relation, radially with respect to the axis of the body to be covered; said laminations being of different length circumferentially with reference to the body to be covered; and means reinforcing the ends of said laminations and holding said ends even, including cement between said laminations and the means separating them; whereby said laminations are maintained of the relatively different circumferential extent of respective concentric circles in radially spaced relation, and for coaxial relation

with the body to be covered, but said covering may be folded substantially flat for convenience of transportation; wherein all of the laminations are formed of asbestos paper, and the outer lamination is creped, so as to be elastic and stretched when the covering is bent in cylindrical form, and prevents sagging of the covering.

7. The method of forming a cylindrical tubular heat insulating covering, with loose laminations, spaced radially with respect to its axis; which includes wrapping a continuous web evolutely upon a cylindrical body, in a plurality of convolutions; interposing cemented reinforcing strips between adjoining convolutions, parallel with the axis of the covering, and in the same sectoral region thereof; and slitting said tube longitudinally through its reinforced region; whereby said laminations are formed of relatively different length, and held together only at their ends, and by said reinforcing strips, and may be folded substantially flat, for storage and transportation.

8. A method as in claim 7; wherein the laminations and reinforcing strips are corrugated and their corrugations are intermeshed.

9. A method as in claim 7; wherein the continuous web is formed of a plain sheet and a corrugated sheet cemented together at the crests of the corrugations; and the reinforcing strips are formed of plain and corrugated sheets like said web, and the web is wrapped with its plain sheet presented inwardly; and the reinforcing strips are inserted with their plain sheets presented outwardly.

10. A method as in claim 7; with the additional step of applying to the exterior of the tubular covering a sheet of elastic material with its ends abutting intermediate of the sectoral region of the reinforcing strips, before slitting said tube.

In testimony whereof, I have hereunto signed my name at Chicago, Illinois, this Thirteenth day of April, 1932.

GRANT V. WILSON.

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