Jan. 11, 1927. 1,613,725

C. R. SABIN

PIPE INSULATION

Filed Nov. 23, 1922

Fig. 1a.

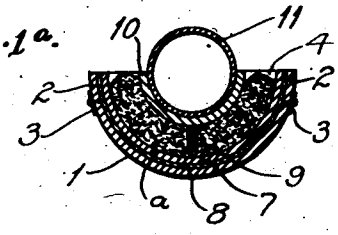


Fig. 1.

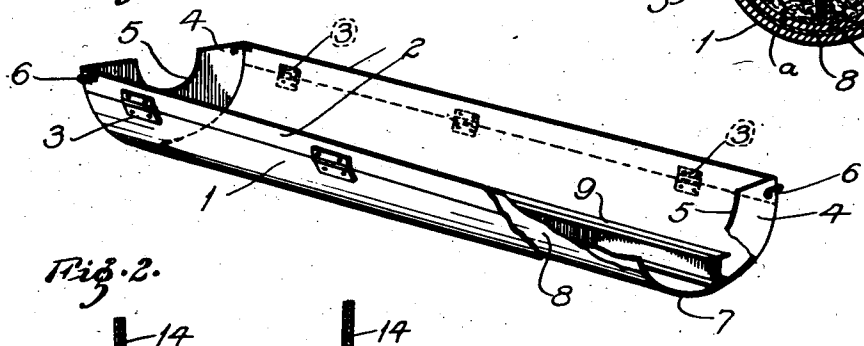


Fig. 2.

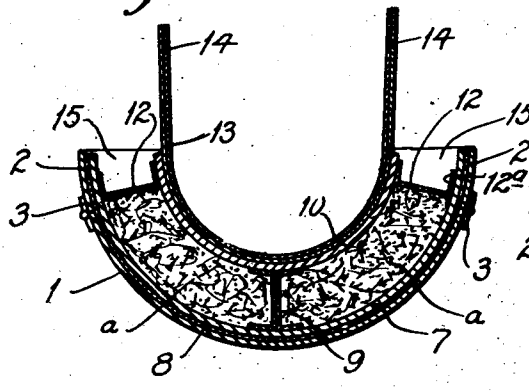


Fig. 3.

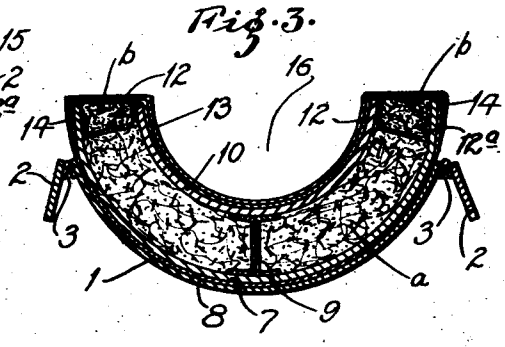
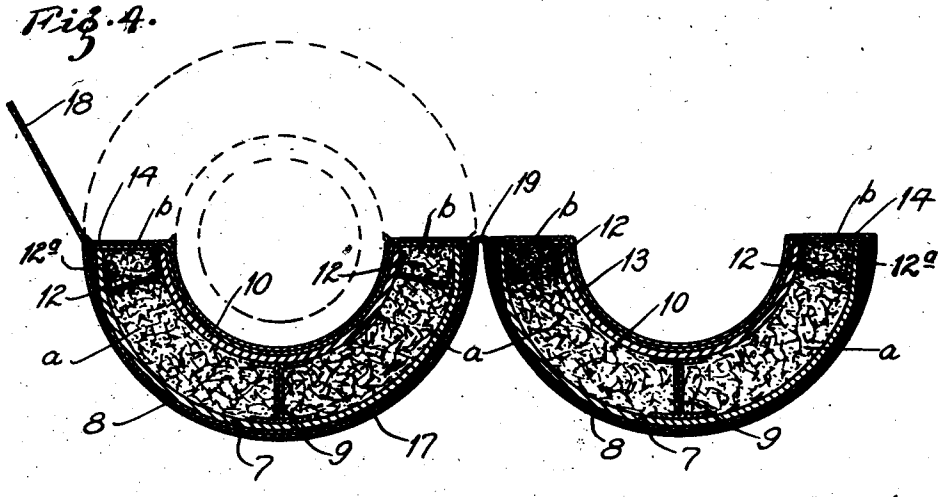


Fig. 4.



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UNITED STATES PATENT OFFICE.

CLAYTON R. SABIN, OF ALEXANDRIA, INDIANA, ASSIGNOR TO GENERAL INSULATING AND MANUFACTURING COMPANY, OF ALEXANDRIA, INDIANA, A CORPORATION OF INDIANA.

PIPE INSULATION.

Application filed November 23, 1922. Serial No. 602,746.

This invention relates to insulating material and the method of making same, and has for its general object, the production of a novel article of this character, in which the insulating material proper, or packing, is composed of mineral wool.

The special object of the invention is to provide a sectional pipe covering in which mineral wool is packed between two walls of asbestos paper, or a like material, and to provide braces for the walls to insure that the covering as a whole will maintain its shape, and that the mineral wool will be maintained in uniform thickness around the body of the pipe covering.

Various materials have been used for pipe insulation, such materials usually comprising asbestos, either alone or in admixture with a binder. These covers are relatively expensive. It is well known that mineral wool possesses high heat insulating qualities in addition to being fire proof, and it is much cheaper than the materials ordinarily employed for pipe insulation. So far as I am aware, however, mineral wool alone, that is without admixture with other materials, or with a binder, has not been employed for pipe insulation, and this I assume to be due to the fact that, owing to its soft, yielding or sponge-like character even when very tightly packed, the covering would not keep its shape and the depth of insulation would not be uniform. At any rate, experimentation with this product has shown that it is unsuitable for use in the manufacture of sectional pipe covering, as such covering is ordinarily made, and this is due to its soft or yielding character. I, therefore, devised the means herein described for forming a stable casing for the mineral wool, so that the covering may be applied to the pipe as readily as the ordinary sectional covering now employed, and when in position about the pipe, the covering will remain firm and of uniform thickness and density throughout its length.

The invention is illustrated in the accompanying drawing in which—

Figure 1 is a broken perspective view of a mold used in forming the pipe covering according to my invention, and showing the outer wall of the casing covering inserted therein and one of the braces I employ in position on the covering wall;

Figure 1ª is substantially a cross-section through the mold of Figure 1, but showing the inner wall of the sectional casing in place on the central brace member shown in Figure 1, and a circular form in the shape usually of a length of tin pipe in position on the inner wall to hold the same in place while the mineral wool is being inserted between the two walls of the sectional casing;

Figure 2 is a cross-sectional view on an enlarged scale through the mold and illustrating what may be termed the second step in the manufacture of one section of the pipe covering;

Figure 3 is a similar view showing a completed section of the pipe covering resting in the mold; and

Figure 4 is a cross-sectional view through two completed sections of a pipe covering made according to my invention and having an outer cloth covering which provides a hinge for the two sections, and an extended end for securing the sections together after they have been placed about a pipe.

Referring now to the drawing, the numeral 1 indicates a mold or form which is semi-cylindrical in shape and of any preferred length, usually about three feet. The upper edge portions of the mold 1 are formed as hinge members 2 and are connected to the body of the mold by hinges 3. At either end the mold is provided with heads 4 having corresponding semi-circular recesses 5 in their upper sides and provided with latches 6 for detachably holding the hinge members 2 in position.

In proceeding according to my invention, I first insert in the mold 1 a sheet of asbestos board 7 which is of the length and dimensions of the interior of the mold 1 and which board is usually covered on its outer side with a sheet of asbestos paper 8 to promote flexibility. The board 7 with its paper covering forms the outer wall of the insulation or covering proper. I next place in the mold to extend longitudinally thereof, a brace member 9 and glue the bottom of this latter to the inner side of the curved sheet of asbestos board 7 in the manner indicated in Figure 1. The brace member 9 preferably has the shape of an I beam and when this shape of brace is used, it may conveniently be formed by gluing together the flat sides of two U-shaped lengths of asbestos board, as more clearly shown in Figures 2 to 4. I next place upon the top of the brace member

9 and glue thereto, a curved sheet of asbestos board 10, as illustrated in Figure 1ª, the board 10 forming the inner wall of the sectional casing. In gluing the wall 10 to the top of the brace member 9, and also for the purpose of holding the inner wall 10 in position while mineral wool *a* is being packed between the two walls 7 and 9, I find it convenient to place in the hollow of the curved wall 10 a circular form 11 which, as stated above, may be a length of tin pipe of the desired diameter. With the parts in the position shown in Figure 1ª, I next pack mineral wool to the desired density between the two walls 7 and 10 in the manner also shown in this figure. I next press in position between the upper edges of the two walls 7 and 10, at either side of the casing, channel-shaped brace members 12, as shown in Figure 2. The flanges 12ª of each channel-shaped member 12 are secured, as by glue, to the inner edge portion of the outer wall 7 and to the upper edge portion of the outer side of the inner wall 10, respectively. I also glue about the inner surface of the inner wall 10, a sheet of asbestos paper 13, the ends 14 of which are made to project well above the upper edges of the mold. I then pack mineral wool *b* into the recess 15 provided in the top of each of the channel-shaped braces 12 and after releasing the latches 6, I turn down the hinged sections 2 at either side of the mold, as shown in Figure 3, and bend the ends 14 of the sheet of asbestos paper 13 over the tops of the recesses 15 and necessarily over the upper edges of the walls 7 and 10, and glue the end portions 14 to the sides of the outer wall 7, as shown in Figure 3. This completes one-half, or section of a pipe covering, the said section being as shown, semi-cylindrical in shape and providing an enlarged semi-circular recess 16 for fitting over one-half of the pipe to be covered. Another section is made in the same way and the two sections are then placed edge to edge and a piece of cloth 17 is glued to the outer surfaces of both sections from the edge of one to the edge of another with a free end portion 18 (Figure 4) extending beyond the edge of the latter. The two sections may then be opened on the hinge 19 provided at the meeting points of the two sections by the cloth 17 and the covering as a whole is completed. When applied to a pipe, which is done by applying one section to the pipe and swinging the other section over it on the hinge 19, the projecting end 18 of the cloth 17 is then glued to the outer surface of the companion section thus firmly uniting the sections in position about the pipe.

It will now be seen that by forming a sectional pipe covering in the manner shown and described, I am enabled to use mineral wool and still preserve the shape and uniform density and thickness of the insulation by reason of the fact that the braces 9 and 12 are sufficient to prevent collapse or yielding of the wall 7 when the covering is applied to the pipe, and both the walls 7 and 10 under such usage as the covering would ordinarily be subjected to in handling or transportation.

It will be obvious to those skilled in the art, that while my invention is intended more particularly for making pipe coverings of insulating material and will no doubt find its widest application to this art, the invention may equally well be embodied in other shapes than that shown, namely, semi-cylindrical, it only being necessary to vary the shape of the material to conform to the shape of the surface to which it is to be applied. For example, my invention may, with advantage, be applied to boiler insulation and such boilers will necessarily vary in shape or contour. The shape, therefore, that the insulating material assumes in its final form, is immaterial as respects the broad scope of the invention as defined in the statement of invention and certain of the claims.

I claim:

1. The method of preparing insulation which consists in placing two walls in parallel relation, securing a permanent brace to the walls to extend between the space separating them, packing suitable insulating material into the space between the two walls on either side of said brace and securing additional braces in position between the walls at the outer edge portions thereof above the filling of insulating material.

2. The method of preparing pipe insulation which consists in placing two curved walls in parallel relation, securing a permanent brace to the walls to extend between the space separating them along the median line thereof, packing mineral wool into the space between the two walls on either side of said brace, securing additional braces in position between the walls at the outer edge portions thereof above the filling of insulating material, securing a sheet of insulated paper to the inner surface of the inner wall and extending the ends of said paper over the space between the walls and securing the extreme end portions to the outer surface of the outer wall.

3. Insulating material comprising two walls, an intermediate brace and terminal braces inserted between the walls and holding said walls in spaced parallel relation, and mineral wool packed between the walls in the spaces between the braces, said intermediate brace and said terminal braces comprising each a continuous element extended longitudinally of said walls from end to end thereof.

4. Pipe insulation consisting of two semi-cylindrical sections, each of which comprises

two curved walls, an intermediate brace and terminal braces inserted between the walls and holding said walls in spaced parallel relation, and mineral wool packed between the walls in the spaces between the braces, said intermediate brace and said terminal braces comprising each a continuous element extended longitudinally of said walls from end to end thereof.

5. Pipe insulation consisting of two semi-cylindrical sections. each of which comprises two curved walls of asbestos board or the like, held in spaced parallel relation by braces of asbestos board, or the like, secured at opposite ends to the walls and extending between them from end to end thereof, two of said braces being located respectively at the outer edge portions of each section and having mineral wool superimposed upon the same, and asbestos paper or the like secured to the surface of the inner wall of each section and extending over the body of mineral wool on the latter named braces and being secured at their end portions to the outer surface of the outer wall.

In testimony whereof, I have hereunto set my hand.

CLAYTON R. SABIN.

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