May 6, 1930. E. SCHMIDT ET AL 1,757,479

HEAT INSULATION

Filed Feb. 25, 1928

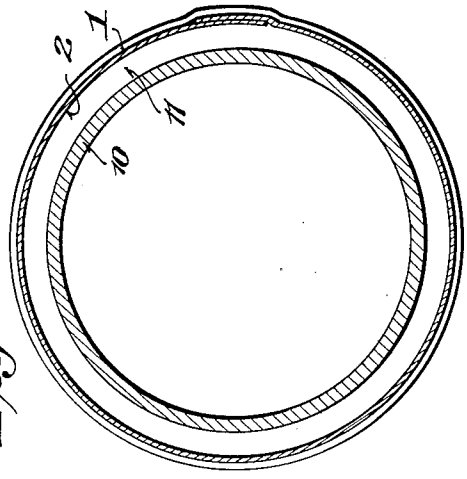


Fig. 2.

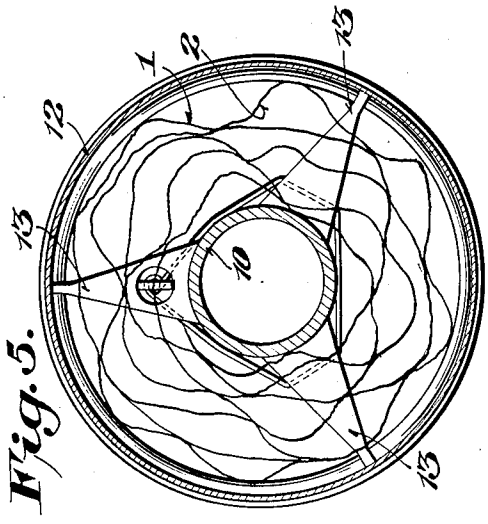


Fig. 5.

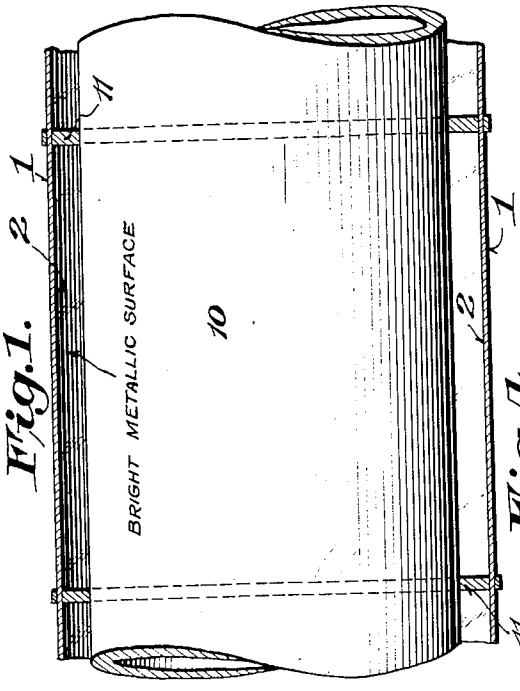


Fig. 1.

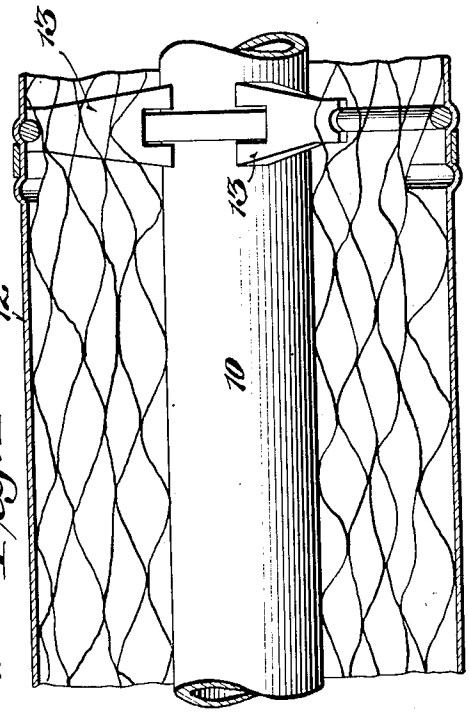


Fig. 4.

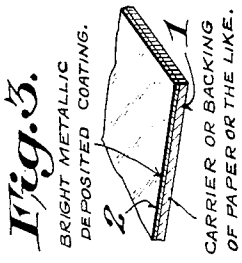


Fig. 3.

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UNITED STATES PATENT OFFICE

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HEAT INSULATION

Application filed February 25, 1928, Serial No. 257,099, and in Germany July 3, 1926.

This invention relates to the thermal insulation described in the specification of our co-pending application Serial No. 105,753 filed 30th April, 1926, and has for its object an improvement in or modification of the same.

The thermal insulation described in our co-pending application consists in surrounding the object to be insulated with a number of air spaces bounded by sheets of thin bright metal foil. The sheets of foil may either be supported on suitable spacing or distance pieces or may be employed as a loose filling for subdividing air chambers for thermal insulating purposes. In the latter case the loss of heat at the points of contact throughout the loose filling is very small as the sheets, being very thin and in contact with one another at comparatively few points, only permit a very restricted flow of heat by conduction.

In order to render the insulation cheaper and also improve the insulating properties of the sheets, the latter are preferably selected as thin as possible, even as thin as the thinnest tissue paper obtainable. The thinness of the sheets renders the insulating construction of sheets of relatively low rigidity. A construction of greater rigidity could be formed by employing thicker sheets, but one object of the present invention is to obtain greater rigidity in a more economical manner.

According to the present invention a carrier of any suitable material provided with a bright coating or layer for reflecting radiation, is employed in place of the thin bright metal foil employed in our co-pending application. The layer or coating may be metallic and a very thin coating or layer may be applied by spraying a metallic mass upon the carrier or by galvanic action. Known insulating materials such as paper, cork, asbestos, peat and the like may here be mentioned as being suitable materials for the carrier, but it is not absolutely essential to utilize any insulating material for the carrier, an insulating material being however preferable for this purpose, as the thermal insulating properties of the insulating material thus formed are thereby improved.

The present invention permits the employment of continuous, that is to say unbroken, bounding surfaces as the coated material can be made economically in relatively large sheets, whereas thin bright foil can only be manufactured in an economic manner in relatively small sheets. Moreover the cost of the coating or layer provided on the carrier is so small on account of the thinness of the coating or layer that it is immaterial from the point of view of expense, what coating material is employed. The material from which the coating is formed should however be one which will not readily become dull and lose its reflecting properties and thus permit loss of heat by radiation through the insulation.

The coating or layer may be applied to the carrier either before or during the construction of the insulation.

An embodiment of the invention is illustrated in the accompanying drawing, in which,

Fig. 1 is an elevation of a length of pipe insulated in accordance with the invention;

Fig. 2 is an end view of Fig. 1;

Fig. 3 is a perspective of a fragment of insulating sheet;

Fig. 4 is a view similar to Fig. 1 in which the insulating sheets are crumpled, and

Fig. 5 is an end view of the same.

The insulating sheets consist of a backing 1, of paper or the like, having a bright metallic coating 2, deposited thereon, as by spraying. In Fig. 1, the pipe 10 has spacing rings 11 placed around it at intervals, said rings supporting one of the insulating sheets 1, 2. In Figs. 4 and 5, the pipe 10 has a sheet or sheets of insulation, previously crumpled, wound around it, and an outer sheathing 12, of sheet metal, asbestos, or other suitable material enclosing said sheets and supported from the pipe by the spiders 13.

Having now described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. Heat insulation for an object, consisting

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of a sheet of paper or the like, having a bright metallic coating deposited thereon and adapted to enclose the object so as to leave an air space between it and said sheet.

2. Heat insulation, comprising a plurality of thin supporting sheets, having a bright metallic coating deposited thereon and adapted to surround said object, air spaces being left between the latter and the inner sheet and between each pair of adjacent sheets.

3. Means for preventing the radiation, convection and conduction of heat from a body, consisting of non-metallic material, having a bright metallic coating deposited thereon and adapted to surround said object so as to form a plurality of air chambers.

4. Means for preventing the radiation, convection and conduction of heat from a body, consisting of sheets of insulating material with bright metallic coatings deposited thereon, said sheets being adapted to be so placed around said body as to leave air spaces between it and the inner sheet and between each pair of adjacent sheets.

In testimony whereof we have hereunto set our hands.

ERNST SCHMIDT.
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