This invention relates to heat insulation for use in lining flues, furnace walls and the like which are subjected to high temperatures.

Another object is to provide a heat insulating lining which may be readily applied and built up in the field.

Another object is to provide a wall having heat insulating properties and having a refractory surface.

Various objects and advantages will become apparent as the nature of the invention is more fully disclosed.

Although the invention is capable of various uses, it will be understood from the following description and the accompanying drawing, in which a specific embodiment thereof is set forth for purposes of illustration.

In the drawing:

Fig. 1 is a transverse section of a portion of a wall showing the heat insulating applied thereon; and

Fig. 2 is a broken perspective view showing the details of construction.

Referring to the drawing, the invention is shown as applied to a portion of a wall 10 of a flue or the like which is adapted to carry gases, as for example from a furnace to a stack. This wall 10 is made of thin sheet metal and is provided with a plurality of pins 11 and 12 which are welded or otherwise secured to the inner surface thereof and act as securing means for the heat insulation to be described.

The pin 11 is shown as a split pin having points adapted to be bent over to hold the insulation whereas the pin 12 is shown as a shank adapted to extend through the lining and secure the same by a washer 13 and a cotter pin 14. It is to be understood that the pins may be all of the same type or that other means for securing the insulation to the walls may be used. The pins have been shown for purposes of illustration only.

The heat insulation comprises a layer 15 of fibrous insulating material, such as mineral wool, asbestos, glass, rock or the like, held between expanded metal screens 16 and 17 which are joined together by transverse wires 18 passing through the material 15 and firmly securing the screens to the opposite sides thereof. A layer of water-proof paper 19, for example, asbestos paper, may be positioned between the screen 17 and the material 15 to cover the exposed face of the insulating material and to protect the same from external moisture.

The layer of fibrous insulating material held between the screens 16 and 17 constitutes a blanket which is sufficiently flexible to readily conform to the surface of a wall and possesses enough rigidity to facilitate handling. It is preferably made under pressure so that the fibres are compacted into a comparatively dense layer.

This blanket is used to line the walls 10 with the screen 17 and moisture-proof paper 19 exposed so that the fibres are protected thereby. It may be applied over the pins 11 and 12 and forced against the wall 10, causing the pins to penetrate the material 15 and the paper 19 and to extend beyond the screen 17. The blanket is held in position by bending over the joints of the split pin 11 and by the washer 13 and cotter pin 14 on the pin 12.

The exposed surface of the blanket is then covered with a layer 20 of castable monolithic refractory cement which adheres to the screen 11 and forms a monolithic refractory facing over the entire surface. The layer 19 of water-proof paper prevents the moisture from this refractory cement from entering the fibrous insulating material while the cement is setting.

In certain instances, layer 19 may be made of combustible material, in which case it will burn out after the wall has been completed and is subjected to high temperatures, leaving the insulating blanket in contact with the wire screen 17. Inasmuch as the cement before the wall is subjected to high temperature, the water proof paper is no longer required for protecting the fibres and the burning out of the same will accordingly not affect the heat insulating properties of the wall.

The structure above described provides a fibrous blanket having high heat insulating properties, which is faced with a hard refractory material capable of preventing physical injury to the fibres. The structure is durable and at the same time may be readily applied to walls of different shapes. The insulating blanket can be readily cut and positioned on the wall and, when covered with the layer of refractory cement, provides a permanent and efficient heat insulating structure.

It is to be understood that this structure may be applied to furnace walls, to hot air ducts and to various other locations in which it is desired to conserve the heat and to prevent injury to a wall by hot gases. A furnace wall may be made...
in this manner at a saving in cost because the outer wall 10 is not required to withstand intense heat and may be made of comparatively light material.

Although a certain embodiment of the invention has been described for purposes of illustration, it is to be understood that various changes and modifications may be made therein without departing from the scope of the invention, which is to be limited only in accordance with the following claims when interpreted in view of the prior art.

What is claimed is:

1. A heat insulating wall comprising a blanket of insulating material having a facing of castable monolithic refractory cement, said blanket comprising a layer of fibrous heat insulating material supported between metal screens.

2. A heat insulating wall comprising a blanket of insulating material formed by a layer of fibrous heat insulating material held between metal screens and a layer of castable monolithic refractory cement covering the face of said blanket and attached to one of said screens.

3. A heat insulating wall comprising a pair of metal screens having a layer of fibrous insulating material positioned therebetween, means extending between said screens and through said insulating material for securing the same to form a comparatively rigid blanket, a layer of waterproof paper under one of said screens to cover the exposed face of the insulating material, and a facing of castable monolithic refractory cement covering said exposed face of the blanket and secured to said last screen.

4. A heat insulating wall comprising a sheet metal wall lined by a blanket formed of a layer of fibrous heat insulating material held between metal screens, pins extending through said blanket to secure the same to said sheet metal wall, and a facing of castable monolithic refractory cement over the exposed face of said blanket.

5. The method of making a heat insulating wall which comprises lining a metal wall with a blanket of fibrous heat insulating material having its exposed face covered by a layer of paper and held by a metal screen, covering the metal screen with a layer of castable monolithic refractory cement, allowing the cement to set, and then burning out the paper to form a rigid wall composed entirely of refractory material.

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