

Description

This invention relates to a thermal insulation blanket according to the preamble of claim 1.

Thermal insulation blankets are commonly used on exhausts, turbochargers and other heat generating elements of boats, ships, trucks, power generators and the like. The thermal insulation material comprises a layer of a thermally insulating material typically formed of mineral fibre such as ceramic fibre rock wool or fibre glass.

US-A-4 442 585 discloses a thermal insulation blanket 10 comprising a layer of thermal insulation material 12 having first and second opposed major surfaces, a layer of cloth 16, 18 enclosing the layer of thermal insulation material and a layer of woven metal mesh 22 overlying the layer of cloth on at least one of the major surfaces of the layer of thermal insulation material.

Furthermore GB-A-638 306, discloses a thermal insulation blanket in which the edges of a metal mesh are attached to the edges of a layer of cloth.

The present invention provides a thermal insulation blanket which is improved in relation to the known blankets.

In accordance with the present invention a thermal insulation blanket which comprises a layer of thermal insulation material having first and second opposed major surfaces, enclosed by a layer of woven metal mesh, and a layer of cloth enclosing the layer of thermal insulation material which layer of cloth is located between the layer of insulation material and the layer of mesh is characterised in that the layer of mesh has an edge portion which is formed by inturning free edges of the layer of mesh to form adjacent inturned mesh portions and attaching the inturned mesh portions together by stitching or stapling the inturned portions with metal wire.

The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIGURE 1 is a schematic sectional elevation through part of a thermal insulation blanket in accordance with the present invention;

FIGURE 2 is a plan view of an insulation blanket in accordance with the present invention; and

FIGURE 3 is a plan view to an enlarged scale of one corner of the insulation blanket of Figure 2 showing a woven wire mesh and stitching at edges of the blanket.

In the accompanying drawings, there is shown a thermal insulation blanket 10. The thermal insulation blanket 10 comprises a central layer of insulation material 12 enclosed within a layer of cloth 14 as shown in Figure 1. Located externally of the layer of cloth 14 is a layer of woven stainless steel

wire mesh 16 which encloses the layer of cloth 14 and the layer of insulation material 12.

Figure 2 shows the layer of woven stainless steel wire mesh 16 covering the whole of one surface of the layer of the cloth 14. The layer 16, as mentioned above encloses completely the layer of cloth 14 and the layer of insulation material 12.

Typically, the woven stainless steel wire mesh 16 is woven in an interlocking loop pattern as shown in Figure 3 although variations in the weave pattern are possible.

The thermal insulation blanket 10 has edges 18. As shown in Figure 1, the edges 18 may be formed by gathering or inturning of free edges of opposed pieces of cloth forming the layer 14 together with opposed free edges of the woven stainless steel wire mesh 16. The inturned edges of the layers 14 and 16 may project into the layer of insulation material 12 as shown in Figure 1.

The gathering or inturning of the layers of cloth and mesh results in the woven stainless steel wire mesh 16 being innermost at the edge 18 of the thermal insulation blanket 10.

Further to increase the strength of the edges 18 the gathered or doubled over portions of the layers of cloth and mesh are stitched through with fine stainless steel wire 24 as shown in Figure 1. The edge stitching is shown in more detail in Figure 3.

This combination of gathering and stitching at the edges 18 reduces the movement of the layer of woven stainless steel wire mesh 16 relative to the layer of cloth 14 and thus reduces wear on the cloth 14. This also maintains the shape of the thermal insulation blanket 10.

However, the cloth and the mesh can in some instances simply be folded over at the edges 18. This method of forming an edge 18 of the blanket 10 is convenient. However, the gathered or doubled over technique shown in Figure 1 is extremely useful where the cloth and mesh have free edges which need to be joined together to enclose the layer of thermal insulation material 12.

Also, the free edges of the cloth could be stitched separately and the woven wire mesh then wrapped around the layer of cloth 14. The free edges of the woven wire mesh could then be stitched together separately from the cloth. As shown in Figure 1 clips 20 and hooks 22 may be used in the thermal insulation blanket 10.

The clips 20 may be used on large thermal insulation blankets 10 to augment the support given by the gathered edges 18 and to reduce further movement of the woven stainless steel wire mesh 16 relative to the cloth 14. The hooks 22 may be used to anchor the thermal insulation blanket 10 in a working position and also help prevent movement of the woven stainless steel mesh 16. Typically, the

clips 20 comprise pins 25 which pass through the full thickness of the thermal insulation blanket 10. The pins 25 each may comprise a head 26 at one end and a hook 28 at an opposite end. To reduce fraying of the layer of mesh 16 and the cloth 14 there may also be provided a respective metal plate 29 between each of the head 26 and the hook 28 and the body of the blanket 10.

Further, depending upon the desired shape of the structure to be insulated, several individual sections of thermal insulation blanket 10, each constructed as previously described, may be joined by stitching with stainless steel wire.

Still further, the thermal insulation blanket 10 shown in Figures 1 to 3 does not tend to lose its shape or cause excessive wear on the layer of cloth 14 or the underlying insulation material 12 thereby maintaining its insulating properties at a maximum.

As an alternative to stitching of the edges 18, the edges 18 could be stapled.

Claims

1. A thermal insulation blanket (10) which comprises a layer of thermal insulation material (12) having first and second opposed major surfaces, enclosed by a layer of woven metal mesh (16), and a layer of cloth (14) enclosing the layer of thermal insulation material (12) which layer of cloth (14) is located between the layer of insulation material (12) and the layer of mesh (16) characterised in that the layer of mesh (16) has an edge portion (18) which is formed by inturning free edges of the layer of mesh (16) to form adjacent inturned mesh portions and attaching the inturned mesh portions together by stitching or stapling the inturned portions with metal wire (24).
2. A thermal insulation blanket (10) according to Claim 1, characterised in that the inturned mesh portions are attached to inturned free edges of the layer of cloth (14).
3. A thermal insulation blanket (10) according to Claim 1 or 2, characterised in that the woven metal mesh is formed in an interlocking loop pattern.
4. A thermal insulation blanket (10) according to any one of Claims 1 to 3, characterised in that the woven metal mesh is a woven stainless steel metal mesh.

Patentansprüche

1. Thermische Dämmungsdecke (10), die eine Schicht aus einem thermischen Dämmmaterial (12) mit einer ersten und einer zweiten Hauptoberfläche aufweist, welche entgegengesetzt zueinander angeordnet sind und von einer Schicht aus einem gewebten Metallgitter (16) umschlossen sind, und einer Schicht aus Stoff (14), die die Schicht aus thermischem Dämmmaterial (12) umschließt, deren Schicht aus Stoff (14) zwischen der Schicht aus thermischem Dämmmaterial (12) und der Schicht aus dem gewebten Metallgitter (16) angeordnet ist, **dadurch gekennzeichnet, daß** die Schicht aus einem gewebten Metallgitter (16) ein Randteil (18) aufweist, welches durch das Einschlagen freier Kanten der Schicht aus einem gewebten Metallgitter (16) entsteht, um somit angrenzende eingeschlagene Gitterteile herzustellen und die eingeschlagenen Gitterteile durch Vernähen oder Heften der eingeschlagenen Gitterteile mit Metaldraht (24) anzufügen.
2. Thermische Dämmungsdecke nach Anspruch 1, **dadurch gekennzeichnet, daß** die eingeschlagenen Gitterteile an eingeschlagene freie Kanten der Schicht aus Stoff (14) angefügt sind.
3. Thermische Dämmungsdecke nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** das gewobene Metallgitter in einem formschlüssigen Schleifenmuster hergestellt ist.
4. Thermische Dämmungsdecke nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, daß** das gewobene Metallgitter ein gewobenes Metallgitter aus einem rostfreien Stahl ist.

Revendications

1. Couverture d'isolation thermique (10) comprenant une couche de matière d'isolation thermique (12) ayant une première et une seconde surfaces principales opposées enfermées dans une couche de treillis métallique tissé (16) et une couche d'étoffe (14) renfermant la couche de matière d'isolation thermique (12), la couche d'étoffe (14) étant disposée entre la couche de matière d'isolation (12) et la couche de treillis (16), caractérisée en ce que la couche de treillis possède une partie de bordure (18) réalisée en rabattant, vers l'intérieur, les bords



clips 20 comprise pins 25 which pass through the full thickness of the thermal insulation blanket 10. The pins 25 each may comprise a head 26 at one end and a hook 28 at an opposite end. To reduce fraying of the layer of mesh 16 and the cloth 14 there may also be provided a respective metal plate 29 between each of the head 26 and the hook 28 and the body of the blanket 10.

Further, depending upon the desired shape of the structure to be insulated, several individual sections of thermal insulation blanket 10, each constructed as previously described, may be joined by stitching with stainless steel wire.

Still further, the thermal insulation blanket 10 shown in Figures 1 to 3 does not tend to lose its shape or cause excessive wear on the layer of cloth 14 or the underlying insulation material 12 thereby maintaining its insulating properties at a maximum.

As an alternative to stitching of the edges 18, the edges 18 could be stapled.

Claims

1. A thermal insulation blanket (10) which comprises a layer of thermal insulation material (12) having first and second opposed major surfaces, enclosed by a layer of woven metal mesh (16), and a layer of cloth (14) enclosing the layer of thermal insulation material (12) which layer of cloth (14) is located between the layer of insulation material (12) and the layer of mesh (16) characterised in that the layer of mesh (16) has an edge portion (18) which is formed by inturning free edges of the layer of mesh (16) to form adjacent inturned mesh portions and attaching the inturned mesh portions together by stitching or stapling the inturned portions with metal wire (24).
2. A thermal insulation blanket (10) according to Claim 1, characterised in that the inturned mesh portions are attached to inturned free edges of the layer of cloth (14).
3. A thermal insulation blanket (10) according to Claim 1 or 2, characterised in that the woven metal mesh is formed in an interlocking loop pattern.
4. A thermal insulation blanket (10) according to any one of Claims 1 to 3, characterised in that the woven metal mesh is a woven stainless steel metal mesh.

Patentansprüche

1. Thermische Dämmungsdecke (10), die eine Schicht aus einem thermischen Dämmmaterial (12) mit einer ersten und einer zweiten Hauptoberfläche aufweist, welche entgegengesetzt zueinander angeordnet sind und von einer Schicht aus einem gewebten Metallgitter (16) umschlossen sind, und einer Schicht aus Stoff (14), die die Schicht aus thermischem Dämmmaterial (12) umschließt, deren Schicht aus Stoff (14) zwischen der Schicht aus thermischem Dämmmaterial (12) und der Schicht aus dem gewebten Metallgitter (16) angeordnet ist, **dadurch gekennzeichnet, daß** die Schicht aus einem gewebten Metallgitter (16) ein Randteil (18) aufweist, welches durch das Einschlagen freier Kanten der Schicht aus einem gewebten Metallgitter (16) entsteht, um somit angrenzende eingeschlagene Gitterteile herzustellen und die eingeschlagenen Gitterteile durch Vernähen oder Heften der eingeschlagenen Gitterteile mit Metaldraht (24) anzufügen.
2. Thermische Dämmungsdecke nach Anspruch 1, **dadurch gekennzeichnet, daß** die eingeschlagenen Gitterteile an eingeschlagene freie Kanten der Schicht aus Stoff (14) angefügt sind.
3. Thermische Dämmungsdecke nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** das gewobene Metallgitter in einem formschlüssigen Schleifenmuster hergestellt ist.
4. Thermische Dämmungsdecke nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, daß** das gewobene Metallgitter ein gewobenes Metallgitter aus einem rostfreien Stahl ist.

Revendications

1. Couverture d'isolation thermique (10) comprenant une couche de matière d'isolation thermique (12) ayant une première et une seconde surfaces principales opposées enfermées dans une couche de treillis métallique tissé (16) et une couche d'étoffe (14) renfermant la couche de matière d'isolation thermique (12), la couche d'étoffe (14) étant disposée entre les couches de matière d'isolation (12) et la couche de treillis (16), caractérisée en ce que la couche de treillis possède une partie de bordure (18) réalisée en rabattant, vers l'intérieur, les bords



libres de la couche de treillis (16) pour former des parties adjacentes de treillis retournées vers l'intérieur et en liant, ensemble, les parties de treillis retournées en cousant ou en agrafant les parties retournées à l'aide d'un fil métallique (24).

5

2. Couverture d'isolation thermique (10) selon la revendication 1, caractérisée en ce que les parties retournées du treillis sont attachées aux bords libres retournés de la couche d'étoffe (14).

10

3. Couverture d'isolation thermique (10) selon l'une des revendications 1 ou 2, caractérisée en ce que le treillis métallique tissé est formé d'un motif de mailles entrelacées.

15

4. Couverture d'isolation thermique (10) selon l'une quelconque des revendications 1 à 3, caractérisée en ce que le treillis métallique tissé est un treillis tissé en acier inox.

20

25

30

35

40

45

50

55

4