(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 735 210 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.10.1996 Bulletin 1996/40

(51) Int Cl.[6]: **E04D 5/14**

(21) Application number: **96302096.1**

(22) Date of filing: **27.03.1996**

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB IE IT LI NL PT SE

(30) Priority: **31.03.1995 GB 9506694**

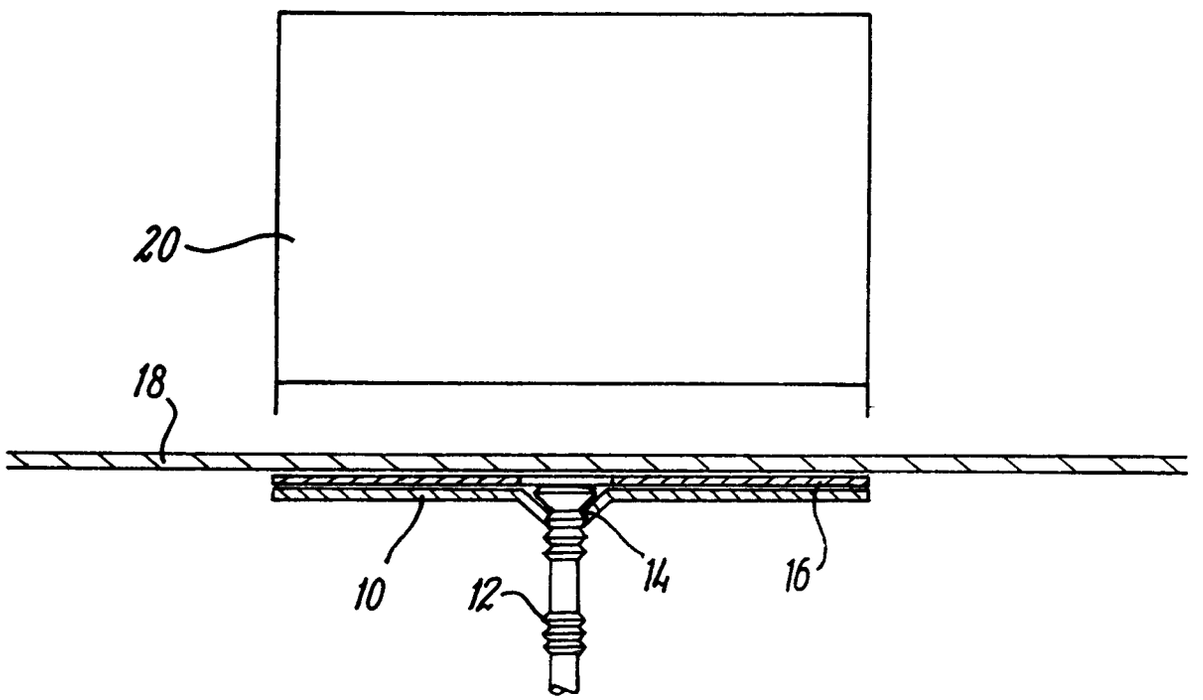
(71) Applicant: **Robertson, Adrian Alexander**
Mobberley, Cheshire WA16 7QS (GB)

(72) Inventor: **Robertson, Adrian Alexander**
Mobberley, Cheshire WA16 7QS (GB)

(74) Representative: **Low, Peter John et al**
Wilson, Gunn, M'Caw,
41-51 Royal Exchange,
Cross Street
Manchester, M2 7BD (GB)

(54) Fixing of membranes

(57) A method of fixing a membrane (20) to a support by placing the membrane (20) over a number of metal discs (10) coated with heat activated adhesive (16). The adhesive is heated inductively by a portable electromagnetic induction heater (20) located above the membrane.



EP 0 735 210 A1

Description

This invention relates to a method for fixing a waterproof membrane to a support.

Waterproof membranes are commonly used in the construction industry to cover roofs. The membranes are usually fixed in place mechanically by means of one or more, metal or plastic, fixing strips laid on the membrane and fastened to the supporting surface below the membrane by suitable fastening means such as pins, nails or the like. The problem with this kind of fixing is that additional steps must be taken to prevent leakage through the membrane at the points where the fastening extends therethrough. Current methods employed to solve this problem include the location of the fixing strip within a pocket or the like formed on the membrane and/or at a seam where one section of membrane joins another section. Alternative proposals include provision below the membrane of the metal discs coated on their upper surface with membrane type material to which the membrane can be secured. Where these proposals use heat welding this usually involves the application of hot air to the surfaces that are to be secured together which is time consuming particularly in cold weather. Solvent based adhesives can be used, but these can be toxic and unpleasant to apply and can have unacceptably long curing times in cold climate conditions.

The present invention has been made from a consideration of this problem.

According to the invention there is provided a method of securing a membrane to a support comprising disposing the membrane over one or more metal members, said metal members being coated on the side adjacent the membrane with a heat activated adhesive and inductively heating the metal members to activate the adhesive and adhere the membrane to the metal members.

In a preferred embodiment of the invention the metal members coated with heat activated adhesive are fixed to whatever structure is to underlie the membrane. The membrane is then laid over the metal members. Once the membrane is in the desired position the metal members are inductively heated by means of an electromagnetic induction heating device or the like located above the membrane. The metal members can have any shape, but are preferably formed from flat metal sheet. The dimensions of each metal member and the number employed can be chosen as desired to suit the particular circumstances.

The invention also extends to assemblies formed using the method defined above.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing which shows diagrammatically a part section through an assembly being formed in accordance with the invention.

Referring to the drawing a sheet metal member 10 in the form of a disc is secured to the underlying structure (not shown) by means of a screw 12 which passes through aperture 14 in the metal member. The metal member is coated on its upper surface with a heat activated adhesive 16.

A waterproof membrane 18 is laid over the metal member. A remote electromagnetic induction heater 20 above the membrane heats up the metal member whereby the adhesive is activated and adheres the membrane to the metal member.

The invention has many advantages over the prior art methods. The method is much faster due, inter alia, to the fact that inductive heating leads to faster activation of the adhesive. The faster installation leads to cost savings in man hours.

Further benefits of the invention are as follows:- The ability to complete laying of the membrane before adhesion to the fixings allows immediate partial waterproofing and prevents soiling of the fixing surfaces by passage of workers and the elements. No temporary ballast is required because random bonding may be achieved.

The invention prevents deformation and damage to the membrane through overheating.

The elimination of toxic solvents and the manual use thereof is a major benefit of the proposed invention. The heat activated adhesive coating on the metal members is of a non-toxic type and is applied to the metal membrane by the manufacturer of the metal members under factory controlled conditions.

The metal members with heat activated adhesive can be produced at a greatly reduced cost compared to the current membrane coated members. The activation of the heat activated adhesives can be carried out by one worker standing, rather than several workers having to crouch down to apply solvent to each member.

The invention is not restricted to the described embodiment and many modifications and variations can be made.

Claims

1. A method of securing a membrane to a support comprising disposing the membrane over one or more metal members, said metal members being coated on the side adjacent the membrane with a heat activated adhesive and inductively heating the metal members to activate the adhesive and adhere the membrane to the metal members.

2. A method as claimed in Claim 1, wherein the metal members are fixed to a structure that is to underlie the membrane.

3. A method as claimed in Claim 3, wherein the metal members are fixed to the structure prior to the membrane being disposed over the metal members.

4. A method as claimed in any preceding claim, where-

in the inductive heating is effected by a portable electromagnetic induction heating device located above the membrane.

5. A method as claimed in any preceding claim, wherein the metal members are formed from flat sheet.

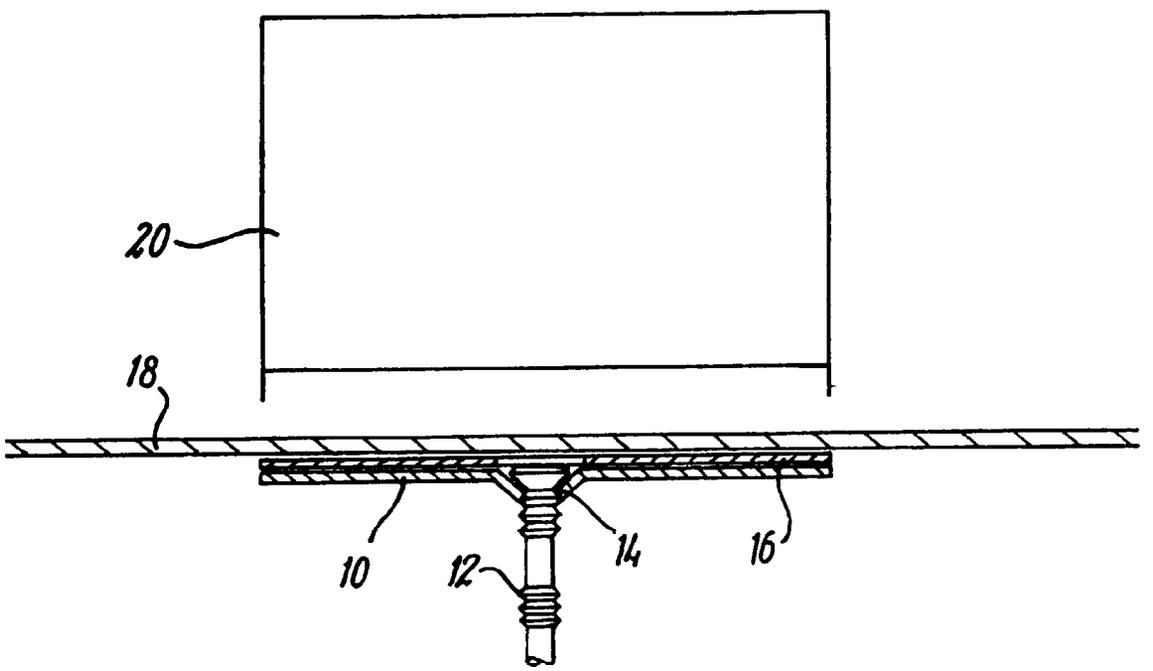
6. A method as claimed in any preceding claim, wherein the metal members comprise flat discs.

7. An assembly formed by the method as claimed in any preceding claim.

8. A metal member for use in the method as claimed in any preceding claim, said member being coated on one side with a heat activated adhesive.

9. A metal member as claimed in Claim 8, wherein the member is formed from flat sheet.

10. A metal member as claimed in Claim 8 or Claim 9, wherein the metal member is a flat disc.


20
18
10
12
14
16

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 30 2096

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	PATENT ABSTRACTS OF JAPAN vol. 015, no. 232 (M-1124), 13 June 1991 & JP-A-03 072131 (TAJIMA INC), 27 March 1991,	1-3,5, 7-9	E04D5/14
Y	* abstract *	4,6,10	

Y	US-A-4 977 720 (KUIPERS) * column 2, line 9 - column 3, line 25 * * figure 2 *	4	

Y	US-A-4 841 706 (RESAN) * column 3, line 22 - column 3, line 41 * * column 3, line 50 - column 4, line 24 * * figures 1-3 *	6,10	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 June 1996	Hendrickx, X

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)