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

(11) EP 1 468 920 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
20.10.2004 Bulletin 2004/43

(51) Int Cl.[7]: **B65B 69/00**

(21) Application number: **03425241.1**

(22) Date of filing: **18.04.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

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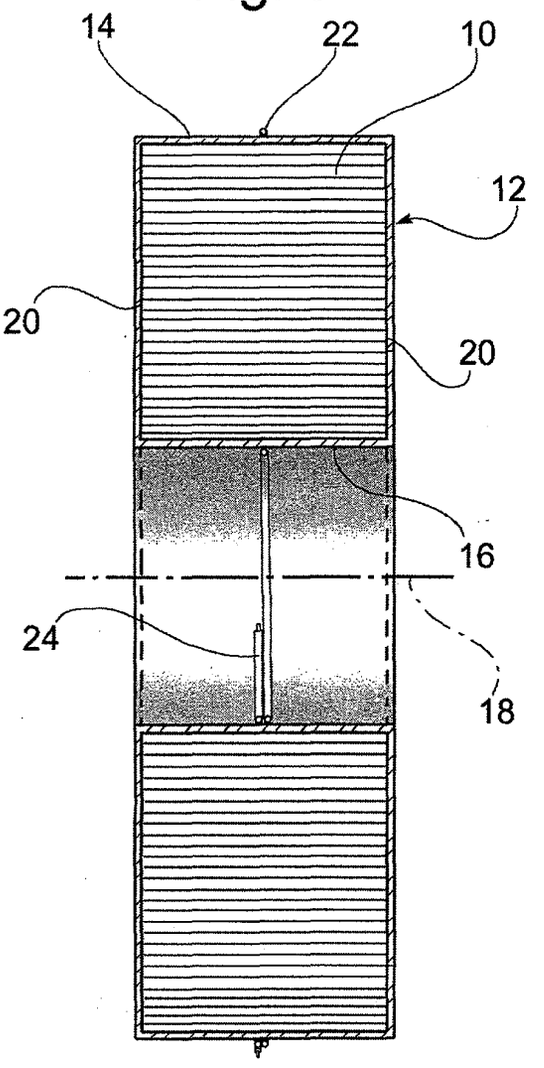
(54) Method for opening a protective covering of a roll of wound metallic material

(57) The method concerns the opening of a covering (12) of protective plastics material of a roll (10) of wound metallic material, which covering (12) comprises an outer cylindrical wall (14) and an inner cylindrical wall (16) which are disposed coaxially about the longitudinal axis (18) of the roll (10), and a first and a second flat wall (20) having the shape of respective annuli which connect the respective facing end edges of the cylindrical walls (14, 16). The method provides for: disposing circumferentially on the outside of the outer cylindrical wall (14) and on the inside of the inner cylindrical wall (16) a respective filiform element (22, 24) capable of generating heat; causing heat to be generated by the filiform elements (22, 24) in order to cause melting of the facing circular sections of covering (12) which is thus split into two separate half-coverings (12a, 12b); and separating the half-coverings (12a, 12b), leaving the roll (10) free.

Fig. 3



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Description

[0001] The present invention relates to a method for opening a covering of protective plastics material of a roll of wound metallic material such as, for example, sheet metal strip.

[0002] Such a covering has a shape complementary to that of the roll so as to be able to enclose it hermetically and, in particular, comprises an outer cylindrical wall and an inner cylindrical wall which are disposed coaxially about the longitudinal axis of the roll, and a first and a second flat wall having the shape of respective annuli which connect the respective facing end edges of the two cylindrical walls.

[0003] The use of such coverings is determined by the need to prevent the material constituting the rolls - which may be stored outside even for rather long periods of time - from being damaged by exposure to atmospheric agents, such as rain, moisture, saline substances and the like.

[0004] At the end of the storage period, when the roll of metallic material is to be used, it is obviously necessary to open the covering. To carry out this operation it has hitherto been proposed to use conventional cutting tools, concentrated jets of superheated air, and mixed tool/superheated jet systems. The results hitherto obtained, however, have been scarcely satisfactory from the point of view of rapidity and practicality of execution.

[0005] It is therefore an aim of the present invention to provide a method for opening a covering of protective plastics material of a roll of wound metallic material which is improved with respect to those of the prior art.

[0006] According to the invention, this aim is achieved by means of a method having the characteristics claimed specifically in the main claim which follows. Preferred forms of the method of the invention are described in the dependent claims.

[0007] By using heat as the means for cutting the covering and owing to its simultaneous application in all the desired areas owing to the use of the filiform elements, the method of the invention proves to be very rapid and simple in execution and thus permits widespread use of the protective coverings, which has been hitherto restricted by the lack of a convenient method of opening.

[0008] Further advantages and characteristics of the present invention will become clear from the following detailed description, provided by way of non-limiting example with reference to the appended drawings, in which:

Figure 1 is a view in front elevation of a roll of sheet metal strip wound with a protective covering round which are positioned filiform elements capable of generating heat,

Figure 2 is a view in side elevation of the wound roll of Figure 1,

Figure 3 is a view in section along the line III-III of Figure 1, and

Figure 4 is a perspective view of the roll freed of the covering which has been sub-divided into two half-coverings.

[0009] A roll 10 of wound metallic material, such as a sheet metal strip, is surrounded (Figures 1-3) by a covering 12 of plastics material which insulates it from the outside atmosphere, protecting it from phenomena of corrosion due to the action of atmospheric agents.

[0010] The covering 12 has a shape complementary to that of the roll 10 and comprises an outer cylindrical wall 14 and an inner cylindrical wall 16 which are disposed coaxially about the longitudinal axis 18 of the roll 10, and also a first and a second flat wall 20 having the shape of respective annuli which connect the respective facing end edges of the cylindrical walls 14 and 16.

[0011] For opening the covering 12, on the outside of the outer cylindrical wall 14 and on the inside of the inner cylindrical wall 16 respective filiform elements 22, 24 capable of generating heat are disposed. In particular, the filiform elements 22, 24 are caused to assume a circumferential arrangement at the centre line plane perpendicular to the axis 18 of the roll 10. If required by particular needs, the filiform elements 22, 24 could however be disposed at any plane perpendicular to the axis 18.

[0012] Each filiform element 22, 24 comprises a resistor capable of generating heat as a result of the passage of an electrical current. Preferably, such filiform elements 22, 24 are armoured resistors capable of generating heat over substantially their entire longitudinal extent.

[0013] Once the arrangement of the filiform elements 22, 24 is completed, the generation of heat thereby is controlled by connecting to an electrical supply the resistors disposed inside them, so as to cause melting of the two circular sections of the covering 12 respectively facing the filiform elements 22, 24.

[0014] In order to create a very close contact between the covering 12 and the filiform elements 22, 24 and to increase the speed of transmission of the heat generated, the filiform element 22 disposed on the outside of the outer cylindrical wall 14 is urged to tighten round the latter, while the filiform element 24 disposed on the inside of the inner cylindrical wall 16 is urged to expand against the latter. These stresses may be exerted for example by acting on the free ends 26 of the filiform elements 22, 24.

[0015] The operations just described are continued until the melting of the two circular sections of covering 12 facing the filiform elements is completed with the formation (Figure 4) of two separate half-coverings 12a, 12b which can easily be separated, leaving the roll 10 free.

[0016] In principle, the filiform elements 22, 24 could also be normal electric cables. These, however, once the melting of the facing sections of the covering 12 was completed, would come into contact with the metallic surface of the roll 10, where a dispersion of electrical

charges would be created. Therefore, in order to avoid such a phenomenon, it is preferable for the electrical conductors to be conveniently insulated and, in particular, for the filiform elements 22, 24 to be produced in the form of armoured resistors.

[0017] With the principle of the invention remaining unchanged, the details of production and the embodiments may of course vary widely with respect to what has been described purely by way of example, without thereby departing from the scope thereof.

Claims

1. A method for opening a covering (12) of protective plastics material of a roll (10) of wound metallic material, which covering (12) comprises an outer cylindrical wall (14) and an inner cylindrical wall (16) which are disposed coaxially about the longitudinal axis (18) of the roll (10), and a first and a second flat wall (20) having the shape of respective annuli which connect the respective facing end edges of the cylindrical walls (14, 16), said method providing for:

   - disposing circumferentially on the outside of the outer cylindrical wall (14) and on the inside of the inner cylindrical wall (16) a respective filiform element (22, 24) capable of generating heat,
   - causing heat to be generated by the filiform elements (22, 24) in order to cause melting of the facing circular sections of covering (12) which is thus split into two separate half-coverings (12a, 12b), and
   - separating said half-coverings (12a, 12b), leaving the roll (10) free.

2. A method according to claim 1, wherein each filiform element (22, 24) comprises a resistor capable of generating heat as a result of the passage of an electric current.

3. A method according to claim 2, wherein said filiform elements (22, 24) are armoured resistors.

4. A method according to any one of the preceding claims, wherein, during the heat generating step, the filiform element (22) disposed on the outside of the outer cylindrical wall (14) is urged to tighten round said outer wall (14), and/or the filiform element (24) disposed on the inside of the inner cylindrical wall (16) is urged to expand against said inner wall (16).

5. A method according to any one of the preceding claims, wherein said filiform elements (22, 24) are disposed at the centre line plane of the roll (10).

Fig. 2

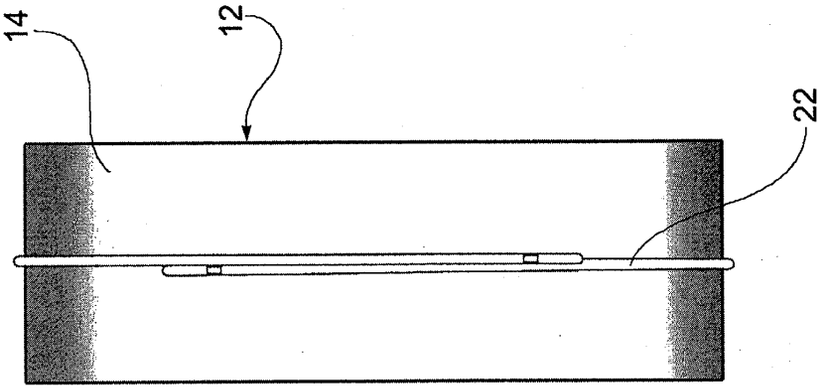


Fig. 1

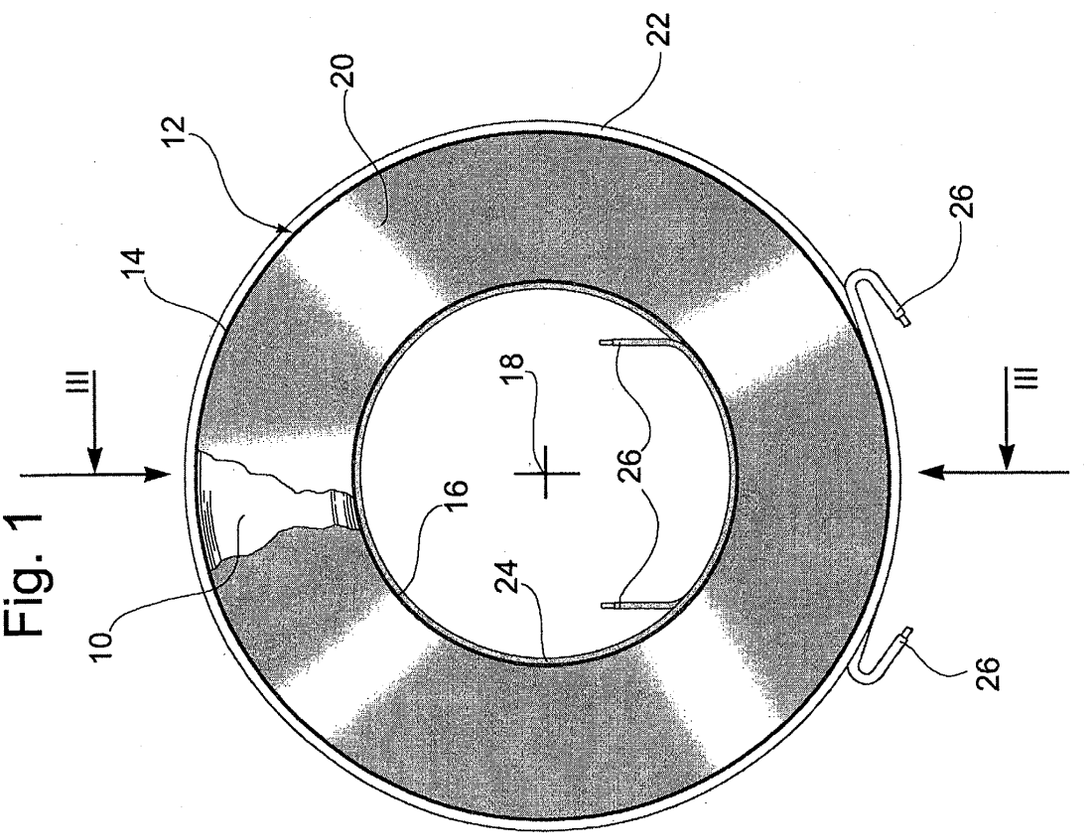


Fig. 4

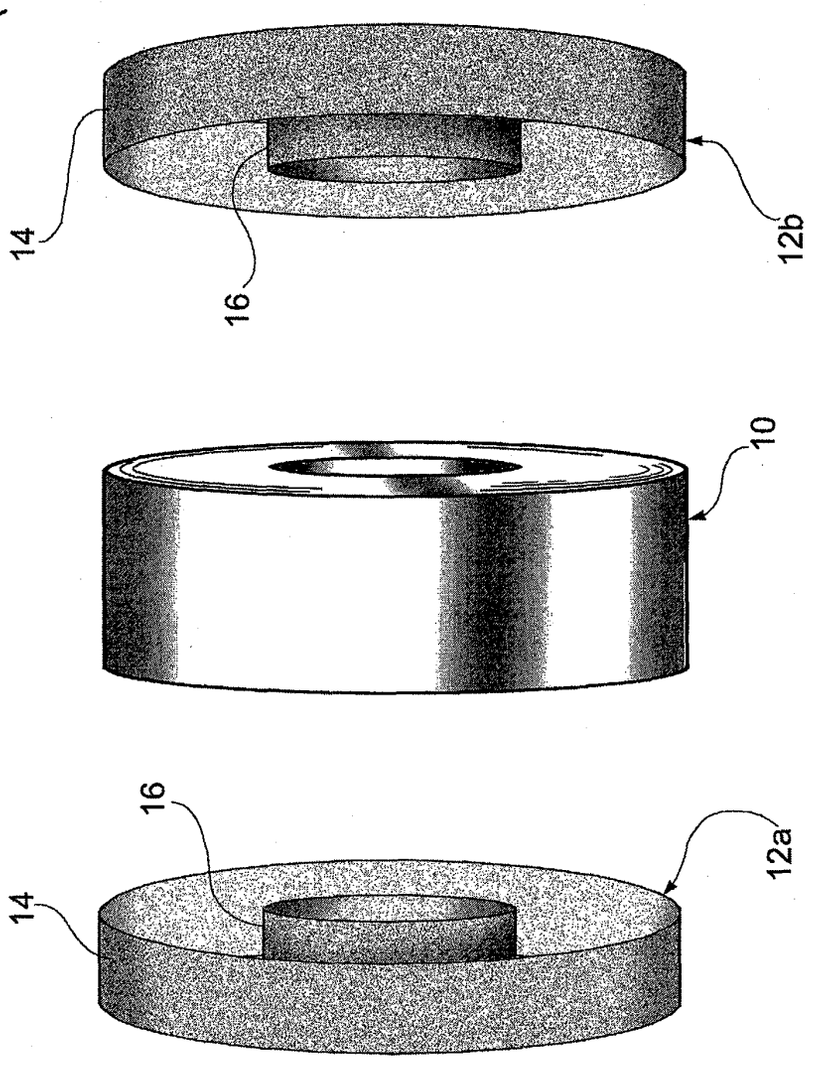
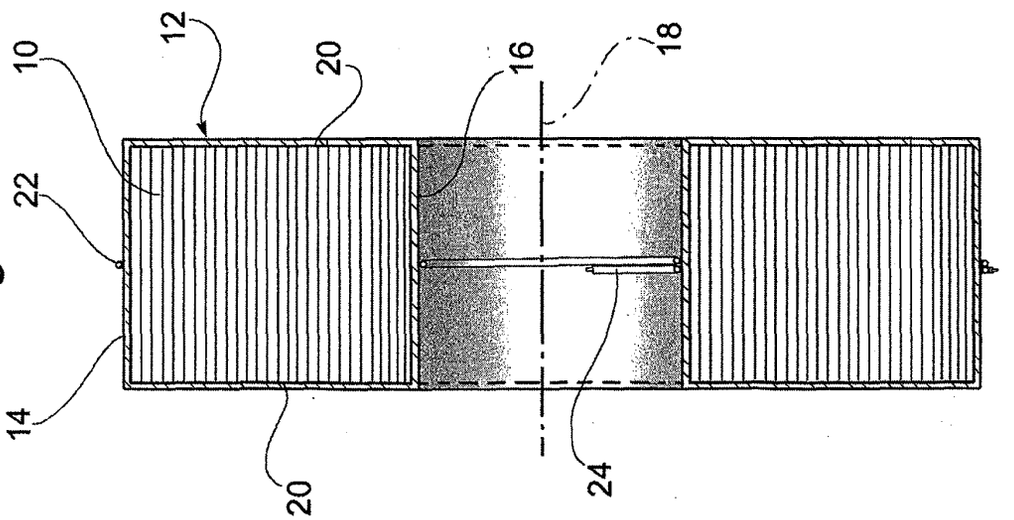


Fig. 3



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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5241

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.7)
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 25, 12 April 2001 (2001-04-12) -& JP 2001 225818 A (CHIYODA SOILTEC KK), 21 August 2001 (2001-08-21) * abstract * * figures 1-3 *	1-5	B65B69/00
A	EP 0 576 779 A (BBU INDUSTRIETECHNIK UND SERVI) 5 January 1994 (1994-01-05) * column 3, line 47 - column 4, line 3 * * figures 1-3 *	1-5	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65B
B67B
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	19 January 2004	Schultz, O

CATEGORY OF CITED DOCUMENTS

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19-01-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2001225818 A	21-08-2001	NONE	
EP 0576779 A	05-01-1994	EP 0576779 A1	05-01-1994

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82