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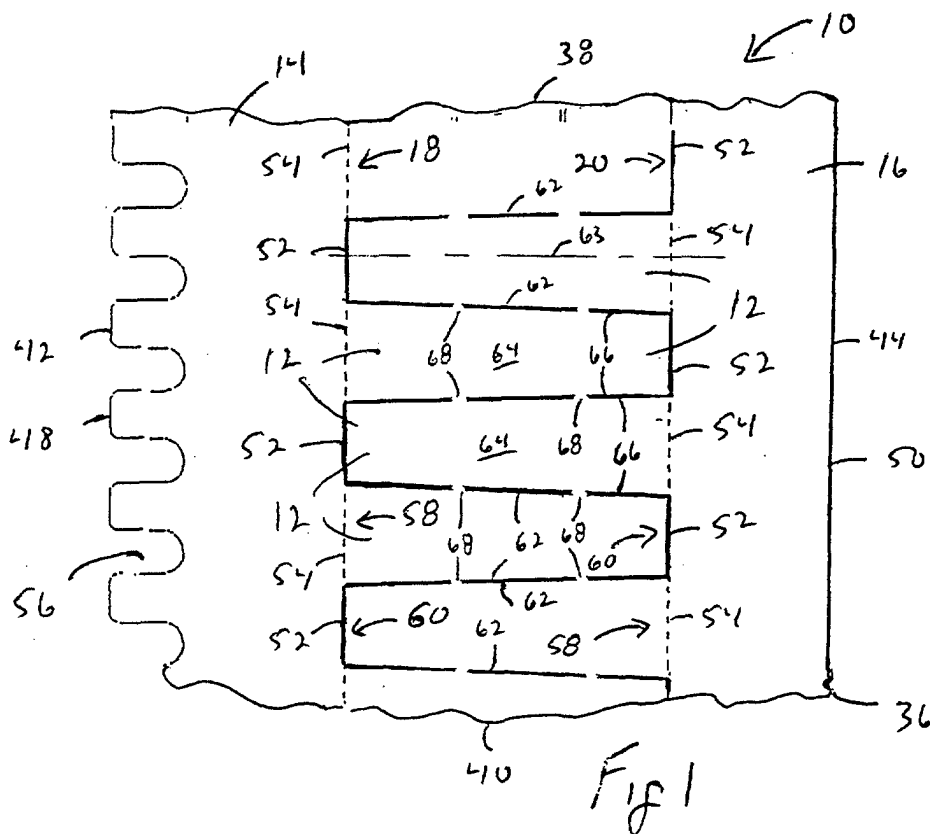
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(54) **Wire marker assembly**

(57) A multiple wire marker assembly includes first and second carrier strips and a plurality of interdigitating labels. Each of the strips has an inner edge and an outer edge. Each of the labels is adjacent to at least one of the other labels, and each label is joined to the inner

edge of at least one of the carrier strips, wherein separation of the carrier strips from each other separates adjacent labels and forms a pair of single carrier strips having labels extending from and spaced along the inner edge of each of the strips.



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Description

BACKGROUND OF THE INVENTION

[0001] The field of invention is labels for marking wires, and more particularly to a wire marker assembly having labels which can be inserted into a wire marker sleeve.

[0002] There are a number of industrial applications requiring identifying markers for tagging components in complicated assemblies or wiring configurations, such as in aircraft electronics and manufacturing control systems. Wires may be marked very simply by writing an identifiable legend on a tape flag affixed to the wire. An alternate method includes marking the wires with a metal or plastic marker sleeve crimped or otherwise attached to the wire. An electronic printer may be used to provide clearly recognizable alphanumeric labeling. The marker sleeves may be printed on directly, or a label may be printed and inserted in or adhered to the marker sleeve.

[0003] Whether it is a label or a sleeve that is printed, the labeling media typically comprises a series of printable portions that are attached to a carrier transport web, also known as a carrier strip. A transport web is generally a thin, flexible supporting member with evenly spaced apertures throughout its length that engage with a drive sprocket or are detected by a photoelectric sensing device for advancing the transport web incrementally past the printhead. The transport web is fed through the printer and one or more labels are marked. The labels/sleeves are then removed from the carrier and attached to objects, such as wires, needing identification. As there are many types of label applications, there are many combinations of labels and transport webs that provide labels of varying sizes, colors and formats.

[0004] A known wire marker assembly disclosed in EP 0 416 170 A1 has a plurality of transverse labels punched in a carrier strip. Each label is separated by carrier strip material, and is removed individually from the carrier strip prior to insertion into a wire marker sleeve.

[0005] Another known wire marker assembly disclosed in DE 3725217 A1 has interdigitated labels. Adjacent labels are fixed to opposing support columns, and are not joined to each other. Moreover, the labels and support structure are formed from a rigid material, and cannot be fed through a printer, such as a thermal transfer printer. A need exists for a wire marker assembly which can be fed through a printer, and has labels which are easily insertable into a marker sleeve.

BRIEF SUMMARY OF THE INVENTION

[0006] The present invention provides a multiple wire marker assembly. The assembly includes a first carrier strip having an inner edge and an outer edge. A first plurality of labels is joined to the first carrier strip, and ex-

tends from the inner edge. Each of the labels has a base end attached to the carrier strip and a head end. The base end and head end are joined by sides. A second carrier strip is fixed relative to the first carrier strip, and has an inner edge and an outer edge. A second plurality of labels is joined to the second carrier strip, and is interdigitated with the first plurality of labels. Each of the labels of the second plurality of labels extends from the second carrier strip inner edge toward the first carrier strip, and has a base end attached to the second carrier strip and a head end. The base end and head end of each label of the second plurality of labels are joined by sides, and at least a portion of at least one of the interdigitated labels is joined to an adjacent side of another of the interdigitated labels.

[0007] A general objective of the present invention is to provide a multiple wire marker assembly which can be fed through a printer, and has labels which are easily insertable into a marker sleeve. This objective is accomplished by providing a multiple wire marker assembly with interdigitated labels joined to carrier strips fixed relative to each other. Once the labels are printed, the carrier strips can be separated from each other to provide individual carrier strips having a plurality of spaced labels fixed thereto. Each label can be easily inserted into a marker sleeve prior to separating the label from the carrier strip.

[0008] Another objective of the present invention is to provide an individual label which is easily insertable into a wire maker sleeve and engages walls of the sleeve to prevent the label from slipping out of the sleeve. This objective is accomplished by providing a label having a base end and head end joined by sides, wherein at least one of the label sides of at least one of the labels diverge from a longitudinal axis of the one label as the label sides extend from the label head end toward the label base end of the one label.

[0009] The foregoing and other objects and advantages of the invention will appear from the following description. In the description, reference is made to the accompanying drawings which form a part hereof, and in which there is shown by way of illustration a preferred embodiment of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Fig. 1 is a plan view of a wire marker assembly incorporating the present invention;

[0011] Fig. 2 is a plan view of the wire marker assembly of Fig. 1 when the carrier strips are separated;

[0012] Fig. 3 is an end view of a label of Fig. 1 inserted into a wire marker sleeve receptacle;

[0013] Fig. 4 is a plan view of a second embodiment of a wire marker assembly incorporating the present invention;

[0014] Fig. 5 is a plan view of a third embodiment of a wire marker assembly incorporating the present invention; and

[0015] Fig. 6 is a sectional view along line 6-6 of Fig. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Referring to Figs. 1-3, a wire marker assembly 10 includes a plurality of adjacent wire marking labels 12 interposed between opposing, parallel carrier strips 14, 16. The wire marker assembly 10 is fed through a printer, such as a thermal transfer printer which prints indicia on each label 12. Advantageously, the carrier strips 14, 16 are separable to provide a plurality of labels 12 spaced along an inner edge 18, 20 of the carrier strip 14, 16 for easy handling and insertion of each label 12 into a wire marker sleeve 22.

[0017] The marker sleeve 22 can be any sleeve known in the art that includes a receptacle for receiving a label. For example, one acceptable marker sleeve 22 is shown in Fig. 3, and includes a receptacle 24 for receiving the label 12 and a means 26 for connecting the receptacle 24 to a wire 28. The open ended receptacle 24 includes a transparent top wall 30 and a bottom wall 32 joined by side walls 34. The side walls 34 of the receptacle 24 engage the label 12 to retain it in the receptacle 24.

[0018] Referring to Figs. 1 and 2, the wire marker assembly 10 is formed from a ribbon 36 of material which can be wound onto a spool. Preferably, the ribbon 36 is die cut to form the wire marker assembly 10 using a die. The die cuts and perforates the ribbon material to define the labels 12 and carrier strips 14, 16.

[0019] Preferably, the wire marker assembly 10 is formed from material known in the art for printing, such as polyvinyl chloride (PVC), filled polypropylene, polyethylene, and the like. Preferably, the material can be extruded and spooled to any length required for a particular printer application. Most preferably, the surface of the material is suitable for thermal transfer printing such that no coating is required, however, an ink receptor top coat can be applied to the labeling media to define a printing surface. Although PVC is preferred, the wire marker assembly material may be any material known in the art such as paper, laminate materials, and the like.

[0020] The wire marker assembly 10 has a leading edge 38 and a trailing edge 40 joined by side edges 42, 44. Each carrier strip 14, 16 is formed along one of the assembly side edges 42, 44, and has an outer edge 48, 50 coincident with one of the wire marker assembly side edges 42, 44. The carrier strip inner edges 18, 20 are parallel to the outer edges 48, 50, and are defined by alternating cuts 52 and perforations 54 in the ribbon 36. Reference notches 56 are formed in the outer edge 48 of one carrier strip 14 for advancing the wire marker assembly 10 through the printer.

[0021] The labels 12 are alternately joined to one of the opposing carrier strips 14, 16, and extend toward the opposing carrier strip 14, 16. Each label 12 has a

base end 58 and a head end 60 joined by sides 62 to define top and bottom faces 64. The printer prints indicia on at least one of the faces 64 of each label 12 to identify an object, such as a wire, being labeled.

[0022] Each label base end 58 is joined to one of the carrier strips 14, 16, and is defined by the perforations 54 formed in the ribbon 36 defining the carrier strip inner edge 18, 20. The label head end 60 extends toward the opposing carrier strip 14, 16, and is defined by one of the cuts 52 defining the inner edge 18, 20 of the opposing carrier strip 14, 16. Advantageously, by joining the base end 58 of adjacent labels 12 to opposing carrier strips 14, 16, the labels 12 are interdigitated to define a continuous printing surface of label faces 64.

[0023] The base end 58 of each label 12 is wider than the head end 60, and the opposing sides 62 of each label 12 diverge from a label longitudinal axis 63 as the label sides 62 extend from the head end 60 toward the base end 58. Advantageously, the narrower head end 60 facilitates slipping the label 12 into a wire marker sleeve receptacle 24, and as the label head end 60 is slipped deeper into the sleeve receptacle 24, as shown in Fig. 3, the diverging sides 62 engage the side walls 34 of the sleeve receptacle 24 to retain the label 12 in the sleeve 22.

[0024] As shown in Fig. 1, the sides 62 of adjacent labels 12 are joined, and fix the carrier strips 14, 16 relative to each other. Each label side 62 is defined by a discontinuous cut 66 extending between the base and head ends 58, 60 of each label 12. Tack points 68 join the sides 62 of adjacent labels 12, and form the discontinuities in the cut 66 defining the label sides 62. Advantageously, the joined sides 62 prevent premature separation of the carrier strips 14, 16 during printing, and the tack points 68 facilitate separation of the adjacent labels 12, and thus the carrier strips 14, 16 when desired. Although joining the adjacent labels 12 using tack points 68 is disclosed herein, other methods known in the art can be used to define the adjacent label sides 62 which facilitate separation of the labels 12 when desired, such as by perforating, scoring, and the like, without departing from the scope of the present invention.

[0025] Referring to Figs. 1-3, in use, the wire marker assembly 10 is fed into a printer, and indicia is printed on the face 64 of each label 12. Once the indicia is printed on each label 12, a user grasps each carrier strip 14, 16, and pulls the carrier strips 14, 16 apart. Pulling the carrier strips 14, 16 apart separates the interdigitated labels 12 along the label sides 62, and forms two independent carrier strips 14, 16 having labels 12 spaced along the carrier strip inner edge 18, 20.

[0026] Each independent carrier strip 14, 16 provides a handle for easily manipulating the labels 12 attached thereto. Each label 12 is inserted into a marker sleeve 22 by manipulating the carrier strip 14, 16 to guide the desired label 12 into the sleeve receptacle 24. The label 12 is slipped into the sleeve receptacle 24 at least until the label sides 62 engage the receptacle side walls 34.

Once the desired label 12 is wedged into the sleeve receptacle 24, it is separated from the carrier strip 14, 16 along the label base end 58. The process is repeated until all of the printed labels 12 joined to the carrier strip 14, 16 are inserted into the proper marker sleeve receptacle 24. Advantageously, by providing labels 12 which remain attached to the carrier strip 14, 16 until after the label 12 is inserted into the proper marker sleeve receptacle 24, the labels 12 remain organized in the order in which they were printed to simplify the wire marking process.

[0027] In another embodiment shown in Fig. 4, three carrier strips 70, 72, 74 are formed in a ribbon 76, and labels 78 are joined to both side edges 80, 82 of the center carrier strip 72. The labels 78 joined to the center carrier strip 72 are interdigitated with labels 84 extending toward the center carrier strip 72 from the outer carrier strips 70, 74. As in the first embodiment, adjacent labels 78, 84 are joined, and fix the carrier strips 70, 72, 74 relative to each other. Reference structure 86 is formed in the center carrier strip 72 for advancing the assembly 88 through a printer.

[0028] In yet another embodiment shown in Figs. 5 and 6, a wire marker assembly 100 includes interdigitated labels 102 joined to carrier strips 104, 106, such as disclosed in the above embodiments. The carrier strips 104, 106, however, are detachably fixed to a carrier web 108 which fixes the carrier strips 104, 106 relative to each other. Preferably, the carrier web 108 includes an adhesive which detachably fixes the carrier strips 104, 106 to the carrier web 108. The interdigitated adjacent labels 102 can be separated by detaching one of the carrier strips 104, 106 from the carrier web 108 to provide a plurality of spaced labels 102 joined to an edge 112, 114 of the carrier strip 104, 106.

[0029] As in the above embodiments, the interdigitated labels 102 shown in Figs. 5 and 6 provide a substantially continuous printing surface of label faces 110. Advantageously, by providing a carrier web 108, joining adjacent labels 102 is not necessary to fix the carrier strips 104, 106 relative to each other.

[0030] While there has been shown and described what are at present considered the preferred embodiments of the invention, it will be obvious to those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention defined by the appended claims.

The invention can be summarized as follows:

[0031] A multiple wire marker assembly includes first and second carrier strips and a plurality of interdigitating labels. Each of the strips has an inner edge and an outer edge. Each of the labels is adjacent to at least one of the other labels, and each label is joined to the inner edge of at least one of the carrier strips, wherein separation of the carrier strips from each other separates adjacent labels and forms a pair of single carrier strips hav-

ing labels extending from and spaced along the inner edge of each of the strips.

Claims

1. A multiple wire marker assembly formed in a label material, said assembly comprising:

a first carrier strip having an inner edge and an outer edge;

a first plurality of labels joined to said first carrier strip and extending from said inner edge, each of said labels having a base end attached to said carrier strip and a head end, said base end and head end being joined by sides;

a second carrier strip fixed relative to said first carrier strip, and having an inner edge and an outer edge; and

a second plurality of labels joined to said second carrier strip and interdigitated with said first plurality of labels, each of said labels of said second plurality of labels extending from said second carrier strip inner edge toward said first carrier strip, and having a base end attached to said second carrier strip and a head end, said base end and head end being joined by sides, and at least a portion of at least one of said sides of one of said interdigitated labels is joined to an adjacent side of another of said interdigitated labels.

2. The multiple wire marker assembly of claim 1, in which at least one of said label sides of at least one of said labels diverge from a longitudinal axis of said one label as said label sides extend from said label head end toward said label base end of said one label.

3. The multiple wire marker assembly of claim 1, in which at least one of said label base ends is defined by perforations formed along said inner edge of one of said first carrier strip and said second carrier strip.

4. The multiple wire marker assembly of claim 1, in which said adjacent sides of said interdigitated labels are defined by a structure which facilitates separating said joined label sides.

5. The multiple wire marker assembly of claim 4, in which said structure is a discontinuous cut formed in the label material between said adjacent labels.

6. The multiple wire marker assembly of claim 1, in which a third carrier strip is fixed relative to said first carrier strip, said third carrier strip having an inner edge and an outer edge; and

a third plurality of labels is joined to said third

carrier strip inner edge and interdigitated with a plurality of labels joined to said outer edge of said first carrier strip.

7. A multiple wire marker assembly formed in a label material, said assembly comprising:

first and second carrier strips, each of said strips having an inner edge and an outer edge; and
a plurality of interdigitating labels, at least one of said labels being adjacent to and joined to at least one other of said labels, and each label being joined to at least one of said carrier strips, wherein separation of said carrier strips from each other separates adjacent labels and forms a pair of single carrier strips having labels extending from and spaced along said inner edge of each of said strips.

8. The multiple wire marker assembly of claim 7, in which each of said labels has a base end and a head end, said base end being attached to one of said carrier strips, and said base end and head end being joined by sides, wherein at least one of said label sides of at least one of said labels diverge from a longitudinal axis of said one label as said label sides extend from said label head end toward said label base end of said one label.

9. The multiple wire marker assembly of claim 8, in which at least one of said label base ends is defined by perforations along said inner edge of one of said first carrier strip and said second carrier strip.

10. The multiple wire marker assembly of claim 7, in which at least one side of at least one of said interdigitated labels is joined to an adjacent side of an adjacent label, and said one side is defined by a structure which facilitates separating said joined label sides.

11. The multiple wire marker assembly of claim 10, in which said structure is a discontinuous cut in the label material between said adjacent labels.

12. The multiple wire marker assembly of claim 7, in which a third carrier strip is fixed relative to said first carrier strip, said third carrier strip having an inner edge and an outer edge; and
a third plurality of labels is joined to said third carrier strip inner edge and interdigitated with a plurality of labels joined to said outer edge of said first carrier strip.

13. A multiple wire marker assembly comprising:

a first carrier strip having an inner edge and an

outer edge; and

a first plurality of labels joined to and spaced along an inner edge of said carrier strip, each of said labels having a base end and a head end, said base end being attached to said carrier strip, said base end and head end being joined by sides, and at least one of said label sides of at least one of said labels diverge from a longitudinal axis of said one label as said label sides extend from said label head end toward said label base end of said one label.

14. The multiple wire marker assembly of claim 13, including a second carrier strip fixed relative to said first carrier strip, and having an inner edge and an outer edge; and

a second plurality of labels joined to said second carrier strip and interdigitated with said first plurality of labels, each of said labels of said second plurality of labels extending from said second carrier strip inner edge toward said first carrier strip, and having a base end attached to said second carrier strip and a head end, said base end and head end being joined by sides.

15. The multiple wire marker assembly of claim 13, in which at least one of said label base ends is defined by perforations along said inner edge of one of said first carrier strip.

16. The multiple wire marker assembly of claim 14, in which at least one of said sides of one of said interdigitated labels is joined to an adjacent side of another interdigitated label, and said adjacent sides are defined by a structure which facilitates separating said joined label sides.

17. The multiple wire marker assembly of claim 14, in which a third carrier strip is fixed relative to said first carrier strip, said third carrier strip having an inner edge and an outer edge; and

a third plurality of labels is joined to said third carrier strip inner edge and interdigitated with a plurality of labels joined to said outer edge of said first carrier strip.

18. A multiple wire marker assembly formed in a label material, said assembly comprising:

a carrier web;

first and second carrier strips detachably fixed to said carrier web, each of said strips having an inner edge and an outer edge; and
a plurality of interdigitating labels, at least one of said labels being joined to one of said first and second carrier strips, and another of said labels adjacent to said one label being joined to the other of said first and second carrier

strips, wherein separation of at least one of said carrier strips from said carrier web separates adjacent labels and forms a single carrier strip having labels extending from and spaced along said inner edge of said strip.

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19. The multiple wire marker assembly of claim 18, in which each of said labels has a base end and a head end, said base end being attached to one of said carrier strips, and said base end and head end being joined by sides, wherein at least one of said label sides of at least one of said labels diverge from a longitudinal axis of said one label as said label sides extend from said label head end toward said label base end of said one label.
20. The multiple wire marker assembly of claim 19, in which at least one of said label base ends is defined by perforations along said inner edge of one of said first carrier strip and said second carrier strip.
21. The multiple wire marker assembly of claim 18, in which at least one side of at least one of said interdigitated labels is joined to an adjacent side of an adjacent label, and said one side is defined by a structure which facilitates separating said joined label sides.
22. The multiple wire marker assembly of claim 18 in which a third carrier strip is fixed to said carrier web relative to said first carrier strip, said third carrier strip having an inner edge and an outer edge; and a third plurality of labels is joined to said third carrier strip inner edge and interdigitated with a plurality of labels joined to said outer edge of said first carrier strip.
23. The multiple wire marker assembly of claim 18, in which said carrier strips are adhesively fixed to said carrier web

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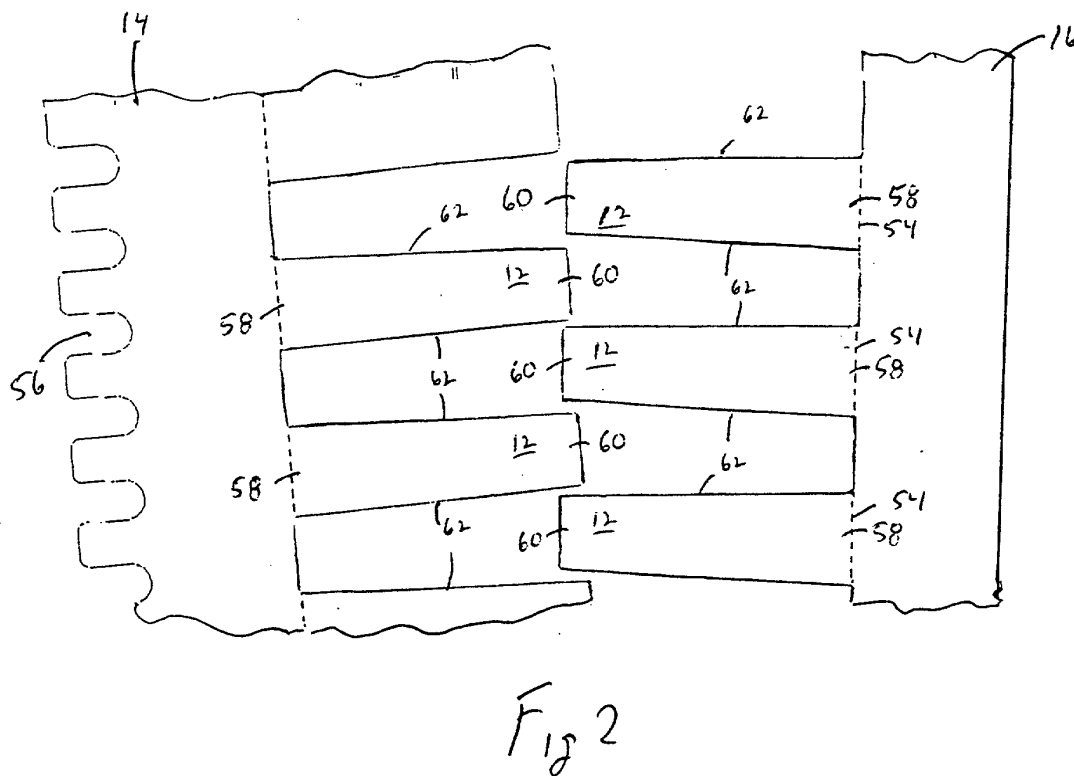
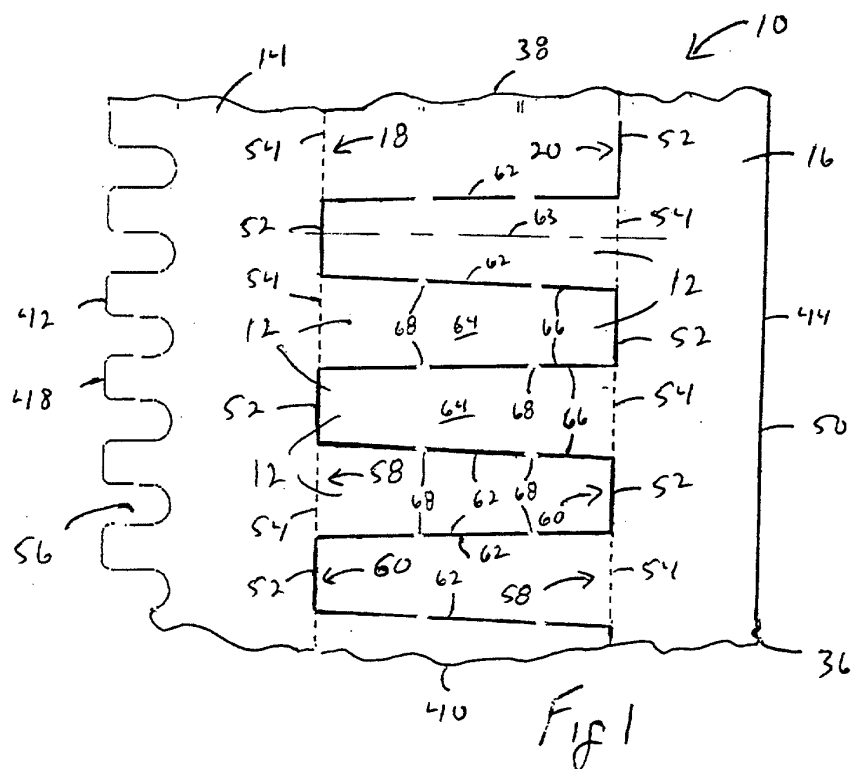
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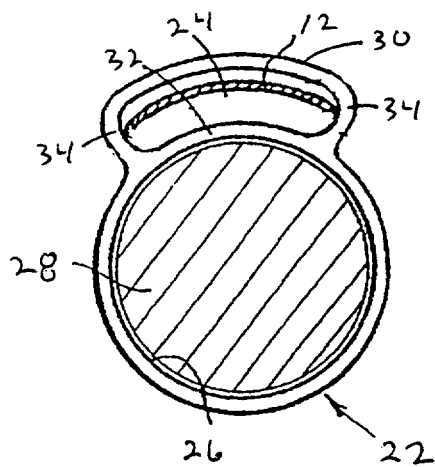


Fig. 3

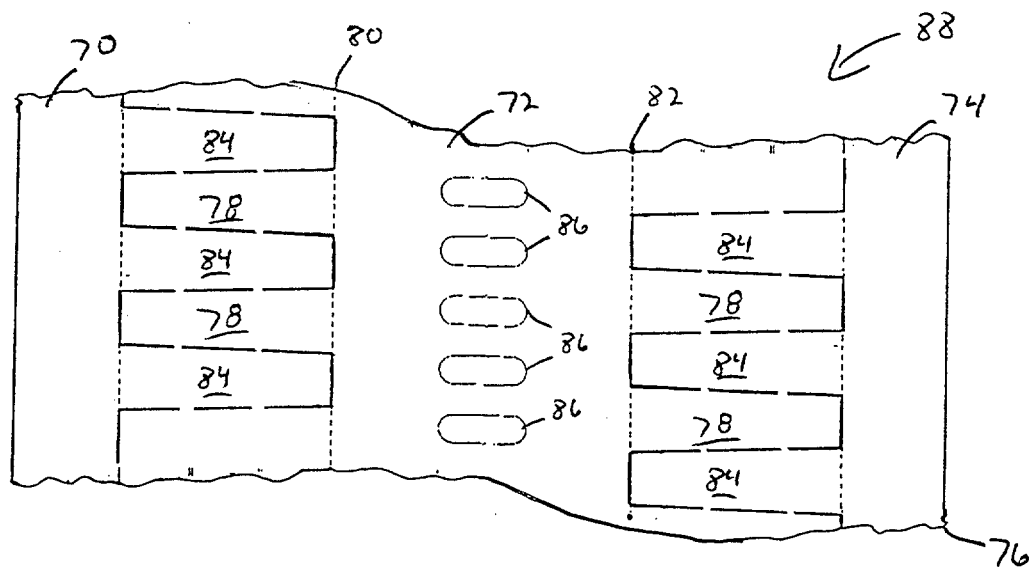


Fig. 4

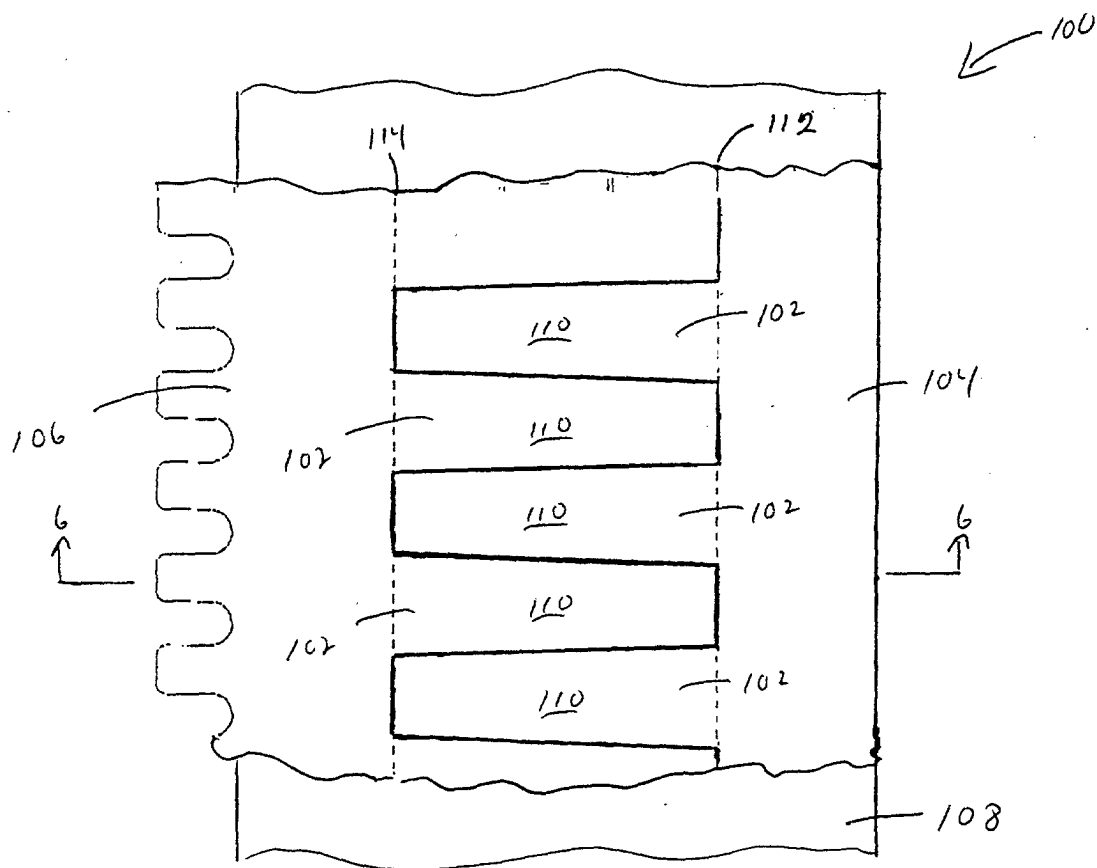


Fig 5

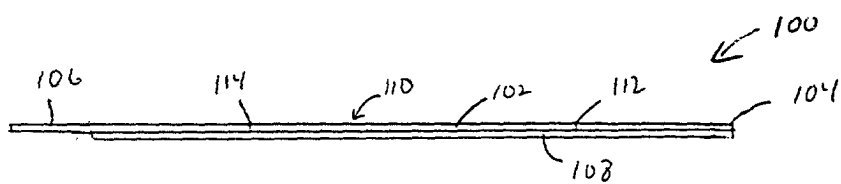


Fig 6



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 01 10 3275

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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