

[54] **UNIVERSAL SURGICAL BINDER**

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[58] Field of Search **128/541, 78, 558, 559, 128/560, 561, 573, 518 R, 549, 557**

[56] **References Cited**

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1,267,657	5/1918	Grace	128/559
1,928,101	9/1933	Grinager et al.	128/558 X
3,115,879	12/1963	Kaplan	128/165 X
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3,598,114	8/1971	Lewis	128/78
3,752,163	8/1973	Kaplan	128/541
3,812,862	5/1974	Bernstein	128/578

Primary Examiner—Geo. V. Larkin

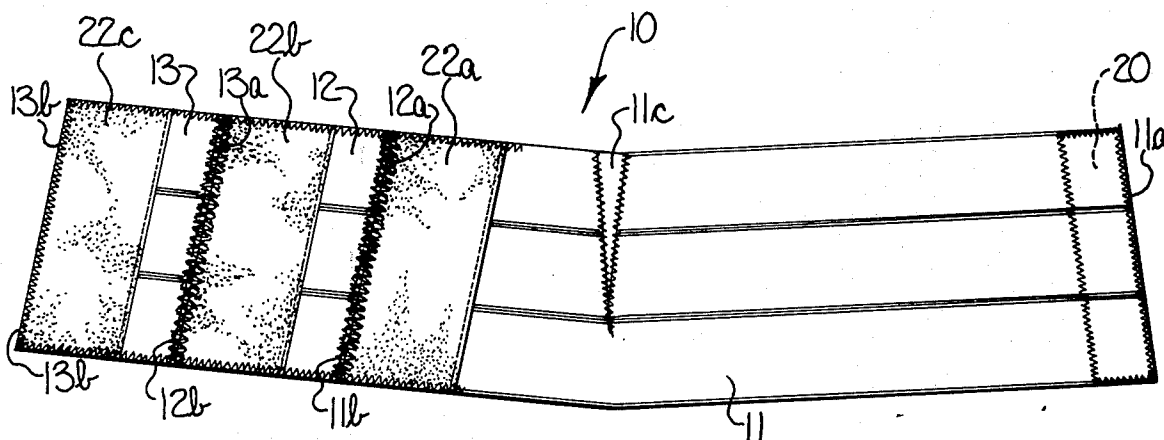
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[57]

ABSTRACT

A surgical binder of a predetermined length for encircling and supporting a body member within a wide range of sizes. The binder is characterized by having at least one removable portion for adjustment of the length thereof to fit a smaller size body member within the range without having an excessive overlap. The binder comprises an elongate base panel having a length sufficient to encircle a certain size body member, and at least one end panel. Means are provided for releasably securing the end panel to the base panel to allow the end panel to serve as an extension for accommodating the binder to a larger size body member. A first fastening member is carried by the base panel, and a second fastening member is carried by each of the base panel and the end panel for being selectively, independently and releasably interconnected with the first fastening member. The end panel may thus be removed from the binder to reduce the overlap thereof when the size of the body member of the wearer does not require the presence of the end panel and the first fastening member is interconnected with the second fastening member of the base panel.

12 Claims, 5 Drawing Figures



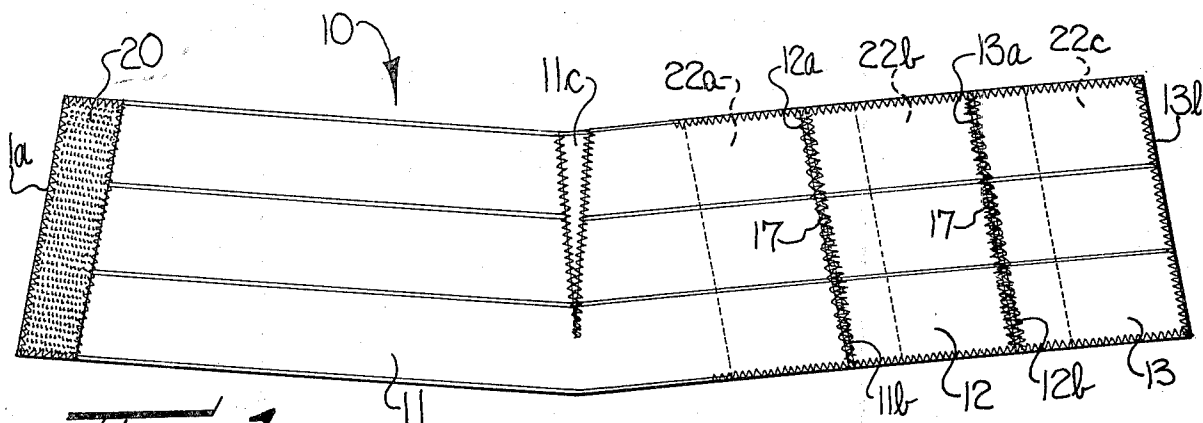


FIG-1

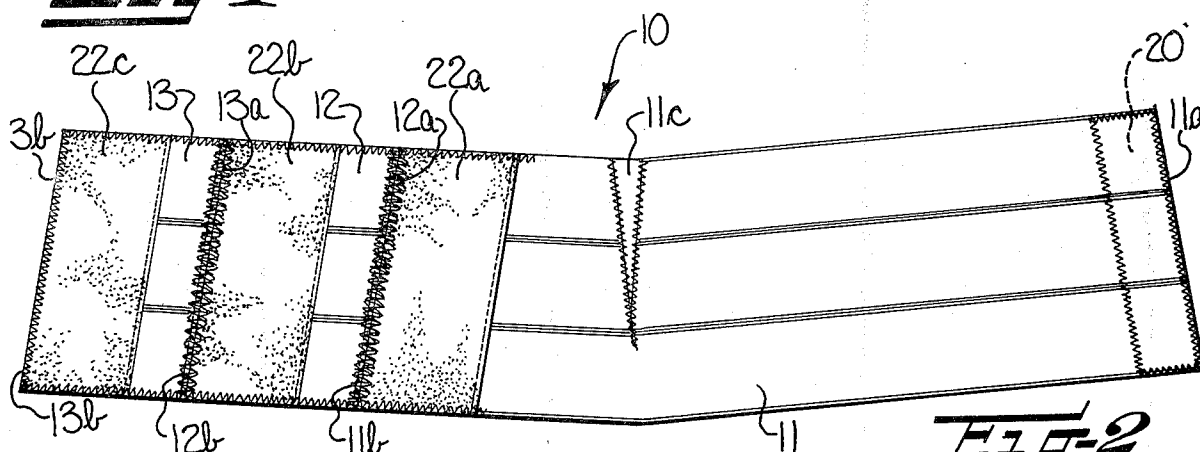


FIG-2

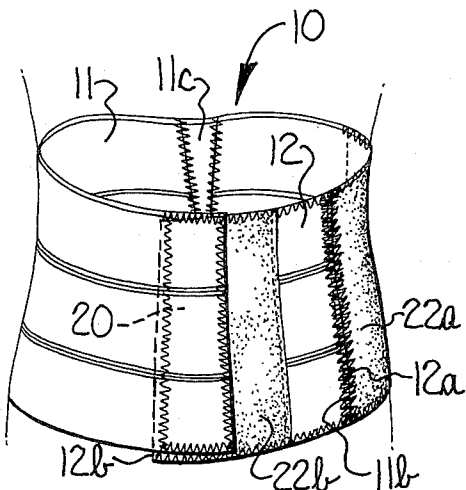


FIG-3

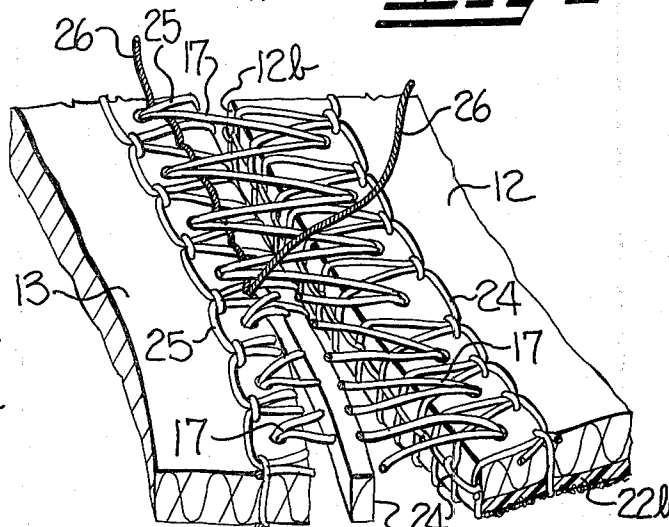


FIG-4

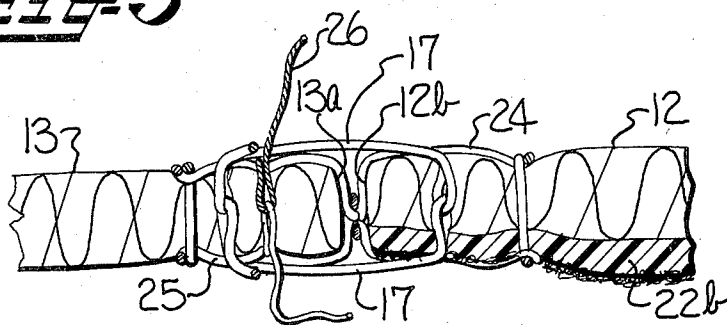


FIG-5

UNIVERSAL SURGICAL BINDER

BACKGROUND OF THE INVENTION

This invention relates to a binder of a predetermined length for encircling and supporting a body member within a range of sizes without having excessive overlap of the belt.

Binders in the form of wide fabric belts are widely used by physicians on patients for a number of purposes, including providing support for the abdominal walls following surgery or childbirth, keeping bones in place which have been set following a break and after removal of the cast, and to prevent cutaneous sutures from being pulled from a wound. These types of binders or belts, referred to generically as surgical binders herein, may be used on various body members, such as the abdomen, thorax, legs, and arms to accomplish any one or more of the purposes set out above. Likewise, such surgical binders may be used on infants and children, as well as adults.

For these reasons, prior surgical binders are required to be stocked in numerous lengths to fit body members having widely differing circumferences, as, for example, a small child's leg or a very large adult's abdomen. As a result, the manufacture, distribution and use of binders of this type involve several problems. For example, the necessity of manufacturing many different sizes of the binders results in inherently inefficient manufacturing techniques which necessarily increase the cost thereof. Likewise, because distributors and retailers must carry a wide range of sizes in inventory, their inventory expense is greater and results in a higher price charged to the ultimate user. Further, suppliers have difficulty in maintaining a full inventory, and often a binder of the correct size may not be in stock when needed. The alternative is to select a binder of a larger size, which is then overlapped around the body member to the extent necessary to fit the smaller circumference.

Prior surgical binders of the described type have been proposed which are adjustable in circumference to fit various sizes. For example, the prior U.S. Pat. to Kaplan, No. 3,115,879, and Lewis, No. 3,598,114, each disclose an adjustable binder or belt having a row of buttons or other fasteners along one end edge, and several spaced rows of cooperating fasteners along the opposite end edge. The single row of fasteners is adapted to engage a selected one of the opposite rows of fasteners to permit adjustment within a range of sizes.

When an adjustable binder or belt of the above described type is positioned about a relatively small body member within its range of sizes, an overlap of excess material results. This overlapping of the fabric undesirably increases the bulk of the binder, which in turn results in increased retention of body heat and perspiration and thus contributes to the discomfort of the wearer. In addition, the added bulk increases the overall circumference of the supported body member and it may in some cases hinder the wearer in wearing clothing which would normally be of a correct size. Finally, such binders may also be unsatisfactory in that the fasteners along the single row may not be able to be properly aligned with the spaced rows of cooperating fasteners when the binder is positioned about certain body members. As a result, the fasteners do not prop-

erly mate, and the use of additional fastening means, such as pins, hooks, or tape may be required.

SUMMARY OF THE INVENTION

Accordingly, it is the object of this invention to provide a surgical binder of a predetermined length for encircling and supporting a body member within a wide range of sizes without having an excessive overlap, and which avoids the above problems of the prior art devices.

These and other objects and advantages of the present invention are achieved in the preferred embodiment set forth herein by providing a surgical binder which comprises an elongate base panel defining first and second opposite end edges and having a length sufficient to encircle the body of certain wearers of the binder, and at least one end panel defining first and second opposite end edges. Means are provided for releasably securing the first end edge of the end panel to the second end edge of the base panel so that the end panel serves as an extension for accommodating the binder to a larger size wearer. A first fastening member is carried by the base panel adjacent the first end edge and a second fastening member is carried adjacent the second end edge of the base panel. Another second fastening member is carried by the end panel adjacent the second end edge thereof. Each of the second fastening members is adapted to cooperate with the first fastening member for being independently and releasably engaged by the first fastening member. The binder may be secured in encircling relation about a body member by interconnecting the first fastening member with a selected one of the second fastening members. To reduce the overlap when the binder is adjusted to a relatively small size, the end panel may be removed from the binder with the first fastening member engaging the selected second fastening member.

According to the preferred embodiment, the base panel and the end panel are releasably secured together in end-to-end relation by means of zig-zag stitching overlaying the second end edge of the base panel and the first end edge of the end panel, with means being provided for preventing raveling of the fabric when the end panel is removed from the binder by removing the zig-zag stitches.

The preferred embodiment also incorporates a plurality of end panels in order to provide a greater degree of adjustability. In addition, the first fastening member comprises numerous rows of hook-like members and the second fastening member comprises a patch of loose, fibrous fabric material.

BRIEF DESCRIPTION OF THE DRAWINGS

Some of the objects of the invention having been set forth above, other objects and advantages will appear as the description of the invention proceeds, when taken in conjunction with the following drawing in which:

FIG. 1 is an elevational view of the inner face of a surgical binder according to the present invention;

FIG. 2 is an elevational view of the outer face of the binder shown in FIG. 1;

FIG. 3 is a perspective view of the binder in position around the lower thorax and upper abdomen of a wearer;

FIG. 4 is an enlarged fragmentary perspective view of the abutting end portions of adjacent panels of the

binder, and showing how the panels are releasably secured together and the means for preventing the fabric from raveling when an end panel is removed to shorten the binder; and

FIG. 5 is an enlarged, fragmentary, cross-sectional view of the abutting end portions of the panels shown in FIG. 4, showing the stitch structure utilized.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, a surgical binder according to the present invention is shown in FIGS. 1 and 2 and broadly indicated at 10. The illustrated embodiment is particularly adapted for use as an abdominal binder, but it should be understood that the invention is also applicable to other types of binders and belts as described above.

The binder 10 comprises an elongate base panel 11 having a length sufficient to encircle a certain small size body member, and a width of generally about 9 to 12 inches. The base panel 11 defines first and second opposite end edges 11a and 11b, respectively, and it is preferably constructed of a conventional elastic fabric material which is somewhat stretchable in the longitudinal direction in order to provide comfort and adequate support. A gore 11c is provided in the base panel 11 to shorten the length of one longitudinal edge of the binder to enable it to more closely correspond to the generally frusto-conical configuration of the human torso. A pair of end panels 12 and 13, are provided, each respectively defining first and second opposite end edges 12a, 12b, and 13a, 13b. The end panels 12 and 13 are also preferably constructed of an elastic fabric material as described above.

The end panels 12 and 13 are releasably secured together in abutting, end-to-end relation by joining their respective abutting end edges 12b and 13a together by means of conventional wide-throw zig-zag stitching 17 overlaying the abutting end edges and extending along the length of the abutting end edges 12b and 13a, note FIGS. 4 and 5.

The pair of end panels 12 and 13 are similarly releasably secured to the base panel 11 by means of conventional wide-throw zig-zag stitching 17 overlaying the second end edge 11b of the base panel 11 and the abutting first end edge 12a of the end panel 12 and serve as an extension to enable the binder 10 to encircle larger size body members.

A first fastening member 20, having a width substantially contiguous with the width of the base panel 11 and comprising numerous rows of hook-like members commonly referred to as male Velcro material, is secured, preferably by zig-zag stitching, to one face of the base panel 11 adjacent the first end edge 11a thereof.

Second fastening members 22a, 22b, and 22c are secured, preferably by zig-zag stitching, to the face of the base panel 11 and the end panels 12 and 13 opposite the face to which the first fastening element 20 is secured and adjacent the second end edge 11b, 12b, and 13b thereof, respectively. The second fastening members 22a, 22b, 22c each comprise a patch of loose, fibrous material, commonly referred to as female Velcro members, and are adapted to cooperate with the first fastening member 20 for being independently and releasably interconnected therewith.

It will be observed that each of the second fastening members 22a, 22b, 22c has a width substantially contiguous

with the width of the base panel 11 and the end panels 12 and 13 to which they are secured for providing secure fastening of the belt along its entire width in cooperation with the first fastening member 20. However, the second fastening members 22a, 22b, 22c may take the form of a plurality of spaced-apart lateral strips of female Velcro material.

Likewise, it will be observed, as is shown in FIG. 2, that the second fastening members 22a, 22b, 22c each have a substantial lengthwise dimension approximately twice that of the first fastening member 20, in order to facilitate incremental cooperative adjustment within a smaller range of sizes. It will be understood to those skilled in the art that the relative lengths of the cooperating fastening members can be varied to provide for greater or lesser ranges of adjustment, as desired, without departing from the spirit of this invention.

As described above, the binder 10 may be utilized to encircle and support different size body members without excessive overlap by removing either the end panel 13 or both the end panels 12 and 13 from the binder 10 so that the remaining length of the binder more closely corresponds to the circumference of the body member to be supported. As is shown in FIG. 3, the end panel 13 has been removed from the binder 10. The combined length of the base panel 11 and the remaining end panel 12 is long enough to encircle the abdomen of the wearer with only so much overlap as to allow engagement of the inwardly facing first fastening element 20 with the outwardly facing second fastening member 22b.

The end panel 13 may be easily removed by severing the zig-zag stitching 17 overlaying the first end edge 13a and the adjacent second end edge 12a of the end panel 12, note FIG. 4. Likewise, both end panels 12 and 13 may be removed to provide an even smaller size binder by severing the zig-zag stitching 17 overlaying the first end edge 12a of the end panel 12 and the adjacent second end edge 11b of the base panel 11, in a manner similar to that shown in FIG. 4.

As set forth above, the base panel 11 and the end panels 12 and 13 preferably comprise elastic fabric material, and thus the panels are likely to ravel if the severed raw edge is not bound in some fashion. In accordance with the illustrated embodiment of the invention, means are provided for preventing such raveling of either the second end edge 11b of the base panel or the second end edge 12b of the end panel 12, depending on where the binder is severed. More particularly, double needle overedge sewing 24 is provided along second end edges 11b and 12b, binding the raw edge within the sewing. Overedge sewing 25 is also provided along first end edges 12a and 13a and assists the zig-zag stitches 17 in preventing raveling of end panels 12 and 13 when attached to the base panel 11.

In order for the overedge sewing 24 to serve the intended purpose of preventing raveling, care must be taken not to sever the overedge sewing when severing the zig-zag stitches 17 in order to remove end panel 13, or both end panels 12 and 13. Therefore, as is best shown in FIGS. 4 and 5, a thread of a contrasting color 26 is carried immediately adjacent and parallel to the first end edge 13a, overlaying end panel 13 within the zig-zag stitching 17. The thread 26 defines a guide line along which the panel 13 is severed to remove it from the binder. By cutting along the guide line defined by the thread 26, the overedge sewing 24 remains intact

and prevents raveling of the second end edge 12b. As will be observed in FIG. 4, in severing end panel 13 from the end panel 12, a thin strip of the first end edge 13a of the end panel 13, together with the overedge sewing 25 binding the edge, is severed and therefore may ravel. However, since the panel 13 is either discarded or re-sewn and reused on another belt it is of no consequence.

Although not shown in the drawings, the same means for preventing raveling described above are also provided to prevent raveling of the second end edge 11b of the base panel 11 in the event both the end panel 13 and the end panel 12 are removed from the binder.

Thus it will be seen that there is described above a simple, easy-to-manufacture surgical binder which is easily and quickly adjustable to fit a wide range of sizes without excessive overlap by removing the unneeded end panels, and which is also adjustable within a smaller range of sizes by the relative longitudinal positioning of the cooperating fastening members. It will be understood that the degree of adjustability also may be varied by increasing or decreasing the length of the end panels, or the number of end panels secured to the base panel.

In the drawings and specification there has been set forth a preferred embodiment of this invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the invention being defined by the claims.

That which is claimed is:

1. A surgical binder of a predetermined length for encircling and supporting a body member within a range of sizes and characterized by having at least one removable portion for adjustment of the length thereof to fit a smaller size body member within the range without having an excessive overlap of the binder, said binder comprising:

an elongate base panel defining first and second opposite end edges and having a length sufficient to encircle a certain size body member; and
at least one end panel defining first and second opposite end edges;

means for releasably securing said first end edge of said end panel to said second end edge of said base panel for positioning said panels in end-to-end relation to allow said one end panel to serve as an extension for accommodating the binder to larger size body members;

a first fastening member carried by said base panel adjacent said first end edge; and

a second fastening member carried by each of said base panel and said end panel adjacent said respective second end edges for being selectively, independently and releasably interconnected with said first fastening member;

whereby the binder may be secured in encircling relation about a body member by interconnecting said first fastening member with a selected one of said second fastening members and wherein said end panel may be removed from the binder by said releasable means to thereby reduce the overlap of the binder when the size of the body member of the wearer does not require the presence of said end panel and said first fastening member is interconnected with said second fastening member of said base panel.

2. A surgical binder as defined in claim 1 wherein said means for releasably securing said first end edge of said end panel to said second end edge of said base panel comprises zig-zag stitches overlaying both said end edges.

3. A surgical binder as defined in claim 1 wherein said first fastening member is carried on one face of said binder and each of said second fastening members is carried on the opposite face thereof.

4. A surgical binder as defined in claim 3, wherein said first fastening member carried by said base panel comprises numerous rows of hook-like members and said second fastening members carried by said base panel and said end panel each comprise a patch of loose, fibrous, fabric material for being releasably engaged by said hook-like members on said first fastening member.

5. A surgical binder as defined in claim 4, wherein said second fastening members have a substantial lengthwise dimension to facilitate cooperative adjustment with said first fastening member within a smaller range of sizes.

6. A surgical binder of a predetermined length for encircling and supporting a body member within a range of sizes and characterized by having at least one removable portion for adjustment of the length thereof to fit a smaller size body member within the range without having an excessive overlap of the binder, said binder comprising:

an elongate base panel defining first and second opposite end edges comprising elastic fabric material and having a length sufficient to encircle a certain size body member;

at least one end panel defining first and second opposite end edges and comprising elastic fabric material;

removable zig-zag stitches overlaying said second end edge of said base panel and said first end edge of said end panel for releasably securing said base panel to said end panel in end-to-end relation to allow said end panel to serve as an extension for accommodating the binder to larger size body members;

a first fastening member carried by said base panel adjacent said first end edge;

a second fastening member carried by each of said base panel and said end panel adjacent said respective second end edges for being selectively, independently and releasably interconnected with said first fastening member; and

means for preventing raveling of said second end edge of said base panel upon removal of said zig-zag stitches to remove said end panel;

whereby the binder may be secured in encircling relation about a body member by interconnecting said first fastening member with a selected one of said second fastening members and wherein said end panel may be removed from the binder by removing said zig-zag stitches to thereby reduce the overlap of the binder when the size of the body member of the wearer does not require the presence of said end panel and said first fastening member is interconnected with said second fastening member of said base panel.

7. A surgical binder as defined in claim 6 wherein said means for preventing raveling upon removal of said zig-zag stitches comprises over-edge sewing along

said second end edge of said base panel binding said edge within said sewing.

8. A surgical binder as defined in claim 7 further including a visually contrasting thread carried immediately adjacent and parallel to said first end edge of said end panel and overlaying said end panel within said zig-zag stitching for providing a guide line for severing said zig-zag stitching to remove said zig-zag stitches and said end panel and to avoid severing of said overedge sewing along said second end edge of said base panel.

9. A surgical binder of a predetermined length for encircling and supporting a body member within a range of sizes and characterized by having removable portions for adjustment of the length thereof to fit smaller size body members within the range without having an excessive overlap of the binder, said binder comprising:

an elongate base panel defining first and second opposite end edges and having a length sufficient to encircle a certain size body member;

a plurality of end panels each defining first and second opposite end edges, and positioned in elongate, serially arranged, first end edge-to-second end edge opposing relation with each other and with said second end edge of said base panel;

means for releasably securing each of said opposing first and second end edges to allow said plurality of end panels to serve as an extension for accommodating the binder to larger size body members;

a first fastening member carried by said base panel adjacent said first end edge; and

a second fastening member carried by each of said base panel and said plurality of end panels adjacent said respective second end edges for being selectively, independently and releasably interconnected with said first fastening member;

whereby the binder may be secured in encircling relation about a body member by interconnecting said first fastening member with a selected one of said second fastening members and wherein a desired number of said plurality of end panels may be removed from the binder by said releasable means to thereby reduce the overlap of the binder when the size of the body member of the wearer does not require the presence of one or more of said end panels and said first fastening member engages said selected second fastening member.

10. A surgical binder as defined in claim 9 wherein said means for releasably securing together said plurality of end panels and said base panel comprises zig-zag stitches overlaying said respective closely adjacent end edges.

11. A surgical binder as defined in claim 10 wherein said base panel and said plurality of end panels comprise elastic fabric material, and wherein said binder further includes means for preventing raveling of said fabric material upon removal of any number of said end panel from the binder, said means for preventing raveling comprising overedge sewing along said second end edge of said base panel and each second end edge of said plurality of end panels.

12. A surgical binder as defined in claim 11 further including a visually contrasting thread carried immediately adjacent and parallel to each of said first end edges of said plurality of end panels and overlaying each of said end panels within said zig-zag stitching for providing a guide line for severing said zig-zag stitching to remove the zig-zag stitching and a selected number of said end panels while avoiding severing of said overedge sewing along said second end edges.

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