

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 April 2007 (12.04.2007)

PCT

(10) International Publication Number
WO 2007/041243 A2

(51) International Patent Classification:
A41F 3/02 (2006.01)

(21) International Application Number:
PCT/US2006/037922

(22) International Filing Date:
29 September 2006 (29.09.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/722,772 30 September 2005 (30.09.2005) US

(71) Applicant and

(72) Inventor: BAKER, Kali, Jemma [US/US]; 5972 Anvil Court, Golden, CO 80403 (US).

(74) Agent: FURST, Marian, J.; 4956 W.6200 S., # 315, Kearns, UT 84118 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 2007/041243 A2

(54) Title: POST C-SECTION ABDOMINAL AND LUMBAR SUPPORT BELT

(57) Abstract: An abdominal and lumbar support belt comprising an elastic material and having ends that can be overlapped and secured about a wearer's lower abdomen and lumbar area. The belt is particularly suitable for use after a caesarian section, when the girth of the woman who has given birth will decrease fairly rapidly. The belt is designed so the end can be cut off when the wearer's girth decreases.

Title: Post C-Section Abdominal and Lumbar Support Belt

Inventor: Kali Jemma Baker

FIELD OF THE INVENTION

5 The present invention relates to abdominal and lumbar support belts, and more specifically to a support belt suitable for use after Caesarean sections and other abdominal surgeries and injuries.

BACKGROUND OF THE INVENTION

Caesarean section, or C-section, is the delivery of a baby through a cut in the
10 mother's lower abdomen and the uterus. Today, it is one of the most frequently performed surgeries in the world, more commonly performed than gallbladder removal, hysterectomy, or tonsillectomy. A C-section may be lifesaving for the baby or the mother or both.

In a C-section, the first incision made is either a vertical incision in the middle of
15 the abdomen, from below the navel down to the pubic bone, or a transverse or "bikini cut" incision, called an anesteil incision, from side to side just above the pubic hairline. The bikini cut incision is more common, because it heals better, has a shorter recovery time, and is more cosmetically acceptable. After going through the various layers of the abdominal wall and opening the bladder fold of peritoneum, the lower segment of the
20 uterus is exposed. An incision is then made in the uterine wall. Usually, the incision is

horizontal; this is preferred as it heals better and bleeds less. However, under some circumstances, it is necessary for the doctor to make a vertical incision in the uterus.

Recovery from a C-section generally takes longer than a vaginal delivery.

Because the abdominal muscles are cut, the abdominal area is greatly weakened following
5 the surgery, generally causing considerable pain and discomfort. At the same time the mother is recovering from the surgery, she also must care for a newborn infant and possibly attend to other household activities.

Thus, there is a need for a device that provides greater abdominal and back
support to women following this surgery to reduce their discomfort and enable them to
10 care for their newborn infants and handle other tasks.

There is also a need for a distinctively designed brace that provides support to the lower abdomen and back when muscles are weakened due to surgery, injury, or other causes.

SUMMARY OF THE INVENTION

15 To achieve the foregoing and other objects and in accordance with the purpose of the present invention broadly described herein, one embodiment of this invention comprises an abdominal and back support belt. The belt comprises a strip of flexible, elastic material with first and second ends, a central portion between the ends, an internal surface, and an external surface, wherein the strip is long enough for the ends to overlap
20 when wrapped around the lower torso of a wearer. The belt also includes first means for fastening the strip around the lower torso of the wearer with the ends of the strip overlapping each other, with the first means attached to the central portion of the strip adjacent and extending to a position adjacent the first end. In addition, the belt includes

second means for fastening the strip around the lower torso of the wearer, with the second means attached to the strip adjacent the second end of the strip and engageable with the first means to secure the belt snugly about the wearer's torso. The belt also includes means for providing structural integrity of the belt when a portion of the belt adjacent the first end is removed from the belt. The first and second means for fastening are adapted for securely fastening the belt about torsos of varying girths, and the first end and a part of the central portion of the strip can be trimmed from the belt.

The belt may be suitable for use during a time period in which a wearer's girth is expected to decrease significantly, such as during recovery from a caesarian section. The belt may additionally comprise a gripping material adhered to the internal surface of the strip. The means for fastening may be selected from hook and loop fastener materials, laces and eyelets, hooks and eyes, buttons and button holes, snaps, and combinations thereof. Preferably, the first means for fastening comprises loop fastener material adhered to one surface of the strip and the second means for fastening comprises hook fastener material adhered to an opposing surface of the strip. More preferably, the loop fastener material is adhered to the external surface of the strip and the hook fastener material is adhered to the internal surface of the strip. The loop fastener material may be adhered to the strip at intervals along the long dimension of the strip, such that if a portion of the strip adjacent to the first end is removed from the strip, the loop fastener material will still be adhered to the remainder of the strip. The hook and loop fastener materials may be adhered to the strip by stitches, with the loop fastener material is adhered by substantially parallel lines of stitches in a direction substantially perpendicular to the long dimension of the belt. The belt may have a width of about 4 inches (10 centimeters). In addition, the belt may additionally comprise stays and pockets for insertion of stays. Preferably, the

belt is washable and substantially undetectable to third parties when worn under the user's clothing.

Another embodiment of the present invention comprises a method for providing abdominal and back support for a wearer whose girth decreases over time. The method
5 comprises a step of providing an abdominal support belt comprising a strip of flexible, elastic material having first and second ends, a central portion between the ends, an internal surface, and an external surface, with strip long enough for the ends to overlap when wrapped around the lower torso of a wearer; first means for fastening the strip
10 around the lower torso of the wearer with the ends of the strip overlapping each other, with the first means attached to the central portion of the strip adjacent and extending to a position adjacent the first end; second means for fastening the strip around the lower torso of the wearer, with the second means attached to the strip adjacent the second end of the strip and engageable with the first means to secure the belt snugly about the wearer's
15 torso; and means for providing structural integrity of the belt when a portion of the belt adjacent the first end is removed from the belt. The first and second means for fastening are adapted for securely fastening the belt about torsos of varying girths, and the first end and a part of the central portion of the strip can be trimmed from the belt. Additional steps comprise removably securing the belt about the wearer's lower torso; and trimming the first end and a part of the central portion from the belt after the wearer's girth
20 decreases. The wearer may be a woman who is recovering from a caesarian section. In addition the method may comprise the steps of providing stays; and inserting the stays into pockets in the belt to stabilize the belt in direction perpendicular to long dimension of belt while belt is in use. Preferably, the stays are positioned at the sides of the wearer.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features, aspects, and advantages of the present invention will become better understood with reference to the following description, appended claims, and accompanying drawings, where:

5 Fig. 1 is a view of the interior surface of one embodiment of an abdominal and lumbar support belt in accordance with the present invention;

Fig. 2 is a view of the exterior surface of the support belt of Fig. 1;

Fig. 3 illustrates the use of the belt of Fig. 1 on a woman whose girth decreases;

10 Fig. 4 is a view of the exterior surface of a second embodiment of a belt in accordance with the present invention;

Fig. 5 is a view of the exterior surface of a third embodiment of a belt in accordance with the present invention;

Fig. 6 is a view of the exterior surface of a fourth embodiment of a belt in accordance with the present invention; and

15 Fig. 7 is a view of the exterior surface of a fifth embodiment of a belt in accordance with the present invention.

DESCRIPTION OF THE INVENTION

The present invention comprises an abdominal and lumbar support belt that is secured and worn around the user's lower abdomen and back. The device is firm enough
20 to provide support yet sufficiently elastic and flexible that it conforms to the shape of the user's torso and permits a full range of motion, allowing the user to sit, stand, and move about naturally while wearing it. Because the belt is intended for use over relatively long periods of time, it is preferably easily washable.

Referring to Figs. 1 and 2, one embodiment of the present invention is a belt 100 that comprises a strip 102 of a flexible, elastic material that is soft to the touch and comfortable against the skin. Examples of suitable materials include stretchable spandex fabrics, relatively stiff elastic fabrics, and stretchable neoprene fabrics. One-quarter-inch
5 thick elastic is an example of one such material that has been found to perform satisfactorily. The strip 102 is sufficiently wide to provide the desired support without unduly restricting blood circulation, yet not so wide as to become bulky and uncomfortable. A width of about four inches (10 centimeters) has been found to be satisfactory. Generally, women gain considerable weight while pregnant and lose the
10 weight after delivering their babies. These weight gains usually are in the range of tens of pounds, and can be as much as 60 to 80 pounds (27 to 36 kilograms). Thus, the elastic belt 100 is preferably long enough that it can be wrapped around the abdomen and back of a large-girthed wearer with sufficient overlap of the ends of the belt to provide for a suitable closure means. As shown in Figs. 1-2, when belt 100 is in use, first end 104 will
15 be closer to the wearer's body and second end 106 will overlap first end 104 and be farther from the wearer's body.

A preferred closure means for the belt comprises hook and loop fasteners, such as the fasteners sold under the name "Velcro®." Preferably, the Velcro fasteners are of a heavy duty or industrial grade. Other types of closures known in the art could be used,
20 such as hooks and eyes, laces and eyelets, buttons and button holes, or snaps. However, hook and loop type fasteners are preferred because they are comfortable, not bulky, and easily cut; it is contemplated that the belt will be shortened as the wearer loses weight and regains abdominal strength, as discussed below.

The hook fastener fabric 108 can be attached to the interior surface 110 of the strip

102 adjacent to the second end 106 of the belt 100, as shown in Fig. 1. Preferably the hook fastener fabric 108 is stitched to the elastic strip 102 with stitches 112, although it could be attached by other means known in the art, such as with glue or adhesive, or with a combination of stitching and glue or adhesive. The patch of hook fastener fabric 108
5 should be large enough to engage the loop fasteners securely. A patch with dimensions of about 3.5 inches by 2.5 inches (8.9 centimeters by 6.3 centimeters) has been found satisfactory.

A strip of loop fastener fabric 114 is preferably attached to the exterior surface 116 of the elastic strip, as shown in Fig. 2. The loop fastener fabric 114 can be attached
10 by any means known in the art, and it extends from a first end of the strip 102 along much of the length of the strip, leaving a section of the strip 102 free to stretch across the abdomen of the wearer. Preferably, the loop fastener material 110 is stitched to the elastic strip with stitching 118 near the edges of the loop fastener fabric 114. In addition, stitching 120 extends across the narrower dimension of the loop fastener fabric 114 at
15 predetermined intervals in a direction substantially perpendicular to the long dimension of the belt. Intervals of about one inch (2.5 centimeters) have worked well, as described further below. Alternatively or in addition to stitching, the loop fastener fabric 114 may be glued or otherwise bonded to the elastic fabric 102. However, glue or adhesive may make the belt too stiff as well as possibly adding an additional manufacturing step.

20 The interior surface 110 of the belt is preferably provided with means for preventing the belt from sliding out of position. Suitable materials include silicone or rubberized gripping material, shown as elongated rectangular areas 122 in Fig. 1, such as are used to maintain the position of strapless bras and the legs of athletic apparel such as bicycle shorts and tights. The material should be non-irritating to the skin, since the belt

may come in contact with the wearer's skin even if worn over undergarments.

In use, the wearer 130, such as a mother recovering from a caesarian section, positions the belt 100 about her lower abdomen and secures the hook and loop fasteners 108 and 114 so that the belt provides support without being so tight that it causes
5 significant discomfort or pain or restricts blood circulation, as shown in Fig 3. If present, the strips 122 of gripping material are positioned against the user's body and function to prevent the belt 102 from sliding out of place. The belt 100 may be worn on top of undergarments and underneath outer clothing so as to be visually undetectable by others. The belt 100 can be easily removed by simply pulling the end with the hook fasteners
10 away from the overlapped section of the belt with loop fasteners.

As the mother recovers from a C-section, the size of her abdomen and girth decrease. Also, some women are larger than others, even when not pregnant or having recently delivered a baby. In addition, as the wearer recovers from a C-section or other abdominal surgery, abdominal muscle strength and tone improve, and the abdomen
15 decreases in size. Therefore, it is desirable that the length of the elastic strip 102 is sufficient to wrap around a large patient 130 who has gained weight (Fig. 3a), but can be adapted to fit as the patient loses weight (130b) and gains abdominal muscle strength and tone (Fig. 3b). In this regard, the belt 100 can be long enough that the ends 102 and 104 overlap when it is wrapped around a relatively large person with a large abdomen, and the
20 strip of hook and loop fastener material can be attached to the belt over much of its length, as illustrated in Figs. 1-3. A length between about 48 inches (122 centimeters) and about 72 inches (183 centimeters) is sufficient to fit around most women.

Referring to Fig. 3, the belt 100 is initially is fairly long to accommodate larger girths. It can be trimmed easily to the proper length, such as by cutting along line 132 with

a suitable cutting device, such as scissors. As the wearer loses additional weight, the belt can be trimmed again, so that the ends continue to overlap enough for good engagement of the hook and loop fasteners, but not so much overlap that the belt becomes bulky under clothing and uncomfortable. Although the stitching 120 at intervals, as shown in Figs. 1-3, provides good contact between the loop fastener fabric 114 and the elastic fabric 102, regardless of how much of the belt 100 is trimmed away, the belt 100 should preferably be trimmed adjacent to and just beyond a row of stitches 120, so that the loop fastener fabric 114 will be securely attached to the elastic strip 102 at the trimmed end 104a of the belt 100a.

10 If the wearer is obese, it may be desirable to include means for stabilizing the belt and preventing it from buckling or wrinkling if the wearer sits or bends over. The embodiment of the present invention shown in Fig. 4 includes one type of stabilizing means, stays. The belt 400 is constructed similarly to belt 100 shown in Figs. 1 and 2, except that the loop fastener material 410 is not stitched to the elastic material 402 along one of the longer edges of the elastic material, as indicated by stitching 418. Thus, the stitching 418 and stitching 420 form pockets 440 along the belt. Stays 442 or 444 can be inserted into the pockets 440 so as to be positioned where desired on the wearer, such as at the wearer's sides. If the wearer loses girth, the belt can be shortened by trimming as described above for belt 100, and the stays 442 or 444 can be removed and reinserted in different pockets for correct positioning about the wearer's slimmer body. The stays 442 or 444 should be stiff enough to provide the desired support and prevent the belt from wrinkling or buckling, yet flexible enough to be comfortable for the wearer. They may comprise bars 442 or rods 444 of a somewhat flexible material.

Other embodiments of the support belt of the present invention are possible. For

example, Fig. 5 shows a belt 500 with a series of strips 510 of loop fastener fabric 514 oriented substantially perpendicular to the long dimension of belt 500, rather than a single continuous strip of loop fastener fabric 114 as shown in Figs. 1 and 2.

Alternatively, as shown in Fig. 6, belt 600 could be provided with laces 634 adjacent the second end 606 of belt 600. Paired openings or eyelets 636 passing through the elastic strip 602 of belt 600 are provided at selected intervals along belt 600. Laces 634 are attached to elastic strip 602 with reinforcing patch 636 and are inserted through a pair of eyelets 638 and then tied or otherwise fastened to secure the belt 600 in place.

Yet another embodiment is illustrated in Fig. 7. One or more hooks 740 are positioned near the second end of the belt 700, with loops or eyelets 742 positioned at selected locations along the belt 700. As shown in Fig. 7, two hooks 740 are attached to one surface of belt 700, preferably with a reinforcement patch 742. Loops 744 are provided on the other surface of belt 700. It may be desirable to position the hooks 740 on the exterior surface of the belt 700 the loops 744 on the interior surface to prevent the hooks from creating pressure or other discomfort to the wearer's body.

A belt in accordance with the present invention, such as belts 100 or 400, can be made by obtaining a strip of a suitable flexible, elastic material of the appropriate size. The piece could be cut from a larger sheet or strip of material. It may be desirable to bind the edges, such as by heat sealing them, stitching, or applying a sealant to prevent raveling. The hook fastener fabric is attached to the second end of the elastic strip on the interior surface, and the loop fastener fabric is then applied to the interior surface of the strip of fabric, with one end of the loop fastener fabric near the first end of the elastic strip and leaving a gap between the other end of the loop fastener fabric and the area where the hook fastener fabric is mounted. If desired, silicone or rubberized gripping material can

be applied to the inner surface of the belt. Alternatively, the flexible, elastic material may be pre-fabricated with silicone or rubberized gripping material mounted to it. If a different type of fastening system is used, such as laces and eyelets (Fig. 6), hooks and loops (Fig. 7), buttons, or snaps (not shown), the fasteners are attached to the elastic
5 material in a suitable manner.

It is well known that the muscles of the lower abdomen and the back work together to maintain stability of the spine and pelvis. An imbalance between these sets of muscles, from any cause, can result in back pain. By providing support to the lower abdomen and lower back, the device and method of the present invention reduce body
10 stress and strain on areas that are weak due to compromise of the lower back and/or lower abdominal muscles. Such muscle weakness can result from a caesarean delivery, other gynecological surgery, back surgery, abdominal surgery, back or abdominal injuries, or other causes. Thus, patients experiencing back pain, and those wishing to prevent it, could also benefit from using the device of the present invention.

15 The belt of the present invention can be worn virtually undetected under clothing. It is easy to use, comfortable to wear, and lightweight enough to pack easily for travel. In addition, it is easy to adjust to changing girth sizes, easily washable, and durable.

The foregoing description is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those
20 skilled in the art, it is not desired to limit the invention to the exact construction and process shown and described above. Accordingly, all suitable modifications and equivalents may be resorted to falling within the scope of the invention.

CLAIMS

I claim:

- 1 1. An abdominal and back support belt, said belt comprising:
2 a strip of flexible, elastic material, said strip having first and second ends,
3 a central portion between said ends, an internal surface, and an external surface, wherein
4 the strip is long enough for said ends to overlap when wrapped around the lower torso of
5 a wearer;
6 first means for fastening said strip around the lower torso of the wearer
7 with said ends of said strip overlapping each other, said first means attached to said
8 central portion of said strip adjacent and extending to a position adjacent said first end;
9 second means for fastening said strip around the lower torso of the wearer,
10 said second means attached to said strip adjacent said second end of said strip and
11 engageable with said first means to secure said belt snugly about a wearer's torso; and
12 means for providing structural integrity of said belt when a portion of said
13 belt adjacent said first end is removed from said belt;
14 wherein said first and second means for fastening are adapted for securely
15 fastening said belt about torsos of varying girths and wherein said first end and a part of
16 said central portion of said strip can be trimmed from said belt.
- 1 2. The belt of claim 1, wherein said belt is suitable for use during a time
2 period in which a wearer's girth is expected to decrease significantly.
- 1 3. The belt of claim 2, wherein said time period is recovery from a caesarian
2 section.
- 1 4. The belt of claim 1, additionally comprising a gripping material adhered to
2 said internal surface of said strip.
- 1 5. The belt of claim 1, wherein said means for fastening are selected from
2 hook and loop fastener materials, laces and eyelets, hooks and eyes, buttons and button
3 holes, snaps, and combinations thereof.

1 6. The belt of claim 1, wherein said first means for fastening comprises loop
2 fastener material adhered to one surface of said strip and said second means for fastening
3 comprises hook fastener material adhered to an opposing surface of said strip.

1 7. The belt of claim 6, wherein said loop fastener material is adhered to said
2 external surface of said strip and said hook fastener material is adhered to said internal
3 surface of said strip.

1 8. The belt of claim 6, wherein said loop fastener material is adhered to said
2 strip at intervals along the long dimension of said strip, such that if a portion of said strip
3 adjacent to said first end is removed from said strip, said loop fastener material will still
4 be adhered to the remainder of said strip.

1 9. The belt of claim 6, wherein said hook and loop fastener materials are
2 adhered to said strip by stitches, and said loop fastener material is adhered by
3 substantially parallel lines of stitches in a direction substantially perpendicular to the long
4 dimension of said belt.

1 10. The belt of claim 1, wherein said belt has a width of about 4 inches (10
2 centimeters).

1 11. The belt of claim 1, wherein said belt additionally comprises stays and
2 pockets for insertion of stays.

1 12. The belt of claim 1, wherein said belt is substantially undetectable to third
2 parties when worn under the user's clothing.

1 13. The belt of claim 1, wherein said belt is washable.

1 14. A method for providing abdominal and back support for a wearer whose
2 girth decreases over time, said method comprising the steps of:
3 providing an abdominal support belt comprising a strip of flexible, elastic
4 material, said strip having first and second ends, a central portion between said ends, an
5 internal surface, and an external surface, wherein the strip is long enough for said ends to
6 overlap when wrapped around the lower torso of a wearer; first means for fastening said
7 strip around the lower torso of the wearer with said ends of said strip overlapping each
8 other, said first means attached to said central portion of said strip adjacent and extending
9 to a position adjacent said first end; second means for fastening said strip around the
10 lower torso of the wearer, said second means attached to said strip adjacent said second
11 end of said strip and engageable with said first means to secure said belt snugly about the
12 wearer's torso; and means for providing structural integrity of said belt when a portion of
13 said belt adjacent said first end is removed from said belt; wherein said first and second
14 means for fastening are adapted for securely fastening said belt about torsos of varying
15 girths and wherein said first end and a part of said central portion of said strip can be
16 trimmed from said belt;
17 removably securing said belt about the wearer's lower torso; and
18 trimming said first end and a part of said central portion from said belt
19 after the wearer's girth decreases.

1 15. The method of claim 14, wherein the wearer is a woman who is recovering
2 from a caesarian section.

1 16. The method of claim 14, comprising the additional steps of:
2 providing stays; and
3 inserting said stays into pockets in said belt to stabilize said belt in
4 direction perpendicular to long dimension of belt while belt is in use.

1 17. The method of claim 16, wherein said stays are positioned at the sides of
2 the wearer.

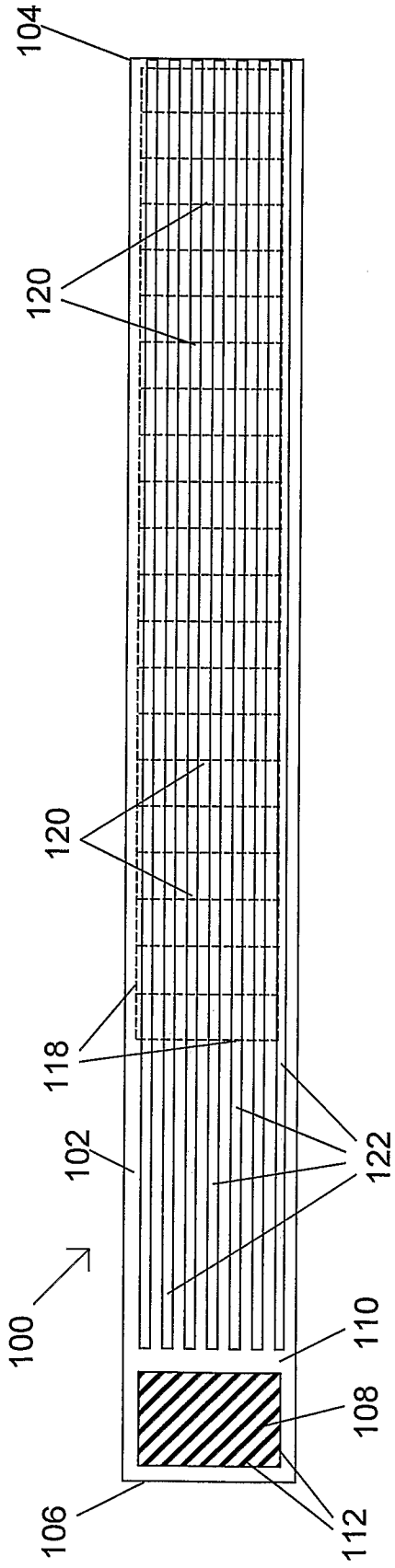


Fig. 1

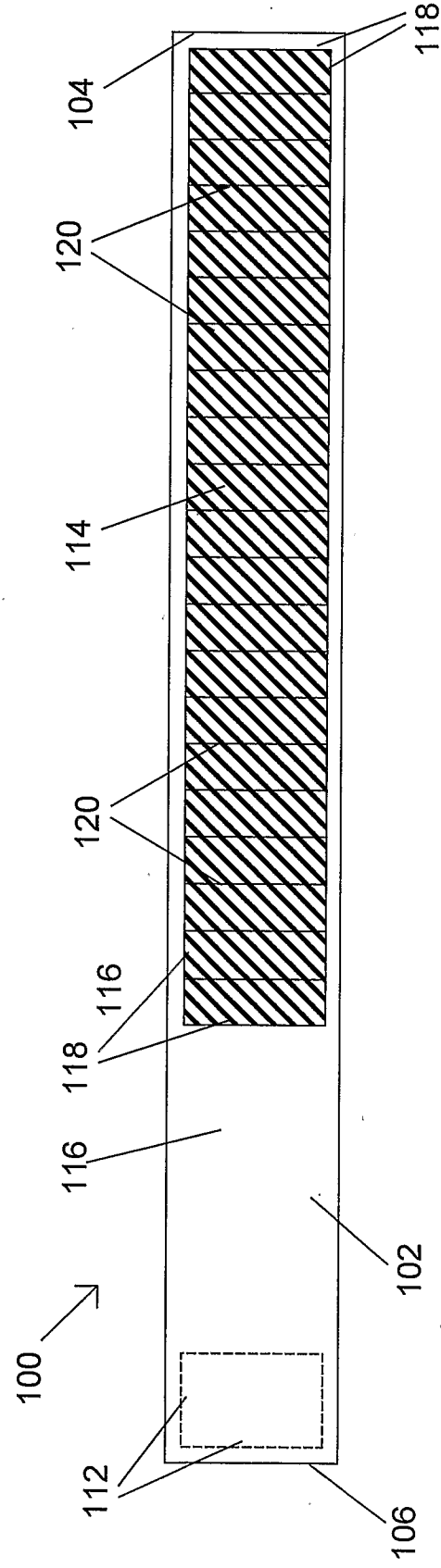


Fig. 2

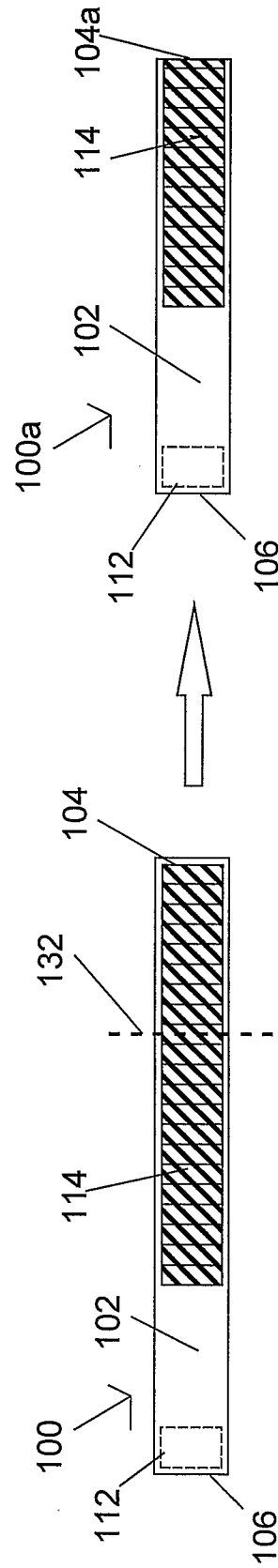
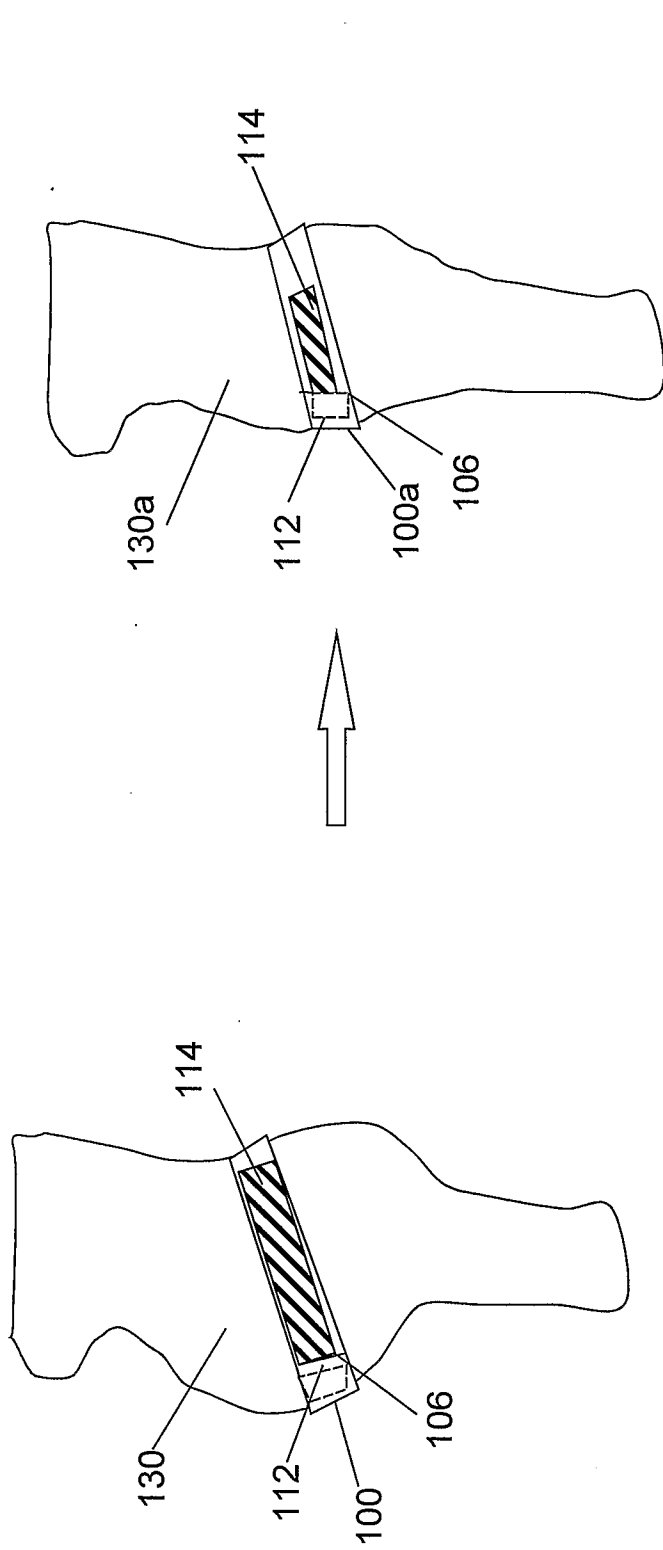


Fig. 3b

Fig. 3

Fig. 3a

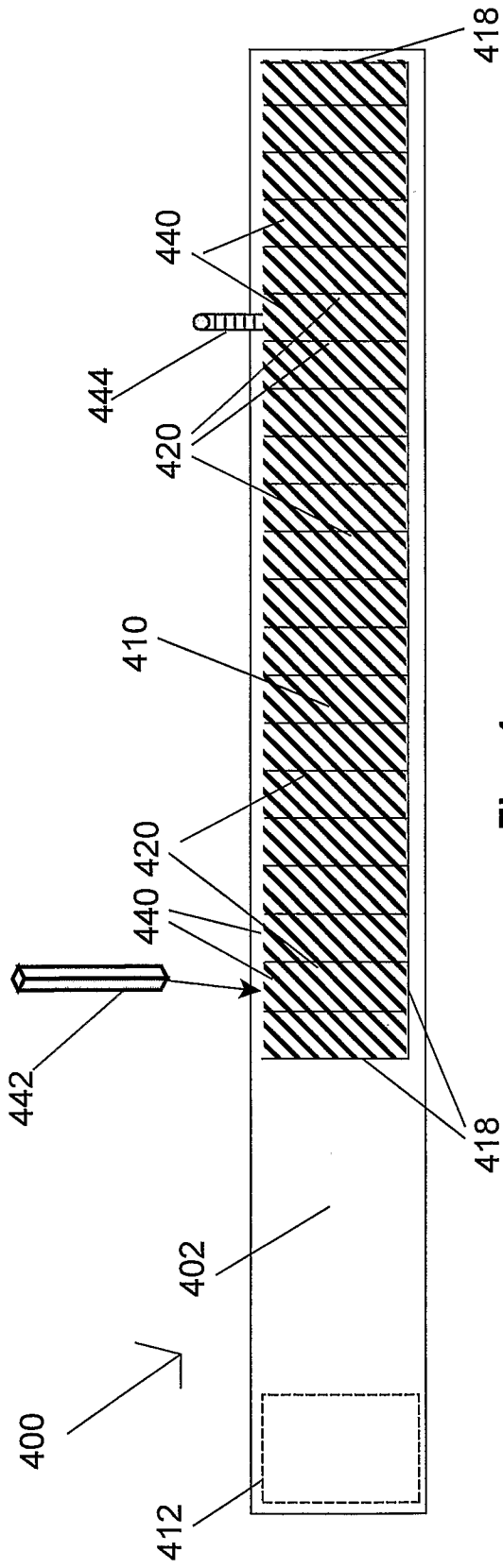


Fig. 4

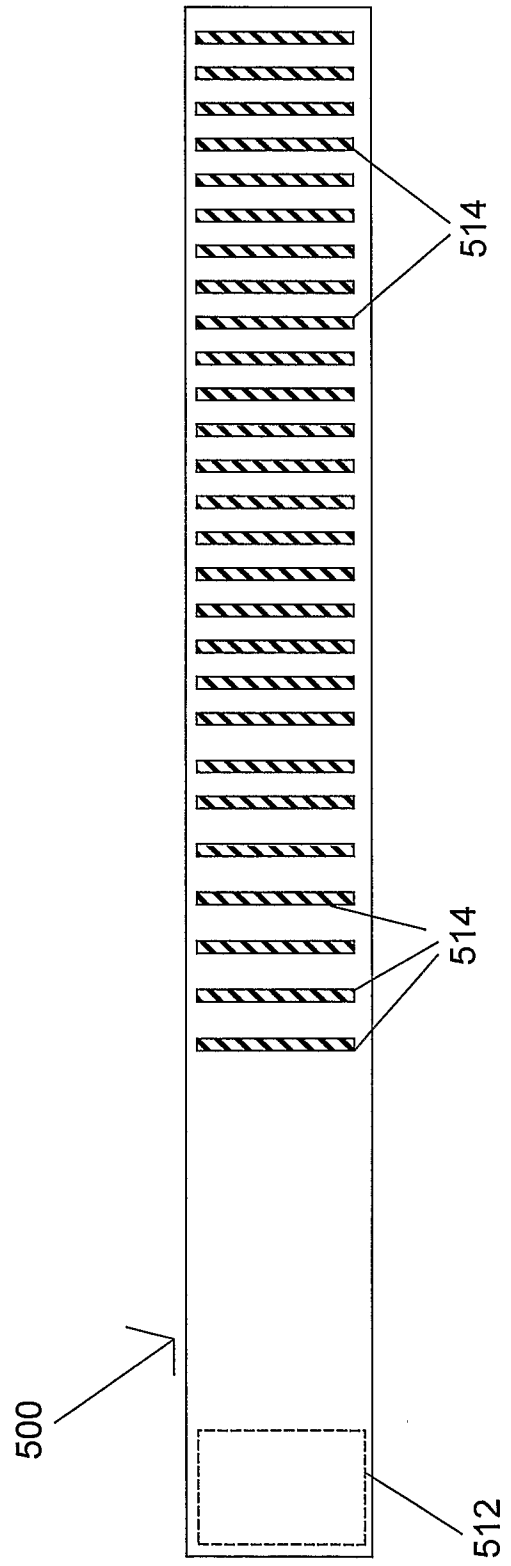


Fig. 5

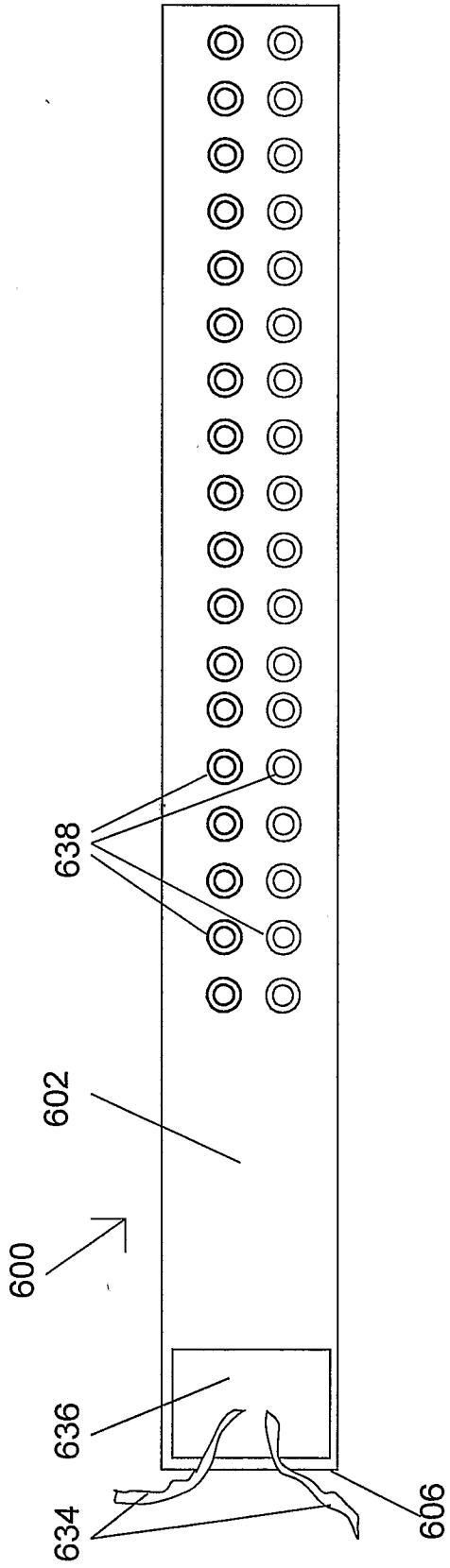


Fig. 6

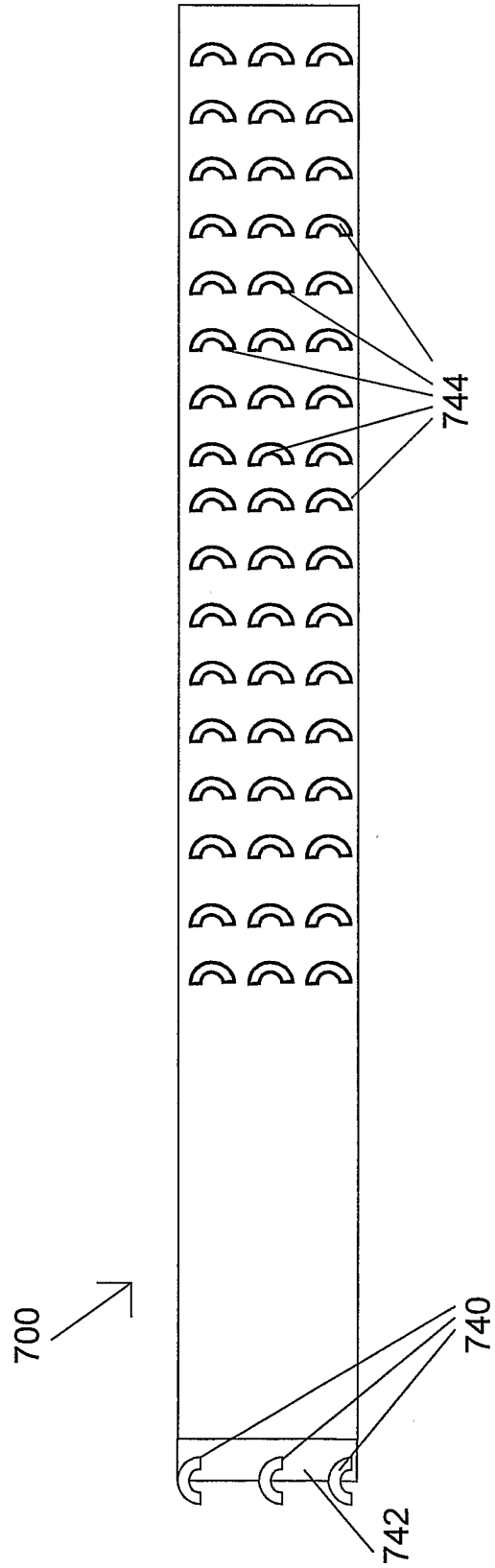


Fig. 7