

W. A. PEASE
ABDOMINAL SUPPORT

2 Sheets-Sheet 1

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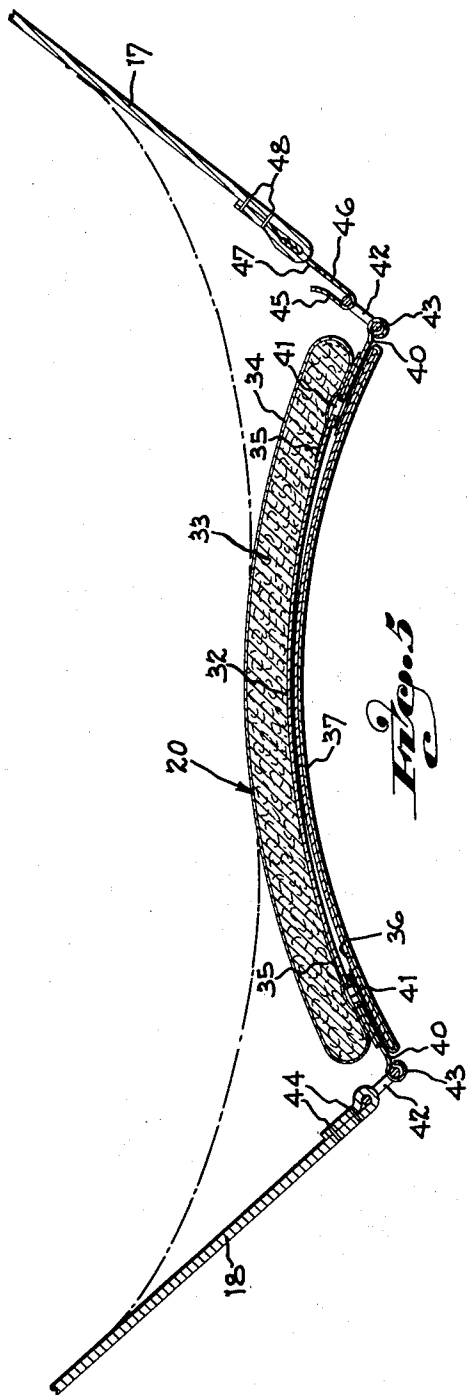
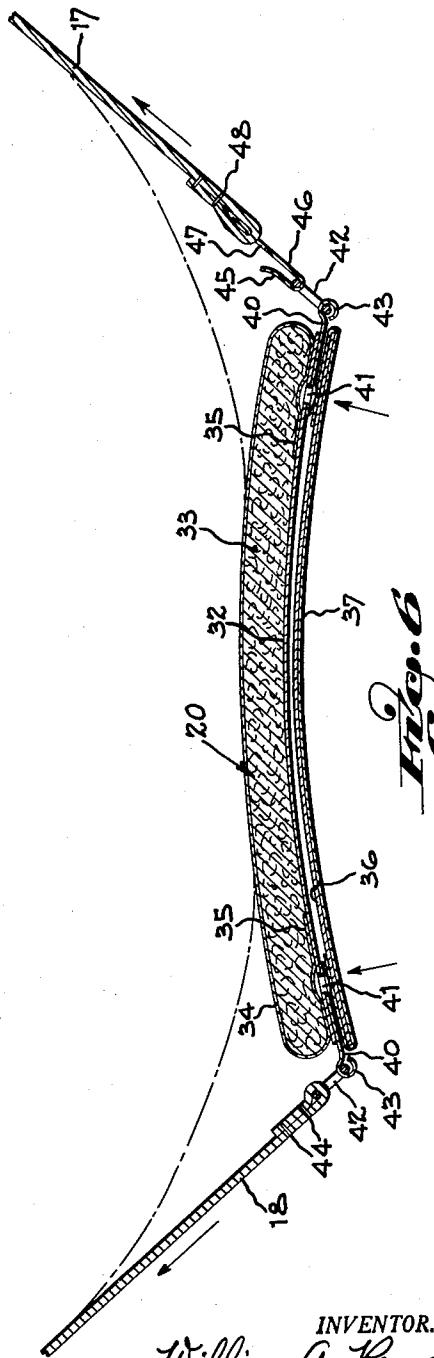
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ABDOMINAL SUPPORT

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3 Claims. (Cl. 2—41)

This invention is directed to a surgical belt incorporating a support pad and utilized as an abdominal support in treating the various forms of ptosis or prolapse of the abdominal organs. By way of example, the structure is of particular utility in correcting gastroptosis, that is, the prolapse of stomach into the lower abdomen, the correction of which requires pressure to be applied to the lower abdomen in an upward and backward direction.

One of the primary objects of the invention has been to provide a resilient support pad of arcuate shape arranged to reside with its convex face against the lower portion of the abdomen and yielding in response to the tension applied to its ends so as to vary its contact area and pressure according to the needs of the patient.

The resilient support pad is held in position by means of pull straps attached to its opposite ends and passing around the body of the patient. The pad is generally oval-shaped as viewed from the front and is curved along its major axis, being flat along its transverse axis. It is arranged to be supported with its convex side against the lower abdomen, such that the tension transmitted to its opposite ends by the pull straps tends to spring it toward a straight condition. Accordingly, if the patient requires a relatively localized area to be supported under light pressure, the pull straps are adjusted to provide light tension. On the other hand if conditions require a greater area to be supported, then the pull straps are adjusted to exert a greater tension, thereby to spring the pad toward its flattened condition to increase the support area and amount of pressure. By virtue of its inherent resiliency, the pad creates a firm but slightly yielding pressure and accommodates itself to the normal expansions and contractions of the abdomen so as to promote comfort.

A further object has been to provide a girdle and a support pad which is unattached to the girdle except that the pull straps of the girdle are utilized to hold the support pad in proper position and at the required pressure against the abdomen, the pad providing localized pressure which is derived from the expanding force exerted against the girdle.

The girdle or surgical belt, which is utilized with the pressure pad, is generally conventional and consists of two complementary sections which are joined together at the rear by lacing, the lacing being drawn under traction by the pull straps which pass around the girdle toward the front. The complementary sections are joined together at the front portion of the girdle by means of hooks and eyes.

Normally, if the girdle is worn with the pull straps joined rigidly together at the front and contracted about the wearer by the lacing at the rear, a non-elastic support is provided. However, according to the present invention, the ends of the pull straps at the front are joined to the opposite ends of the arcuate, resilient support pad in such manner that the forces tending to separate the two girdle sections react through the pull straps in tension to draw the pressure pad in the required upward and backward direction. Therefore, the combination of the

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support pad and girdle takes advantage of the flexibility of the arcuate pad to impart a limited degree of elasticity to the otherwise non-elastic girdle and thus provide a more comfortable garment which yields slightly in response to the movements of the body.

The flexible support pad consists of a generally oval-shaped plate formed of spring steel having the required curvature along its major axis and having a sufficient surface area to cover a substantial portion of the lower abdomen. Upon the convex side of the plate is mounted a soft pliable pad which resides against the abdomen and provides a comfortable supporting surface. One end of the pad is permanently attached to an end of one of the pull straps of the girdle and the opposite end is detachably connected to the other pull strap by means of a hook. The pad, which is otherwise unattached to the girdle, resides beneath the girdle at its front lower portion, with the straps passing from the outside of the girdle through slits into connection with the ends of the pad. The hooked connection of the pull strap allows the girdle to be taken off or put on in a convenient manner without any change in the original adjustment of the girdle.

Various other features and advantages of the invention will be more fully apparent to those skilled in the art from the following description taken in conjunction with the drawings.

In the drawings:

Figure 1 is a perspective view of a surgical belt or girdle incorporating the present ptosis support pad.

Figure 2 is an enlarged perspective view showing the support pad removed from the girdle.

Figure 3 is an enlarged view of the rearward side of the girdle, showing the pull straps and lacing arrangement.

Figure 4 is an enlarged sectional view taken on line 4—4 of Figure 2, detailing the structure of the support pad.

Figure 5 is an enlarged sectional view taken on line 5—5 of Figure 1, detailing the support pad in relaxed position against the abdomen.

Figure 6 is a view similar to Figure 5, showing the action of the pad under increased tension.

Referring to Figure 1, the surgical belt or girdle, indicated generally at 10, comprises two complementary sections 11 and 12 which are fabricated from the usual heavy fabric material. The two complementary sections are joined together at the rear of the girdle by the conventional lacing indicated at 13 and are connected at the front by means of hooks 14 and eyes 15. The hooks and eyes are also conventional, the eyes being attached to the edge of section 11 and the hooks attached to the edge of section 12 by stitching in the usual manner.

The rearward edges of the girdle section are spaced apart as indicated at 16 and this spacing is adjusted by the lacing in fitting the girdle. The girdle is adjusted to the wearer by means of the pull straps 17 and 18 formed of cloth webbing; these straps are adjusted with the girdle in place so as to obtain the proper fit. The straps 17 and 18 have their rearward ends connected to the lacing 13 and their forward ends connected to the ptosis support pad which is indicated generally at 20 in Figure 1.

After the girdle has been properly adjusted, it may be taken off or put back on without disturbing the adjustment of the pull straps. For this purpose, the strap 17 is provided with a hook as explained later. The strap 18 is in permanent connection with the pad, but the pad is otherwise unattached to the girdle. When the girdle is contracted about the body, with the strap 17 hooked to the support pad, the force tending to separate the girdle sections react through the pull straps in tension to apply pressure upon the support pad 20.

It will be noted in Figure 1, that the girdle section 12 is

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longer than section 11 so as to provide the front panel 21 which overlies the front of the abdomen, and support pad. The overlapped edges, which are joined by the hooks and eyes, thus reside to one side of the support pad. When the girdle is to be removed, the strap 17 is unhooked from the pad, then the hooks and eyes 14 and 15 are uncoupled, allowing the girdle to be opened and removed. When the girdle is put on, it is wrapped around the body, the hooks and eyes 14 and 15 are engaged, then the pull strap 17 is hooked to the support pad. In hooking the pull strap 17 to the pad, the corset is contracted about the wearer by operation of the lacing 13 to which the straps are connected, and upon being hooked to the pad, the pull straps hold the pad firmly in its adjusted position against the lower abdomen.

Described in greater detail, the girdle preferably is provided with the usual longitudinal stays or stiffeners which are enclosed in the longitudinal pockets 22. The lower edge of the corset is curved downwardly at the front and rear 23, with upwardly curved areas 24 at opposite sides to relieve the lateral hip regions. The lacing 13 at the rearward side of the girdle passes through eyelets 25 inserted in the rearward edges of the girdle sections and passes through similar eyelets 26 inserted in the buckles 27. The buckles 27 are also of conventional construction, the pull straps 17 and 18 being looped through the buckles in the usual way. The buckles provide a self-locking engagement with the pull straps as the straps are drawn through them. As the pull straps draw the buckles apart the laces draw the spaced rearward edges of the girdle sections toward one another with a block and tackle action to contract the girdle. Since the adjustment is of a permanent nature, a portion of the free length 28 of the pull straps may be served after a comfortable fit is obtained.

Referring to Figure 2 the support pad 20 is generally of oval configuration with its major axis extending transversely of the girdle so as to embrace the major portion of the lower abdominal curve. It has a sufficient area to provide the required support for the organs, measuring for example, in the neighborhood of six inches across its major axis and approximately three and one half inches across its minor axis. The upper and lower edges of the pad are slightly concave as indicated at 30—30 and its opposite ends are curved to taper inwardly and downwardly as at 31—31. The pad is intended to reside slightly above the pubic bone and its contour provides the most effective and comfortable support for most forms of ptosis.

Referring to Figures 5 and 6 the support pad, in position of use, is convex along its major axis and is adapted to flatten resiliently in response to the traction applied by the pull straps 17 and 18. As shown in Figure 6, the convex contact area increases as the pad is sprung toward its flattened condition in response to the adjustment of the pull straps. Although the girdle structure is non-elastic, the support pad provides a limited degree of elasticity by its curvature in addition to providing a variable support area.

Described in detail, the support pad comprises a base consisting of a plate 32 formed of relatively thin spring steel which is sufficiently resilient to flex when applied at a moderate pressure against the abdomen. As best shown in Figure 4, the plate is flat along its minor axis and is curved or arcuate along its major axis as shown in Figure 5.

The convex side of the plate is provided with the soft pad indicated at 33 which provides a comfortable contact surface. The pad is formed of a bat of fibrous material such as wool or cotton fibers and is enclosed by a cloth covering indicated at 34. This material is turned under the marginal edges of the pad of batting as at 35, the under turned margin residing against the surface of the spring plate 32. The soft pad is held in position upon the spring plate by a backing plate 36 formed

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of a pliable material such as soft leather or cardboard. The backing plate is covered with cloth 37 similar to the pad and the marginal edges of the backing plate and pad are secured over the spring plate by stitching, as indicated at 38 in Figures 2 and 4.

The pull straps 17 and 18 are connected to the opposite ends of the pressure plate by means of the hinges 40—40 which are riveted as at 41 to the plate. As shown in Figure 2, each hinge includes a wire loop 42, the edge of the hinge being rolled over the loop as at 43 for pivotal movement. It will be noted that the loops project outwardly from beneath the pad and backing for connection with the pull straps.

The pull strap 18 is permanently connected to the loop of one hinge, the end portion of the strap being doubled over upon the loop and stitched as indicated at 44. The hook 45 of strap 17 provides a detachable connection to the loop of the other hinge. As indicated in Figure 1, hook 45 is in the form of a flat plate having a shank 46 which is slotted as at 47. The pull strap 17 passes through the slot 47 and is lapped over upon itself and stitched as at 48, thus providing a permanent connection to the hook.

It will be noted in Figure 2 that the hinges are slightly angular to the major axis of the support plate, such that the pull straps are inclined upwardly from the front toward the rear of the girdle. The pull straps are maintained in this position by the belt loops 50 (Figure 1) and thus exert their pull in upward and rearward direction to support the internal organs in the desired position.

The support pad is shown in its normal curvature in Figure 5, with the pull straps in a relaxed adjustment. This represents a case requiring only moderate support and it will be noted that a relatively small proportion of the total area of the support pad is in contact with the abdomen. When the pull straps are adjusted to a greater tension as shown in Figure 6, then the spring plate is sprung toward a condition of flatness as indicated by the arrows to increase the pad pressure and contact area of the pad with respect to the abdomen. This view represents a case requiring much greater support. It will be apparent that in either adjustment, the flexible beam effect of the pad imparts a degree of elasticity to the girdle, allowing it to yield in response to contractions and expansions of the abdomen due to body movements and thus promoting comfort.

Having described my invention I claim:

1. An abdominal support comprising a girdle having a pair of complementary sections adapted to encircle the body of the wearer, the opposite edges of said sections at the rearward side of the girdle being spaced apart from one another, a series of spaced eyelets in the said spaced edges of the girdle sections, lacing means slidably looped through the eyelets, the lacing means having respective free end portions passing through the eyelets of said spaced edges, the respective free end portions passing from the eyelets of one edge across the complementary girdle section, said lacing means providing a block and tackle action drawing the spaced edges of the girdle sections toward one another upon application of tension to the free end portions of the lacing means, respective pull straps connected to the free end portions of the lacing means, said pull straps extending from said free end portion around the respective complementary girdle sections toward the front of the girdle, an abdominal support pad residing beneath the girdle at the front thereof, said support pad comprising a plate formed of resilient spring metal having a generally oblong configuration extending transversely of the girdle, said plate being arcuate along its major axis which extends transversely of the girdle and having its convex surface facing inwardly from the front of the girdle adapted to engage the abdomen of the wearer, the girdle having respective openings formed therein adjacent the opposite ends of said plate, said pull straps passing through said openings

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and having their opposite end portions connected to the opposite ends of said plate at points along the major axis thereof, said pull straps adapted to contract the girdle and to draw said plate against the abdomen of the wearer and thereby to spring said arcuate plate to a flattened condition in response to the tension applied by the pull straps to provide a yieldable support and to impart yieldability to the girdle.

2. An abdominal support comprising a girdle having a pair of complementary girdle sections adapted to encircle the body of the wearer, the edges of said sections at the rearward side of the girdle being spaced apart from one another, respective sets of laces extending from the spaced edges of the complementary girdle sections at the rearward side of the girdle, the said sets of laces crossing one another and extending partially about the complementary sections, a pair of pull straps, each strap of the pair being secured to a respective set of laces and extending therefrom around the complementary girdle sections toward the front of the girdle, an abdominal support pad residing loosely beneath the girdle at the front side thereof, said support pad comprising a plate formed of thin resilient spring metal extending transversely across the girdle, said plate being curved along its transverse axis and providing a convex surface facing inwardly from the girdle to engage the abdomen, the girdle sections having respective openings formed therein adjacent the opposite ends of said plate, said pull straps passing through said openings and having their end portions connected to the opposite ends of said plate, said pull straps and laces adapted to exert tension upon the rearward edges of the girdle sections to contract the girdle around the wearer and to draw the said plate against the abdomen of the wearer under localized pressure, said plate having sufficient resiliency to be sprung toward flat condition under the tension applied thereto by said pull straps, the plate yielding in response to tension applied to the girdle sections and thereby imparting elasticity to the girdle.

3. An abdominal support comprising a girdle having a pair of complementary girdle sections adapted to encircle the body of the wearer, detachable fastening means on the adjoining edges of said sections at the front por-

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tion of the girdle connecting the sections together, the opposite edges of said sections at the rearward side of the girdle being spaced apart from one another, respective sets of laces extending from the spaced edges of the complementary girdle sections at the rearward side of the girdle, the said sets of laces crossing one another and extending partially about the complementary sections, a pair of pull straps, each strap of the pair being secured to a respective set of laces and extending therefrom around the respective complementary girdle sections toward the front of the girdle, an abdominal support pad residing loosely beneath the girdle at the front side thereof, said support pad comprising a plate formed of thin resilient spring metal extending transversely across the girdle, said plate being curved along its transverse axis and providing a convex surface facing inwardly from the girdle to engage the abdomen, the girdle sections having respective slits therein adjacent the opposite ends of said plate, one of said pull straps passing through one of said slits and having its end portion connected to an end of said plate, means on the other of said pull straps providing a detachable connection to the opposite end of said plate with said pull strap passing through the other of said slits, said pull straps and laces adapted to exert tension upon the rearward edges of the girdle sections to contract the same around the wearer and to draw the said plate against the abdomen of the wearer under localized pressure when said pull straps are connected to the support pad, said plate having sufficient resiliency to be sprung toward flat condition under the tension applied thereto by said pull straps, said plate yielding in response to tension applied to the girdle sections and thereby imparting elasticity to the girdle.

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