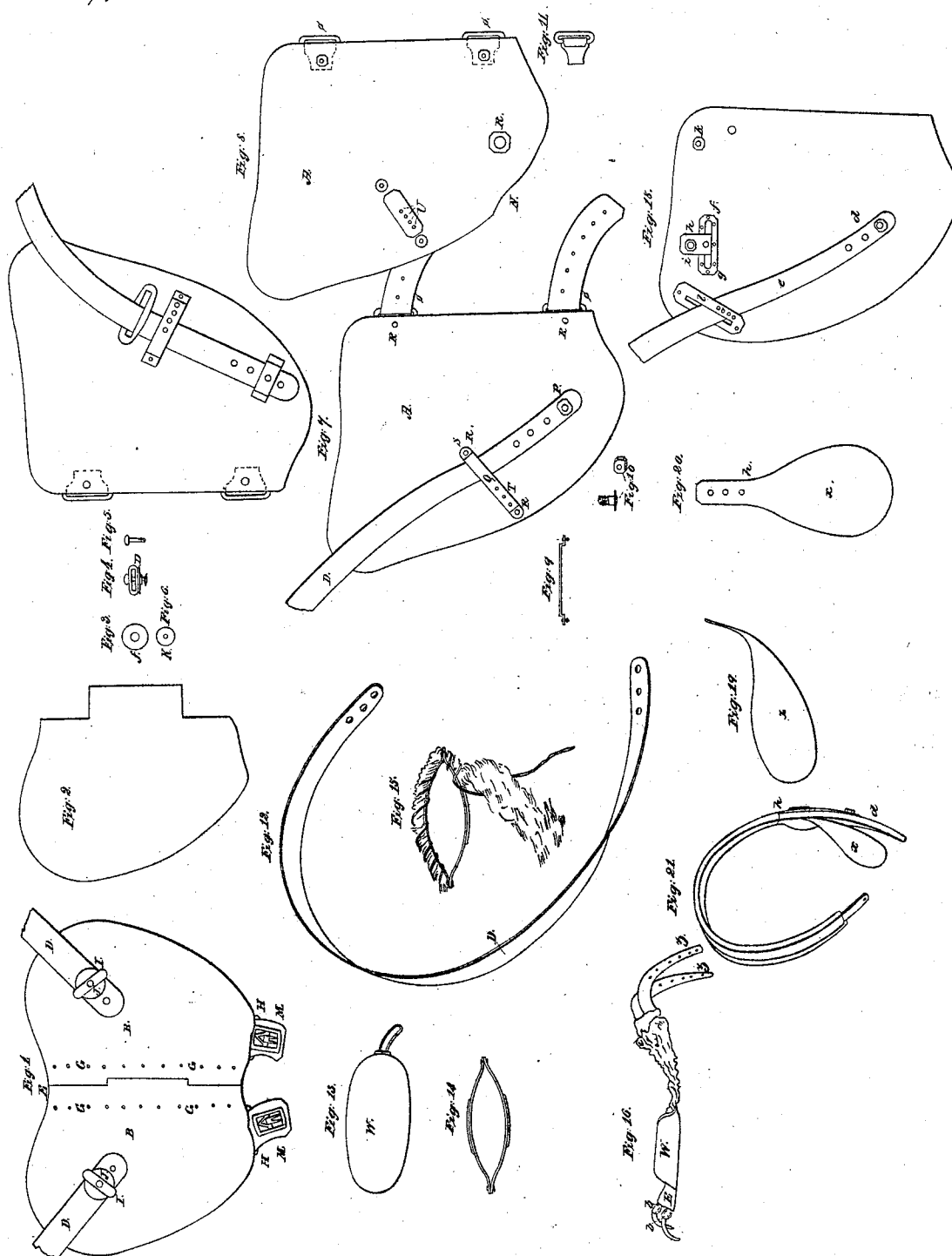


W. Reynolds,
Truss.

2 Sheets-Sheet 1.

No. 1,430.

Patented Dec. 14, 1839.

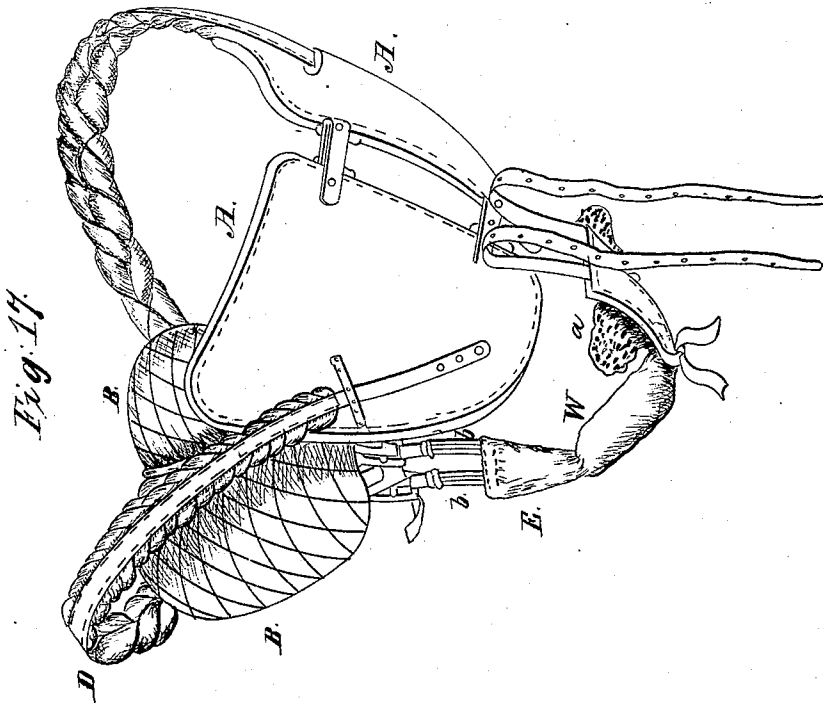


2 Sheets-Sheet 2.
W. Reynolds,

Truss.

No. 1,430.

Patented Dec. 14, 1839.



UNITED STATES PATENT OFFICE.

WM. REYNOLDS, OF CAMDEN, SOUTH CAROLINA.

TRUSS FOR PROLAPSUS UTERUS.

Specification of Letters Patent No. 1,430, dated December 14, 1839.

To all whom it may concern:

Be it known that I, WILLIAM REYNOLDS, of Camden, district of Kershaw, and State of South Carolina, have invented an instrument for affording an easy, natural, and effectual support to the abdomen, back, and perineum in every instance where an artificial agent is required for such a purpose, called "Reynolds's gerenteron or visceral supporter," which is described hereinafter, reference being had to the annexed drawings, making part of this specification.

Of all the various contrivances which have been brought before the notice of the profession and the public for the above purpose not one of them has been found in practice to have sustained the character bestowed upon them by those interested. Useful some of them undoubtedly are in certain isolated cases; but so defective in the main points as to render their general utility very questionable, as will be shown hereafter. Now, the question may be asked at the outset, is there an existing necessity for such an instrument as the above purports to be? The whole medical profession (in the southern part of our country, at least,) will give an affirmative answer. The nature of this climate, the habits of the people, where the two extremes of indolence and labor meet, are fruitful sources of those affections which beget a necessity for the above instrument to be widely diffused and placed within the reach of all, and that the inventor of the "gerenteron," who has tested its advantages in his own practice, may be enabled to do this, he is induced to present it for the protection of a patent as the only mode in which this can be successfully done and he be remunerated for the expense and trouble to be incurred.

The inventor will now proceed to point out the defects of other instruments as he has found them, and the advantages of his own, which he does, without a wish to disparage what the ingenuity of any one has effected in this way. Before doing so it must be remarked that an artificial agent to support the abdomen should assimilate as nearly as possible the natural action of the human hands when they are applied to the lower part of the abdomen for the purpose of lifting up its contents. This will be admitted by all, and it was from frequent observations of the propensity which those who labor under certain affections have of

constantly applying the hands in the manner alluded to that first suggested what the true nature of such an instrument ought to be. The instrument known by the name of "utero abdominal support" has in some instances afforded partial relief in the practice of the inventor, but its defects are these: It does not possess the lifting action spoken of, for the spring passing in a horizontal direction around one hip presses the abdomen too much in an antero posterior direction, or from before, backward; the bowels are thus removed from the pubis (their natural support) and brought immediately over the longest diameter of the pelvic cavity; consequently, under such pressure, a portion of them must be forced downward into that cavity as well as up toward the diaphragm. This effect is of an injurious tendency where displacement, or organic disease of any of the pelvic viscera exists. The front pad of the instrument referred to is defective because it is not divided in the center, so as to yield readily to the gradual enlargement of the abdomen in cases of pregnancy. It does not support the sides of the enlarged belly at the same time that it presses it from before backward. Such an instrument, suitable for the early months of pregnancy, must be laid aside and one, or perhaps more, of a larger size obtained before gestation is completed. On the other hand if such an instrument is only procured for, say the last two months of pregnancy, it is too large and entirely useless after delivery, the time when of all others the female most needs an easy and proper support to the now flaccid abdomen as a protection against a falling down of the womb, to which she is peculiarly liable at this period; especially if compelled to return soon to domestic duties. This (it unfortunately happens) is too often the case, giving rise to a long train of ailments which a suitable support at a proper time might have prevented. The back pad of the "utero abdominal supporter" is found in most instances to produce a painful pressure across the spine, unless an additional padding is placed beneath it; but then the bulk becomes inconvenient and objectionable. Females may overcome this objection, but males are deprived of its use where they require something of the kind not only on this account but by reason of the unnecessary bulk of the center of the front pad. There is also an insurmountable objection

to the pad or compress on the perineal strap. Women with prolapsed uterus cannot sit down upon it on account of its unyielding nature; and the strap itself usually presses the extremity of the spine (the os coccygis) so much as even, when the pad has been withdrawn, to become a serious inconvenience while the patient is in the sitting posture. Patients are always found to complain also that the lower points of the front pads of this instrument pressing the groins too much while in the sitting posture very often prevents their stooping forward. This is caused by the strap dragging the instrument down,—it having no support over the hips. Of the various belts which have appeared from time to time it is unnecessary to say anything. They all press the abdomen backward and of course are objectionable. There is another instrument, or rather an article of dress, which has fallen beneath the notice of the subscriber, purporting to be an effectual cure for prolapsus uteri. It is a female corset with a compress for the lower part of the abdomen extended from it. Now, when it is recollected that the use of the "corset" is a prolific source of this disease, what practitioner could recommend such a resort to his patient? The corset is, in fact, one of the greatest obstacles the physician has to contend against in the cure of this disease. He aims to elevate the prolapsed organ to its lost position, and to keep it there; but the corset, forcing down the abdominal viscera, counteracts his efforts. Here too in this instrument also males are debarred a participation in its use. Few men indeed could be found who would be willing to adopt it if laboring under hernia. It is an unscientific contrivance and worse than useless. In a late medical journal there is something said of an improvement in "Hull's apparatus" by some one in Philadelphia, and the instrument is recommended for trial. The improvement (a very doubtful one) consists in affixing coiled springs to the front pads and straps of Hull's instrument whereby it is rendered very easy. Too much so it is to be feared, for these elastic straps will of course weaken the supporting power of the instrument generally and the desired effect will be lost.

The inventor will now proceed to point out the advantages of his own instrument which he denominates "the gerenteron." A single glance at the form of the instrument will convey to any observer the strict correspondence which it bears to the osseous walls of the pelvis and the natural diameter of the upper strait of that cavity. If the back pad is held in one hand in the position which it takes when applied to the body steadily (the lower end slanting a little backward) and the lower edges of the front pads, after the two are strapped together, are caught

with the other hand, and drawn forward and downward from the back pad to such a distance as might be about its position when applied, its true action will at once be manifested by allowing the hand holding the front pad to be carried backward and forward to and from the back pad which is the fixed point. It will then be observed that the lifting action is in the direction of a line drawn from the under part of the front pads to the point of attachment of the springs on the upper part of the back pad. The nature of the attachment at this point may next be examined. The freedom of motion given to the springs there, is all important for if the springs and pad be held firmly together at the point where the springs pass over the edge of the pad with a finger and thumb of each hand, while another person draws the front pads forward as above described, the lifting action will be found to be in a great measure lost. The extreme points of the front pads will then be found to press directly inward and they will not lift as before. It may also be remarked that should it at any time be required to increase the lifting action, the simple addition of a small spring at this point, under the main one, would effect the object; but then the pressure on the back, under the pad, at the same point would be increased in a like ratio. Attention is next solicited to the construction of the back pad, the vertical hinge of which has these advantages: It permits each side to fold down so as readily to adapt itself on each side of the spine to any shape of the back there, whether the patient be of a muscular habit of body or of an emaciated habit, as is generally the case where some of the diseases to which the "gerenteron" is applicable have existed for a long period. By this arrangement a very slight padding only is required as the spinous ridge is snugly lodged and protected beneath the hinge and this recess may be increased to any degree, in two ways, either by increasing the padding on each side of it, or by raising the plate at this part previous to covering it. The pad partakes of the shape of the sacrum and is so extended as to diffuse the pressure and render it very comfortable. The front pads are light and owing to their raised form and extensive surface have also the pressure well diffused and are consequently very easy. The lower edge of each is cut out that the os pubis may not receive pressure, and such as are extended for male subjects can have a slight hollow on the under surface of the plates to correspond with the course of the spermatic cord in its passage from the abdominal ring toward the scrotum, so that no undue pressure may fall upon it. A most important desideratum likewise consists in having two pads for the front instead of one, because,

as in the case of pregnancy, or otherwise, as the abdomen enlarges the pads recede from each other, while a broad strap or straps (elastic or otherwise) passing from one to the other always maintain an equable support over the entire surface of the abdomen. The "gerenteron" has also this advantage: The same instrument can be applied immediately after accouchment, which was worn during gestation by a simple change of the front connecting strap. Further, in certain cases where no pad can be worn over the abdomen, as often happens from some natural superficial disease, or where it is necessary to keep up an artificial one, such as by setons, or issues, blisters, an eruption from tartar emetic ointment, &c., here in such cases where from combined disease of the pelvic viscera it is important to have the perineum well supported, the "gerenteron" at once effects the purpose in the most effectual manner. It will only be necessary, in such case, to increase the length of the front attachment of the perineal, or crotch strap, attached to the back pad, from which the long springs, and the front pads, have been removed and to have their place supplied with two very light ones of a length only sufficient to clear the hip bones. In this way the support of the perineum is thrown altogether on the part best able to bear it—viz., the back and loins, while the abdomen suffers no pressure, the front straps alone passing over its surface to be secured above to the short springs. Attention is also requested to the perineal straps with its appendages. 1st, the perineal pad, having an elliptic steel spring in its center, does not incommode a female in the sitting posture, and when the body is erect an ample force is constantly exerted against that part. The soft, flat sponge attached in a situation corresponding to the vulvæ and labia pudenda, absorbs the discharge, which accompanies diseases of the uterus, urethra, vagina, &c. Its mode of attachment is convenient for the purpose of ablution and covers the opening of the pocket containing the pad in such a way as to protect the pad from being affected by the discharge. The tapes which tie down the free edge of the pocket also aid in this. The two short pieces of the elastic strap at the extremity which buckles to the back pad, are placed there so that there may be a very slight yielding while the patient is in the sitting posture. There is a space between these two pieces which is not without its object. The extremity of the spine lodging between them is relieved from the pressure which a broad strap passing over it produces. This instrument is likewise easily modified for the cure of inguinal or scrotal and umbilical hernia. It has this advantage that while the large pads support the abdomen generally, any degree of pressure can

be made on a particular point by the addition of a small pad and spring to suit the case.

The spring may be of any desired strength and the pad of hard or soft material. When a rupture occurs on one side and a truss is applied there, of course a greater strain is thrown upon the other situations. Where hernia occurs, and there is often a constitutional tendency to rupture in some persons, this pressure at one point may produce a hernia at other places by throwing the weight of the viscera upon them. Now, the "gerenteron" supports the whole abdomen, whether there be one or more of these additional pads. When the "gerenteron" is used for hernia in males, any common strap will answer for the crotch. When used by them as an abdominal support alone, as in corpulency, or as a protection against hernia, a strap will be seldom necessary, as it will retain its position in most such cases without one.

The physician will at once perceive that the "gerenteron" is almost unlimited as to the cases where it will be serviceable. An enumeration of some of them will not perhaps be out of place here. In all diseases of the organs contained within the pelvis, whether of the uterus, ovario, bladder, or rectum; in hemorrhoids, or piles, prolapsus of the uterus, or lacerated perineum, &c.; in the abdominal affections, as where the belly is pendulous from various causes, such as enlarged ormentum, enlarged liver, spleen, &c.; in certain dropsies; also, in hernia, in artificial openings; as a support in certain conditions attendant on gestation, and after parturition, as a protection against falling womb; as a support to corpulent persons or those who ride much on horseback. In all such as these its utility is clearly indicated producing an effect which no other instrument known can produce.

To enable others skilled in the art, to construct the "gerenteron," I will now proceed to explain more particularly the mode in which it is done, having reference to the annexed drawings, as occasion may require.

Figure 1 represents the outer surface of the back pad plate without any covering drawn, of an ordinary size; Fig. 2, one of the plates of said back pad; Fig. 3, outside washer; Fig. 4, swivel which receives the end of the spring; Fig. 5, screw pivot passing through swivel and spring; Fig. 6, convex washer put on the end of the swivel; Fig. 7, one of the front pads; Fig. 8, under side of ditto; Fig. 9, edge view of clasp; Fig. 10, screw and nut for attaching end of spring to front pad plate; Fig. 11, one of the loops for the straps; Fig. 12, one of the hip springs connecting the back and front pads; Fig. 13, the perineum pad; Fig. 14, a longitudinal section of ditto showing the elliptic

spring inside of it; Fig. 15 represents one of the springs partly covered and partly uncovered; Fig. 16, perineal strap and appendages which is to be attached to the back and front pads and to which the perineal pad is attached, also a vaginal sponge. Fig. 17 is a perspective view of the before enumerated parts put together and finished for uses; Fig. 18 represents a modification of the same instrument for hernia, front view; Fig. 19, side view of the hernial pad; Fig. 20, front view of ditto; Fig. 21, side view of the instrument adapted for hernia, a front view of which is seen in Fig. 19.

Similar letters refer to similar parts in the figures.

The instrument consists of two front pads, one of which is shown at A, Fig. 7, connected to a back pad B by two springs of steel D and a strap E, for supporting the perineum, &c.

First of the pack pad B. This pad is formed of two pieces of tin B B about the size of the drawing, somewhat egg shaped. They are united by a simple hinge F throughout their whole length, when thus united they should present somewhat the form of a heart with the point cut off. The broad end will be the upper part of the pad. A row of small holes G are now to be punched out on each side of the hinge each row at about $\frac{3}{4}$ an inch distant from it. The holes to be about $\frac{1}{4}$ or $\frac{3}{8}$ inch apart for the purpose to be seen hereafter. If found to be more convenient the holes may be punched before forming the hinge, they are to be large enough to admit the passage of a strong needle and thread through them. The hinge and a portion of the plate—say half an inch—on each side of it, is now to be raised a little so as to leave a recess on what is intended for the under side, that the spine may be safely lodged therein. It is to be raised more at the upper part than below where in fact it need be but little raised at all. If it be raised at the upper part so that about $\frac{1}{2}$ the thickness of the thumb may lie in it, it will be enough. Two loops H for the attachment of the perineal straps are now to be soldered on the lower ends of the plates. Two swivels I for the attaching of the springs D and their washers J, K are now to be procured, but before proceeding farther take a strip of strong buckskin about 2 inches wide and twice the length of the hinge; place one end of it at the lower end of the hinge, hold it there, carry the strip up the hinge on the outside and down again on the inside to the point where you started with it, stitch it there with some strong material by passing the needle through the holes already made. A hole large enough to admit with freedom the stem of the swivel, is now to be made in each plate about $\frac{1}{2}$ of the length from the top and about midway

between the hinge and the outer edge. A piece of leather is now to be laid over the outside surface, large enough to admit of having the padding stitched to it, all around, a hole is to be made through the leather corresponding to that last made in the plate for the swivel, the outside washer J is now to be laid on the swivel, passed through and riveted over a smaller washer K on the under surface. Care must be taken here that the stem L is not beaten down too much. The swivel must have a rolling motion as well as a pivot one, for on this much of the peculiar action of the springs depends. Indeed if this washer be raised somewhat in the middle and the convex side placed next the under surface of the plate it will be an advantage. Pads to fit the plates on the inside of such width that they shall not meet over the hinge by half an inch or so are now to be prepared in the usual way and neatly stitched to the front covering of leather all around. It will also be well to leave a small portion of the padding to project at the lower ends under the spot where the buckles M will be fixed. Two buckles M are now to be attached to the loops at the lower end. The back pad is then finished.

Next of the front pads A A. These are also plates of tin raised to suit the form of the abdomen. After being thus raised the edges are to be turned back slightly or they would be likely to press the skin too much. This must be done more particularly along the lower and outer edges and at the latter part it will be advantageous to turn the edge back nearly $\frac{1}{2}$ an inch. It will also be proper to raise these plates as at N, when constructed for the use of males, that the spermatic cord, in its passage, be not pressed upon. It will be somewhat like the raising of the hinge in the back pad, but need only be slightly raised in this instance, the broadest part of the hollow will be at the lower edge and narrowing thence for a couple of inches. The loops O for the straps are put on here as in the other. The pivot P for the front spring is then riveted to its place. Holes R are made for the buttons, and the rivets S of the clasp Q. The leather covering is then put over it; the buttons passed through, the clasp put on and its rivets passed through the leather and plates and the whole riveted on the under side as before explained. The clasp under which the spring slides should have several holes T through for the passage of a pin to hold the springs when necessary more toward the front of the abdomen—so that they shall not press the hip bone when they pass above it. On these pins are small threads to be cut which shall screw into corresponding holes in the plates U beneath them—and that they may hold the better a piece of doubled tin should be soldered on the plate

where the holes are to be, and further these holes should be punched and tapped before the leather is put on. For the construction of the springs D so much does not depend upon the material used, as upon the form given to them. The common material used for trusses will answer very well but it should be tinned to protect the springs from corrosion. The form, however, is all important. They should ascend from the pivots I on the back pad upward, outward, and slightly forward for a short distance until they arrive over the hip; they are then to pass along the side a little and when they arrive at the front part of the hip bone they should be brought a little toward the umbilicus or navel, so as to clear the extreme point of that bone; then turning downward and receiving as they pass along the exact shape of the front pads, terminate within an inch or two of the bone at the lower part of the belly, called the rubis. The springs will, of course, differ in length, width and thickness according to the size and age of the patient by whom they are to be used. A few holes may be made on each end of the springs for the more convenient adjusting of the pads and when necessary they may be cut off between these holes by those who may not find it convenient to have an instrument constructed expressly for themselves. The springs are to be covered in the usual manner.

The perineal pad W is made in the following manner: This pad is made hollow and has an elliptic spring X in the cavity thereof for the purpose before mentioned. The elliptic spring X is composed of steel such as is usually employed in the construction of musical boxes, about $1\frac{1}{2}$ inches long, about one inch at the swell. No stuffing should be placed within the ellipses of the spring. Wadding laid on the outside of the spring and secured there with thread passed around it as shown in Fig. 16 does very well as a padding. Over this a few folds of oiled cloth, which will cover the whole, will protect the spring from rusting, finally it may be covered with leather or linen. An oil cloth pocket for containing the pad furnished with pieces of tape for tying it secures the whole. The pad is also furnished with a piece of tape for drawing it from the pocket. It is attached to straps Z by which the perineal portion of this apparatus is attached to the abdominal pads in front and to the back pad behind. The straps may be of leather or of elastic materials where that is desirable and may be furnished with coiled springs about half an inch long to yield when sitting.

That part of the strap which corresponds to the labia pudendi is covered with a flat soft sponge *a* to absorb the discharge which accompanies this disease generally. The

sponge is kept in its proper situation by attaching two small hooks to its under surface which are to be received into two corresponding eyes on the straps. This mode of attachment permits the frequent removal of the sponge for ablution. One of these eyes being placed at the opening of the pocket (on its upper free edge) the consequence is that when the sponge is attached none of the discharge can possibly reach the perineal pad concealed within the pocket. The straps which buckle to the back pad may be made of linen and furnished with coiled springs *b b*. The part of the strap E between the principal pad and the coiled springs should be slightly padded, which part corresponds to the anus.

In the formation of the "gerenteron" as it is modified for hernia, there is no difference from what is already described, except that it has in the front pads a slit or narrow opening *f*, through the plate, leather and padding for the passage of the spring *h* of the small hernia pad *x* which as is shown in the drawing, is to be secured on the outside or front of the large front pads by a pivot, screw, and nut in the same way that the main or body spring is attached. There is likewise a difference in the form and situation of the clasp as shown in the drawing. *d* is a screw and nut as before described; *e*, the spring with extra holes for better adjustment; *f*, the opening through which the hernial spring passes; *g*, an edging of sheet brass surrounding the slit and riveted there over the leather covering; *h*, the spring of the hernial pad where it passes out from beneath; *i*, nut and screw same as *d*, but rather smaller; *k*, a nut and screw to attach the spring of a small pad when used for umbilical hernia; *l*, the clasp through which the main spring passes. One half passes over the spring and constitutes the clasp. The other goes below it and it is this part which is secured to the plate with two or three rivets. It also serves to protect the leather from the friction of the spring. That part which passes over the spring has holes for a pin to graduate the position of the spring as heretofore set forth in a previous part of the description of this instrument.

Directions for application.—There is no difficulty in the adjustment of the "gerenteron." The upper part of the back pad rests at the small of the back, from whence it extends down the sacrum. The front pads take their position without trouble, the lower edges of them extend down toward the pubis. The springs lie over or above the hip bones along the sides. The pin in the clasp, removes them more or less from the anterior point of the hip bone. The pads are secured in front, by the straps there for that purpose. The crotch strap

is buckled to the back pad, so that the perineal pad shall rest exactly under the space called the perineum, which extends from the anus to the vulva. This strap is then brought up in front and attached by its two loose ends to the buttons on the front pads. The springs can be lengthened or shortened by changing the pivots from one hole to another at each end of the springs, and where it becomes at any time necessary to do so, a portion of the spring may be cut off between the holes.

In applying the modification for hernia in the male subject, the nut which retains the small pad firmly on the large one, is to be taken off and the true relation of the small pad to the abdominal ring ascertained, lengthening or shortening it, or moving it, to either side, before again screwing down the nut. When the proper situation is found the nut is to be screwed down very tight, and the instrument put on as above described, save that instead of the padded crotch strap for female use any common one will answer, if indeed the patient requires one at all. When the rupture is confined to one side, of course only one of the front pads need have the hernial pad. When used for umbilical hernia any one will understand how it is to be applied on looking at the instrument and reading the foregoing directions. That modification wherein the short springs are adapted instead of the long ones and which has no front pads, is also so simple as to require no further directions.

The inventor desires to enter an objection against any infringement on this patent by adding a corset to the "gerenteron", because, it would detract from its efficacy and because if necessary, it can be done in a variety of ways which suggest themselves to the inventor. Something attached to the upper part of the back pad by elastic straps, which would lace around the chest, so as to support the breasts might be useful and can be added where it is desirable to do so, but against any thing descending in front below the sternum the inventor most stren-

uously protests. The inventor is aware that a spiral spring in the padding of the front large pads, as a substitute for his small hernial pad and spring, might be adopted; but he believes the latter to answer the purpose best. He is also aware that a wedge sliding behind the spring of his small hernial pad, or the action of a screw against it, would conveniently control its power; but he considers such additions unnecessary complications. He is aware that all the straps may be constructed with coiled springs or gum elastic material and that even the pads also may be thus constructed, and therefore he objects to such innovations, believing them unnecessary in a general point of view, but where required they can be so constructed.

What I claim as my invention, and which I desire to secure by Letters Patent, consists—

1. In constructing the back pad plate a little raised on each side of the center so as to form a recess on the under side that the spine may be safely lodged therein in combination with the vertical hinge in the center permitting each side to fold down so as readily to adapt itself on each side of the spine to any shape of the back, as before described.

2. The combination of the hip springs constructed and arranged as herein described with the front and back pad, the whole being arranged and operating in the manner set forth.

3. The mode of adjusting the hip springs by means of the clasps and pins on the front pads as described.

4. The mode of adjusting the front pads so as to adapt them to any sized abdomen by the means described, or any other mode substantially the same.

5. The construction of the pad for supporting the perineum with an elliptic spring in the center as described.

WM. REYNOLDS.

Witnesses:

WM. P. ELLIOT,
EDMUND MAHER.