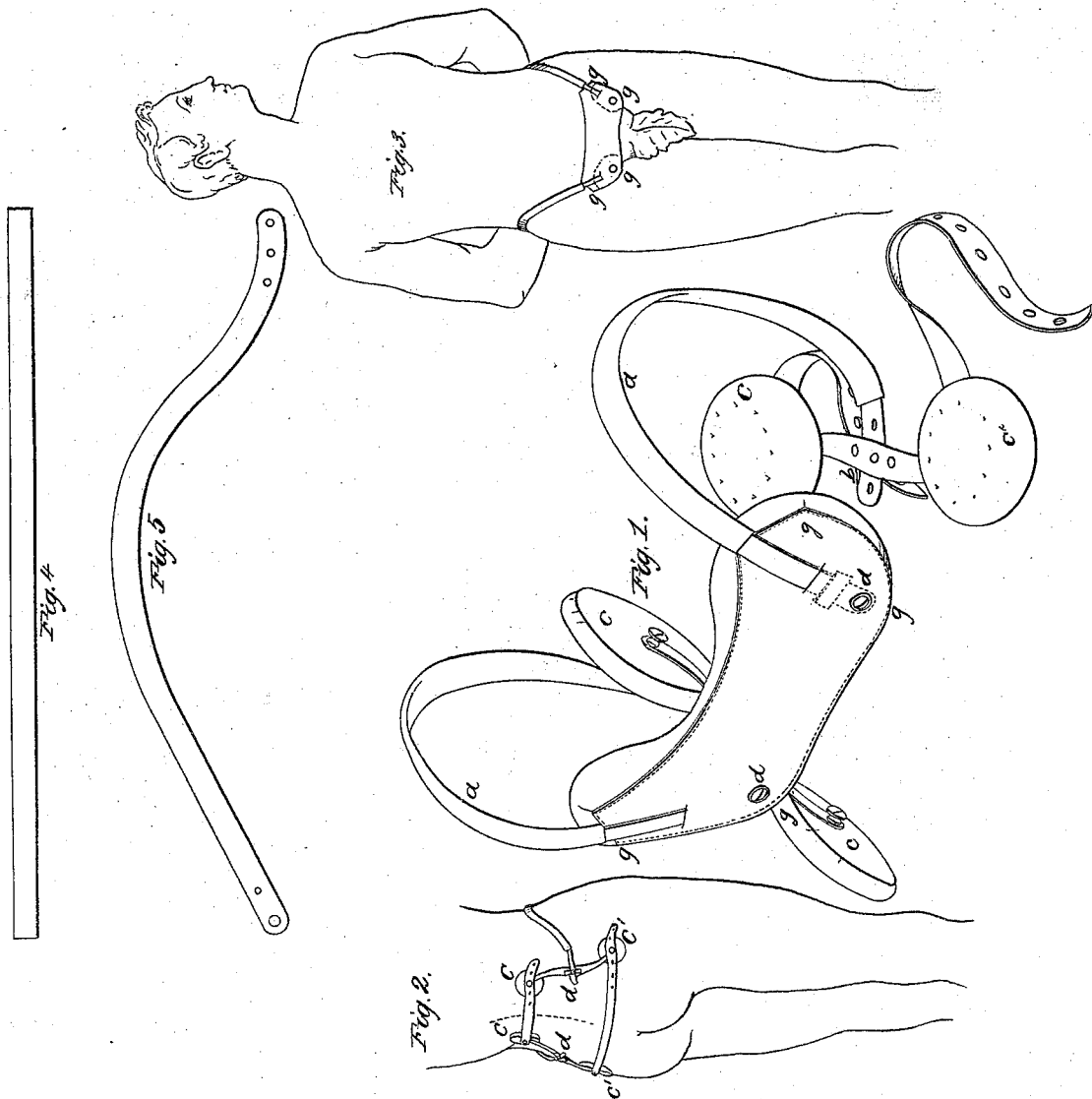


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UNITED STATES PATENT OFFICE.

SAML. S. FITCH, OF NEW YORK, N. Y.

ABDOMINAL SUPPORTER.

Specification of Letters Patent No. 7,186, dated March 19, 1850.

To all whom it may concern:

Be it known that I, SAMUEL S. FITCH, of the city, county, and State of New York, have invented a new and Improved Abdominal Supporter; and I do hereby declare that the following is a full and exact description.

The nature of my invention consists in a pad to support the abdomen, said pad being supported by means of two elastic steel bands which pass over the hips to the columns of the back where they each are fastened to, and rest upon, the middle of an S plate of elastic steel, each end of the S plate having upon it a pad which rests upon the back and thus by this combination is the abdomen supported and the back uninjured.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

Figure 1, is a representation of the supporter. Fig. 2, represents its application to the back. Fig. 3, represents its application to the abdomen.

The abdominal supporter consists of four arms—two long, and two short—and of five pads—one large and four small—which are constructed, shaped and combined as follows, and are intended to sustain and strengthen the small of the back, and support and hold up the bowels and pendulous abdomen, and thus prevent and cure a sinking of the contents of the chest, the lungs and heart, as also the liver, stomach, spleen, upper and lower bowels &c., and their covering and contents; also to arrange and support the abdominal rings, and thus prevent the possibility of rupture as well as to sustain and cure any rupture that opens through said rings.

The two lesser arms (*b* Fig. 1) are made of elastic steel plate, and when properly adjusted stand vertical on the surface of the body, three inches at the center from each side of the spine at the middle part of the loins; these arms are connected with the long arms (*a* Fig. 1) by a mortise on the center of the small arms; through this mortise the end of the long arm passes and is clamped or fastened by a screw (at *d* Fig. 2). From the mortise the small arms (*b* Fig. 1) rise upward above the mortise about an inch,—or more as the case may require—perpendicularly, when they are made to curve inwardly toward the spine, so as to

extend one inch inward toward their vertical center, and thus approach within two inches of the spine and then rest on a small round pad (*c* Figs. 1 and 2) and are thus placed nearer the spine and on the short ribs before the ribs begin to curve to form the lateral circle of the body; by this construction they are prevented from pressing on the spine, or on the ribs after they begin to curve; in the former case, that is pressing on the spine, they would produce dangerous spine diseases, and by the latter—pressing on the curvature of the ribs—the ribs would be forced inward on the large organs in the trunk of the body, the liver, spleen, stomach, bowels etc.; which would injure these delicate and vital organs—such effects being daily witnessed by using instruments which allow pressure on the spine or on the curvature of the ribs.

Below the mortise the small arm passes vertically downward about an inch—or more if the case requires it—when it curves outwardly one inch—where it rests on a small round pad (*c'* Fig. 2) which is thus carried on to the flat plate of the os illium, and by its pressure serves to strengthen the bones of the pelvis, and presses on the flat part of the os illium, by which all pressure on the os sacrum is prevented as well as all pressure on the suture or joint where the os illium is united to the os sacrum; both of which pressures would weaken the pelvis, and would be liable to produce most distressing and dangerous nervous and spinal diseases.

Straight arms placed in the small of the back must press on the spine or on the curvature of the ribs, or on the os sacrum, or suture or joints which connect the os sacrum with the os illium; the doing of any of which will produce the diseases and injuries before mentioned, all of which are avoided by using the curved arms as described.

The small arms are connected to the large arms by a mortise on the center of the small and through which the end of the large arm passed and is firmly fastened by a screw. The long arms (*a* Figs. 1 and 2) are made of elastic tempered steel plate: the ends which fasten to the small arms are pierced in several places to receive a screw which passes through a mortise on the small arms, thus, by loosening the screw, to allow the small arm to approach or recede, from the spine, at pleasure. The flat surface of the

long arms presents itself to the body. The long arms from the posterior ends pass at first outwardly in, nearly, a horizontal position about $1\frac{1}{2}$ inches when they curve upward and rise high enough to entirely clear the crest of the os illium, so as in no part to touch or infringe upon the hip bone: it now curves gently around the lower portions of the waist until it is forward of the hip when it bends forward and goes downward until it reaches the lower abdominal ring at which place it is fastened by means of a slot and screw (at *d* Fig. 1) to the front pad. The inner flat surface of the long arm is everywhere made to lay flat to the surface of the body and not to allow its edges to cut the skin. To produce this effect these long arms are cut upon an irregular bevel; the lower and outer edges of the arms are consequently much shorter than the upper and inner edges: being cut on a bevel allows the arms to be bent and shaped so as everywhere to fit the surface.

The long arms in a medium sized supporter are about $4\frac{1}{2}$ inches in length along the plate, from the posterior ends, at the short arms, to where they curve above the middle part of the crest of the os illium; and from this point to the forward termination of the arms at the abdominal ring, in front, is about $9\frac{1}{2}$ inches: the mode of bending and cutting the long arms divides each into a long and short lever having this rest at the crossing above the crest of the os illium, and their points of pressure at the abdominal rings in front and at the center of the small of the back, or loins, behind; and by the short arms the pressure is conveyed to the small pads on the ends of the short arms: thus the pressure is conducted and made to fall on the short ribs above and on the flat plate of the os illium below. These long arms are constructed of steel plates and so tempered as to be perfectly elastic, and bent in such a manner that when free from pressure they will fold inward entirely upon each other.

When the supporter is placed upon the body the long lever of the long arms (*a* Figs. 1 and 3) raise the front pad (*g* Figs. 1 and 3) and with it all the abdomen toward the top of the hips or crest of the illium; thus preventing the downward pressure of the bowels upon the lower pelvis, and preventing the bowels from falling upon the rectum, womb, and bladder and uterus, and large blood vessels that pass through the pelvis and outwardly over the front of the thigh, and upon the abdominal rings by which hernia is produced. By this arrangement no flat pressure is allowed, but a lifting pressure is gained, not much upon the front of the bowels but upon the lateral columns of the abdominal contents, and thus extending support from the bottom of the

sides of the abdomen to both lateral columns of the trunk of the body, supporting the bowels, liver, the stomach, the heart, lungs and breast, by lifting all up, pressing upon the short ribs and assisting gently to enlarge the chest; and thus avoids the error of those instruments whose chief pressure is made on the center of the abdomen or sinus alba.

The sinus alba is a membranous support that is drawn nearly tight, from the end of the breast bone and two or three short ribs, at the top, downward to the os pubis or front cross bone of the pelvis. Pressure upon the sinus alba at the chief point of pressure will frequently drag downward and inward to the end of the breast bone and thus diminish the size of the chest, while a lifting and lateral pressure on the lower part of each side of the abdomen contributes to enlarge the chest. The front pad (*g*, Figs. 1 and 3) is made as follows: It is usually about $6\frac{1}{2}$ inches long, from one side to the other of the abdomen, and about four inches deep, vertical measurement. Its upper edge is nearly straight; its lateral edges are inclined inward and downward following the course of the groin; the lower edge is cut out at its center to go above and over the os pubis—which it covers like a yoke—while the two lateral lower edges are carried downward and cut so as to cover the abdominal rings and all the space between the os pubis and groin and occupied much by the abdominal rings. The pad is made of a strong plate of tin or other material cut to its proper shape and padded and covered with any suitable substance.

The shape described above for the front pad combined with the fact of the long arms being terminated at its lower outside edge or near it makes those two points the points of pressure and support instead of nearer the center of the pad which is the case with other instruments in use. The small arms being shaped like the letter **S** instead of being straight, the pressure is neither on the columns of the back or on the spine as in other instruments. A strap connects the two upper pads of the small arms and one also connects the two lower pads. These give to the supporter only the movement of the body. The **S** spring differs from other shaped springs in that it is so formed that when the upper pad is resting above the short rib, behind its curve and free from the spine, &c., the lower pad is upon the plate of the os illium—the side or long spring enters the socket of the **S** spring at right angles to the edge of the **S** spring, and thus obtains for the **S** spring a different and more favorable bearing than from that of any other shape; the pads preserve their position and the spring readily yields to the motion of the body.

The long elastic spring or arm, connecting the supporter with the S spring, differs from others in being cut beveled, and also in its shape when first cut and before it is bent and tempered to its true shape. Ordinary springs, used in these instruments, when flattened are right lines or straight, as in Fig. 4. The springs used in this instrument when flattened out (or first cut) commence with a curve, having a curve in an opposite direction in the middle and are terminated by a sight line, as seen in Fig. 5.

The supporter pad is peculiar in the form of that part which covers the hernia rings; it is thicker at this point, and the long arm terminating here causes the pressing and lifting action directly upon it, while the lower outer edge is fitted to the groin and the lower edge yoked so as to free the os pubis.

What I claim as my invention and desire to secure by Letters Patent is—

1. Two short elastic arms S shaped, connected with other parts of a supporter, with a pad upon each end—one pad to rest upon the short ribs behind the curve and free from the spine while the other rests upon the flat plate of the os illium; each S plate being united at the middle to a long elastic arm by a mortise allowing no motion but that of sliding in and out; the long arm and

short arm always crossing at right angles through the mortise.

2. I claim the invention of two long elastic arms, in connection with other parts of a supporter, and with the S shaped arms by a mortise and screw bolts—these arms so cut as when laid upon a flat surface that the edge will be convex, then concave and then straight; and formed so as to sit flat upon the person, rising above the hips with a point of rest about one third of its length from the back and falling down in front to a pad, and by so adjusting the shape of the arms and point of rest as to press directly upon the hernial rings and lift up the abdominal contents toward the top of the hips.

3. A supporter pad so formed as to be thicker on the inside near its lower and outer edge at the point of termination or lower fastening, to it, of the long elastic arms, so as to press directly on the hernial rings, the lower outer edges being cut so as to follow the course of the groin, and the lower edge yoked, or cut convex, to go above the os pubis thus acting upon all those parts occupied by the abdominal rings.

S. S. FITCH.

In presence of—

GEO. C. THOMAS,
E. D. WILLARD.