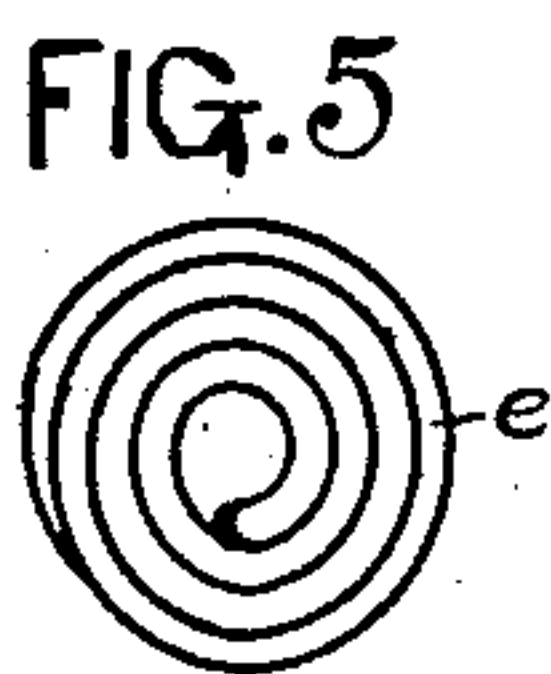
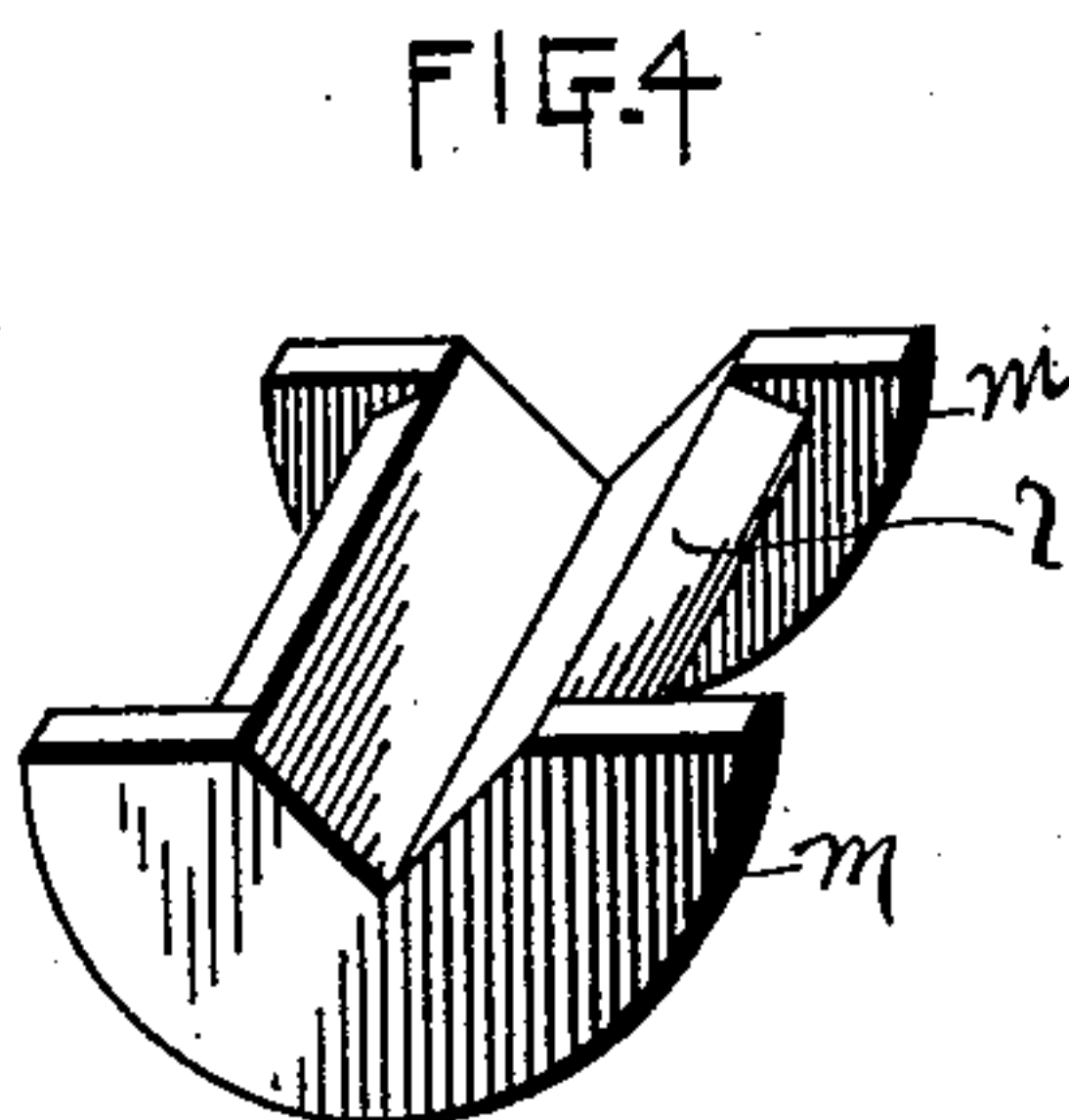
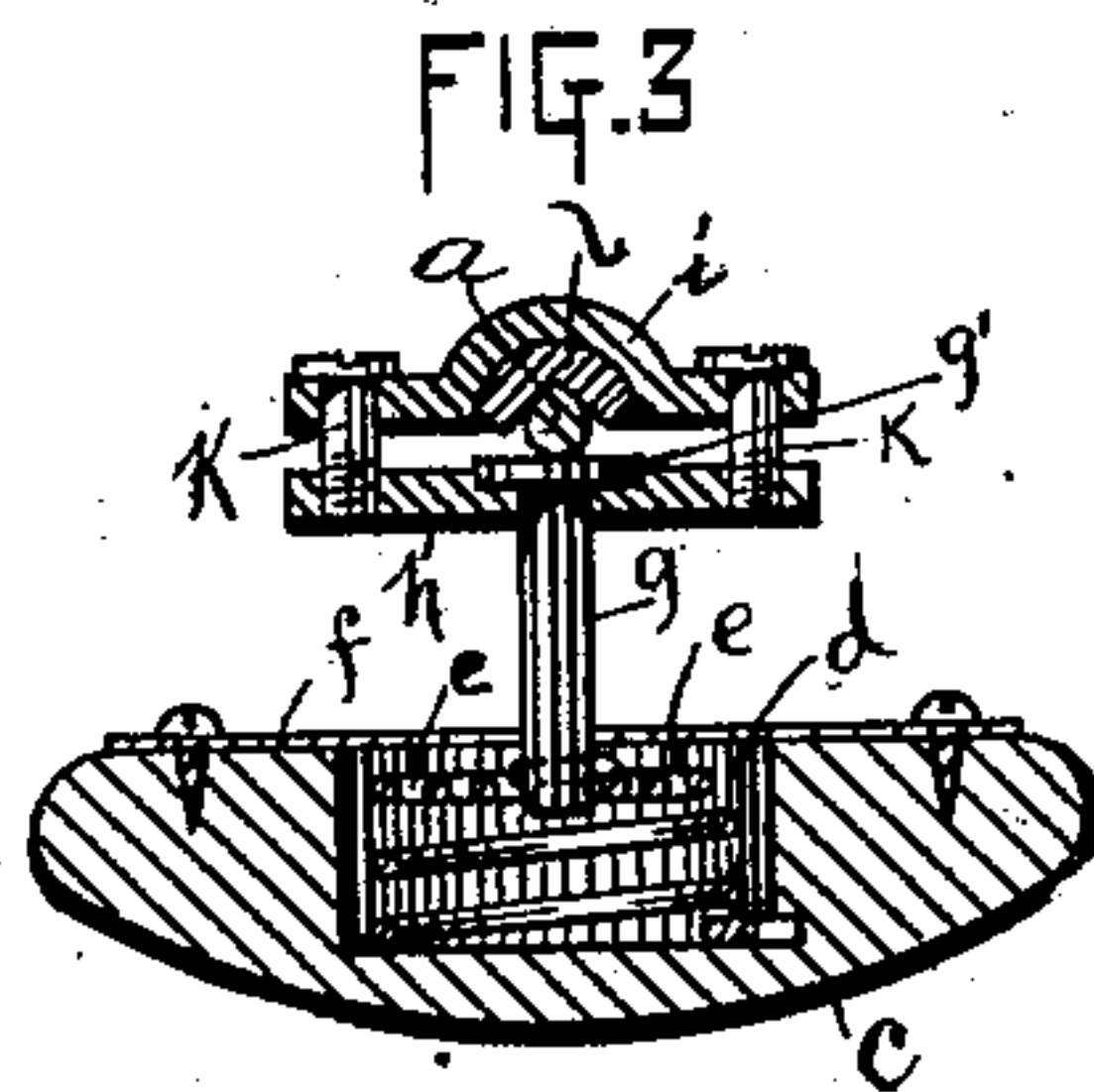
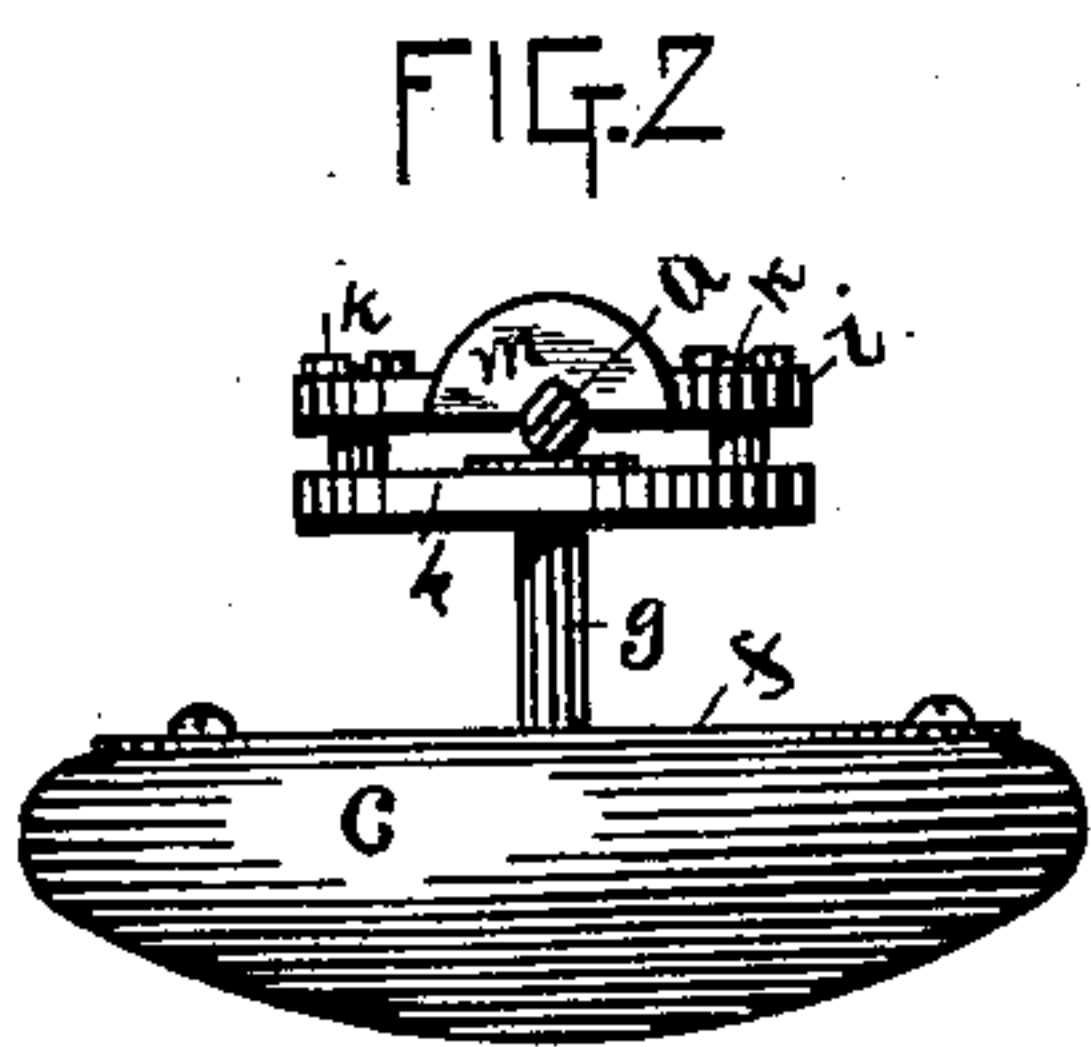
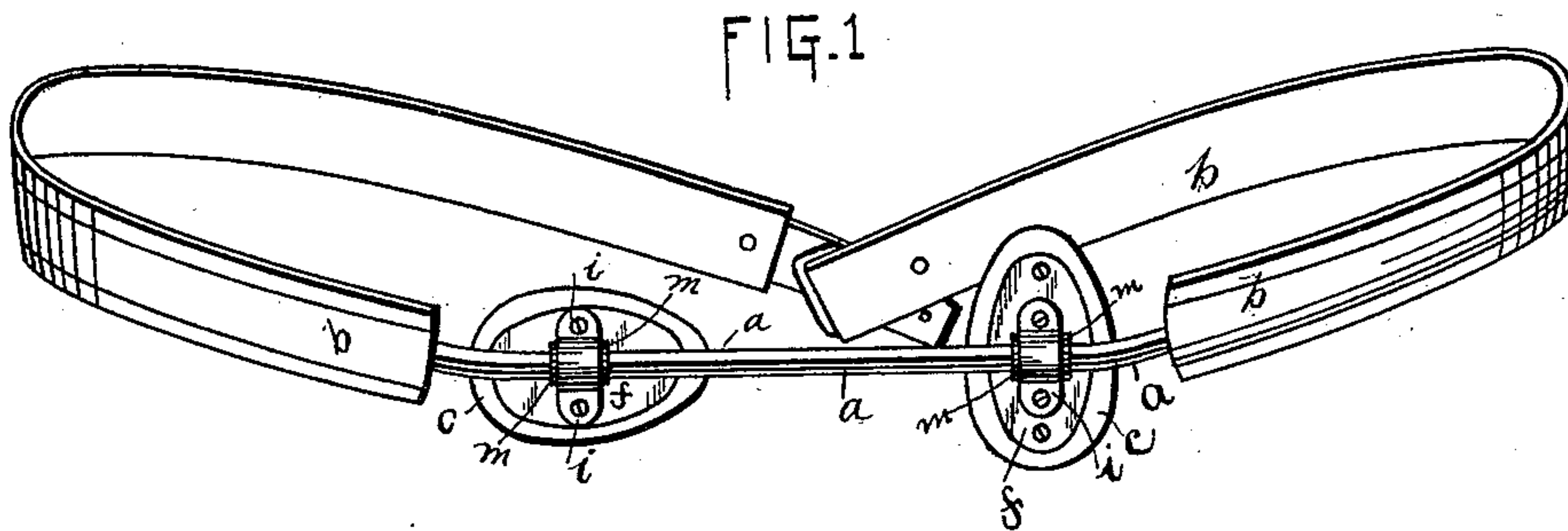


(No Model.)

A. C. HAINES.  
TRUSS.

No. 400,910.

Patented Apr. 9, 1889.



WITNESSES:

Geo. B. Fravel  
C. B. Currier.

INVENTOR,

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# UNITED STATES PATENT OFFICE.

ABEL C. HAINES, OF COLUMBUS, OHIO.

## TRUSS.

SPECIFICATION forming part of Letters Patent No 400,910, dated April 9, 1889.

Application filed March 23, 1888. Serial No. 268,197. (No model.)

*To all whom it may concern:*

Be it known that I, ABEL C. HAINES, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Abdominal Supports, of which the following is a specification.

My invention relates to the improvement of that class of abdominal supports used in the treatment of hernia and other diseases, and has particular relation to the means and manner, as hereinafter specified, of forming a connection between the pads and body-band.

The objects of my invention are, first, to provide a light abdominal support of this class, so constructed as to combine therein strength, durability, and simplicity, admitting of ready adaptation to each individual case, so as to apply pressure at such point and in such direction as shall be most favorable for effecting relief or cure and also contributing ease and comfort to the wearer; second, to so form the body-band and construct the clamping and attaching plates as to admit of ready and convenient adjustment to the positions and angles required and at the same time provide a firm and secure grip on the body-band, and, third, to provide an improved flexible connection between the pad and supporting-bolt. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved support. Fig. 2 is a side elevation of one of the pads, showing in cross-section the body-band to which it is attached. Fig. 3 is a central vertical section taken through said pad and the attaching device. Fig. 4 is a detail view, in perspective, of the body-band bearing-piece; and Fig. 5 is a plan view of the pad-spring.

Similar letters refer to similar parts throughout the several views.

*a* represents a metallic body-band, formed as hereinafter described. That portion of the band on either side of the middle portion may be provided with any desired covering, *b*, and may be bent to assume the form shown in the drawings, or in any other form which may be desirable in conforming to the shape of the body of the wearer. The ends of said

band may be connected in any well-known manner, but are preferably connected, as shown, by a strap and buckle, respectively secured by riveting or otherwise to the ends of the band.

The body-band *a* is so formed as to present on the side toward the body a half-round or half-oval surface, while its opposite and remaining side has two flattened surfaces or a double bevel to form an angular surface, as shown.

*c* represents a pad, which may be formed of wood or other suitable material, and having its front surface preferably oval or rounded, as shown, and its rear surface flattened. In this rear flattened side is formed a depression, *d*, within which is seated a coiled spring, *e*, of peculiar construction. The outer end of this spring is, as shown, made to present a flat surface by forming a number of coils of the spring-wire, one about the other, upon the same level or flat spiral, before continuing the spring-wire downward in the helical form, constituting a double spring with more wire and consequent greater elasticity and durability. Against the flattened side of the pad is secured, by screws or otherwise, a metallic plate, *f*, having a small central bolt-hole communicating with the recess or depression *d*. Passing loosely through said plate bolt-hole is one end of a bolt or pin, *g*, which is secured centrally to the flattened outer end of the spring *e*. The remaining and outer end of this bolt *g* passes loosely through an oblong metallic binding-plate, *h*, and is provided with a flanged disk-shaped head, *g'*, made to bear upon the outer surfaces of said plate *h*, or within a similarly-shaped depression formed therein.

*i* represents a second outer clamping-plate detachably connected with the plate *h* by means of screws *k*, passing loosely through holes formed in the outer ends of said plate *i* and having their rear ends entering and engaging with the threads of oppositely-located screw-holes formed in the outer ends of the plate *h*. The central portion of the plate *i* is bowed upwardly to form a concave depression on its under side.

*l* represents an oblong metallic bearing-piece having one of its sides rounded to con-



form to the curve of the central portion of the plate *i* and having its remaining opposite side provided with an angular groove, as shown. The edges of the central part or body of this bearing-piece are beveled back, as shown, for the purpose hereinafter mentioned, while each end of said bearing-piece is provided with a half-circular flange, *m*.

The bearing-piece *l* is adapted to be made to bear and fit within the concave under surface of the plate *i*, and is provided with flanged ends to prevent the piece from becoming displaced while adjusting the plates *h* and *i* for the proper position of the pad.

A connection is formed between the pad and the body-band by unscrewing one of the screws *k* from the plate *h*, and inserting the body-band in such position that its angular side will fit and bear within the angular notch or groove of the bearing-piece *l*, while the curved surface of the body-band bears against the outer surface of the bolt-head *g'*. The screws *k* are then screwed into the screw-holes of the plate *h* until the body-band is firmly clamped between the bolt-head and bearing-piece.

I am aware that round, half-round, and flat body-bands have been used, and have been held between clamping-plates by means of a set-screw. In the use of the first, experience has shown that a wire or round body-band of proper strength and lightness is too small to admit of clamping the pad to it with sufficient firmness, while in the use of the half-round or flat band a more rigid bearing-surface is had, but the adjustment of the pad to different positions is prevented.

By the herein-described device it will be seen that the angular outer side or double beveled body-band *a* above described, fitting into the angular notch in the bearing-piece *l*, secures a degree of rigidity of bearing on the wire of the body-band which cannot otherwise be secured, while the enlarged rounded outer surface of the body of the bearing-piece *l*, when clamped in the enlarged concave surface of the clamp *i*, serves, by reason of said enlarged surface, with a given friction to hold

the pad in position with a correspondingly greater and sufficient firmness, and at the same time admitting of the desired adjustability to allow the clamping-piece to be turned to cause the pad-bolt to project in different directions from the band, thus securing the desired position of the pad. The bevel of the rear sides of the bearing-piece between its flanges will, as may readily be seen, increase the turning-space of said bearing-piece.

It will be observed that one or more pads may be secured, as above described, to the body-band, and, as is usual in this class of abdominal supports, any extra pressure of the body against the pad, which may be caused by the bending of the body of the wearer or otherwise, will operate to press the rear end of the spring-actuated bolt *g* farther into the depression *d* of the pad, thus preventing any inconvenience or discomfort to the wearer arising from such movement of the body. It is also obvious that by the peculiar construction of the spring *e*, heretofore described, a stronger and more elastic spring is attained.

It is obvious that a second bearing-piece corresponding in general form with the one herein described may be used in connection with a lower plate corresponding in general form with the upper plate, *i*; but the construction described is preferable.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

In an abdominal support, the combination of the pad, its spring-actuated bolt *g*, pivoted to plate *h* and having head *g'*, clamping-plate *i*, detachably connected, as described, with plate *h*, and the rounded and angular grooved adjustable bearing-piece *l* with the body-band *a*, having one of its sides half-rounded in form and its remaining side angular, substantially as and for the purpose specified.

ABEL C. HAINES.

In presence of—

C. W. ALLISON,  
C. C. SHEPHERD.