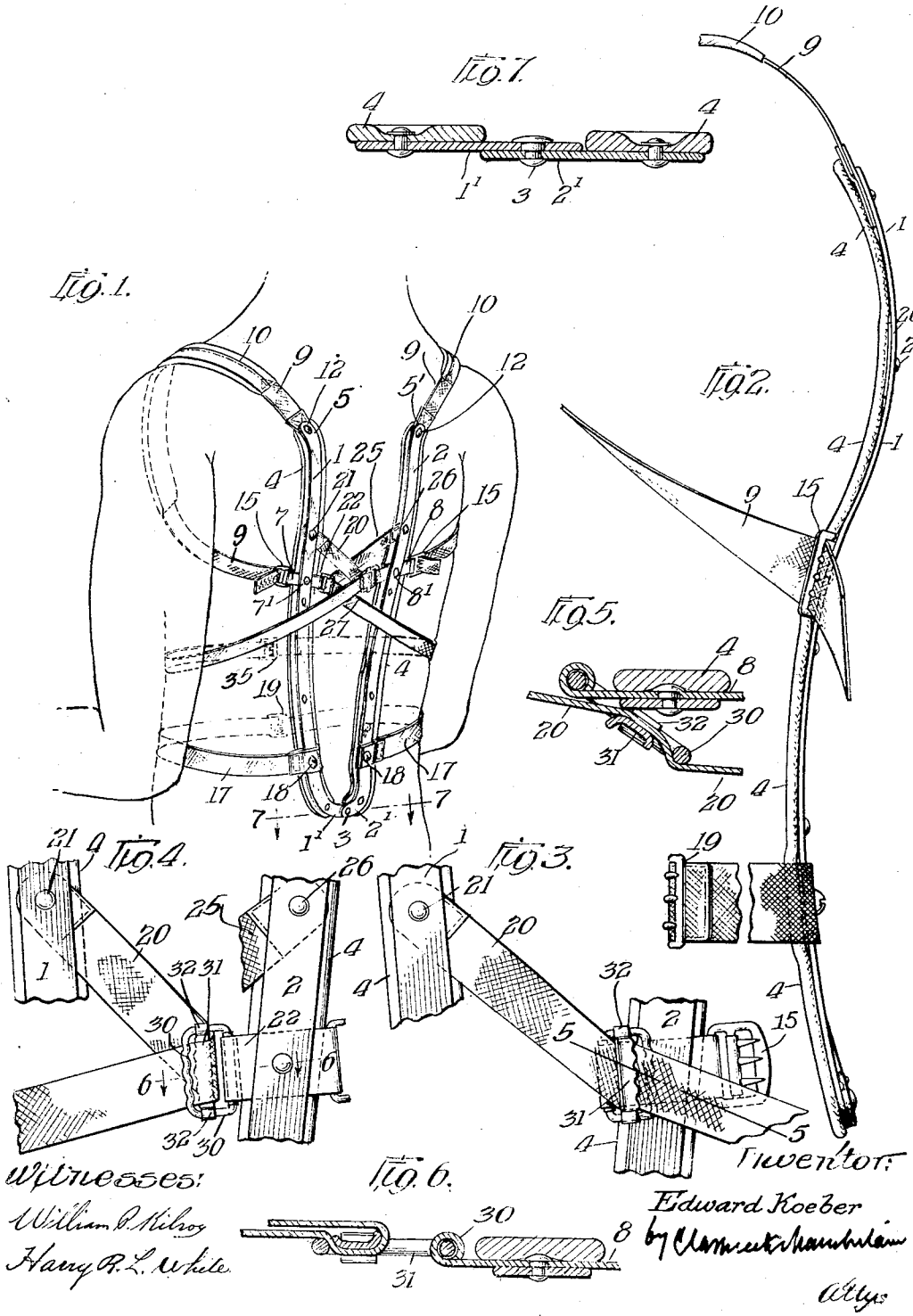
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BACK SUPPORT AND SHOULDER BRACE

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My invention relates to the relief and correction of deformities and relative displacements of the upper portion of the human body and the bony structures connected therewith; and it particularly relates to those defects which are the result of faulty habits of position and carriage.

The object thereof is to provide means by which positive and accurate adjusted movement and pressure may be applied longitudially on each side of the spine without direct pressure thereon. It is a further object to correct minor displacements and relative malpositions of the vertebra, ribs, shoulder blades and collar bone; to provide means which, within range of applicable size, may be readily adapted to a great range of figures; and which can be readily applied and adjusted by the patient himself. And it is a further object to provide a brace which is easy and comfortable to wear and which gives support to weakened tissues and aid in cultivating and producing a graceful and upright carriage.

The principles of my invention are illustrated in the drawings in which Fig. 1 shows a perspective view of my invention as applied in practice and adapted to correct the deformity of round shoulders. The following figures are in relatively larger proportion: Fig. 2 is a side view looked at from the left; Figs. 3 and 4 represent views of the tensioning apparatus as opened and closed respectively; Figs. 5 and 6 represent a securing device forming part of the tensioning apparatus in respectively the free and closed position as shown on the dotted lines 5—5 and 6—6 of Figures 3 and 4; and Fig. 7 is a section on the line 7—7 of Fig. 1.

Further describing my invention by reference to the drawings in which like characters of reference denote like parts throughout: The principal members forming stay pieces are two in number and are indicated by the numerals 1 and 2. They consist of resilient metal strips primarily shaped to conform to the natural curves of the spine and are of such flexibility as may be best suited to the character of the support desired or correction needed. The lower ends 1′ and 2′ are bent in their normal planes toward each other and pivoted at 3 so the two principal members will be in spaced relation on each side of the spine when applied to the form. The upper ends may thus be spread or closed as desired by means of special devices such as hereinafter explained.

The upper extremities of said stay pieces should also be outwardly bent or flared as indicated. Transverse links 7 and 8 are pivotally attached to the stay pieces by the pivot pins 7′ and 8′. Shoulder straps 9 having pads 10 are attached to the upper and flaring portions 5 and 5′ of the stay pieces by means of pivot bolts 12. The free ends of said shoulder straps pass around the shoulders, as indicated, are received and secured by buckles 15 which are hinged to the outer ends of the transverse links 7 and 8 thus forming shoulder loops. A waist belt for securing the lower part of the device is provided in two sections 17, the rear portions of which are attached by pivots 18 to the lower portions of the stay pieces, and the free front ends are adjustably connected by a buckle 19 or other similar device.

The shoulder loops and belt provide means by which the brace, as a whole, may be placed and held in primary unadjusted position upon the form of the wearer.

The final adjustment and application is made by means of straps, preferably of webbing, 20 and 25 which are attached to the stay pieces 1 and 2 by pivot pins 21 and 26. Identically formed securing devices 22 and 27 are hinged to the inner ends of the transverse links 7 and 8. The said devices, as indicated in Figs. 3 to 6, inclusive, may consist of an oblong frame 30 and a fastening member 31 having end loops 32 which are mounted upon the end pieces of the frame and upon which said fastening member 31 has free sliding movement.

The inner faces of the stay pieces 1 and 2 are provided with pads 4 wide enough to extend laterally beyond the edges of the stay pieces. These may be as shown in the drawings in a single piece extending from end to end of the stay pieces and which may be secured to the stay pieces by the rivets or pivot bolts 12, 21, 26, 7′ and 8′, or they may

be separately made and additionally secured to the stay pieces. But it will be noted that by positively enclosing the pivoted ends of the shoulder straps 9, the webbing straps 20 and 25 and the body portions of the transverse links, between the stay pieces and the pads, practically smooth and unimpeded movement of the parts is assured.

To illustrate the operation of the device, assuming that it is placed in primary position, the shoulder loops and belt being loosely in place but with the webbing strips 20 and 25 substantially in the positions indicated in Figs. 3 and 4, leaving the stay pieces spread at their upper ends. Fig. 3 shows the locking device turned back on the transverse link, as indicated in cross section in Fig. 5, and with the strap 20 passing freely through the same and extending to the right to be grasped by the right hand of the wearer. It will be understood that the strap 25 will be passed to the left through a similar device and grasped by the left hand of the wearer. The free ends of the said webbing straps 20 and 25 are then changed from hand to hand by the wearer, as shown in Fig. 4, and drawn at any desired tension to the positions shown in Fig. 1 thereby bringing the stay pieces into as close proximity to each other as desired. The securing devices take up the slack as it occurs, as indicated in Fig. 6, and the free ends for convenience are then secured together in front of the body by the buckle 35 in conformity with the adjustment of the stay pieces as set forth.

It will be understood that details of construction may be changed or varied as desired, especially in regard to the specific form or means employed by which the fastening straps are secured to the person of the wearer.

I claim:

1. In a back support and shoulder brace, the combination of a plurality of back-supporting resilient stay pieces connected to each other by a pivot at their extreme lower ends and separated thereabove to provide lateral support conformable to the normal conformations of the human spine, shoulder loops adjustably attached to the upper ends of said stay pieces, and means operatively attached to the said stay pieces for moving the upper portions thereof on said pivot relatively to each other whereby the shoulders of a wearer may be held in adjusted position.

2. In a back support and shoulder brace; the combination of a plurality of resilient stay pieces pivotally attached to and spaced from each other at their extreme lower ends, said stay pieces being so separated from each other on their facing edges as to provide lateral support conformable to the normal conformations of the human spine, a plurality of straps having their ends connected with the stay pieces to form shoulder loops, and a securing device attached to the upper portions of each of said stay pieces adapted to be connected with the other stay piece and secure the shoulder loops in adjusted relation to each other.

3. In a back support and shoulder brace; the combination of a plurality of stay pieces pivotally attached to and spaced from each other at their lower ends so as to allow normally free movement of the upper ends, links extending transversely across each one of said stay pieces and pivoted thereto, buckles on the outer ends of said links, straps having one end pivoted to the ends of said stay pieces and having the other end attached to said buckles to form shoulder loops, securing devices hinged to the inner ends of said links, and straps each having one end pivoted to one of the stay pieces above one of the links and passing through the securing device hinged to the link on the other stay piece.

4. In a back support and shoulder brace; the combination of a plurality of stay pieces pivotally attached to and spaced from each other at their lower ends so as to allow normally free movement of the upper ends, links extending transversely across each one of said stay pieces and pivoted thereto, buckles on the outer ends of said links, straps having one end pivoted to the ends of said stay pieces and having the other end attached to said buckles to form shoulder loops, securing devices hinged to the inner ends of said links, straps each having one end pivoted to one of the stay pieces above one of the links and passing through the securing device hinged to the link on the other stay piece, so that when the free ends of said straps are connected about the body of the wearer, the same will form substantially a continuous connection with said links and the shoulder loops connected therewith.

5. In a shoulder brace and back support having resilient bracing strips; the combination therewith of shoulder loops, transverse links, pivots to secure said links to said bracing strips, and pads substantially conformed to the bracing strips and secured thereto by said pivots so that the transverse links may freely move on said pivots between the bracing strips and the pads.

6. In a back support and shoulder brace; a plurality of resilient stay pieces spaced from each other, means including a pivot for attaching the lower ends thereof to each other, a reversibly hinged buckle connected to each of said stay pieces, a draw strap connected with each of said stay pieces so as to pass freely through the buckle on the other stay piece when drawn in one direction and be locked thereby when drawn in the other direction.

7. In a back support and shoulder brace; a plurality of resilient stay pieces having a connecting pivot at their lower ends, independent means on each stay piece for adjustably and independently connecting each stay

piece to the form of a wearer, and locking devices on one stay piece and connected to the other stay piece for moving them on said pivot and locking them in adjusted positions.

8. In a back support and shoulder brace; a plurality of resilient stay pieces having a connecting pivot at their lower ends, independent means on each stay piece for adjustably and independently connecting each stay piece to the form of a wearer, the combination therewith of adjustment straps, each having one end attached to one of the stay pieces, and adjustable securing devices connected with each stay piece adapted to receive and lock the adjustment strap of the other stay piece when turned theretoward and to release the said adjustment strap when turned therefrom.

In witness whereof I have hereunto set my hand at Chicago, Illinois, this 15th day of February, 1926.

EDWARD KOEBER.