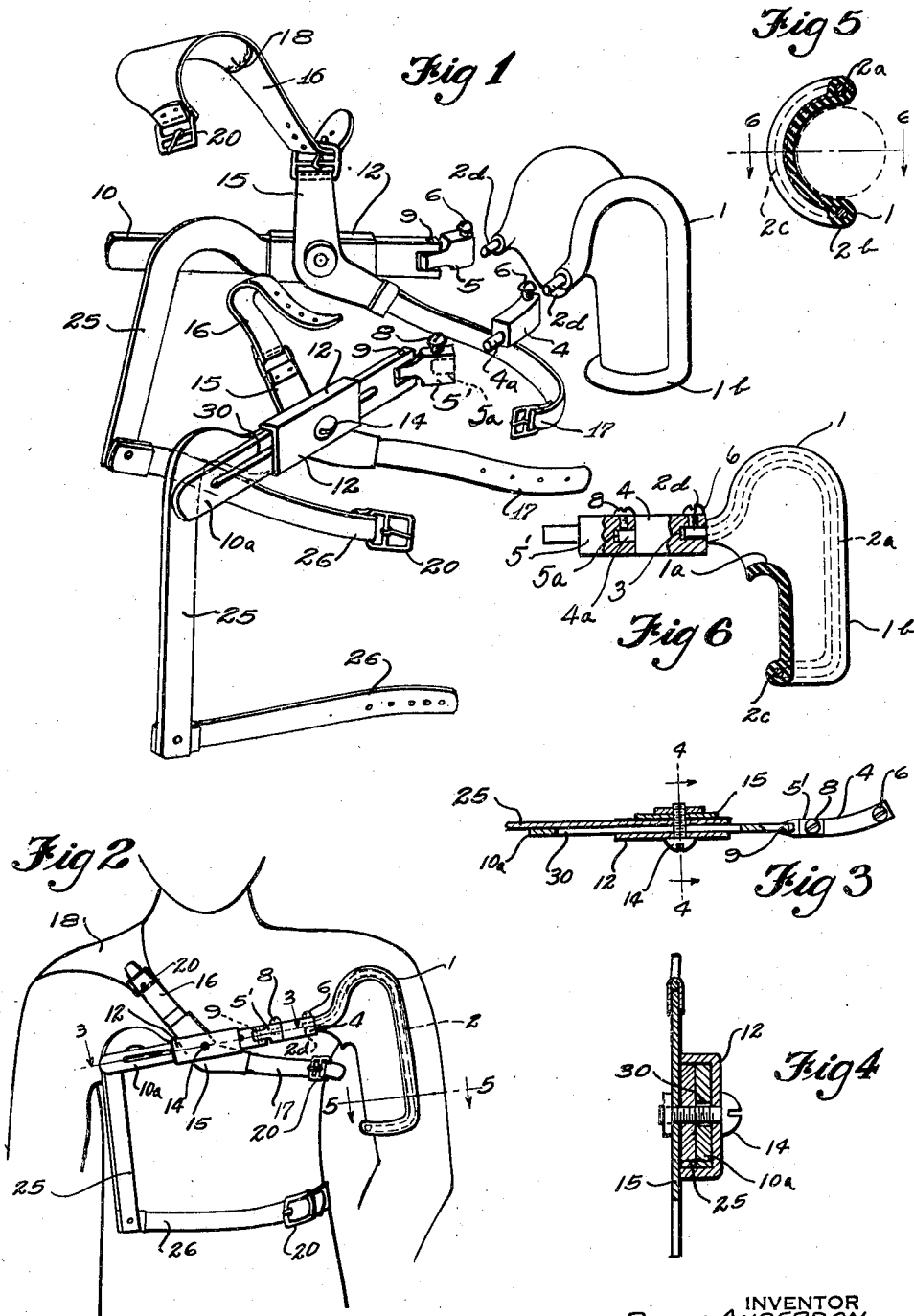


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R. ANDERSON  
COLLARBONE AND ARM SPLINT  
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INVENTOR  
ROGER ANDERSON

BY  
*Coak + Robinson* ATTORNEY

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## COLLARBONE AND ARM SPLINT

Roger Anderson, Seattle, Wash.

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This invention relates to improvements in fracture splints, and it has reference more particularly to splints for use in connection with the reduction of fractures of the clavicle, or collarbone; it being the principal object of this invention to provide a splint that may be adjustably fixed to the user's body and comprising a saddle adapted to support the arm and shoulder at the injured side by engagement within the arm pit, and which splint is adjustable to so locate and secure the saddle as to lift the shoulder up and press it back as desired, or necessary, for a correct setting and healing of the fracture.

It is an object of the invention to provide a splint of the character above stated that permits more comfort to the user in that it does not require the arm at the injured side to be held in an elevated, or extended position in order to bring the fractured parts into apposition.

A still further object of this invention is to provide a splint that is reversible, thereby permitting its use for either the right or left side of the body, and which is adjustable to adapt it to the needs of persons of different size, and a proper positioning of the arm supporting saddle.

Other objects of the invention reside in the details of construction and combination of parts, and mode of use, as will hereinafter be explained.

In accomplishing these and other objects, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawing, wherein—

Fig. 1 is a perspective view of the splint embodied by the present invention.

Fig. 2 is an illustration showing the splint as applied in use.

Fig. 3 is an enlarged sectional detail on the line 3—3 in Fig. 2.

Fig. 4 is a cross sectional detail on line 4—4 in Fig. 3.

Fig. 5 is a cross sectional detail on the line 5—5 in Fig. 2.

Fig. 6 is a cross sectional detail on the line 6—6 in Fig. 5.

Referring more in detail to the drawing—

In its present preferred form of construction, the splint comprises a shoulder and arm supporting saddle 1, preferably formed of rubber, or a like material, to give softness and yieldability thereto, and providing a seat portion 1a for application to the arm pit at the side containing the fractured clavicle, and having an outwardly opening, trough-like portion 1b depending from the saddle to extend along and to cradle the upper arm therein. Opposite side portions of the

trough extend along front and rear sides of the arm and are also extended upwardly at front and rear sides of the shoulder as a support and brace therefor.

The pad is stiffened and is also supported in place by a heavy wire, or rod, 2 that is embedded within its peripheral portions. As will best be observed by reference to Figs. 2, 5 and 6 the wire, or rod 2 is continuous and is bent in a manner to form opposite side frames 2a and 2b, joined across their lower ends by an inwardly bowed portion 2c. The upper end portions of the opposite side frames which extend at front and rear sides of this shoulder are inwardly and downwardly curved and have their end portions 2d extended directly inwardly from the saddle at front and rear sides of the shoulder, and these are fixed in supports, presently described, for supporting the saddle in place.

The lifting and bracing of the shoulder by means of the saddle when the splint is applied, is accomplished through the mediacy of adjustable supporting means located at the front and back of the patient.

As will be noted by reference to Fig. 2, the ends 2d of the saddle frame wire 2 are fitted within sockets 3 in the ends of mounting blocks 4 and 5, and are secured therein by set screws 6. The block 4 is longer than block 5 and is slightly curved in a horizontal direction to conform more to the curvature of the body at that location. This block 4 is, in turn, removably mounted on a block 5' which corresponds in size and shape to block 5; the mounting means comprising a neck portion 4a on the end of block 4 that may be removably fitted in a socket 5a in block 5'. A set screw 8 in block 5' may be tightened against the neck portion to secure the parts together.

The blocks 5 and 5' are hingedly fixed by vertical hinge pins 9, respectively, in the ends of flat bars 10 and 10a which, in use of the splint, are disposed at the back and front of the user's body. Each bar is fitted for a longitudinal, adjustable shifting in a mounting sleeve 12 and the two sleeves 12—12 are pivotally fixed by bolts 14 to supporting plates 15—15 which are adapted to lie flatly against the chest and back of the patient and which are held functionally in place by supporting straps 16 and 17 attached to their opposite end portions. It will be observed that the front strap 16 connects adjustably with a pad 18 which overlies the patient's shoulder, opposite the side containing the fracture while the rear strap 16 connects permanently with pad 18 and is adapted for adjustable connection with the

rear support 15. The straps 16 are likewise adjustably connected together beneath the shoulder at the injured side. Buckles of any suitable form such as designated at 20, or other means, may be employed to effect these connections.

The raising or lowering of the saddle is effected by the adjustment of a pair of levers 25—25 of angular form, located at front and back of the patient, each having a horizontally directed upper end portion fixed to the inner face of the corresponding sleeve 12 and a downwardly depending portion extended to or below the patient's waist line. A strap 26 connects the lower ends of the levers 25 across the side of the body below the saddle, and it is to be understood that by shortening this connection, the lower ends of these levers will be moved in a manner to cause the sleeves to be rotatably adjusted on the supporting bolts 14, thereby to elevate the outer ends of the bars 10 and 10a and raise the saddle accordingly, by reason of the connection.

Each of the flat bars 10 and 10a is provided with a longitudinal slot 30 that receives the pivot bolt 14 of its mounting sleeve 12 therethrough, and thus the bars are made longitudinally adjustable to provide for a rearwardly or forwardly tilting of the saddle trough, and any adjustment may be retained by tightening the pivot bolts 14 in a manner to clamp the walls of the sleeve against the bars. It is to be noted, by reference to Fig. 4, that the bolts 14 extend through the sleeves and also through the ends of the levers, and are threaded through flat nuts disposed against the inner faces of the sleeves.

Assuming the device to be so constructed, it is applied in use as shown in Fig. 2, by placing the saddle 1 against the shoulder beneath the arm pit with the arm resting in the saddle trough. The supporting straps are adjusted so that the two levers 25 will be brought to proper position, and then the levers are adjusted and temporarily fixed by the strap 26. A desired adjustment of the bars 10 and 10a is then made so as to give the saddle the proper supporting effect on the shoulder. When the desired adjustment has been made, it is secured by tightening the bolts 14. Then a final adjustment of the levers 25 is made so as to lift the shoulder to the proper position for bringing the fractured bones into apposition.

It is readily apparent that through the mediacy of the various straps, and by reason of the adjustability of the parts, the saddle may be adjusted to lift the shoulder as well as to push it out and rearwardly, as is desirable for the reduction of this particular fracture.

If it is desired to use the splint on the opposite side from which it is herein shown as being applied, it would be first required that the connecting block 4 be changed in position so that it would be at the front side of the body when the splint is reversed. This is by reason of the fact that it is desirable that the saddle be thrown to the rear in order to properly support the shoulder.

Devices of this kind may be made in various sizes. However, the adjustability that has been provided in the present arrangement adapts it to use on persons of different size. The means of adjustment also permits the splint to be adjusted during the healing period of a fracture without inconvenience.

It is also a feature of this splint that the arm at the injured side need not be held in the elevated position that is usually required by use of the airplane splint. It therefore gives more com-

fort to the user and makes it possible for him to move about in the normal manner.

While I have not herein illustrated the use of arm supporting splints of the "airplane" types with the present supporting mechanism, such is anticipated, and it is quite apparent that various kinds of splints might be applied to the arm and supported through connections made with the levers 10 and 10a.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is—

1. A splint of the character described, comprising a saddle adapted for application to the arm pit, to seat the shoulder and upper arm therein, supports adapted to be functionally secured to the body of the user at front and back of the chest, a front lever and a back lever mounted pivotally at points between their ends on said supports respectively, and having ends hingedly secured to said saddle at front and rear of the shoulder, and means at their outer ends adapted to be engaged with the user's body to retain the levers in shoulder supporting position; said levers being individually adjustable in length between their mounting pivots and the saddle, to effect a forward or rearward disposition of the shoulder relative to the body.

2. A splint of the character described, comprising a saddle adapted for application to the arm pit to supportingly seat the shoulder and upper arm therein, a front support and a rear support applicable to the user's body at front and back of the chest, and means for sustaining said supports in functional position on the user's body, front and rear bell crank levers pivotally mounted on said supports; said bell crank levers having horizontal arms pivotally connected at their outer ends to the saddle at front and rear of the shoulder, and having downwardly depending arms, and a strap connecting the lower ends of said arms about the body to regulate and retain the elevation of the saddle; said horizontal arms of the bell cranks being individually adjustable in length for determination of the forward or rearward disposition of the shoulder.

3. A splint of the character described comprising a saddle member adapted for application to the arm pit to seat the shoulder and upper arm therein with the arm in a position depending from the shoulder, a body harness, supports attached to the harness centrally of the body at front and back of the chest, a sleeve pivoted on each support, a lever longitudinally adjustable in each sleeve; said levers having hinge connections at their outer ends with said saddle, means for securing the longitudinal adjustment of each lever in its sleeve, bell crank levers at front and rear of the body, each having one arm fixed to the sleeve at that side of the body and its other arm extending downwardly along the side of the body, and an adjustment strap applied about the body and connected to said depending arms of the bell cranks for adjusting the sleeves in their supports to retain a set elevation of the saddle.

4. A splint of the character described comprising a saddle applicable to the arm pit to seat the shoulder and upper arm therein, a harness applicable to the body of the user and having supports embodied therein centrally at front and back of the chest, and saddle supporting levers mounted by said supports and hingedly attached to the saddle at front and back sides, and adjustable independently of each other on said sup-

ports to regulate the elevation of the saddle, its tilt and the traction applied thereby.

5 5. A splint of the character described comprising a saddle applicable to the arm pit at the injured side, to seat the shoulder and upper arm therein, a shoulder harness including a weight sustaining portion applicable over the well shoulder, supports secured in said harness at front and back of the chest, sleeves pivoted on said supports, saddle supporting levers longitudinally adjustable in said sleeves, means hingedly connecting the levers with the saddle respectively at front and rear sides, means for securing the adjustment of the saddle supporting levers on the sleeves to determine and retain the forward or rearward disposition of the saddle, depending levers attached to the sleeves for pivotally adjusting them on their pivots and an adjustable body engaging means for maintaining the adjustment

of the depending levers and the elevation of the saddle.

6. A splint of the character described comprising a saddle for application to the arm pit in a manner to supportingly receive the shoulder and having front and rear supporting pivots, anchoring supports adapted to be applied to the body of the user at front and back of the chest, a body harness for functionally affixing said supports, front and rear extension levers with ends pivotally attached to the saddle pivots, respectively, and having means for pivotal connection at different positions along their length with the said anchoring supports, and adjustable means operatively connected with the extension levers and engaging with the wearer's body at a position removed from the shoulder for sustaining the extension levers and saddle at a desired elevation.

ROGER ANDERSON.