June 25, 1957 J. BORNTRAEGER 2,796,862

SURGICAL ARM SLING

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Fig. 1.

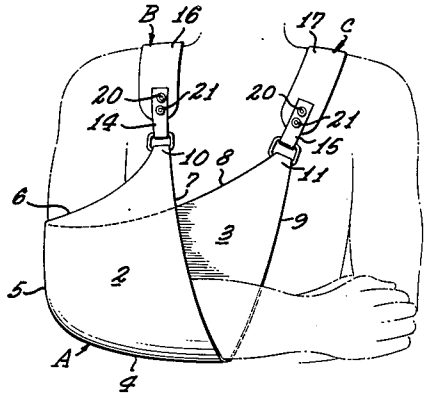


Fig. 3.

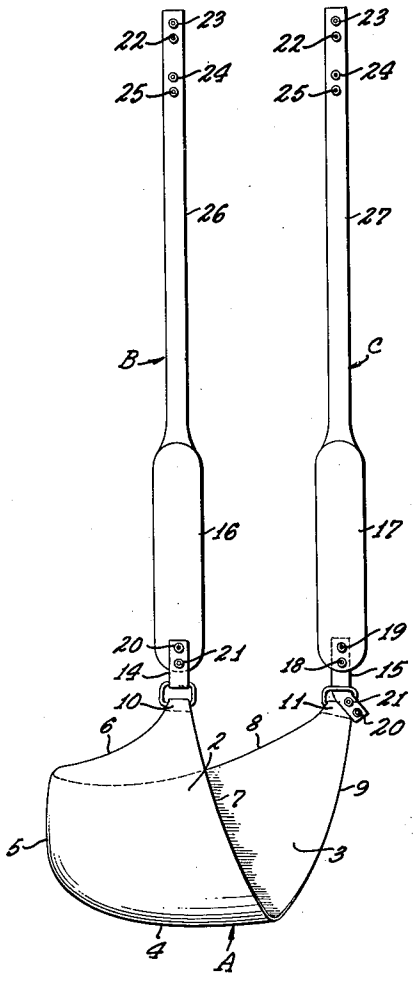
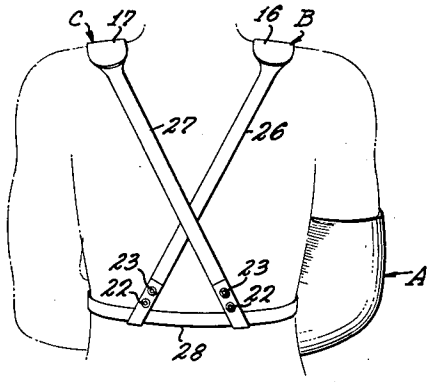


Fig. 2.



JANE BORNTRAEGER
INVENTOR.

BY Lynn & Lott

ATTORNEY.

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SURGICAL ARM SLING

Jane Borntraeger, Malibu, Calif.

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2 Claims. (Cl. 128—94)

The invention relates to a surgical arm sling of the type utilized for cradling and supporting the forearm of the wearer in a raised position.

The sling is of the type employed in cases of fractures or dislocation involving the arm. In the conventional arm sling of this type the forearm of the wearer is cradled in the body of the sling and the strap portions of the sling are encircled about the wearer's neck so that the load imposed by the weight of the forearm is borne largely by neck muscles of the wearer. The neck muscles of a person, while capable of supporting such a load, are not nearly as adequate, for performing this task as the combination of the shoulder and back muscles.

In the present invention the load imposed by the weight of the forearm is distributed substantially equally on each shoulder of the wearer and is imposed in a substantially downward direction. It is apparent that the human body is capable of supporting a much greater load when it is distributed across both shoulders and is imposed in a direction substantially vertical to the shoulders while the load (the forearm) is located in front of the person, it is none the less distributed so as to be borne by the chest, shoulder and back muscles of the wearer, substantially equally on either side of the neck, by means of a sling having supporting straps which extend over each shoulder and are anchored at their free ends to a belt encircling the body of the wearer at his waistline.

The principal object of the invention is to provide a surgical arm sling for supporting the forearm of the wearer in a raised position wherein the load imposed by the weight of the forearm is distributed over the body of the wearer in the manner in which the body is most capable of carrying such a load, thereby incurring a minimum amount of muscle fatigue. Specifically, the invention aims to provide a sling support of a character such that the neck of the wearer is relieved of the load imposed by the sling.

Another object of the invention is to provide a surgical arm sling having supporting straps, the free ends of which may be removably fastened at the back of the wearer to a belt encircling his waistline.

Another object of the invention is to provide a surgical arm sling having supporting straps which are adjustable in length to accommodate persons of varying stature.

Another object of the invention is to provide a surgical arm sling having a body portion with a pocket formed therein to support the elbow and forearm of the wearer and having tongue portions emanating from the body portion, to which supporting straps may be anchored. The tongue portions, when arranged across chest of the wearer, are spaced so as to fall on opposite sides of the chest, and when the supporting straps are fixed to the tongue portions, the load imposed by the weight of the forearm is distributed substantially equally on either side of the chest.

Another object of the invention is to provide a surgical arm sling having supporting straps which extend over each shoulder of the wearer and down his back, the free ends

of said straps being anchored to a belt encircling the wearer at his waist line; said straps being crossed at the back of the wearer to prevent the same from sliding off of the shoulders of the wearer and also to lessen to some extent the upward strain imposed at the waist region of the trousers (if the belt is serving the added function of supporting the trousers).

Other objects and advantages of the invention will be apparent from the ensuing specifications and appended drawing in which:

Fig. 1 is a front view of the upper portion of a human body with the forearm thereof cradled in the arm sling of my invention;

Fig. 2 is a rear view thereof showing the shoulder straps anchored to the belt of the wearer; and

Fig. 3 is a plan view of the sling only.

Referring to Fig. 3 the sling is comprised generally of a body portion A and supporting straps B and C. The body portion of the sling is preferably made of fabric, which may be woven from nylon or some similar material, and includes opposed side wall portions **2** and **3** which are integraly joined to each other along their lower margins to form a bottom **4** and are joined together at their upwardly projecting rear end margins to form a closed rear **5**. Thus a pocket is formed in the body of the sling having a horizontally extending bottom and a generally vertically extending rear end wall portion for supporting, respectively, the forearm and elbow of the wearer.

Side wall members **2** and **3** are of generally trapezoidal shape, having upper margins **6**, **8** which are inclined upwardly and toward the wearer's left from the closed end **5**, and meet the open end margins **7**, **9** thereof to define respective tongues **10**, **11**. The upper margin **6** of member **2** is shorter and of steeper inclination than upper margin **8** of member **3**, and the free end margin **7** of member **2** converges upwardly with relation to closed end **5**, while the free end margin **9** of member **3** diverges upwardly with relation to closed end **5**. Thus when the wearer has inserted his forearm and elbow in the sling preparatory to projecting the supporting straps over the respective shoulders (outer strap B going over the right shoulder and inner strap C going over the left shoulder), the outside tongue **10** lies against the right side of the chest and the inside tongue **11** lies against the left side of the chest so that when the straps are then projected over the respective shoulders and fastened at their ends to the wearer's belt **28**, there are no uncomfortable binding or twisting forces exerted on the sling which would tend to render same uncomfortable to the wearer.

The supporting straps B and C have flap portions **14** and **15** each of which is anchored at one of its ends to a respective shoulder pad portion **16** or **17** by means of a fastener element **18** or **19** which in addition to anchoring the flap to the pad also provides the necessary male or female element to which the alternatively male or female fastener element **20** or **21** located at the free end of the tongue may be removably secured. (In Fig. 3 the supporting strap C is shown preparatory to being fastened to the sling tongue **11**). The overall length of the supporting straps may be adjusted by utilizing only one fastening element at the free end of each flap and fastening the same to the corresponding fastener element at the end of the shoulder pad. The overall length of the supporting straps may likewise be additionally adjusted at the ends remote from the shoulder pads by selectively fastening one of the fastener elements **22** or **23** to only one of the inner fastener elements **24** or **25**.

The shoulder pads **16** and **17** may form a substantial portion of the overall length of the supporting straps and are, of course, positioned along the length of the straps so as to lay across the shoulders of the wearer whenever

the sling is installed. Each pad may be formed of some resilient material such as sponge rubber, the pad being covered with a fabric material such as woven nylon. The pads afford comfort to the wearer at the shoulders where the load is greatest.

Those portions **26** and **27** of the supporting straps which extend beyond the shoulder pads are of sufficient length to extend down the wearer's back diagonally to his waist line. The free end of each strap is then looped over and fastened to the belt which encircles the body of the wearer at his waist line. If the sling is used on a man or woman who is wearing trousers, then the free ends of the supporting straps may be looped over the belt which supports the trousers.

When the sling is installed in position on the wearer, those portions **26** and **27** of the supporting straps beyond the shoulder pads are preferably crossed at the back of the wearer and then fastened to the belt at the waistline (as shown in Fig. 2) thereby preventing any tendency of the shoulder pads to slide off the shoulders.

In the conventional type of arm sling the supporting straps are encircled directly about the neck of the wearer and the load imposed by the weight of the forearm is principally carried at the back of the neck the load being imposed in a direction which is inclined from the vertical and the load is concentrated primarily in one location at the back of the neck.

In the present invention the load which is located on the chest of the wearer above the waist line, is transmitted across the chest of the wearer and thence across each shoulder and thence down across the back to his waist line. The load is thus distributed over a large area of the body and there is no concentration of the load at any one point on the body. The back of the neck and the neck muscles are thus relieved of any necessity of carrying any of the load.

An important feature of the invention, which will be apparent from an inspection of Fig. 3, is the reversibility

of the sling. It can be applied to either arm by a simple reversal procedure.

I claim:

1. For attachment to a conventional belt encircling a human being at his (or her) waistline, the following device: a surgical sling for cradling the forearm of such human being, said sling including: a fabric panel formed to include front and rear wall portions facing each other, a web portion interconnecting said wall portions to provide a bottom on which the forearm rests and a web portion interconnecting the wall portions and the bottom at the rear ends of said wall portions to form, in conjunction with the wall portions and bottom, a pocket; each wall portion having regions wherein the side margins of such wall portion converge to form a tongue portion, one tongue portion being horizontally offset relative to the other tongue portion when the sling is in use; a fastener element fixed to each tongue portion; an elongated strap emanating from each tongue portion and removably fixed to the fastener element thereon; additional fastener elements at the free end of each strap, said straps being of sufficient length to extend one over each shoulder and then down the back of the human being so that the fastener elements at the free ends of the straps are fastened to the belt.

2. A device as set forth in claim 1 wherein a sponge rubber cushioning pad is anchored to each strap in the regions thereof which overlie the shoulders of the human being and wherein a nylon fabric covering is wrapped around each pad.

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