Sept. 10, 1963 W. SCHMIDT 3,103,215

CERVICAL BRACE

Filed June 30, 1961 2 Sheets-Sheet 1

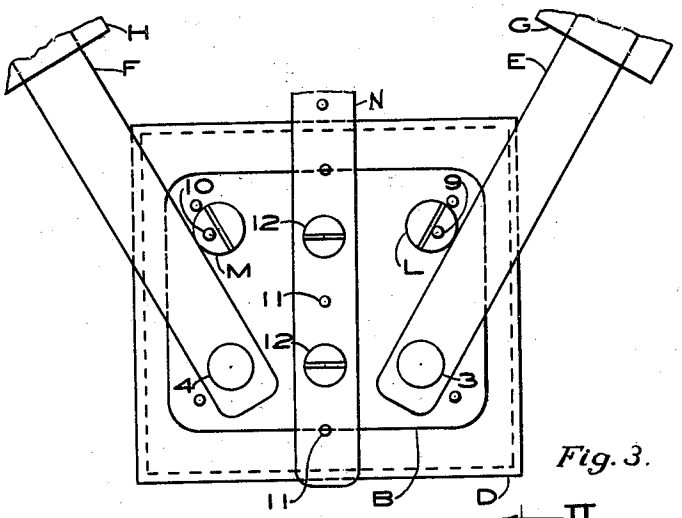


Fig. 3.

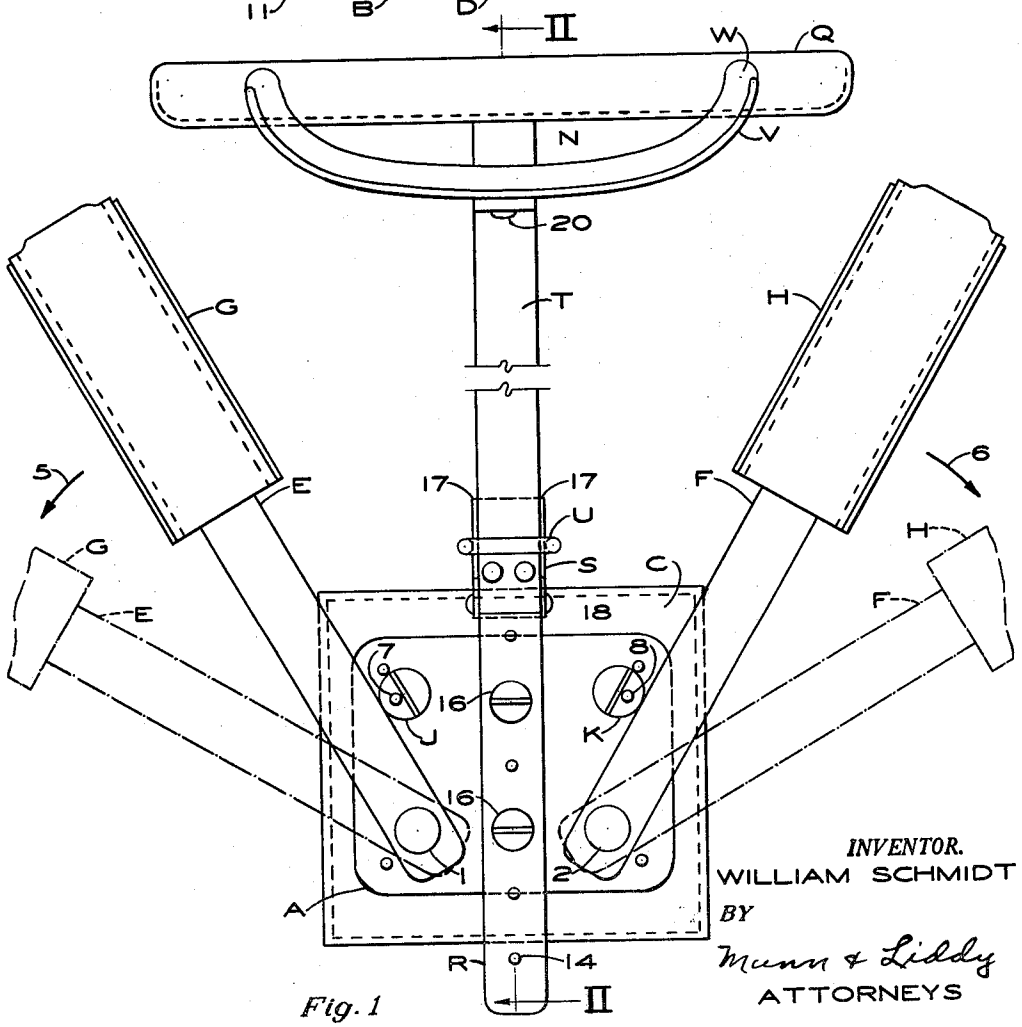


Fig. 1

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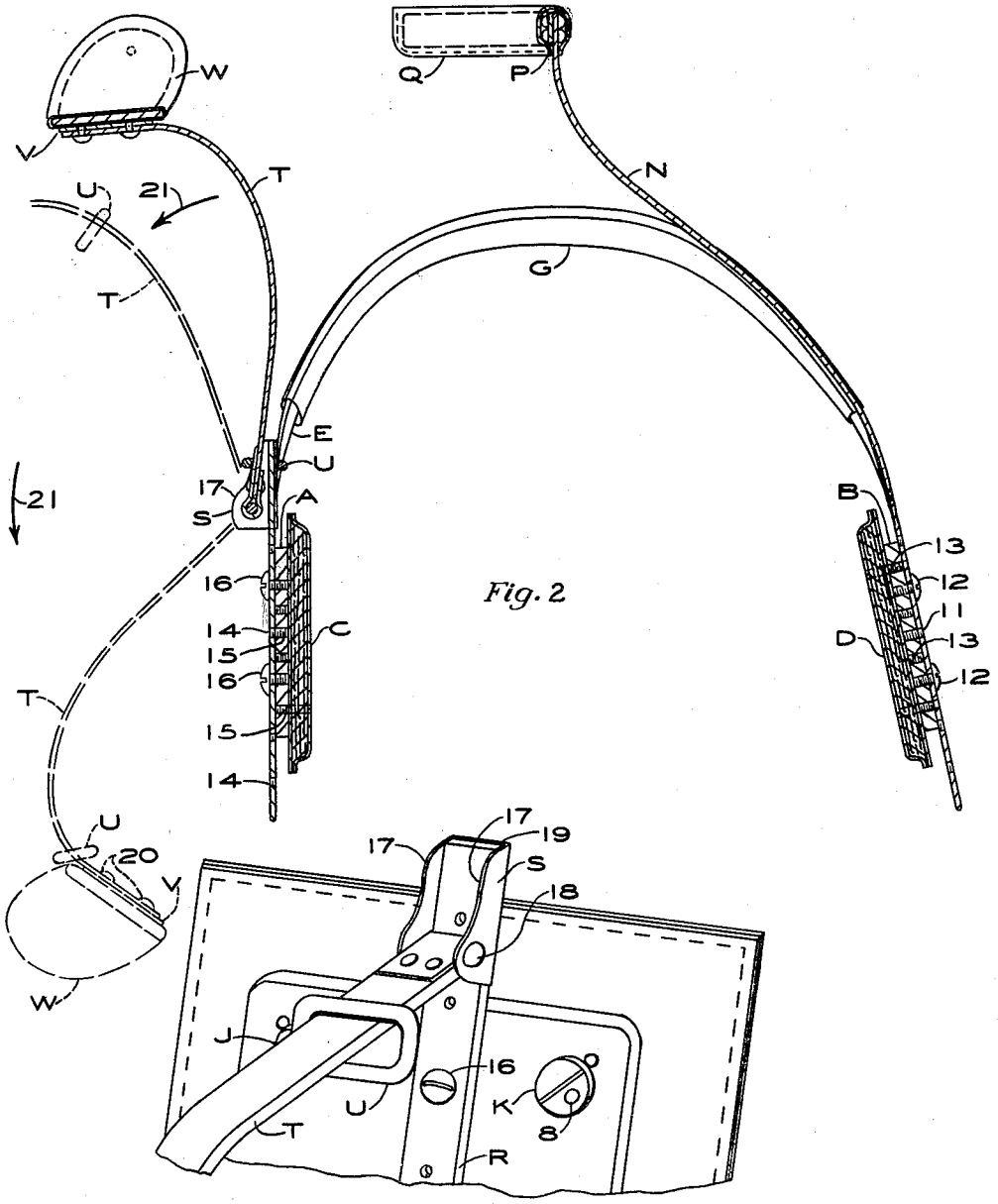


Fig. 2

Fig. 4

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CERVICAL BRACE

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The present invention relates to improvements in a cervical brace and it consists in the combinations, constructions and arrangements hereinafter described and claimed.

An object of my invention is to provide a cervical brace that is light in weight and when it is in position, there is no strain placed on the shoulders of the wearer. The device does not have to be partially taken apart when applying it in position on the wearer nor when removing it. The chin rest is supported by an arm which in turn is pivoted to the front or sternum plate of the device. Novel means is provided for supporting the arm rigidly in position for supporting the chin of the wearer. The means can be released for permitting the arm to swing into inoperative position and carry the chin rest therewith. The shoulder straps for the device have their ends pivotally connected to the sternum plate and to the rear or dorsal plate and these straps can be swung away from each other when placing the device over the head, after which they can be swung toward each other into a position where they can rest on the wearer's shoulders. Adjustable stops mounted on the front and rear plates limit the swinging movement of the shoulder braces toward each other.

A further object of my invention is to provide a device of the type described which is simple in construction and is durable and efficient for the purpose intended.

Other objects and advantages will appear as the specification continues. The novel features of the invention will be set forth in the appended claims.

Drawings

For a better understanding of my invention, reference should be had to the accompanying drawings, forming part of this specification, in which:

FIGURE 1 is a front elevation of the cervical brace;

FIGURE 2 is a transverse section and is taken along the line II—II of FIGURE 1;

FIGURE 3 is a front elevation of the rear plate; and

FIGURE 4 is a perspective view of the hinge and drop lock ring that holds the chin plate supporting arm in operative position

Detailed Description

In carrying out my invention I provide a front or sternum plate A which is preferably made of metal and is rectangular in shape with rounded corners, see FIGURE 1. I also provide a rear or dorsal plate B, see FIGURES 2 and 3. The front plate carries a padding C and this is designed to rest against the sternum portion of the body. In like manner the rear plate B has a padding D and this is designed to rest against the dorsal portion of the body.

The two plates are interconnected by curved shoulder bars E and F and these are preferably made of an aluminum alloy so as to be light in weight. In addition these bars can be curved into the desired shape and they will hold the curvature into which they have been formed. The greater portions of the bars E and F are covered with padding in the shape of a sleeve. The bar E has a sleeve-like padding G while the bar F has a sleeve-like padding H.

In FIGURE 1, I show the curved shoulder bars E and F having their ends pivotally connected at 1 and 2 to the sternum plate A. In FIGURE 3, I show the other ends of the bars E and F piovtally connected at 3 and 4

to the dorsal plate B. It is possible to swing the curved shoulder bars E and F away from each other and about their pivots as indicated by the arcuate arrows 5 and 6 in FIGURE 1. The bars can be swung into the dot-dash line positions or can be swung even further. This will permit the cervical brace to be moved downwardly over the head of the wearer. The bars E and F can then be swung toward each other until they are in proper position and then the brace can be lowered until the bars come to rest upon the shoulders of the wearer.

I provide novel adjustable stop means for limiting the swinging of the bars toward each other. In FIGURE 1, I mount eccentric discs J and K on the sternum plate and these discs are pivotally secured to the plates at 7 and 8. The eccentric discs J and K have kerfs for receiving a screw driver blade by means of which they can be rotated on their pivots into the desired positions. The pivots exert enough friction to hold the positions of the eccentric stops into the positions into which they have been rotated. The curved shoulder bars E and F can be swung toward each other until they will strike the eccentric discs and this will limit any further movement of the bars in the same direction.

In FIGURE 3, I show eccentric discs L and M and these are pivotally mounted at 9 and 10 on the dorsal plate B. Their function is to act as adjustable stops for limiting the swinging movement of the bars E and F toward each other. The discs L and M are provided with kerfs for receiving a screw driver blade by means of which the discs are rotated into the desired positions. Again the pivots 9 and 10 exert sufficient friction to hold the discs in the positions into which they have been rotated.

In FIGURES 1, 2 and 3, I show an adjustable rear upright N and this upright has a plurality of equally spaced openings 11 for receiving screws 12 which secure the upright to the dorsal plate B. The plate B has a plurality of openings 13, see FIGURE 2, which are theaded to receive the screws 12. The openings 13 are preferably spaced one-fourth of an inch apart and the openings 11 are preferably spaced one-half an inch apart. This will permit the adjustable upright N to be moved with respect to the dorsal plate B one-fourth of an inch at a time and then secured to the plate by the screws 12. I do not wish to be limited to the exact mentioned distance between the openings 13. The top of the rear adjustable upright carries an occipital supporting bar P. The bar is curved and is covered with a padding Q, see FIGURE 2. The adjustable upright N can be raised or lowered so as to bring the occipital supporting bar P against the occipital region of the head.

In FIGURES 1 and 2, I show a front adjustable upright R and this upright has openings 14 that are preferably spaced one-half an inch apart. The front or sternum plate A has openings 15 which are preferably spaced one-fourth of an inch apart and are threaded to receive screws 16.

An enlarged view of a portion of the front adjustable upright R is shown in perspective in FIGURE 4 and it will be seen that the top of the bar has a hinge member indicated generally at S. This hinge member S has side flanges 17 and a swingable arm T is pivotally mounted between the side flanges 17 by a pivot pin 18. FIGURE 4 shows the swingable arm T in an inoperative position while FIGURES 1 and 2 show the arm T in operative position. A drop lock ring U is free to slide along the arm T and when the arm is in operative position as shown in FIGURE 2, the lock ring U can be moved down over the back portion 19 of the hinge S and will secure the arm U against swinging movement. The flanges 17—17 will contact with the sides of the arm T and will prevent lateral movement of the arm with respect to the hinge.

The top of the swingable arm, see FIGURE 2, carries a chin plate V and this is secured to the arm by rivets **20** or other suitable fastening means. The chin plate carries a padding W that engages with the chin of the wearer.

Operation

From the foregoing description of the various parts of the device, the operation therefore may be readily understood. I have already explained how the curved shoulder bars E and F can be swung away from each other when mounting the device on the shoulders of the wearer. After the device has been passed over the head of the wearer, the bars E and F are moved toward each other until they strike the adjustable stops J—K, L—M and then the device is lowered into place where the paddings G and H will contact the shoulders. The adjustable eccentrics J—K and L—M have been rotated into the desired positions for stopping further movement of the bars E and F toward each other. Also the bars E and F have been shaped to conform to the curvature of the shoulders of the wearer.

Before the device can be moved downwardly over the head of the wearer, the swingable arm T must be swung into inoperative position by first lifting the drop lock ring above the hinge S and then swinging the arm in the direction of the arcuate arrow **21** in FIGURE 2. The device is now placed over the head and the bars are swung toward each other and then support the device on the shoulders. The rear adjustable upright N may be now raised or lowered until the occipital supporting bar P with its padding Q engages with the occipital region of the head. Then the rear upright may be secured to the dorsal plate B by the screws **12**. The swinging arm T is now swung into its operative position and the drop lock ring U is lowered over the hinge S and will lock the arm rigidly in place. The front adjustable upright R can be raised or lowered with respect to the sternum plate A until the chin plate V with its padding W engages with the chin of the wearer and supports the chin in the desired manner. The upright R is secured to the plate A. The device will now hold the head of the wearer in proper position. There will be little or no pressure of the bars E and F on the wearer's shoulders. The force of the chin will tend to move the plate A against the body and the force of the head on the bar P, will tend to force the plate B against the body.

If it is desired to free the chin for permitting the wearer to eat or if the wearer is a male, to permit him to shave, the drop lock ring can be raised to free the swingable arm T and permit it to swing into inoperative position. This can be accomplished without removing the brace. This is a very important feature. The swingable arm T can be moved back into position and will continue to support the head of the wearer.

It will be noted that the sternum and dorsal plates A and B do not extend in a vertical position but are

slightly inclined from the vertical with their top edges being spaced closer together than their bottom edges. I have found that when the curved shoulder bars E and F are moved away from each other to permit the cervical brace to be placed over the head of the wearer or to be removed therefrom, the bars will have a tendency to swing toward each other when freed. This will aid in holding the bars against the adjustable stops J—K and L—M. The device functions as a unit and no part of it needs to be entirely removed from the rest of the device when either mounting the cervical brace on the wearer or when removing it from him.

I claim:

1. A cervical brace comprising a front plate adapted to bear against the chest portion of the human body; a rear plate adapted to bear against the back of the body; a pair of curved shoulder bars having their ends pivotally secured to the front and rear plates and holding the plates from fulcruming on their upper edges, the bars being swingable away from each other to permit the device being placed over the head and then being swingable toward each other; adjustable stops carried by the front and rear plates for limiting the movement of the shoulder bars toward each other; an adjustable front upright adjustably carried by the front plate; a swingable arm pivoted to the upright near its upper end; the upper end of the arm supporting a chin plate; a drop lock ring carried by the arm and engageable with the upper end of the adjustable upright and with said arm for rigidly connecting the arm to the upright so that the chin plate will engage with the chin of the wearer; an adjustable rear upright adjustably carried by the rear plate; and an occipital supporting bar carried by the upper end of the rear upright.

2. The combination as set forth in claim 1: and in which the adjustable stops are in the form of eccentric discs pivotally mounted on the front and back plates and adapted to be rotated into desired positions for acting as stops for the shoulder bars and limiting the swinging movement of the bars toward each other; said adjustable stops on said front plate having their pivotal connections with said plate spaced at equal distances on each side of said adjustable front upright; and said adjustable stops on said rear plate having their pivotal connections with said plate spaced at equal distances on each side of said adjustable rear upright; whereby said stops can be adjusted so that said shoulder bars will make the desired angles with said front and rear uprights when the bars contact with said stops.

References Cited in the file of this patent

UNITED STATES PATENTS

2,721,383	Miller	Oct. 25, 1955
2,735,424	Benjamin	Feb. 21, 1956

FOREIGN PATENTS

227,677	Australia	Feb. 19, 1960