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Fig. 1

Fig. 2

Fig. 3

Fig. 4
CERVICAL COLLAR


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5 Claims. (Cl. 128—75)

This invention relates to cervical collars, and more particularly to an improved cervical collar construction characterized by features which enable the collar firmly to support the head and neck portions of a wearer. Such collars are used in the treatment of strained or arthritic necks, the treatment of "wry" necks, and in other remedial applications, as for instance neck dislocations, etc.

A primary object of the invention is to provide an improved cervical collar construction which is light and easily worn, yet which gives maximum optimum support when placed in operative position about the neck of the wearer. Thus a result, the collar may be used to provide a requisite support, without undue discomfort to the wearer.

More specifically, it is an object of the invention to provide a two-piece cervical collar construction which has a base portion for engaging the chest and upper shoulder portions of a wearer and a separate upper portion for engaging the head and mandible area of a wearer, wherein the normally relatively immobile portions of a wearer, that is, his or her chest, provides support for the collar through a chest and shoulder-engaging base piece which completely encircles the patient's neck (and is thus relatively immobile during use), and wherein the normally relatively mobile portions of the wearer, i.e., his or her head, is supported on a piece of lesser length which is secured at its ends during use in fixed position on the neck-encircling piece. The construction reduces chances of chafing and discomfort, as motion tending to result from attempted head movement is not transmitted directly to the larger, neck-encircling piece, but instead is absorbed somewhat and resisted by the upper, head-supporting piece.

Another object of the invention is to provide such a cervical collar which includes means for fixing in various adjusted positions the relative position of the ends of the head-supporting piece, whereby maximum support after adjustment is permitted each individual user. Any movement permitted the head by the collar is limited substantially to one localized area, and movement here is permitted only by reason of the flexible nature of the material making up the base and upper portions of the collar.

Still another object of the invention is to provide a cervical collar wherein a pair of primary support areas are provided which have additional means making the areas unyieldable, and wherein these support areas each have a base positioned substantially directly over the forward extremities of the clavicle of a wearer, and an upper end substantially directly under the lateral aspects of the mandible of a wearer.

These and other objects are attained by the invention, which is more fully described hereinafter in conjunction with the accompanying drawings, wherein:

Fig. 1 is a plan view of an embodiment of the cervical collar of the invention, showing the collar laid out flat and before placement of the collar in operative position about a wearer's neck;

Fig. 2 is a section view of the cervical collar shown in Fig. 1, along the line 2—2 in Fig. 1;

Fig. 3 illustrates the collar in an operative position about a wearer's neck (with the wearer in dotted outline); and

Fig. 4 illustrates a modification of the invention.

Referring now to the drawings, and more particularly to Figs. 1 and 2, 10 indicates generally a cervical collar of the type contemplated, comprising a pair of elongated sheet parts, designated at 11 and 12 respectively. Lower sheet part 11 has a longer length than upper sheet part 12, and constitutes a neck-encircling part in the device. When the collar is attached around the neck of a wearer, the left end in Fig. 1 of lower sheet part 11 overlaps slightly the right end of the sheet part. Upper sheet part 12, which constitutes a head-supporting part, does not fully encircle the neck when the collar is strapped in place but instead terminates in the vicinity of the neck near the base of a wearer's ears.

Each of the sheet parts comprises a sheet-like body portion (11a and 12a) made of stiff but flexible material. This material may take the form of a suitable plastic, which is semirigid in nature, but flexible when laid out in sheet form in a direction laterally of the faces of the sheet. Exemplary of such plastic materials are the nylon plastics or the butyrate plastics. A stiff rubber composition is also suitable, although such a composition might not be as attractive to wear due to its coloring.

The body portions of the sheet parts are covered over portions of their edges with a foam cushioning enclosed in a suitable covering. This cushioning is designated at 14 for lower sheet part 11 and 15 for upper sheet part 12.

Parts 11 and 12 are secured together at adjacent end portions by fixed pivot connections 31, 32, with the upper edge of lower part 11 overlapping the lower edge of upper part 12. Pivot connections 31, 32 take the form of rivets extending through both part layers. The pivot connections accommodate relative pivotal movement of the parts about axes normal to the plane of the part faces. However, since the connections are fixed, i.e., are secured on both parts against any lateral shifting movement, they also hold the ends of parts 11 and 12 firmly against lateral shifting.

Intermediate pivot connections 31, 32 are a pair of elongated, substantially rigid adjustment mechanisms, indicated generally at 36, 37. Each comprises an inner slide portion 38 and an outer slide portion 39.

Portions 38, 39 are maintained in an overlapped and an aligned position by a guide finger portion 41 integral with outer slide portion 39 which extends through and slides in a slot 42 formed in the inner slide portions. Guide finger portion 41 has projections 43 which underlie inner slide portion 38, and thus the guide finger is prevented from separating from portion 38. A screw 46 turned into an accommodating threaded bore provided in inner slide portion 38 and projecting outwardly through a slot 47 formed in outer slide portion 39 provides a means for fixing portions 38, 39 of the adjustment mechanism in various adjusted positions.

The upper and lower ends of each adjustment mechanism are pivotally secured, as by rivets, to the upper and lower sheet parts 11, 12, respectively. The connections are made close to the outer edges of these parts and, like connections 31, 32, are also fixed against lateral shifting movement. The adjustment mechanisms perform the double function of fixing the relative vertical positioning and providing substantial rigid support along those areas where they overlie parts 11, 12. The top and bottom ends are positioned in special locations, as discussed hereinafter, where this rigid support is most desired.
In constructing the cervical collar, the ends of the longer, lower sheet part are brought together, slightly, before attachment by rivets 31, 32 to upper sheet part 12. Further, mechanisms 36, 37 are affixed to the sheet parts by rivets 51 with portions of the sheet parts disposed outwardly of the mechanisms lying flat together. As a result, after parts 11 and 12 are assembled together, a bowed-out portion exists in the lower sheet part in the space between mechanisms 36, 37. Further, this bowed-out portion is disposed outwardly, slightly, pressing from the top edge to the bottom edge of the part. This bowed-out, flared portion is best illustrated in Fig. 2.

The collar is secured about the neck of a wearer by bringing together the outer ends of lower sheet part 11 until a snap buckle 56 carried by a strap 57 secured to one end of the part overlies a snap fastener 59 secured to the other end of the sheet part, and then snapping the buckle portion to the snap fastener. The snap buckle is adjustable longitudinally along strap 57 to enable the collar to be used with different neck sizes.

It will be noted that the lower sheet part terminates in elongated end portions 61, 62, which have substantially linear and parallel upper edges indicated at 66, 67 for end portion 61 and at 68, 69 for end portion 62. When the collar is secured in place, the lower edges engage the base of a wearer's neck and the upper edges provide occlusion edges. This support is a relatively immobile type of support, due to the fact that the lower part constitutes the neck-encircling portion of the device and when in operative position rests on the more stable chest and shoulder portions of a wearer.

The collar is positioned about the neck of a wearer, as shown in Fig. 3. When the collar ends are turned over, flexing of the collar has the effect of moving the center portion of part 11 flatly against the center of part 12, since in bending the collar the lower part is curved over a greater radius than the upper part. In operative position, the flared-out edge of part 11 curves downward over an area and a series of the extremities of a patient's clavicle, designated generally at 71.

It will be seen that in certain areas of the collar of this invention it is relatively rigid, when the collar is in operative position. These areas are along the end portions 61, 62 and along the collar, part connections 31, 32, up to where adjuster mechanisms 36, 37 are located. From pivot connections 31, 32 to where mechanisms 36, 37 are located, a rigid, triangular-shaped brace structure exists.

An important feature of the invention is the positioning of the ends of elongated brace mechanisms 36, 37. The bottom ends of mechanisms 36, 37 are closer together than the top ends. Referring to Fig. 3, when the collar is placed about a wearer's neck, the bottom ends of mechanisms 36, 37 are located substantially directly above the forward extremities of the clavicle. The upper ends of the adjuster mechanisms, on the other hand, are located directly under the lateral aspects of the mandible of the wearer. Thus, the most rigid support is provided between these locations, which is where such support is most desirable.

Fig. 4 shows a modification of the invention. In this figure, an auxiliary adjuster mechanism 76, similar in construction to mechanisms 36, 37, is provided between mechanisms 36, 37. This may be desirable in some instances when additional support is needed at center portions of the collar.

The cervical collar of the invention is relatively nominal to produce, as relatively few parts are needed in the construction and these parts are readily assembled. A few principal collar sizes may be adjusted to fit many different neck sizes. Thus, the collar may be made in a few principal sizes and then kept in stock by a seller for the particular size of all sizes.

While specific embodiments of the invention have been described herein with particularity, it is appreciated that various changes may be made in the configuration and arrangement of the various parts without departing from the invention. It is desired not to be limited to the specific embodiments shown. As included in the invention, all are modifications coming within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A cervical collar construction comprising an elongated, substantially neck-encircling part of stiff but flexible sheet material, an elongated, head-supporting part of stiff but flexible sheet material of shorter overall length than said neck-encircling part, a pair of fixed pivot connections connecting opposite end portions of said head-supporting part to opposite end portions of said neck-encircling part, said head-supporting part being spaced vertically partially above said neck-encircling part and having lower edge portions lying beside and laterally offset from upper edge portions of said neck-encircling part, and a pair of fixable adjustment means intermediate said pivot connections and spaced one from the other along the length of the collar for fixing in adjusted positions the relative vertical positioning between the two aforementioned parts, said neck-encircling part intermediate said pair of spaced adjustment means bowing outwardly and away from said head-supporting part when the head-supporting part is laid out flat and prior to positioning of the collar about the neck of a wearer.

2. A relatively sturdy and lightweight cervical collar comprising an elongated upper and an elongated lower sheet part, each of said sheet parts having a body of stiff but flexible sheet material, said sheet parts in operative position being mounted with opposite end portions of one adjacent opposite end portions of the other and with upper edge portions of the lower sheet part overlapping lower edge portions of the upper sheet part, a pair of fixed pivot connections interconnecting the two sheet parts, each interconnecting an adjacent set of end portions, and a pair of fixable adjustment means intermediate said pivot connections and spaced one from the other along the length of the collar for fixing in adjusted positions the relative vertical positioning between the two sheet parts, said lower sheet part intermediate said pair of spaced adjustment means bowing outwardly and away from said upper sheet part when the upper sheet part is laid out flat and prior to positioning of the collar in operative position about the neck of a wearer, each of said adjustment means comprising an elongated mechanism secured at top and bottom ends to said upper and lower sheet parts, respectively, said bottom ends being closer together than said upper ends, said bottom ends being adapted to be positioned in an operative position of the collar substantially directly above the forward extremities of the clavicle of a wearer, said upper ends being adapted to be positioned in an operative position of the collar directly adjacent to the lateral aspects of the mandible of a wearer.

3. A cervical collar construction comprising an elongated, substantially neck-encircling part of stiff but flexible sheet material, an elongated, head-supporting part of stiff but flexible sheet material of shorter overall length than said neck-encircling part, said parts in operative position being mounted with opposite end portions of one adjacent opposite end portions of the other and with upper edge portions of the neck-encircling part overlapping lower edge portions of the head-supporting part, said pair of pivot connections, each connecting adjacent end portions of said head-supporting and neck-encircling parts, and a pair of fixable adjustment means intermediate said pivot connections and spaced one from the other along the length of the collar for fixing in adjusted positions the relative vertical positioning between the two aforementioned parts, said neck-encircling part intermediate said pair of spaced adjustment means bowing outwardly and away from said head-supporting part when the head-supporting part is laid out flat and prior to positioning of the collar about the neck of a wearer, each of said
adjustment means comprising an elongated mechanism secured at top and bottom ends to said head-supporting and neck-encircling parts, respectively, said bottom ends being closer together than said upper ends, said bottom ends being adapted to be positioned in an operative position of the collar substantially directly above the forward extremities of the clavicle of a wearer, said upper ends being adapted to be positioned in an operative position of the collar directly adjacent to the lateral aspects of the mandible of a wearer.

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