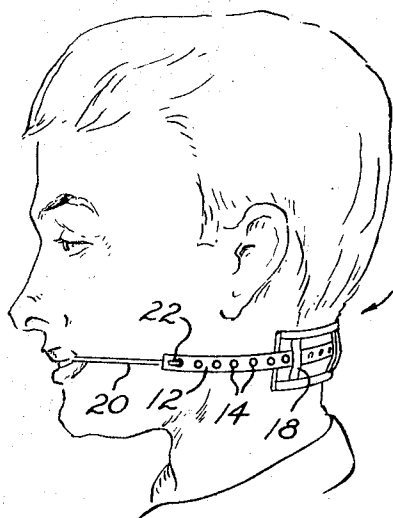


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J. J. STIFTER
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3,512,257



✓ Fig. 1

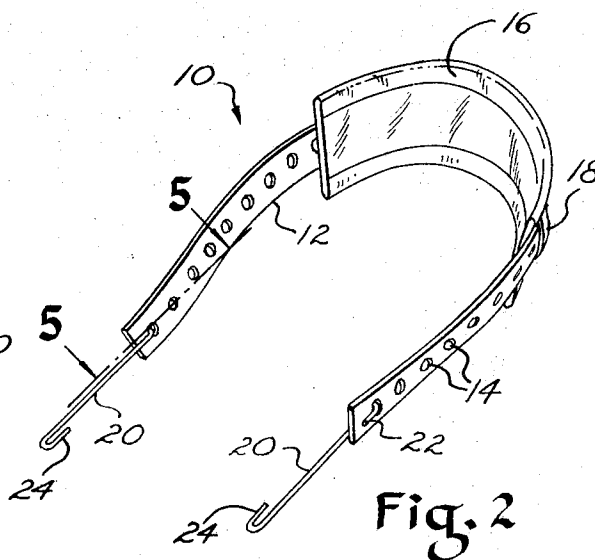


Fig. 2

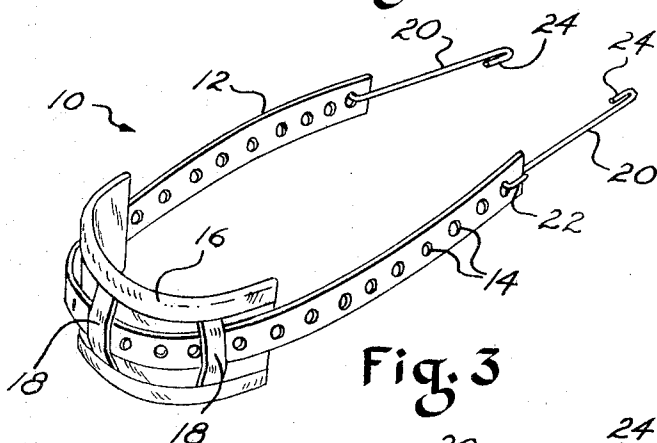


Fig. 3

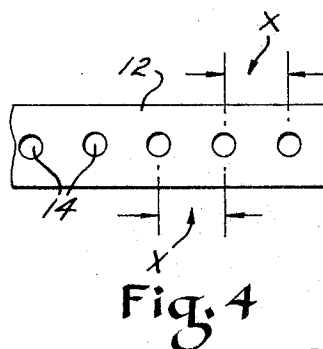


Fig. 4

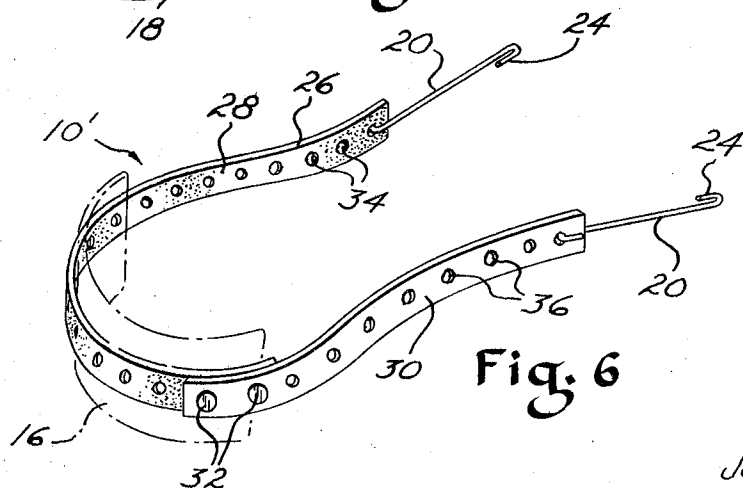


Fig. 6

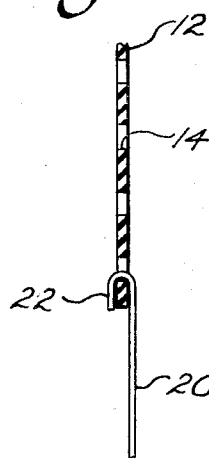


Fig. 5

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ABSTRACT OF THE DISCLOSURE

There is disclosed herein means for applying traction to the arch band of an orthodontic appliance comprising a resilient strap having spaced apertures therein, the distance between adjacent of said apertures representing a predetermined increment of traction when the strap is stretched such distance.

This invention relates to orthodontic devices and particularly relates to strap means for applying traction to an orthodontic arch band.

In devices of the type referred to which are presently being used, head gear or straps are provided which are adjustable to afford the proper tension upon the arch band. The operator of the device must rely upon his experience to determine the proper tension to be used thereby making it difficult for the orthodontist to be certain that the patient is using the device properly and can be relied upon to apply the optimum traction as required.

The primary object of the present invention is to provide an orthodontic device comprising a cervical or neck strap for applying traction to a maxillary or mandibular arch band which can be used by the patient to apply a predetermined traction to said arch band without need for adjusting the strap.

Another object of the invention is to provide a device of the type referred to having an elastic tension strap provided with a series of spaced apertures for attaching face bows thereto wherein the distance between adjacent apertures represents a known, predetermined increment of pressure to be applied to the arch band.

Still another object of the invention is to provide an orthodontic device having the features as set forth above wherein a portion of the cervical strap attached to one face bow is adapted to apply greater or lesser traction than another portion of the strap connected to the other face bow.

Yet another object of the invention is to provide an orthodontic device of the above type which can be reliably used by the patient for effecting the desired traction to the arch band.

A further object of the invention is to provide an orthodontic device of the foregoing type which is simple and uncomplicated in construction, composed of but few parts, and highly durable and reliable in use.

Other objects of the invention and the invention itself will be readily understood from the following description of the invention and the accompanying drawings, in which said drawings:

FIG. 1 is a left-hand side view of a patient's head showing the manner in which the orthodontic device of this invention is worn;

FIG. 2 is a perspective view of the orthodontic device of this invention as generally viewed from the front and left side thereof;

FIG. 3 is a perspective view of the orthodontic device of this invention as generally seen from the rear and right side thereof;

FIG. 4 is an enlarged, fragmentary detail showing a portion of the strap in plan view;

FIG. 5 is a section taken generally along the line 5-5 of FIG. 2; and

FIG. 6 is a perspective view similar to FIG. 3 showing another form of the orthodontic device of this invention.

Referring now to the drawings in all of which like parts are designated by like reference numerals, the orthodontic device of this invention is generally shown at 10 and comprises an elastic strap 12 having a plurality of evenly spaced apertures 14 therein. Intermediate the ends of the strap 12, there is provided a neck pad 16 having a plurality of retainer loops 18 on its rear surface through which the strap 12 is threaded. The distal ends of the strap 12 on either side of the neck pad 16 are provided with S-shaped hooks or face bows 20 which have oppositely and backwardly turned, substantially similar hooked end portions 22 and 24. The hooked end portions 22 turn outwardly and engage the endmost apertures 14 at either end of the elastic strap 12 whereas the hooked end portions 24 are turned inwardly and are adapted to engage an arch band or other dental appliances of any suitable type (not herein illustrated) disposed within the patient's mouth. It will be understood that the face bows 20 may be of any suitable form or length and that the same may be curved or otherwise shaped to fit the contour of the patient's face and to make the appliance more comfortable to wear.

The orthodontic device 10 is worn by a patient in the manner shown in FIG. 1 wherein the neck pad 16 is disposed at the back of the neck and the ends of the strap 12 and the associated face bows 20 project forwardly adjacent to the cheeks of said patient.

The strap 12 is preferably made of rubber or other suitable resilient material adapted to apply a predetermined amount of tension for any given amount of elongation of the strap. This factor would be known by the orthodontist and is used in the following manner: each aperture 14 is spaced from an adjacent aperture such distance as to afford a predetermined increment of pressure when the strap is stretched the distance X between said two adjacent holes (FIG. 4). The orthodontist knows what these increments of pressure are and can, therefore, utilize the strap to apply a predetermined traction to the arch band. By simple instructions to the patient, the doctor can also be certain that the proper traction is applied even when the strap is manipulated by the patient himself.

In use of the device of this invention, the orthodontist may simply cut the strap 12 whereby the endmost aperture 14 represents the desired tension point. In this manner, the patient can apply exactly the amount of pressure needed which has been determined ahead of time by the orthodontist. No further adjustment of the strap is needed, and the doctor is assured that the proper tension is being used at all times.

FIG. 6 shows a modified orthodontic device 10' which differs from the device 10 in that the strap thereof shown at 26 comprises two parts: a strap portion 28 and a strap portion 30 connected together in any suitable manner such as by rivets 32. The device 10' is preferably provided with a suitable neck pad 16, shown in broken lines in FIG. 6, and the distal ends of the strap portions 28 and 30 are provided with the face bows 20 in the same manner as that shown in the first embodiment. As herein illustrated, the strap portion 28 is the longer of the two strap portions and is provided with a plurality of evenly spaced apertures 34 similar to the apertures 14 of the device 10. The strap portion 30 is relatively shorter and is provided with suitable spaced apertures 36 which are also similar to the apertures 14. In the form of the invention illustrated, the strap portion 28 is of such material as to have a greater modulus of elasticity than the smaller strap portion 30. However, a similar affect can be obtained by making the straps of the same material and having one strap thinner or narrower than the other whereby it stretches more easily. In the form shown in FIG. 6, the

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result is that a greater pull is effected on the left side of the patient's face and, consequently, on the left side of the arch band than on the right side thereof. The strap 26 and the pad 16 press against the back and sides of the patient's neck as illustrated in FIG. 1 with sufficient frictional contact to prevent the traction on both sides of the arch band from equalizing thereby creating the effect of pulling the arch band more on one side than on the other. If desired, the strap portion 28 may be completely nonresilient whereby one face bow 20 and said strap portion 28 merely serve as anchor means effecting little pull on the left side of the arch band while the strap portion 30 effects a predetermined traction on the right side of said arch band. The device 10' is used in the same manner as that set forth in the foregoing description, the orthodontist carefully cutting the distal end portions of the strap portions 28 and 30 to the proper length and then instructing the patient as to which aperture is to be used to effect a predetermined tension upon one or both sides of the dental appliance.

From the foregoing it will be seen that the present invention provides a simple uncomplicated orthodontic device for effecting traction of a predetermined amount at one or both sides of the arch band of an orthodontic appliance. The patient is afforded simple means of properly applying the correct amount of tension as prescribed by the doctor without making adjustments to the strap portion in any manner. The strap 12 and the strap portions 28 and 30 can be made in continuous lengths whereby the orthodontist can readily fashion or construct an orthodontic device according to the present invention to suit the particular traction needs of the patient. The result is that both the doctor and the patient are assured at all times that the proper traction is being applied to the teeth according to that prescribed by the doctor.

I claim:

1. An orthodontic device for applying a known, predetermined traction to an orthodontic appliance comprising a strap adapted to engage the back of the neck and having distal end portions projecting forwardly along the sides of the face; at least one of said portions of said strap comprising resilient material having a known modulus of elasticity whereby it is adapted to apply a predetermined amount of tension for a given amount of elongation of said portion; a pair of connector means carried by said distal end portions having means for engaging the orthodontic appliance; at least said one portion having connector receiver means for engaging one of said connector means at spaced intervals along said portion the space between adjacent of said receiver means representing a known, predetermined increment of traction when said strap is stretched said distance whereby an orthodontist can prescribe a known, predetermined traction to be applied to said orthodontic appliance by prescribing the use of a selected one of said receiver means.

2. An orthodontic device as set forth in claim 1; said strap being made of a single strip of flat resilient material; said receiver means comprising means defining a plurality of apertures uniformly spaced along said strap; each said connector means having a hook shaped end portion for engaging said apertures at one end thereof and means for engaging the orthodontic appliance at the opposite end thereof.

3. An orthodontic device as set forth in claim 2; a neck pad carried by said strap intermediate the end portions thereof, said pad adapted to be worn at the back of the neck.

4. An orthodontic device as set forth in claim 1; said strap comprising two strap portions each having a dif-

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ferent, known modulus of elasticity; means connecting said portions together to form one continuous strap; said receiver means comprising means defining a plurality of apertures uniformly spaced along each said strap portion; each said connector means having a hook shaped end portion for engaging said apertures at one end thereof and means for engaging the orthodontic appliance at the opposite end thereof whereby a different traction can be applied to one side of said appliance than to the other side thereof.

5. An orthodontic device as set forth in claim 4; one of said strap portions being longer than the other whereby said longer portion substantially engages one side of the face and the back of the neck and said other portion extends substantially only along the other side of the face.

6. Cervical strap means for use in applying a known, predetermined traction to orthodontic appliance means, said strap means comprising a length of elongated resilient material having a known modulus of elasticity whereby it is adapted to apply a predetermined amount of tension for a given amount of elongation of said strap, said strap means adapted to engage the back of the neck and having distal end portions projecting forwardly along the sides of the face; means defining a plurality of apertures for engaging the appliance means uniformly spaced along said strap means, the distance between adjacent of said apertures representing a predetermined increment of traction when said strap means is stretched said distance whereby an orthodontist can prescribe a fixed, predetermined traction to be applied to said appliance means by cutting said strap means adjacent to an aperture representing the prescribed traction and instructing the patient which aperture to use for attaching the end portions of said strap means to the appliance means.

7. Cervical strap means for use in applying known, predetermined traction to orthodontic appliance means, said strap means comprising two lengths of elongated material having different, known moduli of elasticity whereby they are adapted to apply predetermined amounts of tension for given amounts of elongation thereof; means connecting the ends of said lengths together to provide a strap means adapted to engage the back of the neck and having distal end portions projecting forwardly along the sides of the face; means defining a plurality of apertures for engaging the appliance means uniformly spaced along said strap means, the distance between adjacent of said apertures representing a predetermined increment of traction for each said length when said length is stretched said distance whereby an orthodontist can prescribe a fixed, predetermined traction to be applied to either side of the appliance means by cutting said lengths adjacent to an aperture representing the prescribed traction and instructing the patient which aperture to use for attaching end portions of said strap means to the appliance means.

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ROBERT PESHOCK, Primary Examiner