Jan. 17, 1950 A. B. BRUSSE 2,494,540

TIE EYELET FOR ORTHODONTIA

Filed April 16, 1945

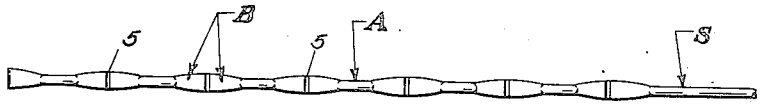


Fig. 1

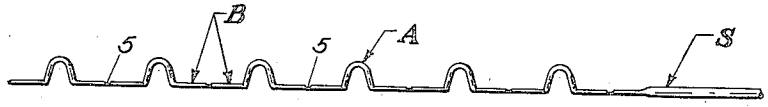


Fig. 2

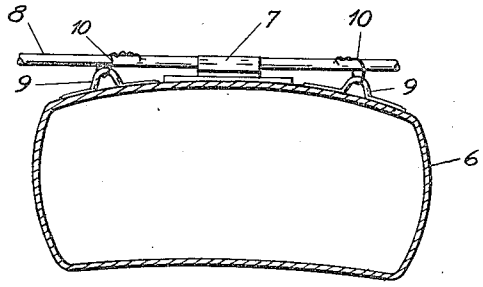


Fig. 3

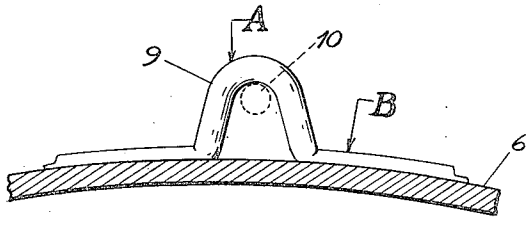


Fig. 4

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Patented Jan. 17, 1950 2,494,540

UNITED STATES PATENT OFFICE

2,494,540

TIE EYELET FOR ORTHODONTIA

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Application April 16, 1945, Serial No. 588,489

3 Claims. (Cl. 32—14)

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This invention relates to an orthodontic appliance and more particularly to a tie eyelet for use with an arch wire or bar.

One of the objects of the invention is to produce an improved tie eyelet for orthodontic work which can be readily attached to a tooth band whereby an arch wire or bar can be conveniently and securely tied thereto by a tie wire.

Another object is to so construct a tie eyelet that it can be easily and securely attached, as by welding, to a tooth band.

Still another object is to so construct a tie eyelet that it will present a smooth surface to mouth tissues and also have a smooth opening for facilitating threading of the tie wire therethrough.

A further object is to produce by simple operations an improved tie eyelet from a single piece of metal.

A still further object is to produce from a single length of round wire a strip of serially arranged improved tie eyelets which are so joined together that each eyelet may be attached to a tooth band while still a part of the strip and then readily detached from the other eyelets forming the strip.

A further object is to so produce an eyelet from a single metal piece that the arched part which receives the tie wire will be rounded for strength and smoothness and the attaching flanges will be flat for efficient and easy welding to the tooth band.

Other objects of this invention will become apparent from the following description taken in connection with the accompanying drawings.

In the drawings:

Figure 1 is a top view of a strip of serially arranged eyelets embodying my invention;

Figure 2 is a side view of the strip shown in Figure 1;

Figure 3 is a view showing two eyelets attached to a tooth band on opposite sides of a bracket and having tied thereto the arch wire; and

Figure 4 is an enlarged view of a single eyelet as welded to a tooth band.

Referring to the drawings in detail, and first to Figures 1 and 2, there is disclosed a strip comprising a series of tie eyelets which are made from a single round metal wire which is preferably of stainless steel, although any other metal or material may be used when found suitable. The strip is indicated by the letter S. In order to form the eyelets of the strip the round wire is provided with a series of arches indicated at A, these arches being equally spaced apart and in the general form of a U. The wire from which the arches

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are made is not deformed in any way and thus these arches will have a round cross section, with all surfaces thereof being curved and smooth.

The portions of wire between the arches are deformed by being flattened in order to provide flat surfaced attaching flanges for each arch as will become apparent. These intermediate connecting portions between each pair of arches is scored substantially centrally as indicated at 5, the scoring comprising nothing more than the provision of a transverse groove in the top surface, that is, the surface on the side of the arch. The result will be that this scoring will produce from the intermediate portions between the arches base or flange portions indicated at B for each arch. The flanges B for each arch extend in opposite directions from the legs of such arch.

The series of tie eyelets, as shown in Figures 1 and 2, and comprising a single strip and are thus ready for orthodontic use and in a condition in which they can be easily and conveniently applied to a tooth band. In making the strip a portion of the wire from which the eyelets are formed is left at one end in its unworked round form to thus provide a convenient handle for the series, as shown in Figures 1 and 2, and thereby facilitate attaching of the eyelets to the band. It will be particularly noted the eyelets are formed by simple steps comprising bending, stamping and scoring, some or all of which may be combined.

An example of the manner in which an eyelet is used is shown in Figures 3 and 4. In Figure 3 there is shown a tooth band 6 made of suitable metal and is employed to encircle a tooth. On the exterior side of this band there is shown secured thereto any suitable channel bracket 7 which is employed to support the arch wire 8 all in a well known manner. This arch wire extends around the front of the teeth and has its ends attached to suitable rear teeth or molars of the human dental arch by the use of other tooth bands and appliances. The tie eyelets which embody my invention are employed in tying the arch wire to the tooth band and as shown in Figure 3 two tie eyelets 9 are welded or otherwise secured to the tooth band on opposite sides of the channel bracket 7. Tie wires 10 are then employed to firmly connect the arch wire to the tie eyelet. These tie wires are passed through the arch portion of the tie eyelet and then around the arch wire after which the ends are twisted together, as shown. Thus it is seen that the arch wire will be connected to the tooth band 6 on opposite sides of the supporting bracket 7 in a firm manner.

As is clearly shown in the enlarged view of Figure 4, each tie eyelet 9 is so constructed that it can be easily and efficiently secured to the tooth band 6. The flange portions which extend from opposite sides of the legs of the arch portion present flat surfaces which can be easily and rigidly welded to the flat surface of the tooth band. In making this attachment the end eyelet of the strip opposite the handle end will be the one used. It is held in the desired position by employing the handle at the opposite end of the strip S, said handle as previously mentioned being an unworked piece of the wire from which the series of eyelets are made. With the end eyelet so held the flange portions B can be quickly welded to the tooth band 6. After the welding is accomplished the unused eyelets of the strip are disconnected from the attached eyelet by merely bending the strip at the particular score 5 adjacent the welded eyelet. Because of the scoring the unwelded series of eyelets will readily "break off" from the attached eyelet.

The rounded arch portion B of each eyelet gives considerable strength to the tie eyelet and also presents a smooth surface to the eye through which the tie wire 10 can be easily inserted. The curved surface of the arch portion also insures that there will be presented to the mouth tissues a smooth surface which will not cause injuries and will be reasonably comfortable. The attaching flanges are thin and thus will not present any appreciable raised surface on the tooth band. The ends of the flanges, as shaped by the scoring, present a beveled surface sloping toward the tooth band surface thus keeping roughness to a minimum.

Being aware of the possibility of modifications in the particular tie eyelet shown and described, I do not intend that the scope of the invention embodied therein be limited in any way except in accordance with the appended claims.

What is claimed is:

1. An orthodontic tie eyelet formed from round stainless steel wire for attachment to a toothband, said eyelet comprising an arch having a circular crown and divergent legs, said crown and legs being of round cross section, and a thin flattened flange integrally formed from said wire and extending outwardly from the end of each of said legs, said flanges increasing in width toward their outer extremities, said extremities being further decreased in thickness less than half the thickness of the inner portions of said flanges.

2. A device for orthodontic use formed from round stainless steel wire comprising a plurality of connected tie eyelets and a straight handle portion connected to the end eyelets, each of said eyelets having an arch formed with a circular crown and divergent legs, said crown and legs being of round cross section, a plurality of thin flattened connecting portions integrally formed between the ends of adjacent legs and between said handle and end eyelet, said portions having convex opposite edges, a transverse band extending across the intermediate and widest part of each of said connecting portions, and said band being of a decreased thickness less than half the thickness of the rest of said connecting portions.

3. The combination with a toothband of a bracket having a channel extending longitudinally of said band, eyelets on said band adjacent each end of said channel, each of said eyelets having an arch secured to said band by flattened flanges extending outwardly from both ends of said arch, an arch wire extending through said channel and over said eyelets, and tire wires extending through each of said eyelets and around said arch wire.

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