Sept. 25, 1962 H. D. KESLING 3,055,111

BUCCAL SHEATH

Filed April 21, 1959

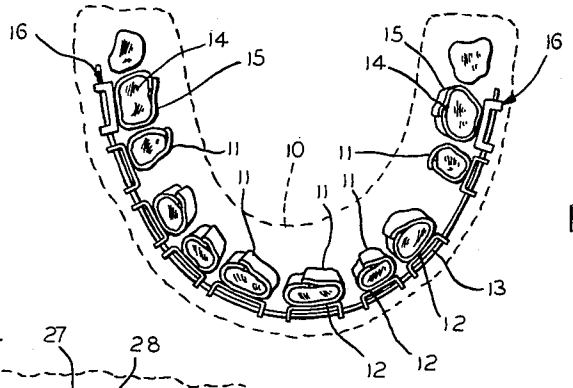


FIG. 1

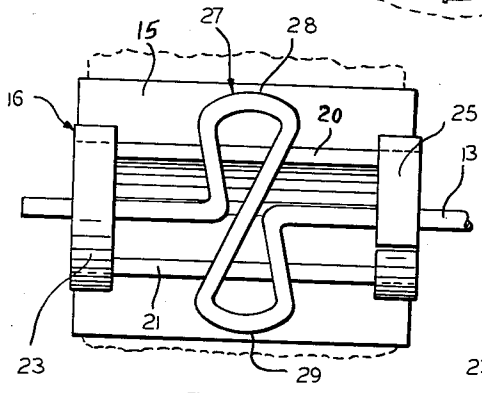


FIG. 2

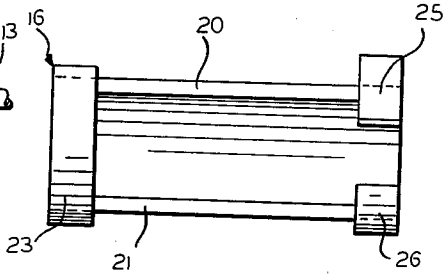


FIG. 3

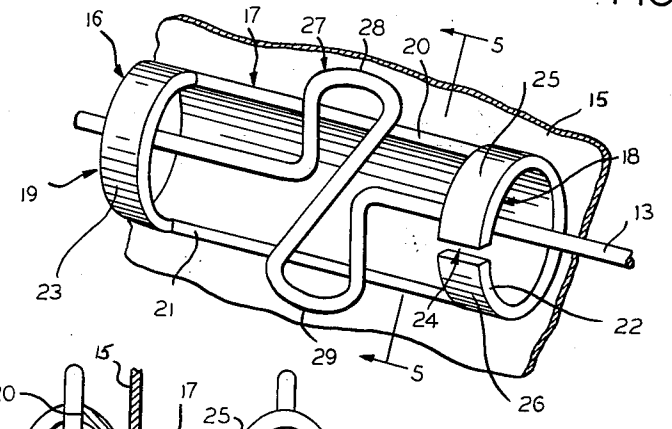


FIG. 4

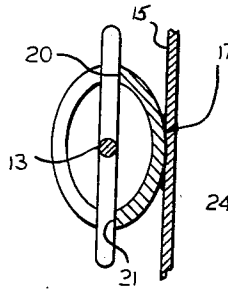


FIG. 5

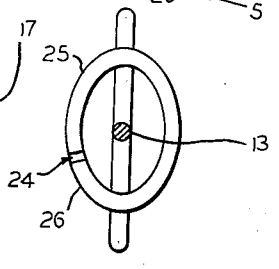


FIG. 6

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BUCCAL SHEATH

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This invention relates to apparatus employed in orthodontics, and more particularly to buccal sheaths, and still more particularly to the combination of a buccal sheath and arch wire for controlling torque on the anchor tooth.

The practice of orthodontics is primarily concerned with the straightening of teeth, wherein an arch wire is secured to selected teeth of a dental arch. The opposite ends of the wire are normally retained to anchor teeth. Generally, the anchor teeth are molars near the back of the dental arch. Inasmuch as the molar or anchor teeth serve to retain the ends of the anchor wire, forces are transmitted to these teeth, some of which may be undesirable and tend to malposition the teeth.

Accordingly, it is an object of this invention to solve the above problem and obviate the difficulties heretofore encountered, and provide a new and improved buccal sheath for retaining the ends of the arch wire.

Another object of this invention resides in the provision of a buccal sheath adapted to be secured to an anchor tooth and for retaining an end of an arch wire which may function to control torque on the anchor tooth.

A further object of this invention is in the provision of a buccal sheath in combination with means provided on the arch wire for controlling the torque on the tooth supporting the buccal sheath.

A still further object of this invention is to provide, in combination with a buccal sheath secured to anchor teeth of a dental arch, loops in the arch wire coacting with the buccal sheath to control the torque on the anchor teeth.

Other objects, features, and advantages of the invention will be apparent from the following detailed disclosure, taken in conjunction with the accompanying sheet of drawings, wherein like reference numerals refer to like parts, in which:

FIG. 1 is a plan view of a dental arch having an arch wire secured thereto, and illustrating use of buccal sheaths in accordance with the present invention;

FIG. 2 is an enlarged front elevational view of a buccal sheath according to the invention, and illustrating how the arch wire is formed to coact with the buccal sheath;

FIG. 3 is a front elevational view of a buccal sheath according to the invention and illustrating how the forward or mesial loop may be opened to laterally receive the arch wire;

FIG. 4 is a perspective view of the embodiment of FIGS. 2 and 3, and illustrating the position of the arch wire;

FIG. 5 is a sectional view, taken substantially along line 5—5 of FIG. 4; and

FIG. 6 is an end elevational view of the buccal sheath looking toward the mesial end thereof.

Referring now to the drawings, and particularly to FIG. 1, a dental arch **10** is shown including a plurality of teeth having the conventional type teeth bands **11** secured thereto in any suitable manner such as by use of cement. Each of the teeth bands **11** has suitably secured to its labial or buccal side arch wire supporting members **12** for receiving and connecting an arch wire **13** to the teeth.

As is generally conventional, the opposite ends of the arch wire **13** are preferably retained by anchor teeth **14**. In this instance, the anchor teeth are molar teeth and have conventional teeth bands **15** suitably secured thereto and supporting buccal sheaths **16** according to the invention.

Each buccal sheath **16** includes generally a mesial-distally extending elongated plate **17** having a loop **18** at the mesial end and a loop **19** at the distal end thereof, the loops receiving the arch wire **13**.

The plate **17** which extends longitudinally of the dental arch is concavo-convex in shape with the convex side thereof facing the buccal side of the anchor tooth. Preferably, the backing plate is semi-oval in shape. Parallel spaced mesial-distally extending wire control bars **20** and **21** are carried on the plate **17**, which are also spaced buccally of the anchor tooth. In this instance, the wire control bars **20** and **21** are integral with the plate **17**.

The loops **18** and **19** are defined partly by end portions of the plate **17** and partly by convexo-concave sections **22** and **23** formed integrally with the plate **17**. The sections **22** and **23** thereby define wire holding straps at the mesial and distal ends of the sheath. Preferably, the straps are semi-oval in shape, whereby looking at one end of the buccal sheath gives the effect of looking at a somewhat flattened tube. The distal strap **23** is continuous, but the mesial strap **22** is longitudinally slit at **24** to define upper and lower portions **25** and **26**. Either the upper or lower portion may be bent back to provide access for laterally receiving the arch wire **13** when mounting the arch wire on the buccal sheath. Then the portion may be bent back into its original position to retain the arch wire in position. The longitudinally extending slit **24** may be provided at any location along the strap **22**, but preferably more closely to the gingival end thereof.

The arch wire **13** is provided with means coacting with the buccal sheath to control the torque on the anchor tooth in the way of a double loop **27**, including upper and lower loops **28** and **29**. The double loop **27** extends occlusal-gingivally between the biting surface of the teeth and the gum, and is of such a dimension to extend occlusally beyond the upper wire control bar **20** and gingivally beyond the lower wire control bar **21**, whereby the loops **28** and **29** may respectively engage the wire control bars **20** and **21** to control the torque on the anchor tooth. The double loop **27** is thus slidably arranged against the wire control bars **20** and **21** between the mesial and distal straps **22** and **23**. The part of the arch wire **13** extending mesially from the double loop **27** is thus retained by the mesial strap **22**, while a part of the wire extending distally of the double loop **27** is retained by the distal strap **23**. The loops **28** and **29** may be formed in the arch wire **13** in order to selectively control the torquing of the anchor tooth.

In mounting the double loop **27** and the arch wire to the buccal sheath, the very end of the arch wire extending distally of the double loop may first be inserted in the distal loop **19**, and with a portion of the mesial strap **22** bent to permit insertion of the portion of the arch wire **13** mesial to the double loop **27** into the mesial loop **18**. Then replacing of the bent portion of the mesial strap **22** functions to retain the portion of the arch wire **13** mesial to the double loop **27** at the mesial end of the buccal sheath. During the tenure of the straightening process, the double loop **27** is permitted to slide back and forth or in one direction between the mesial and distal loops **18** and **19** of the buccal sheath, and the loops **28** and **29** coact with the wire control bars **20** and **21** to control the torque of the anchor tooth.

The buccal sheath may be constructed in any desirable manner, such as by providing a somewhat flattened tube, and milling the central portion away on the buccal side, and slitting the loop at the mesial end of the sheath. Alternatively, the buccal sheath may be formed from a stamped blank wherein it would be shaped as shown. In the latter instance, both the mesial and distal straps would be slit, although this would not be necessary.

It will be understood that modifications and variations

may be effected without departing from the scope of the novel concepts of the present invention, but it is understood that this application is to be limited only by the scope of the appended claims.

The invention is hereby claimed as follows:

1. A buccal sheath adapted to be secured to a tooth mounted band comprising, an elongated plate extending mesial-distally of an anchor tooth, and a pair of closed loops mounted at opposite ends of said plate for receiving an arch wire, said loop at one end being cut mesial-distally to permit one portion thereof to be bent back for laterally receiving the arch wire in the loop.

2. A buccal sheath adapted to be secured to a tooth mounted band comprising, an elongated plate extending mesial-distally of an anchor tooth, and a pair of closed loops mounted at opposite ends of said plate for receiving an arch wire, said loop at the mesial end being cut mesial-distally to permit one portion thereof to be bent back for laterally receiving the arch wire in the loop.

3. A buccal sheath adapted to be secured to a tooth mounted band comprising, an elongated plate extending mesial-distally of an anchor tooth, and a pair of closed loops mounted at opposite ends of said plate for receiving an arch wire, said loop at the mesial end being cut mesial-distally to permit one portion thereof to be bent back for laterally receiving the arch wire in the loop, and a pair of mesial-distally extending parallel wire control bars spaced buccally from the band between said loops.

4. A buccal sheath adapted to be secured to a tooth mounted band comprising, an elongated concavo-convex plate extending mesial-distally of an anchor tooth, the convex side of said plate facing the tooth, and a convexo-concave wire retaining strap at each end of the plate for retaining the wire thereto, the opposite ends of each strap being secured to said plate, said strap at the mesial end of the plate being cut mesial-distally to permit one portion thereof to be bent back for permitting lateral reception of the wire.

5. A buccal sheath adapted to be secured to a tooth mounted band comprising, an elongated concavo-convex plate extending mesial-distally of an anchor tooth, the convex side of said plate facing the tooth, and a convexo-concave wire retaining strap mounted at each end of the plate for retaining the wire thereto, said strap at the mesial end of the plate being cut mesial-distally to permit one portion thereof to be bent back for permitting lateral reception of the wire, the upper and lower edges of the plate defining wire control bars spaced from the band.

6. In combination with an arch wire, a buccal sheath adapted to be mounted buccally of an anchor tooth, said sheath comprising an elongated plate extending mesial-distally, a pair of loops at opposite ends of said plate for retention of the arch wire, a pair of spaced mesial-distally extending wire control bars between said loops, and a double loop in said wire extending occlusal-gingivally and slidably engaging at least one of said wire control bars to control torque on said tooth.

7. In combination with an arch wire, a buccal sheath adapted to be mounted buccally of an anchor tooth, an elongated concavo-convex plate extending mesial-distally, the convex side of said plate facing the tooth, a convexo-concave wire retaining strap mounted at each end of the plate for retention of the arch wire, the upper and lower edges of said plate defining wire control bars spaced buccally of said tooth, and a double loop in said wire extending occlusal-gingivally between said straps and slidably engaging at least one of said wire control bars to control torque on said tooth.

8. The combination of claim 7, wherein the mesial strap is cut mesial-distally to permit one portion thereof to be bent back for laterally receiving the arch wire between the strap and plate.

9. In combination with an arch wire, a buccal sheath adapted to be mounted bucally of an anchor tooth, said sheath comprising an elongated plate extending mesial-distally, a pair of loops at opposite ends of said plate for retention of the arch wire, a pair of spaced mesial-distally extending wire control bars between said loops, and means carried by said wire between said loops engaging at least one of said wire control bars to control torque on said tooth.

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