May 26, 1964 S. J. KESSLER 3,134,171

ORTHODONTIC ASSEMBLY

Filed June 7, 1962

FIG. 1

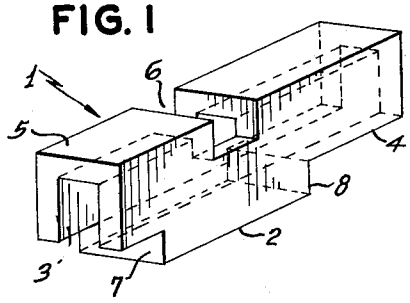



FIG. 2

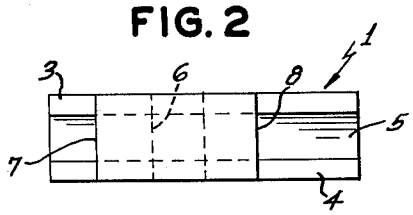



FIG. 3

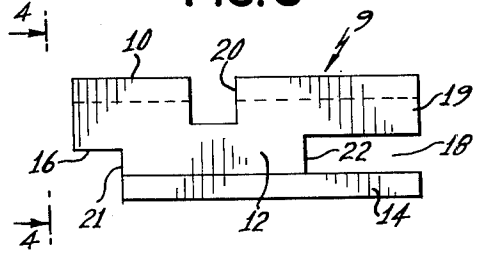



FIG. 4

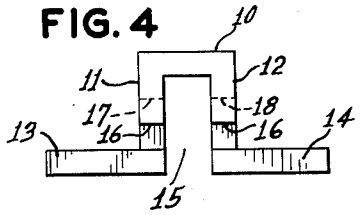



FIG. 5

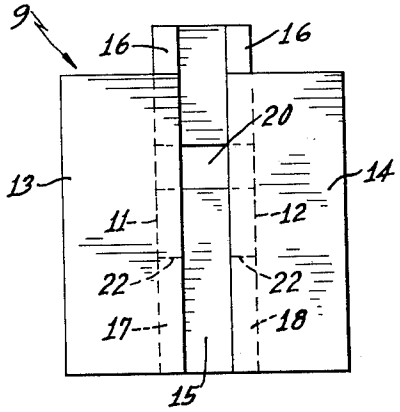



FIG. 7

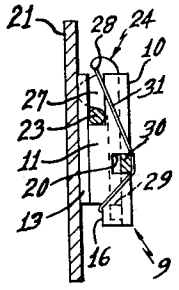



FIG. 8

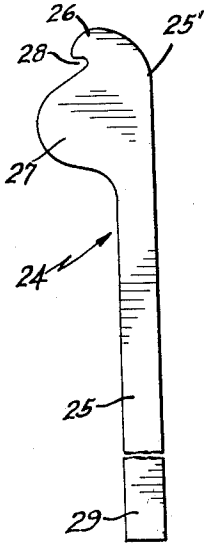
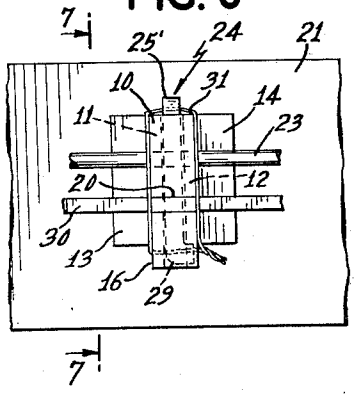



FIG. 6




INVENTOR.
SOLOMON J. KESSLER

BY John McFarlich, Agent
Samuel Kohn

ATTORNEY

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# ORTHODONTIC ASSEMBLY

Solomon J. Kessler, Newark, N.J., assignor to Engelhard Industries, Inc., Newark, N.J., a corporation of Delaware

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The present invention deals with an orthodontic device and more particularly with an orthodontic bracket.

Orthodontic brackets of various constructions are used in conjunction with arch bow wires for the correction of irregular teeth. Some bracket constructions comprise a somewhat elongated generally U-shaped body having a central transverse slot into which an arch bow is positioned and secured thereby by means of a ligature wire in accordance with known practice. Other U-shaped bracket constructions eliminate the transverse slot and utilize a lock pin passing through the bracket longitudinally thereof to secure an arch bow at one end of the bracket.

The present invention contemplates a bracket construction whereby an arch bow may be secured by a lock pin or by a ligature wire, or whereby two arch bows may be employed simultaneously with one secured by a ligature wire and the other by a lock pin.

It is an object of the invention to provide an improved orthodontic bracket.

It is another object of the present invention to provide an orthodontic bracket adapted to accommodate a plurality of arch bows which are secured to the bracket both by a lock pin and a ligature wire or to selectively accommodate a single arch bow secured to the bracket by means of either a lock pin or a ligature wire.

Other objects of the invention will become apparent from the description hereinafter following and the drawings forming a part hereof, in which:

FIGURE 1 illustrates an isometric view of an orthodontic bracket according to the invention,

FIGURE 2 illustrates a bottom view of FIGURE 1,

FIGURE 3 illustrates an elevational side view of a modified orthodontic bracket according to the invention,

FIGURE 4 illustrates an end view along lines 4—4 of FIGURE 3,

FIGURE 5 illustrates a bottom view of FIGURE 3,

FIGURE 6 illustrates a top view of the bracket including a portion of a tooth band on which it is mounted and including portions of arch bows secured to the bracket,

FIGURE 7 illustrates partly cross-sectional and partly elevational side views along lines 7—7 of FIGURE 6, and

FIGURE 8 illustrates an elevational side view of a lock pin according to the invention.

Referring to FIGURES 1 and 2, one form of bracket according to the invention is in the form of a generally tubular member **1** of rectangular cross-section having an overall height of 0.060", an overall width of 0.050" a length of 0.125", and wall thicknesses of 0.018". The bottom wall **2** is cut-away longitudinally from one end of tube **1** for a distance of 0.025" and for a distance of 0.040" from the other end to provide inverted U-shaped extensions **3** and **4** from the remaining bottom wall **2**, as particularly illustrated by FIGURE 2. It is essential that one of the extensions **3** and **4** is longer than the other, e.g., extension **4** is longer than extension **3** for the purpose hereinafter more particularly described. The top wall **5** is provided with a transverse slot **6** through the thickness thereof and to a depth of substantially one-half the height of the tube **1**. Particularly, the slot is located centrally of the ends **7** and **8** of the remaining bottom wall **2**. Preferably, the surface of the bottom wall **2** is provided with a layer of solder or brazing alloy (not shown) for subsequent soldering or welding the bottom **2** to a tooth band. Alternatively, the tube **1** may be spot-welded to a tooth band.



FIGURES 3, 4 and 5 illustrate a modified form of orthodontic bracket in the form of an elongated inverted U-shaped member **9**. The U-shaped bracket comprises a top wall **10**, side walls **11** and **12** and flanges **13** and **14** extending laterally of the bottom of the side walls **11** and **12**, respectively, and the flanges extending in opposite directions relative to each other, thereby providing an open channel **15** longitudinally of the bracket and co-extensive with the length thereof. The flanges and a portion of the side walls of the bracket are cut-away from one end of the bracket to provide a U-shaped extension **16** extending longitudinally outwardly of the flanges **13** and **14**. The other end of the bracket is provided with longitudinal slots **17** and **18** in the sides **11** and **12**, respectively, and adjacent the flanges **13** and **14**, thereby providing a U-shaped extension **19** extending from the side walls. The extension **19** is of greater length than the extension **16** and substantially corresponds with the dimensions of the extensions **3** and **4** of FIGURES 1 and 2. The top wall **10** is provided with a transverse slot **20** through the thickness thereof and to a depth substantially one-half the height of the side walls. The slot **20** is located centrally of the ends **21** and **22** of the side walls **11** and **12**.

Regarding FIGURES 6, 7 and 8, the bracket **9** illustrated by FIGURES 3, 4 and 5 is mounted on a tooth band **21** by welding or brazing the flanges **13** and **14** to the tooth band. The bracket is mounted with the longer extension **19** uppermost and the shorter extension **16** lowermost. A round arch bow wire **23** is mounted in the slots **17** and **18** in abutment with the ends **22** of side walls **11** and **12** and transversely of the bracket **9**. A lock pin **24**, as particularly illustrated by FIGURE 8, is inserted into channel **15** with its shank **25** passing through the channel and extending axially beyond the bracket and its enlarged head **25'** overlying the arch bow wire **23** to maintain it in locked position. The lock pin is of rectangular cross section and the enlarged head extends laterally of the lock pin longitudinal axis. The head is provided with an upper lobe **26**, a lower lobe **27** and a notch **28** between the lobes. The lower lobe extends outwardly of the upper lobe and the bottom surface of the lower lobe contacts the arch bow wire. Having mounted the lock pin over the arch bow wire **23**, the depending end portion **29** is cut and bent and forced into position beneath the lower extension **16**, which is undercut to a sufficient depth to accommodate the thickness of the lock pin shank **25**. Having so secured the round arch bow wire **23**, a second arch bow wire **30**, of rectangular cross section, is mounted into transverse slot **20**. A ligature wire **31** is mounted in notch **28** of lock pin head **25'** and passes downwardly therefrom along both sides, over the arch bow **30** and its ends are tied at the bottom of the bracket as illustrated by FIGURES 6 and 7. While the bracket is illustrated in connection with two arch bow wires, either arch bow wire may be employed without the other. Should the arch bow **30** be employed alone, the lock pin may be eliminated and the ligature wire may be positioned beneath the extensions **16** and **19** and tied accordingly.

Various modifications are contemplated within the scope of the appended claims.

What is claimed is:

1. An orthodontic assembly comprising an elongated member of rectangular cross-section having a channel longitudinally therethrough, one side of the elongated member being cut-away longitudinally from both ends of the elongated member to form a body portion having U-shaped extensions axially thereof, one of the extensions being longer than the other, a transverse slot across the body portion intermediate the extensions through a side opposite the said one side, a tooth band, the bracket being

mounted on the tooth band with the cut-away side facing in the direction of the tooth band, a mesial-distal extending arch wire mounted in the slot, a lock pin comprising a head member and an elongated shank extending therefrom, the head member extending laterally of the shank axis, an upper and lower lobe on the lock pin head with a notch therebetween, the lower lobe extending laterally of the shank axis beyond the upper lobe, the lock pin being mounted in said bracket with the head adjacent the longer extension and the shank passing through the longitudinal channel of the bracket, a ligature wire seated in said lock pin head notch, passing over the arch wire, and tied adjacent the other extension.



2. An orthodontic assembly according to claim 1 comprising a second mesial-distal extending arch wire mounted between the lock pin head and the body portion of the bracket.

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