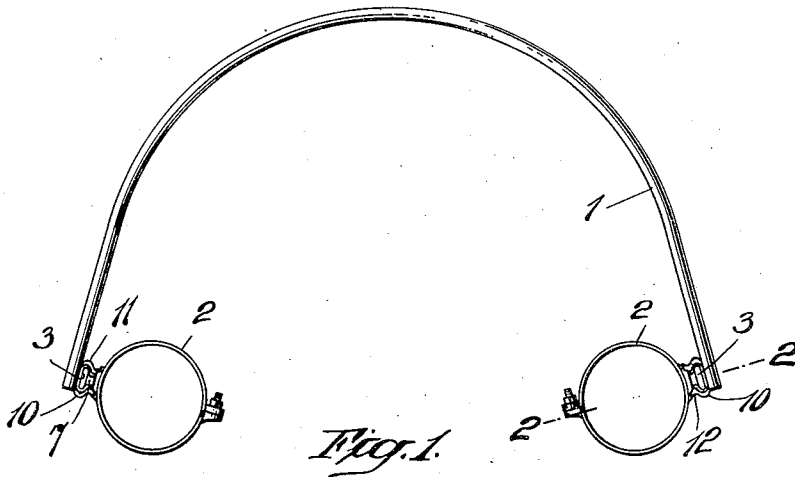
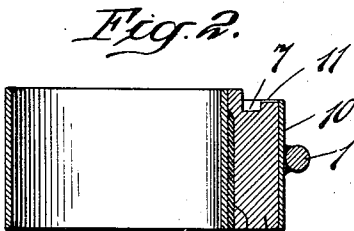
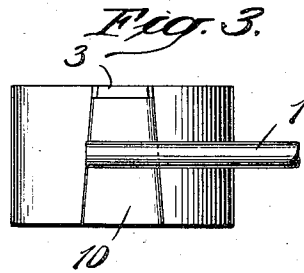
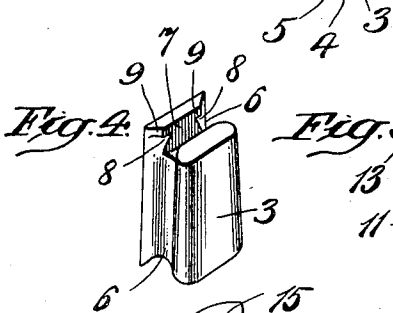
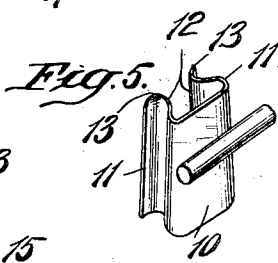
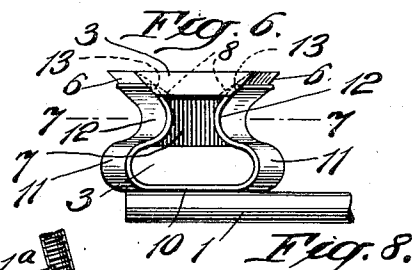
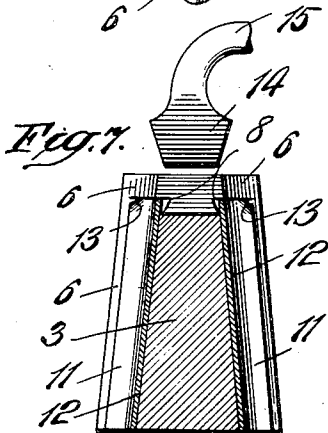
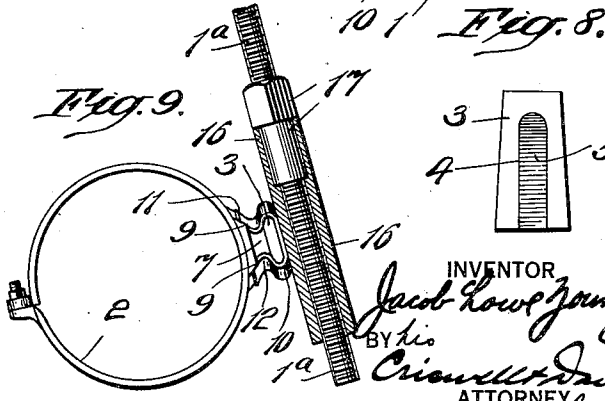
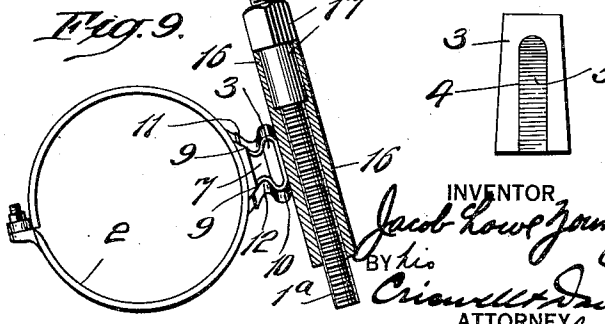


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ORTHODONTIA APPLIANCE.
APPLICATION FILED JULY 5, 1918.

1,304,722.

Patented May 27, 1919.



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ORTHODONTIA APPLIANCE.

1,304,722.

Specification of Letters Patent.

Patented May 27, 1919.

Application filed July 5, 1918. Serial No. 243,352.

To all whom it may concern:

Be it known that I, JACOB LOWE YOUNG, a citizen of the United States, and resident of New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Orthodontia Appliances, (Case 3,) of which the following is a specification.

This invention relates to improvements in orthodontia appliances or tooth-regulating and retaining appliances of the arch-wire type.

The present invention has for one of its objects the provision of efficient means for detachably locking the arch wire or delivery member to the anchor teeth and the malposed teeth.

Another object is to provide detachably interlocked means adapted for use with either an inside or outside arch wire for positively locking the arch wire to the anchor teeth.

Another object of the invention is to provide cooperating sets of separably interlocked devices held to the arch wire and teeth, respectively, and so constructed that the devices will not engage the gum when interlocked; and still another object is to provide positively but separably interlocking devices so constructed as to insure firm and rigid connections between the arch wire and the teeth and to prevent relatively lateral movement between the cooperating interlocked devices.

A further important object of the invention is the provision of a separable coupling for connecting an arch wire to tooth bands comprising relatively slidable interlocking members, which coupling may be made and sold independently of the arch wire and bands and the members of which may be readily affixed or soldered to the arch wire and bands at the desired points by the dental surgeon.

In the drawings, Figure 1 is a plan view of one embodiment of the invention and showing the arch wire or delivery member and the anchoring means;

Fig. 2 an enlarged vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 a detail side elevation showing the anchoring means at one end of the arch wire;

Figs. 4 and 5 detail perspective views of the male and female members of the separable coupling, respectively;

Fig. 6 an enlarged plan view of the coupling members in interlocked relation;

Fig. 7 a vertical sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 a rear elevation of the male coupling member; and

Fig. 9 a detail plan view showing the separable coupling applied to an appliance of the type shown in patent to Angle, No. 626,476.

Referring to the various parts by numerals, 1 designates the delivery member or arch bar which may be of any usual or suitable construction, preferably being formed of a piece of stiff resilient wire bent to conform to the curvature of the dental arch, and 2 designates the usual anchor bands adapted to be fitted about the anchor teeth or molars in the well-known manner.

The separable locking connections between the arch wire and the two anchor bands 2 are of the same construction. Each of said connections embodies a post coupling member, block or post 3 the rear face of which is soldered to the outer surface of the anchor band 2.

I prefer to form a recess or cavity 4 in the rear face of the post 3 which may be filled with solder 5, either by the dental surgeon or the manufacturer. By filling the cavity with solder flush with the rear face of the post the post may be readily secured to the anchor band by simply heating the solder and placing the rear face of the post against the band. This method of soldering the post to the band avoids waste of solder and also avoids running of surplus solder beyond the sides of the post where it would interfere with the engagement of the socket member of the coupling with the post. The sides of post 3 taper from one end to the other of the post and are provided with longitudinal grooves 6. The smaller end of the post is formed with a transverse slot 7 extending from one groove 6 to the other groove, and that portion of the sides of the post between the rear wall of the slot and the rear face of the post is provided with oppositely disposed notches 8 forming shoulders or abutments 9 adjacent the smaller end of the post.

The socket member 10 is formed of a piece of resilient sheet metal bent to form a tapered plate provided with inclined side flanges 11 pressed inwardly longitudinally thereof to form ribs 12 adapted to slide in

the grooves 6 in the sides of the post or block 3. The outer corners of the flanges at the smaller end of member 10 are bent laterally to form projections 13 adapted to snap in the notches 8 under shoulders 9 on post 3 when the member 10 is moved downwardly about the post. The post 3 is preferably of the same length as the width of the anchor band, and the member 10 is preferably shorter than the post 3 so that the ends of the post and member 10 will not extend beyond the edges of the band when the post and member are in interlocked relation.

When the two relatively slidable members of the separable connection are interlocked as shown in Figs. 1 to 3, and Figs. 6 and 7, accidental separation of the members is impossible owing to the engagement of the laterally bent corners 13 of the flanges 12 of the socket member in the notches 8 in the post or block 3. This positive lock also serves to prevent the patient, and particularly children, from tampering with the appliance and partially or entirely disconnecting the delivery member from the teeth. The delivery member may be readily detached by the dental surgeon by means of a suitable implement, such as that shown in Fig. 7, having a wedge-shaped head 14 and a suitable handle 15, or by means of a small pair of pliers having relatively sharp or thin jaws. It will be obvious that by forcing the wedge-shaped head 14 of the implement 15 downward in the slot 7 in the smaller end of post or block 3, the adjacent ends of flanges 12 on the socket members, which extend above the bottom of said slot, will be forced outwardly away from each other, thus releasing the projections 13 on the flanges from the notches 8, whereupon the members 3 and 10 may be readily separated by giving them a relative longitudinal sliding movement. To release the socket member by means of a pair of pliers, the points of the jaws of the pliers are inserted in the slot 7 and the jaws are then spread apart to force flanges 12 away from each other.

The separable coupling above described is also adapted for use with an appliance of the type shown in the patent to Angle, No. 626,476, above referred to. When so employed, the post or block 3 is preferably soldered to the anchor band 2 in the manner above described, and the socket member 10 is soldered at any desired point intermediate its ends to the usual anchor tube 16 employed in this type of appliance, as shown in Fig. 9. The arch wire or delivery member 1^a is threaded at its ends in the usual manner, and adjusting nuts 17 are threaded on the ends of the wire 1^a and cooperate with tubes 16 in the usual manner. In the construction shown in Fig. 9 it will be observed that the anchor tubes 16, adjusting nuts 17, and the arch wire or delivery member 1^a may

be removed bodily in assembled relation from the mouth without disturbing the adjustment of the nuts 17 on the arch wire 1^a.

The tapered formation of the two interlocking members 3 and 10 insures an accurate fit of the member 10 about member 3, thus preventing relative lateral movement of the interlocked members and affording a firm and rigid connection between the arch wire and the anchor tooth. It will be observed also that the separable coupling may be employed, if desired, to connect the arch wire with bands fitted on the malposed teeth.

What I claim is:

1. An orthodontia appliance comprising a curved delivery member, bands adapted to be secured to teeth, and two-part separable couplings for holding the delivery member to the bands, one part of each coupling being connected with a band and the other with the delivery member and each of said couplings embodying a post having under-cut sides and a plate having side flanges bent inwardly toward each other to slidably engage the under-cut sides of said post.

2. An orthodontia appliance comprising a curved delivery member, bands adapted to be secured to teeth, and two-part separable couplings for holding the delivery member to the bands, one part of each coupling being connected with a band and the other with the delivery member and each of said couplings embodying a post having under-cut sides and a plate having side flanges bent inwardly toward each other to slidably engage the under-cut sides of said post, said post being formed with a shoulder adjacent one end thereof and one of the flanges on said plate being formed with a laterally projecting portion adapted to engage said shoulder to lock the post and plate against relative longitudinal movement.

3. An orthodontia appliance comprising a delivery member, tooth-embracing bands, and two-part separable couplings for detachably connecting the delivery member with said bands one part of each coupling being fixed to a band and the other being connected with the delivery member, each coupling embodying a tapered post having under-cut sides and recesses at opposite sides of the post adjacent the smaller end thereof, and a tapered socket part having one open face and inwardly pressed sides adapted to slidably embrace the post, the sides of said socket being each formed with a lateral projection adjacent the smaller end of said part adapted to engage in one of the recesses in the post to lock the parts together.

4. An orthodontia appliance comprising an arch wire, tooth bands, and two-part separable couplings for detachably locking the wire to the bands, one part of each coupling being fixed to a band and the

other to the arch wire, each coupling embodying a tapered post having its sides formed with longitudinal grooves and provided with a transverse slot at its smaller end extending between said grooves and shoulders at the ends of said slot, and a tapered socket comprising a plate having yieldable side flanges pressed inwardly longitudinally to form ribs adapted to slide in the grooves on the post, each of said flanges being provided with a lateral projection adjacent the smaller end of the socket adapted to engage one of the shoulders on the post to lock the parts together.

5. An orthodontia appliance comprising anchor bands adapted to embrace posterior teeth of the dental arch, a tapered block having its inner face soldered to each band, said block being formed with longitudinal channels in the sides thereof connected at the smaller end of the block by a transverse slot and the sides of said block being provided with recesses above the bottom of said slot, an arch wire, tapered plates soldered to the arch wire adjacent the ends of said wire and formed with side flanges bent inwardly toward each other to engage in the channels in said block, the flanges on said plates being formed with projections adapted to engage in the recesses in the block to lock the plate and block against relative longitudinal movement.

6. The combination with a tooth-embracing band and the arch wire of an orthodontia appliance, of a two-part separable locking device embodying a block having a cavity in its inner face containing solder for attaching the block to the band, and a substantially U-shaped member soldered to the arch wire slidably embracing the block to move longitudinally thereof, said member and block being formed with cooperating longitudinally extending interlocking portions for holding the block and member against relative lateral movement.

7. The combination with a tooth-embracing band and the arch wire of an orthodontia appliance, of a two-part separable coupling embodying block fixed on the band and a substantially U-shaped member the transverse wall of which is fixed to the arch wire intermediate its ends, the sides of said member having a slidable interlocking connection with the sides of the block to prevent lateral movement of the member and permit connection and disconnection of the members by a relative longitudinal movement.

8. An anchor coupling for orthodontia appliances embodying a block having one face provided with a cavity, solder filling said cavity to adapt the block to be soldered to a tooth-embracing band, and a plate adapted to be connected with an arch wire and provided with side flanges adapted to embrace

the sides of said block and having a longitudinally extending tongue-and-groove connection therewith.

9. Means for separably connecting an arch wire to a tooth, embodying a tooth-embracing band, and a two-part coupling, one part of which is fixed on the band and the other part of which is connected with the arch wire, said coupling parts having a tongue-and-groove connection to permit connection and disconnection thereof by a relative longitudinal movement and to prevent relative lateral movement of the parts when connected together.

10. Means for separably connecting an arch wire to a tooth, embodying a tooth-embracing band, and a two-part coupling, one part of which is fixed on the band and the other part of which is connected with the arch wire, said coupling parts having a tongue-and-groove connection to permit connection and disconnection thereof by a relative longitudinal movement and to prevent relative lateral movement of the parts when connected together, and one of said parts being formed with a recess and the other with a yieldable portion carrying a projection adapted to engage in said recess to releasably lock the parts together.

11. An orthodontia appliance comprising a delivery member, a socket coupling member supported by the delivery member and formed with a longitudinally extending channel having inwardly flaring side walls, a tooth-embracing band, and a post coupling member having one face secured to the band and formed with under-cut sides.

12. An orthodontia appliance comprising a delivery member, a socket coupling member having one face soldered to the delivery member at a point intermediate the ends of the coupling member, said coupling member being formed with a longitudinal channel having inwardly flaring side walls, a tooth-embracing band, and a post coupling member soldered to said band and formed with a relatively narrow portion adapted to extend through the throat of the channel in the socket member and an enlarged portion adapted to engage in said channel.

13. An anchor coupling for orthodontia appliances, embodying a block or post forming a coupling member and having one face provided with a cavity, solder filling said cavity to adapt the block to be soldered to a tooth-embracing band, and a plate or socket member adapted to be connected with an arch wire and provided with side flanges adapted to embrace the sides of said block.

14. Means for connecting the arch wire of an orthodontia appliance to a tooth band, comprising a pair of relatively slidable post and socket members tapered longitudinally, one of said members at its smaller end being formed with a transverse abutment, the

other one of said members having a yield-
able portion at its smaller end adapted to
engage the abutment of the other member
to releasably lock the members together, one
5 of said members being fixed to the tooth
band, and the other member being fixed to
the arch wire.

15. Means for connecting the arch wire of
an orthodontia appliance to a tooth band,
10 comprising a pair of relatively slidable post
and socket members tapered longitudinally,
one of said members at its smaller end being
formed with a transverse abutment, the

other one of said members having a yield-
able portion at its smaller end adapted to 15
engage the abutment of the other member to
releasably lock the members together, one of
said members being fixed to the tooth band
and the other member being fixed to the
arch wire, the post and socket members be- 20
ing non-circular in cross section to hold the
post against relative, rotative movement.

This specification signed this 29th day of
June, A. D. 1918.

JACOB LOWE YOUNG.