Aug. 21, 1956 J. E. JOHNSON 2,759,265

ORTHODONTIC DEVICE

Filed Feb. 18, 1955

Fig. 1.

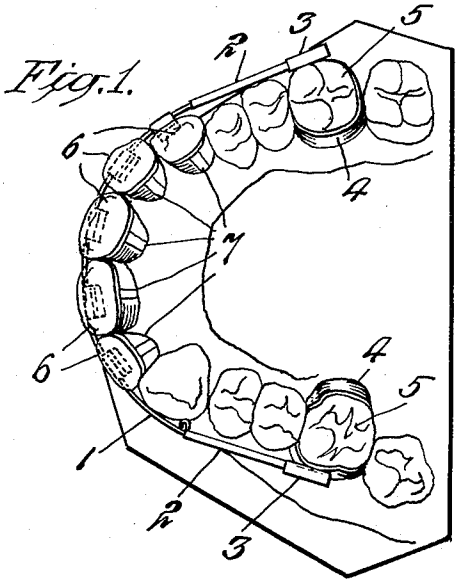


Fig. 2.

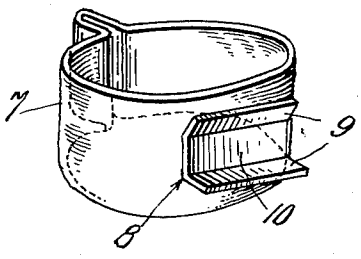


Fig. 4.

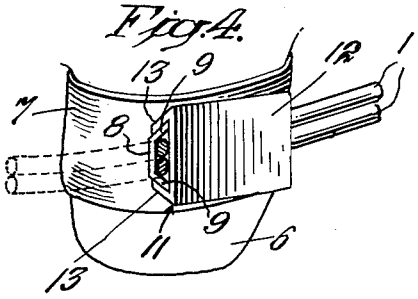


Fig. 3.

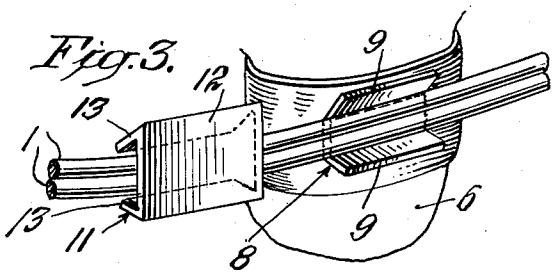


Fig. 5.

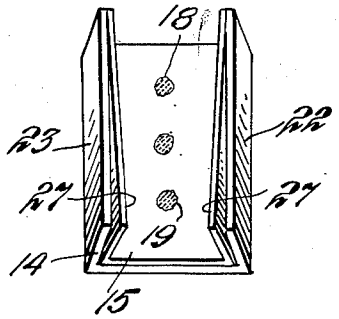
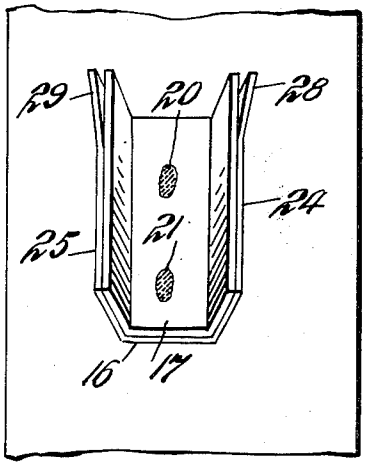


Fig. 6.



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ORTHODONTIC DEVICE

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5 Claims. (Cl. 32—14)

This invention relates in general to orthodontia appliances of the arch bow type. Appliances of this type usually comprise an arch bow formed of spring wire curved to conform approximately to the normal dental arch, the ends of the arch bow being anchored to suitable anchor teeth such as molars, and the intermediate portion of the bow being connected to the tooth or teeth to be moved or regulated. The connection between the arch bow and the teeth to be treated is usually made by bands which rigidly encircle the teeth and are provided with suitable clamping devices or locks to secure the arch bow to the tooth bands.

One object of my invention is to provide in an orthodontia appliance, a novel and improved construction and combination of an arch bow and means for connecting it to a tooth to be treated, whereby said arch bow shall be positively held against movement relatively to said tooth laterally in or out of the general plane of the arch bow but shall be free to move longitudinally in its general plane relatively to said tooth so that the length of said arch bow can be easily and quickly adjusted without disturbing the connection of the arch bow to the tooth being treated.

Another object of my invention is to provide a novel and improved lock or clamping means for connecting an arch bow to a tooth band which shall be strong, durable and positive in operation, and shall be simple in construction and use.

Another object is to provide a lock or clamp for connecting an arch bow to a tooth band which shall comprise only two simple interlocking parts to receive and hold the arch bow between them, one part to be rigidly secured to the tooth band and the other part to be removably attached to the first-mentioned part.

A further object is to provide a novel or improved lock or clamp of this character which shall permit free longitudinal sliding of the arch bow relatively to the clamp in substantially the plane of the arch bow, whereby easy and quick adjustment of the arch bow shall be possible.

Other objects are to provide a lock or clamp of the character described in which the part to be secured to a tooth band is channel-shaped with the flanges of the channel spaced apart a distance adequate to nicely receive the arch bow, and the other part is shaped to longitudinally slide over the first-mentioned part and hold the arch bow in said channel, the two parts being constructed to prevent relative lateral movement; to provide such a lock which can be made of sheet metal, and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawing in which corresponding and like parts are designated throughout the several views by the same reference characters.

Figure 1 is a plan view of an orthodontia appliance embodying my invention, showing it mounted upon a model of the dental arch.

Figure 2 is an enlarged perspective view of a tooth band to be applied to a tooth to be treated and having secured thereon one part of my improved lock.

Figure 3 is a perspective view showing the first step in assembling the parts of my improved lock.

Figure 4 is a perspective view showing the parts of the lock completely assembled and connecting an arch bow to a tooth band.

Figure 5 is a perspective view showing the particular improvement according to this invention as applied to one part of my improved lock, and

Figure 6 is a perspective view showing the particular improvement according to this invention as applied to another part of my improved lock.

Specifically describing the illustrated embodiment of the invention, I provide an arch bow preferably comprising two parallel strands **1** of spring wire which have terminal tubes **2** secured to their ends for attachment to anchor tubes **3** mounted on anchor bands **4** which rigidly encircle anchor teeth such as molars **5**.

The intermediate portions of the arch bow are connected to the teeth **6** to be regulated or treated, by tooth bands **7** generally of known construction to which are connected locks or clamps embodying my invention and by which the arch bow is secured to the tooth bands **7**. The locks are all of the same construction, each comprising a main part **8** which is channel shaped and has its flanges **9** of a width and spaced apart a distance adequate to nicely receive the strands **1** of the arch bow between them as clearly shown in Figures 3 and 4. The base portion **10** of the main part **8** is rigidly secured as by soldering or brazing to the outer side of a tooth band, with the channel disposed approximately horizontal, or approximately perpendicular to the axis of the tooth band. The flanges **9** of the channel diverge outwardly from the base **10** to interlock with a closure part **11**. This closure part is also approximately channel-shaped and comprises a base **12** at the edges of which are flanges **13** which diverge toward each other and are spaced apart a distance substantially equal to the distance between the outer sides of the flanges **9** of the main part **8**. The closure part **11** of the lock can be attached to and removed from the main part **8** by a relative longitudinal sliding and telescoping movement of the parts, so as to form an opening between said parts with its axis approximately perpendicular to the axis of the tooth band.

In use of the appliance, a tooth band **7** having the main part **8** of a lock secured thereto is applied to a tooth to be treated, in the usual manner. The arch bow is then placed in position with the strands of wire **1** lying within the channel of the main part **8**, as clearly shown in Figure 3 of the drawing. Thereupon, the closure part of the lock is slipped laterally over the arch bow and longitudinally on one end of the main part **8** as shown in Figures 3 and 4.

Then the closure part is completely slid upon the main part with the arch bow between them, as shown in Figure 4.

However, while the channel-shaped parts may be assembled as described with an arch bow therebetween, a special pliers or tool has been heretofore employed to clamp or force the parts together to prevent movement of the parts with respect to each other and to positively interlock the two parts of the lock with each other against lateral movement.

In order to eliminate the use of special clamping tools and to prevent a possible over-tightening of the interlocking parts, I provide at least one of the channel members **8** and **11** as a laminated structure as illustrated by Figures 5 and 6. Preferably the channel shaped members are provided by forming a pair of similarly shaped channel members **14** and **15** telescoped with respect to each other and/or channel members **16** and **17** likewise telescoped with respect to each other and subsequently

bonded together as, for example, by spot welding as illustrated by spot welds **18**, **19**, **20**, and **21** or otherwise. Essentially, and in accordance with this invention, the opposite corners of the laminated structure on one side thereof are separated from each other. For example, the diametrically opposite free edges of legs **22** and **23**, likewise the edges **24** and **25**, at one end of the channel members are separated from each other. In the case of the closure part or outer member **11**, the free edges **26** and **27** of the inner layer are directed inwardly toward each other, and in the case of the main part or inner member **8**, the free edges **28** and **29** of the outer layer are directed outwardly of each other. In order to provide for the frictional interlocking of the inner and outer channel-shaped members, at least one of the laminated layers from which the members **8** and **11** are formed is preferably a resilient layer, said resilient layer being the inner layer of the closure member **11** and the outer layer of the inner member **8**. Also, the said resilient layer of each member is preferably thinner than the other layer forming the laminated part whereby the interlocked channel-shaped members are substantially under spring tension in the locked position.

With such a construction, it will be observed that the two parts of the lock will interlock with each other against relative lateral movement so as to firmly hold the arch bow in proper relation to the tooth band against lateral movement in or out of the general plane of the arch bow. At the same time, the arch bow is free to slide longitudinally in its own plane through the lock, which is particularly desirable in adjusting the arch bow. The parts of the lock can be easily separated to disconnect the arch bow from a tooth band, by reversing the operation above-described for applying the closure part to the main part.

From the foregoing, it will be observed that the lock comprises only two simple parts which can be easily and quickly connected and disconnected without special adjustments that are incident to orthodontia appliances wherein one part of the lock or clamp is rigidly or positively connected to the arch bow. At the same time, the possibilities of accidental separation of the parts of the lock or of the arch bow from the lock, is reduced to a minimum.

While I have shown and described my invention as embodied in certain details of construction, it should be understood that this is primarily for the purpose of illustrating the principles of the invention and that many modifications and changes may be made in the details of construction, for example, by reversing the main part and the closure part without departing from the spirit and scope of the invention as defined by the following claims when construed in the light of the prior art.

What I claim is:

1. An orthodontic lock comprising a tooth band, a pair of channel-shaped lock members, said members being interlockingly laterally slidable one over the other with the channel faces thereof disposed toward each other forming a passage therebetween, one of said members being secured to said tooth band, the other member being a closure member, at least one of said members being a laminated member with the laminae thereof separated from each other at the diametrically opposite free edges thereof at one end of said member.

2. An orthodontic lock according to claim 1, wherein the member secured to the tooth band is the laminated member.

3. An orthodontic lock according to claim 1, wherein the closure member is the laminated member.

4. An orthodontic lock according to claim 1, wherein at least one lamina of said laminated member is a substantially resilient member.

5. An orthodontic lock according to claim 1, wherein one lamina of said laminated member is thinner than another lamina thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

1,304,721	Young	May 27, 1919
1,952,320	Johnson	Mar. 27, 1934