F. MAEULEN AND G. L. VAN ALLEN.

LOCK FOR ORTHODONTIC APPLIANCES.

APPLICATION FILED OCT. 8, 1921.

1,429,749. Patented Sept. 19, 1922.

Fig. 1

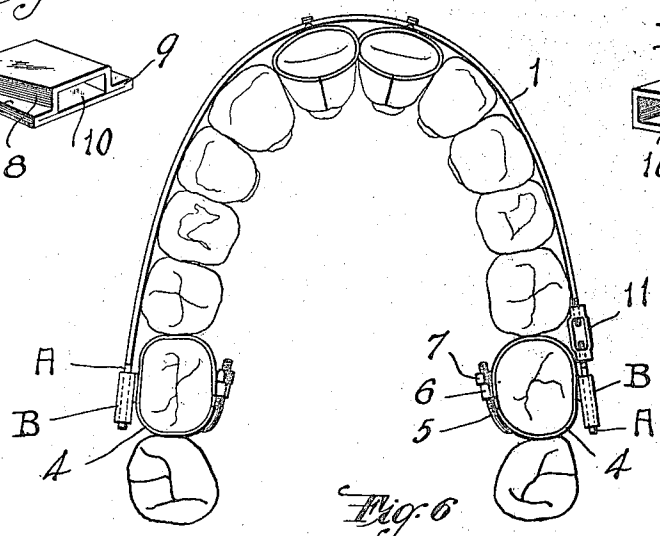


Fig. 2

Fig. 3

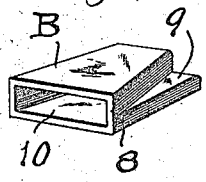


Fig. 6

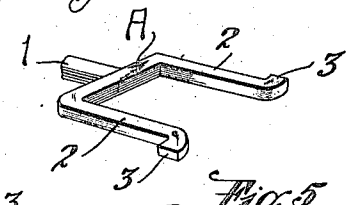


Fig. 4

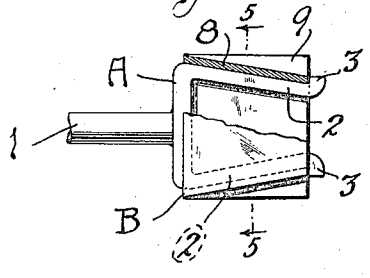
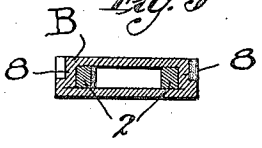


Fig. 5



INVENTORS

FREDERICK MAEULEN

AND GEORGE L. VAN ALLEN

BY Everett & Rook ATTORNEYS.

Patented Sept. 19, 1922. 1,429,749

UNITED STATES PATENT OFFICE.

FREDERICK MAEULEN, OF RAHWAY, AND GEORGE L. VAN ALLEN, OF NEWARK, NEW JERSEY, ASSIGNORS TO BAKER & COMPANY, INC., A CORPORATION OF NEW JERSEY.

LOCK FOR ORTHODONTIC APPLIANCES.

Application filed October 8, 1921. Serial No. 506,284.

To all whom it may concern:

Be it known that we, FREDERICK MAEULEN and GEORGE L. VAN ALLEN, citizens of the United States, and residents, respectively, of Rahway, in the county of Union and State of New Jersey, and Newark, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Locks for Orthodontic Appliances, of which the following is a specification.

This invention relates to orthodontic appliances of the class including an arch-bow and anchor-bands for attaching the same to the molar teeth, and more particularly the invention relates to means for fastening the ends of the arch-bow to the anchor-bands.

The objects of our invention are to provide a device embodying novel features of construction for producing a locked connection of the ends of the arch-bow with the anchor-bands; to provide a member to be secured to the end of an arch-bow and a member to be secured to an anchor-band, said members having a telescoping engagement and said anchor-band member being arranged at right angles to an axial plane of the anchor-band, and said members being formed to lock themselves against relative movement in any direction; to provide a substantially U-shaped member having a spring arm with a projection thereon to be secured to the end of the arch-bow, and a socket member to be secured to an anchor-band, said first-mentioned member being adapted to be inserted within said socket member from one end thereof with said projection on the spring arm engaging the walls of said socket member to lock the U-shaped member in said socket member; to provide a U-shaped member having a pair of spring arms with oppositely extending projections thereon adapted to be secured to the end of an arch-bow, and a tubular member adapted to be secured to an anchor-band and having opposite converging walls, said tubular member being adapted to receive said U-shaped member from one end thereof, said converging walls of the tubular member forcing said arms of the U-shaped member together as the same is forced into the tubular member, and said spring arms snapping said projections outwardly into engagement with the other end of said tubular member to lock said members together; and to obtain other results and advantages as may be brought out by the following description.

Referring to the accompanying drawings, in which like numerals of reference indicate the same parts throughout the several views,

Figure 1 is an inverted plan view of the upper human dental arch, showing our invention used in connection with an arch-bow applied thereto;

Figure 2 is an enlarged perspective view of one of the socket members to be secured to an anchor-band looking at the small end thereof;

Figure 3 is a similar view looking at the member from the opposite end thereof;

Figure 4 is a plan view of one of the socket members with the member attached to the arch-bow locked therein, portions of the socket member being broken away for clearness in illustration;

Figure 5 is a transverse sectional view taken on the line 5—5 of Fig. 4, and

Figure 6 is a perspective view of one of the arch-bow members.

In the embodiment of our invention shown in the drawings the reference character A designates a U-shaped member adapted to be soldered or otherwise secured to one end of an arch-bow 1, the arms 2 of said member being resilient and preferably rectangular in cross-section and adapted to be pressed inwardly toward each other, the free extremities of said arms having outwardly bent hooked portions or projections 3 arranged at substantially right angles to the arms, as shown in Figures 4 and 6.

One of these members A is secured to each end of the arch-bow 1, as shown in Figure 1, and they are adapted to cooperate with socket members B secured as by soldering or in any other suitable manner, to anchor-bands 4 which are adapted to be clamped to the molar teeth by the usual threaded rod 5, sleeve 6 and nut 7 which is threaded on said rod. The socket members B are preferably tubular and of a cross-section corre-

sponding to the arms 2 of the member A, the said members having the narrow sides 8 thereof converging toward each other which can be conveniently formed by pressing the narrow sides of the members inwardly over the adjacent side as indicated at 9. It will thus be seen that the socket members A are provided with recesses 10 substantially rectangular in cross-section and having two converging sides and two substantially parallel sides. These socket members B are rigidly secured to the corresponding anchor-bands 4 with the recesses 10 extending longitudinally of the dental arch, or at right angles to an axial plane of the anchor-band, and the small ends thereof projecting inwardly of the arch.

With the members A secured to the ends of the arch-bow 1 as shown in Figures 1, 4 and 6, to secure the arch-bow in position the members A are forced into the recess 10 in the socket members B with the arms 2 thereof engaging the converging sides 8 of the socket members. As the members A are forced into the recesses 10 the resilient arms 2 are pressed inwardly toward each other as shown in Figure 4, and as soon as the hooked portions 3 of the arms pass the inner ends of the members B the resiliency of the arms 2 causes the hooked portions 3 to snap outwardly into engagement with the ends of the converging sides 8, as shown in Figure 4. It will thus be seen that the members A and B are securely locked together, the converging sides 8 of the members B preventing any further movement of the members A in one direction and the hooked portions 3 of the members A preventing movement of the members A in the opposite direction. It will also be seen that this locking operation is automatic in that the spring arms automatically force the hooked portions 3 outwardly into operative position, and the engagement of the arms 2 with the converging sides 8 is automatically obtained by the insertion of the member A into the recess 10. When it is desired to remove the members A from the socket members B to detach the arch-bow 1 it is merely necessary to press the hooked portions 3 of the arms 2 inwardly to clear the ends of the sides 8 and simultaneously pull each member A outwardly from the large end of the recess 10.

The arch-bow 1 would ordinarily be cut to the proper length to span the teeth of the dental arch, but in case adjustment of the arch-bow is desired a turn-buckle 11 or other suitable adjusting mechanism might be connected between one end of the arch-bow and one of the members A, as shown in Figure 1 of the drawings.

While we have shown and described one possible embodiment of our invention, it will be understood that this is for the purpose of illustrating the principles thereof only, and that many modifications and changes can be made in the detail construction of the invention without departing from the spirit or scope thereof. Therefore, we do not desire to be understood as limiting ourselves except as required by the following claims when construed in the light of the prior art.

Having thus described the invention, what we claim is:

1. In an orthodontic appliance, the combination of an anchor-band having a socket member thereon arranged at substantially right angles to an axial plane of said anchor-band, and an arch-bow having a resilient hooked projection at the end thereof to be inserted into said socket member, said resilient projection engaging the walls of said socket member to lock said arch-bow to said socket member.

2. In an orthodontic appliance, the combination of an anchor-band to be secured to a tooth and having a member secured to the outer side thereof formed with a socket arranged at substantially right angles to an axial plane of said band, and an arch-bow having a longitudinal resilient member at its end provided with a lateral projection, said member being adapted to be inserted into said socket member and the resiliency of said arch-bow member forcing said projection into engagement with the walls of said socket member to lock the arch-bow therein.

3. In an orthodontic appliance, the combination with an anchor-band to be applied to a tooth and an arch-bow, of a socket member on said anchor-band arranged at substantially right angles to an axial plane of said anchor-band, and a resilient member arranged longitudinally on the end of said anchor-band to enter the socket in said socket member on longitudinal movement of said arch-bow, one of said members being formed with a projection to engage the other member to automatically and positively connect said arch-bow to said socket member as the said resilient arch-bow member is forced into said socket member.

4. In an orthodontic appliance, the combination of a member having a recess therein formed with opposite converging sides, and a member having a pair of spaced resilient arms one of which is formed with a projection, said arms being adapted to be inserted into the large end of said recess and being forced together by said converging sides, whereby said projection is forced into engagement with the walls of said recess to lock said members together.

5. In an orthodontic appliance, the combination of a U-shaped member having resilient arms formed at their extremities with outwardly projecting hooked portions, and a tubular member having opposite converging sides, said U-shaped member being adapted

to be inserted into the large end of said tubular member, with the said arms being pressed together by said converging sides to limit the movement of said U-shaped member into said tubular member, and said projections on the arms being forced outwardly into engagement with the ends of the said converging walls at the small end of said tubular member to prevent movement of said U-shaped member in the opposite direction.

FREDERICK MAEULEN.
GEORGE L. VAN ALLEN.