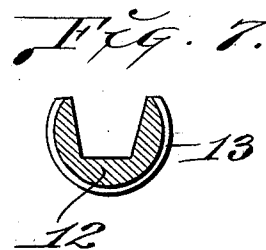
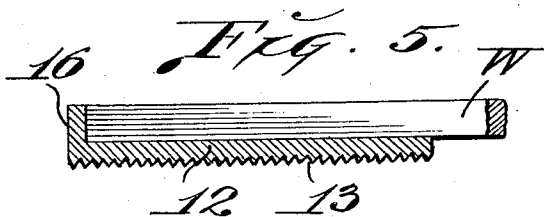
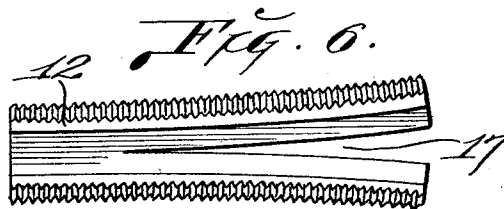
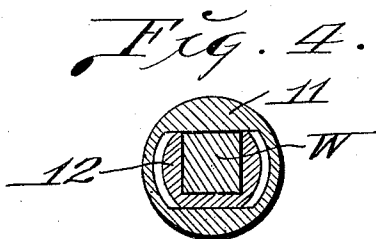
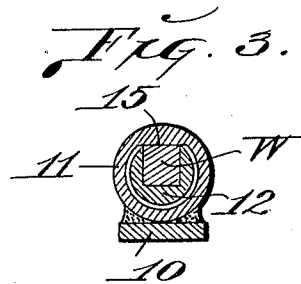
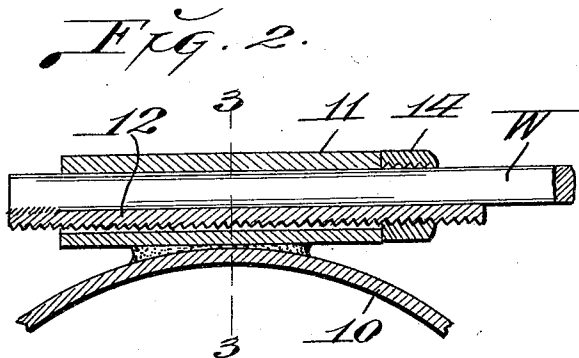
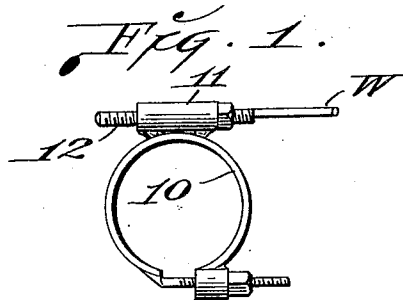


Aug. 2, 1932.

S. R. ATKINSON  
ORTHODONTIA APPLIANCE

1,869,733

Filed Jan. 25, 1930



INVENTOR: —  
SPENCER R. ATKINSON.  
BY *Martin C. Smith.*

## UNITED STATES PATENT OFFICE

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## ORTHODONTIC APPLIANCE

Application filed January 25, 1930. Serial No. 423,491.

My invention relates to an orthodontic appliance and has for its principal object, the provision of relatively simple and efficient means that is associated with the tooth encircling band and the arch wire, for lengthening the latter from time to time as conditions require.

Further objects of my invention are, to provide an arch wire adjusting device that is relatively simple in construction, inexpensive of manufacture, capable of being readily and accurately adjusted and further, to provide a device of the character referred to that will eliminate the necessity for the cutting of threads on the ends of the arch wire and which latter in some instances are very small.

Further objects of my invention are, to provide a lengthening attachment for the ends of arch wires that will firmly hold said arch wires against rotation when properly secured to the tooth bands, further, to provide a device of the character referred to that will form a strong and substantial adjustable connection between the end of the arch wire and tooth encircling band and further, to provide an attachment that will act automatically in holding the adjusting nut, that forms a part of the device against rotation while in service.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawing, in which:

Fig. 1 is an elevational view of a tooth band and showing my improved arch wire adjusting device applied thereto.

Fig. 2 is an enlarged section taken through the center of the adjusting attachment.

Fig. 3 is a cross section on the line 3—3 of Fig. 2.

Fig. 4 is a cross sectional view similar to Fig. 3 and showing a modified form of the attachment.

Fig. 5 is a longitudinal section of a modified form of the threaded sheath that is applied to the end of the arch wire.

Fig. 6 is a plan view of a further modified

form of the threaded arch wire engaging sheath.

Fig. 7 is a cross sectional view of the arch wire sheath that forms a part of my invention.

Referring by numerals to the accompanying drawing which illustrate a practical embodiment of my invention, 10 designates the tooth band of an orthodontic appliance, the ends of which bands are connected by the usual threaded pin and bolt and permanently secured to said band, preferably at a point directly opposite the connected ends thereof is a tubular member 11, that receives the end of the usual arch wire W.

One end of a substantially channel shaped sheath 12 is permanently secured, preferably by solder to the end of the arch wire W that projects through the tube 11 and formed on the outer circular face of the sheath 12 are screw threads 13. This sheath extends entirely through the tube 11 and as said sheath is somewhat longer than the tube, the ends of said sheath project beyond the ends of said tube.

Screw-seated on one of the projecting ends of the sheath is a nut 14 that bears directly against the corresponding end of tube 11.

In order to prevent rotation of the arch wire W within the tube the latter is provided on its inner surface with a longitudinally disposed flat face 15 that is engaged by the exposed face of that portion of the wire W that occupies the sheath 12.

Sheath 12 is formed of metal having a certain degree of resiliency and the side portions of the end of said sheath that receives the nut 14 are spread apart a slight distance, as illustrated in Fig. 7 and the resulting tension acts to frictionally engage the nut so as to resist rotation thereof and thus said nut is retained against accidental removal.

When my improved orthodontic appliance is in use the parts are assembled, as illustrated in Figs. 1, 2 and 3 and the arch wire W is retained against rotation in the tube 11 by the engagement of the exposed face of that portion of the wire that occupies the sheath, against the flat face 15 within tube 11.

The nut 14 normally bears against the end

of tube 11 and in order to lengthen the arch wire the nut 14 may be rotated on the threaded exterior of sheath 12, thereby drawing the same through the tube 11 and as the wire W is soldered to said sheath, said wire will be drawn lengthwise through the tube 11, thus accomplishing the desired results.

In some instances the sheath is provided with oppositely disposed flat faces, which engage correspondingly arranged flat faces within the tube 11, thus holding the sheath and arch wire against rotation and where such construction is employed, the rounded side faces of the sheath between the flat faces thereon, are threaded for the reception of the adjusting nut (see Fig. 4).

In Fig. 5, I have illustrated a modified arrangement wherein a solid wall 16 is formed at one end of the sheath 12. Where such construction is employed, the end of the arch wire W abuts directly against the end wall 16, thereby eliminating the necessity for soldering the sheath to the arch wire.

In Fig. 6 I have illustrated a modified form of the sheath, wherein a longitudinally disposed slot 17 is formed in the bottom of said sheath and the portions of the sheath to the sides of said slot are bent apart so as to produce tension when the parts are forced toward each other and such tension is effective in exerting pressure against the nut that is mounted on the sheath so as to prevent accidental unscrewing of said nut.

Thus it will be seen that I have provided an arch wire holding and adjusting device that is relatively simple in construction, inexpensive of manufacture and very effective in performing the functions for which it is intended.

The provision of a threaded sheath for that portion of the arch wire that passes through the tube on the tooth band, eliminates threading of the arch wire and the formation of a flat face on the interior of the tube for engagement with one of the faces of the arch wire effectually prevents rotation of the wire relative to the tube.

The device is capable of very accurately adjusting the length of the arch wire and the sheath is constructed so as to counteract any tendency of accidental unscrewing of the adjusting nut.

It will be understood that minor changes in the size, form and construction of the various parts of my improved orthodontia appliance may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In an orthodontia appliance, a tube adapted to be secured to a tooth band, a threaded sheath mounted to move lengthwise through said tube and held against rotary

motion, which sheath is substantially U-shape in cross section, an arch wire positioned in said U-shaped sheath and rigidly fixed thereto and a nut screw-seated on one end of said sheath and bearing against the end of said tube.

2. In an orthodontic appliance, a tube adapted to be secured to a tooth band, a threaded sheath mounted to move lengthwise through said tube and held against rotary motion, which sheath is substantially U-shape in cross section, an arch wire positioned in said U-shaped sheath and rigidly fixed thereto, a nut screw-seated on one end of said sheath and bearing against the end of said tube and the end of the sheath on which said nut is located being spread so as to produce tension therein tending to hold the nut against rotation.

3. In an orthodontia appliance, the combination with an arch wire and tooth band tube, of a threaded sheath provided with a longitudinally disposed channel in which the end of the arch wire is seated, which sheath and arch wire are rigidly connected to each other and extend lengthwise through the tooth band tube, a nut located on said threaded sheath and bearing against the end of said tube and which tube, sheath and arch wire are provided with cooperating flat faces so that said sheath and arch wire are held against rotation within said tube.

4. In an orthodontia appliance, the combination with an arch wire and tooth band tube which arch wire passes through said tube and is held against rotation therein, of a threaded sheath provided with a longitudinally disposed channel in which a portion of said arch wire is seated, which sheath extends through the tooth band tube, said arch wire being rigidly secured to said sheath and a nut mounted on said threaded sheath and bearing against one end of said tube.

5. In an orthodontia appliance, the combination with an arch wire, of a threaded sheath rigidly secured thereto and having a longitudinally disposed channel which receives said arch wire, a tubular support for said sheath, cooperating means on said tubular support and arch wire for preventing rotation of the arch wire within said support and a nut screw-seated on said sheath and engaging said tubular member.

6. In an orthodontia appliance, the combination with a tooth band and a tubular member secured thereto, of an arch wire, a threaded sheath rigidly fixed to said arch wire and extending through the tubular member on said tooth band, a nut screw seated on said threaded sheath and engaging one end of said tubular member and which sheath is split lengthwise for a portion of its length to produce tension on said nut.

In testimony whereof I affix my signature.

SPENCER R. ATKINSON.