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J. BERGER

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ORTHODONTIA APPLIANCES

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FIG. 1

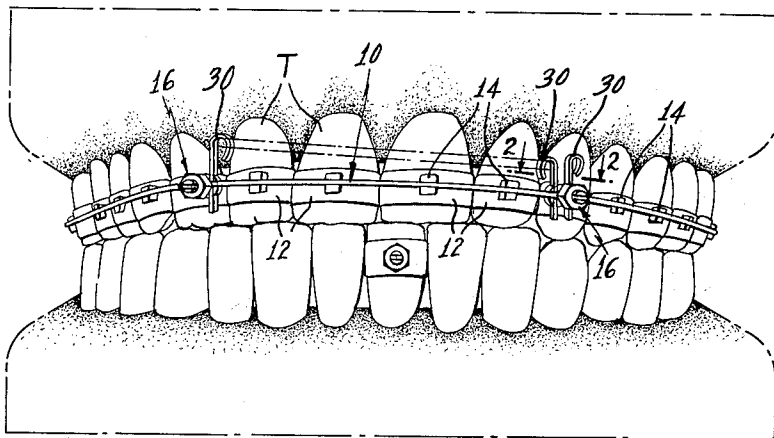


FIG. 2

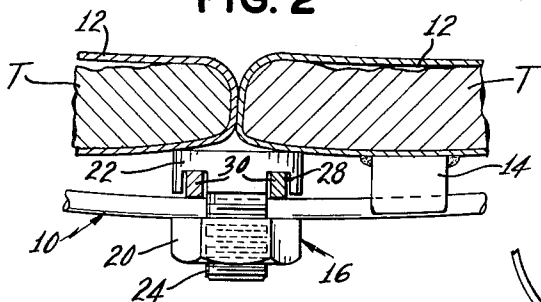


FIG. 4

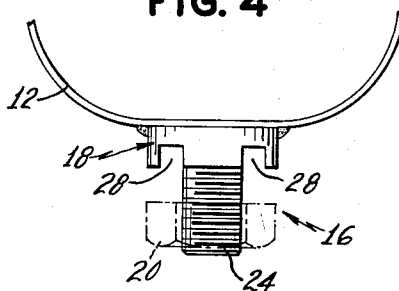
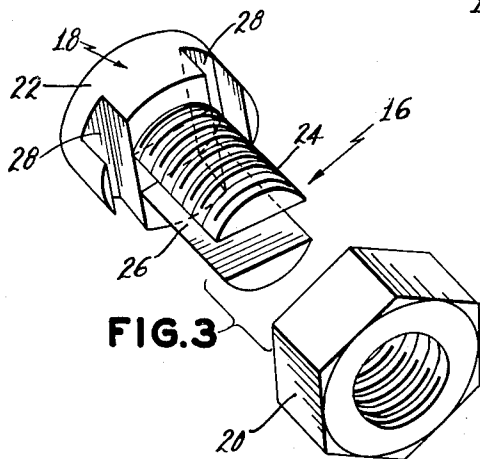


FIG. 3



INVENTOR.
Joseph Berger
BY Henry Kerner
ATTORNEY

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3,028,671

ORTHODONTIA APPLIANCES

Joseph Berger, 83—67 116th St., Kew Gardens, N.Y.

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2 Claims. (Cl. 32—14)

The present invention relates generally to orthodontia appliances.

More specifically, the present invention relates to a novel locking device which is adapted to be releasably secured anywhere along the arch wire in a patient's mouth, and which locking device is provided with means for releasably securing thereto accessories, such as hooks and spurs which are used in orthodontia work.

It has heretofore been the practice, in orthodontia work, to fix an arch wire in position in a patient's mouth by securing said arch wire to locking devices which were attached to the tooth bands. Once the arch wire was in place, the only way to secure the required accessories (hooks, spurs, etc.) onto the arch wire was by a soldering operation. This type of securement has proved to be problematic, inconvenient and uncomfortable, since breakage of the soldered connection is quite frequent and causes much discomfort to the patient.

According to the present invention there is provided a new lock which is adapted to be releasably secured anywhere along the arch wire or directly onto the tooth band. The lock is adapted to have releasably secured thereto all the required orthodontia accessories without necessitating any soldering whatsoever. The new lock thus obviates the problem of requiring soldered connections for the accessories and results in a more reliable, flexible and generally improved orthodontia appliance and technique.

It is therefore an object of the present invention to provide an orthodontia appliance having generally improved characteristics.

Another object is the provision of an orthodontia lock adapted to be releasably secured anywhere along the arch wire.

Another object is the provision of an orthodontia lock adapted to be releasably secured anywhere along the arch wire and adapted to have releasably secured thereto orthodontia accessories such as hooks and spurs.

The above and other objects, features and advantages of the present invention will be more fully understood from the following description considered in connection with the accompanying illustrative drawings.

In the drawings:

FIG. 1 is an elevation view of a dental arch wire having a plurality of orthodontia appliances, in accordance with the invention;

FIG. 2 is a sectional view, taken along line 2—2 of FIG. 1, on an enlarged scale;

FIG. 3 is a perspective view, on an enlarged scale, of the orthodontia appliance in accordance with the invention; and

FIG. 4 is a plan view of the orthodontia appliance showing a different mode of utilization thereof.

Referring now to the drawings and FIG. 1 in particular, there is shown a horizontal arch wire 10 placed around a set of upper teeth T, the latter being provided with tooth bands 12 upon which there are secured, as by soldering, channeled members 14 through which arch wire 10 passes for the guiding thereof. The arch wire 10 is secured in place at the opposite ends thereof in any suitable manner (not shown).

Pursuant to the invention there are provided one or more orthodontia appliances or locks 16, for releasable securement to arch wire 10. Lock 16 consists of a main body portion 18 and a nut 20. Main body portion 18 comprises a flat cylindrical base 22 and a threaded post 24

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extending therefrom, the latter being provided along the entire longitudinal extent thereof with a horizontally extending slot 26. The flat cylindrical base 22 is provided, at opposite sides of threaded post 24, with a pair of vertically extending slots 28 for receiving orthodontia accessories such as, for example, hooks 30 shown in FIG. 1.

In order to assemble lock 16, hooks 30 or other accessories are placed in vertical slots 28 and arch wire 10 is passed through horizontal slot 26 in post 24. Nut 20 is then threaded onto post 24 thereby simultaneously securing lock 16 onto arch wire 10 and locking hooks 30 in vertical slots 28. It will be understood that the hooks 30 or other accessories are thicker than the depth of vertical slots 28 so that, upon tightening nut 20, arch wire 10 will bear against said hooks. Thus it is seen that a single tightening operation of the nut 20 performs the dual function of securing lock 16 to the arch wire and locking the accessories in their desired position.

It is thus seen that locks 16 may be releasably secured anywhere along the arch wire without the necessity of soldering. Furthermore, the various accessories and attachments, such as hooks, spurs, etc., which have heretofore been normally soldered to the arch wire, can now be releasably secured to the arch wire by means of locks 16, without causing discomfort to the patient. Also, the common problem of breakage of the soldered connections of orthodontia accessories is eliminated, resulting in a more reliable and more comfortable overall orthodontia device.

The use of locks 16 lends itself to a plurality of convenient applications. For example, in order to improve open bite cases, two locks 16 are secured onto the upper arch wire, two onto the lower arch wire, and spurs are inserted in the vertical slots thereof to accommodate up and down elastics, respectively. Further, the elimination of diastemas and condensation of an arch can be accomplished by fashioning a loop in the arch wire and placing a lock 16 in the bicuspid arch which is then tied back to the molar tubes. Prevention of a forward drifting of a molar or segment of the arch is facilitated by the placing of a coil spring distal in the lock. Arch elongation is possible by placing locks 16 anteriorly of the molar tubes.

Referring now to FIGURE 4, there is shown another mode of utilizing the lock 16 in accordance with the invention. Instead of releasably securing the lock 16 to the arch wire 10, the base 22 is soldered directly onto the tooth band 12. The arch wire 10 and accessories 30 are inserted in slots 26 and 28, respectively, as before, and, by tightening nut 20, the accessories 30 are releasably secured in position and the arch wire, while not supporting the lock 16 as before, is nevertheless properly guided through horizontal slot 26.

By using lock 16 in the manner shown in FIGURE 4, the accessories 30 can still be secured without the necessity of soldering. The embodiment of FIGURE 4 is used primarily in connection with the uprighting of tilted teeth, such being effectuated by imparting to the lock 16 which is mounted on the tooth band a rotational movement by means of accessories 30, which are mounted in the vertical slots 28 of the lock 16.

While I have shown and described the preferred embodiments of my invention, it will be understood that the invention may be embodied otherwise than as herein specifically illustrated or described, and that in the illustrated embodiment certain changes in the details of construction and in the form and arrangement of parts may be made without departing from the underlying idea or principles of this invention within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An orthodontia appliance comprising a base and a

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threaded post extending therefrom, said post having a slot for the passage therethrough of a horizontally extending arch wire, and a nut threaded onto said post for releasably securing said arch wire between said base and said nut, said base having a pair of vertically extending slots at opposite sides, respectively, of said post, each for receiving any one of a plurality of orthodontia accessories therein.

2. An orthodontia appliance comprising a base and a threaded post extending therefrom, said post having a slot for the passage therethrough of a horizontally extending arch wire, a nut threaded onto said post for releasably securing said arch wire between said base and said wire, said base having a pair of vertically extending slots at opposite sides, respectively, of said post, each for receiving any one of a plurality of orthodontia accessories therein,

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said nut being operative, when threaded onto said post, to simultaneously releasably secure the arch wire in said slot of said threaded post and said accessories in said vertical slots.

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