March 24, 1931. J. L. PRESTON 1,797,481

FRACTURE SPLINT

Filed May 7, 1929 2 Sheets-Sheet 1

Fig. 1.

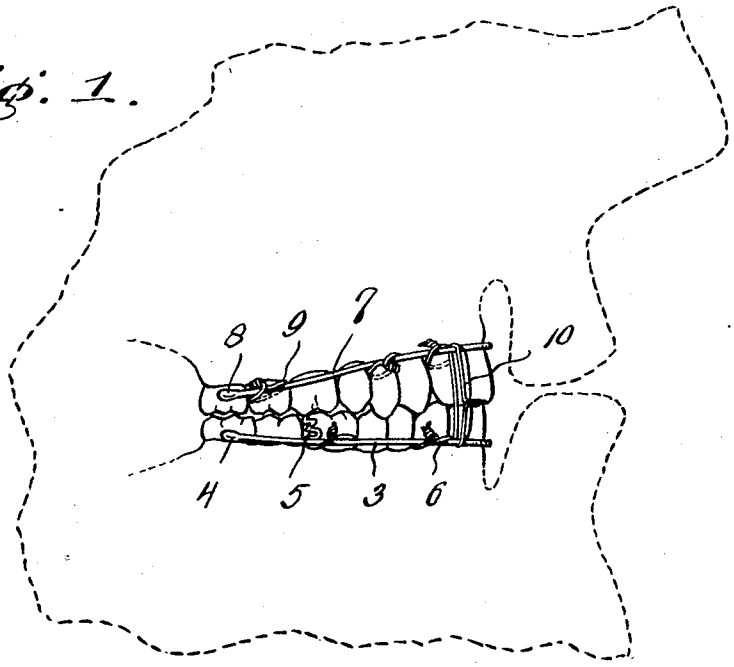
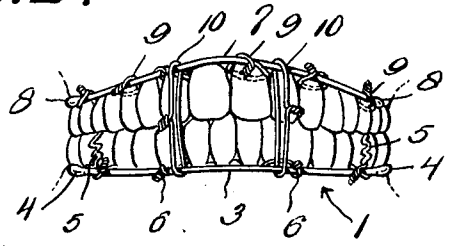


Fig. 2.



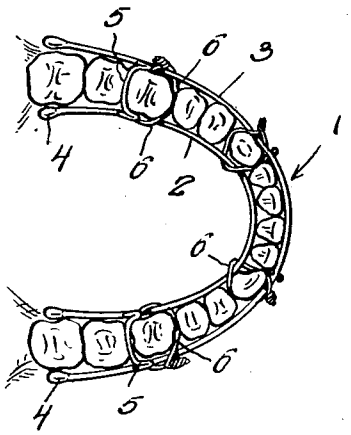


Fig. 4.

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Fig. 3.

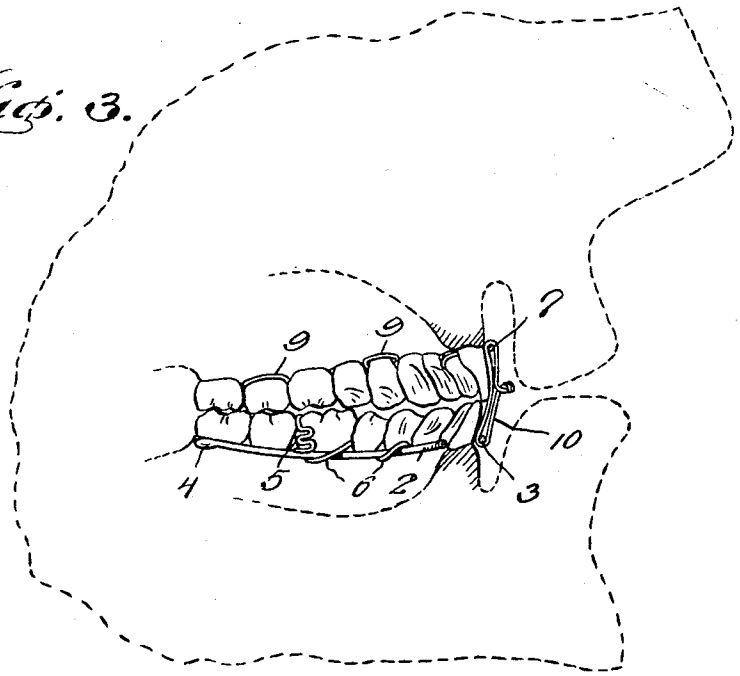


Fig. 5.

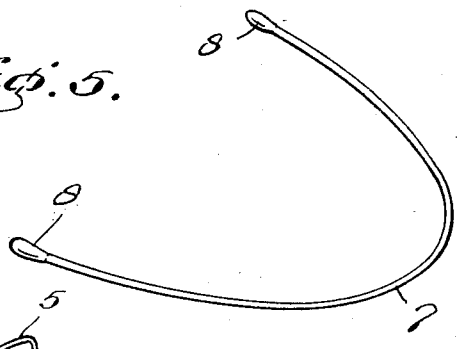
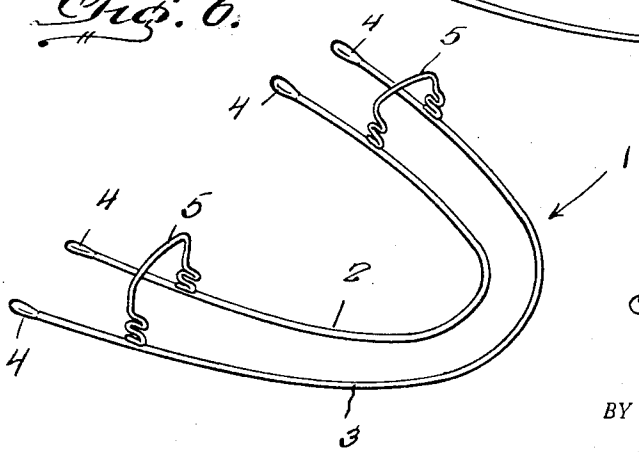


Fig. 6.



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Patented Mar. 24, 1931 1,797,481

UNITED STATES PATENT OFFICE

JOHN LEWIS PRESTON, OF WICHITA FALLS, TEXAS

FRACTURE SPLINT

Application filed May 7, 1929. Serial No. 361,138.

The present invention relates to improvements in fracture splints for use in the treatment of mandibular fractures and the present application is a continuation in part of my co-pending application bearing Serial No. 352,264, filed April 3, 1929.

One of the important objects of the present invention is to provide a fracture splint which includes complementary wire inter-dental splint members that can be readily and easily applied in position in the mouth of the patient so that the necessity of taking impressions of the mouth is eliminated, the wire inter-dental splint members being capable of use for any kind of fracture involving the body of the mandible, providing some teeth are present in the mouth for attachment.

Another important object of the invention is to provide a fracture splint of the above-mentioned character wherein early fixation of normal occlusion and immobilization of the jaws during the process of healing is afforded by the use of the present invention.

A still further object is to provide a fracture splint of the above-mentioned character wherein inelastic ligatures are employed for fastening the maxillary and mandibular bars together for the purpose of re-establishing normal occulsion and immobilization of the jaws during the process of healing.

Another object of the invention is to provide a fracture splint of the above-mentioned character wherein the maxillary and mandibular bars may be properly fastened in position against the upper and lower teeth respectively and in such a manner as to present a neat appearance and without causing any discomfort to the wearer.

A still further object is to provide a fracture splint of the above-mentioned character which is simple in construction, inexpensive, strong and durable and further well adapted for the purposes for which it is designed.

Other objects and advantages of the invention will become apparent from the following description when taken in connection with the accompanying drawings.

In the accompanying drawings wherein like reference characters indicate corresponding parts throughout the same:

Figure 1 is a side elevation of the fracture splint embodying my invention showing the same positioned in the mouth of the patient and further illustrating the manner in which the maxillary and mandibular bars are fastened together.

Figure 2 is a front view for further illustrating the inelastic ligatures for securing the maxillary and mandibular bars together and further illustrating the means for securing said bars to the respective teeth.

Figure 3 is a vertical sectional view therethrough.

Figure 4 is a top plan view of the inner and outer mandibular bars showing the interconnecting means therebetween extending around the adjacent teeth in the mouth of the patient.

Figure 5 is a detail perspective view of the maxillary bar per se; and

Figure 6 is a similar view of the inner and outer mandibular bars and the connecting means therebetween.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates generally the mandibular splint unit, the same comprising the inner and outer bars 2 and 3 that are preferably formed of gold wire, the same being bent into substantially U-shaped formation to conform to the contour of the lower set of teeth. Enlarged blunt heads 4 are formed on the free ends of the complementary inner and outer U-shaped members for the purpose of protecting the gums against injury by the ends of said U-shaped members.

The inner and outer U-shaped members 2 and 3 are interconnected through the medium

of finer wires 5 and these wires 5 further provide a means whereby the lower splint unit may be fixedly secured in position with respect to the lower teeth. In adjusting the mandibular splint unit, it is firmly grasped with the fingers and pushed down over the teeth to approximate position in the mouth. On the side opposite to the point of fracture, a rubber dam clamp is inserted over the bicuspid or molar tooth to hold the splint unit 1 securely while ligating the same on the opposite side.

The ligature wires 6 are so bent as to be disposed through the inter-proximal space between the teeth and underneath the inner or lingual bar, then the end of the ligature wire 6 is picked up and brought over the lingual bar and directed through the next inter-proximal space buccally, engaging the tooth as well as both splint bars 2 and 3. The excess wire is cut off and the ends of the ligature wire are twisted tightly to the attached tooth. This process of ligating the wire splint unit 1 is repeated to as many teeth on both sides of the jaw as necessary to insure fixation as suggested very clearly in Figure 4 of the drawings. The wires 5, which are malleable and crimped so as to be extensible, are merely employed for maintaining the inner and outer mandibular bar elements in the proper spaced relation to which they are adjusted with respect to each other, and the terminals of the crimped ends of the wires 5 may be soldered to the U-shaped members 2 and 3 adjacent the free ends thereof to provide a unitary structure.

The maxillary bar which is shown generally at 7 in Figure 5 is also formed from a piece of gold wire that is bent into substantially U-shaped formation to conform to the shape of the upper set of teeth and this maxillary bar 7 has its ends provided with heads 8 similar to the heads 4 and for the same purpose as the heads 4.

The maxillary bar 7 is preferably disposed against the outer faces of the upper teeth directly adjacent the gum and wire ligatures 9 similar to the wire ligatures 6 are associated with this maxillary bar 7 for securely fastening the same to the upper teeth.

After the upper and lower splint units have been properly attached to the upper and lower teeth respectively, in elastic ligatures in the form of strands of wire 10 are looped around the maxillary bar 7 and the adjacent portions of the outer mandibular bar 3 and the free ends of each ligature wire 10 are twisted together in the manner clearly suggested in Figures 1, 2 and 3 of the drawings. In this manner, normal occlusion is re-established, and immobilization of the jaws during the process of healing is insured.

Should it become necessary to open the patient's mouth after final adjustment of the splint units, as for the removal of a tooth, to treat the fracture or to replace a broken wire ligature, it is only necessary to cut the wire loops interconnecting the maxillary and outer mandibular bars with a pair of scissors. This can be done without disturbing the retention of the splint and when desired, reclosure of the mouth can be re-established by relooping the maxillary and outer mandibular bars together.

A fracture splint of the above-mentioned character may be made in different sizes to accommodate mouths of various sizes and furthermore due to its simplicity, my improved splint will be at all times positive and efficient in carrying out the purposes for which it is designed. The splint will furthermore present a neat appearance and will not cause any discomfort to the patient while being worn. The splint is constructed to provide a sanitary appliance and whenever desirable, the mouth can be washed out without disturbing the retention of the splint.

While I have shown the preferred embodiment of my invention, it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. In a fracture splint of the class described, a mandibular splint unit including inner and outer bar members for disposition against the respective faces of the lower teeth, crimped malleable wires connecting said bar members together, wire ligatures fixedly securing said units to the lower teeth, an upper splint embodying a bar member for engagement with the outer surfaces of the upper teeth, wire ligatures fixedly securing the upper splint to the upper teeth, and separate wire loops securing the upper bar member and the adjacent outer bar member of the mandibular unit together.

2. In a fracture splint of the class described, a mandibular splint unit including inner and outer bar members for disposition respectively against the inner and outer faces of the lower teeth, inverted U-shaped wires connecting said bar members together, wire ligatures fixedly securing said unit to the lower teeth, an upper splint embodying a bar member for engagement with the outer surfaces of the upper teeth, wire ligatures fixedly securing the upper splint to the upper teeth, and inelastic means for securing the outer bar member of the mandibular splint unit and the bar member of the upper splint together, said last-mentioned means comprising wire loops passed around the outer bar member of the mandibular splint unit and the upper splint and having their ends twisted together.

3. In a fracture splint of the class de-

scribed, a mandibular splint unit including inner and outer bar members for disposition respectively against the inner and outer faces of the lower teeth, and means adjustably connecting said bar members together, said last-named means comprising crimped malleable wires of substantially inverted U-shape having their ends attached to said bar members.

In testimony whereof I affix my signature.

JOHN LEWIS PRESTON.