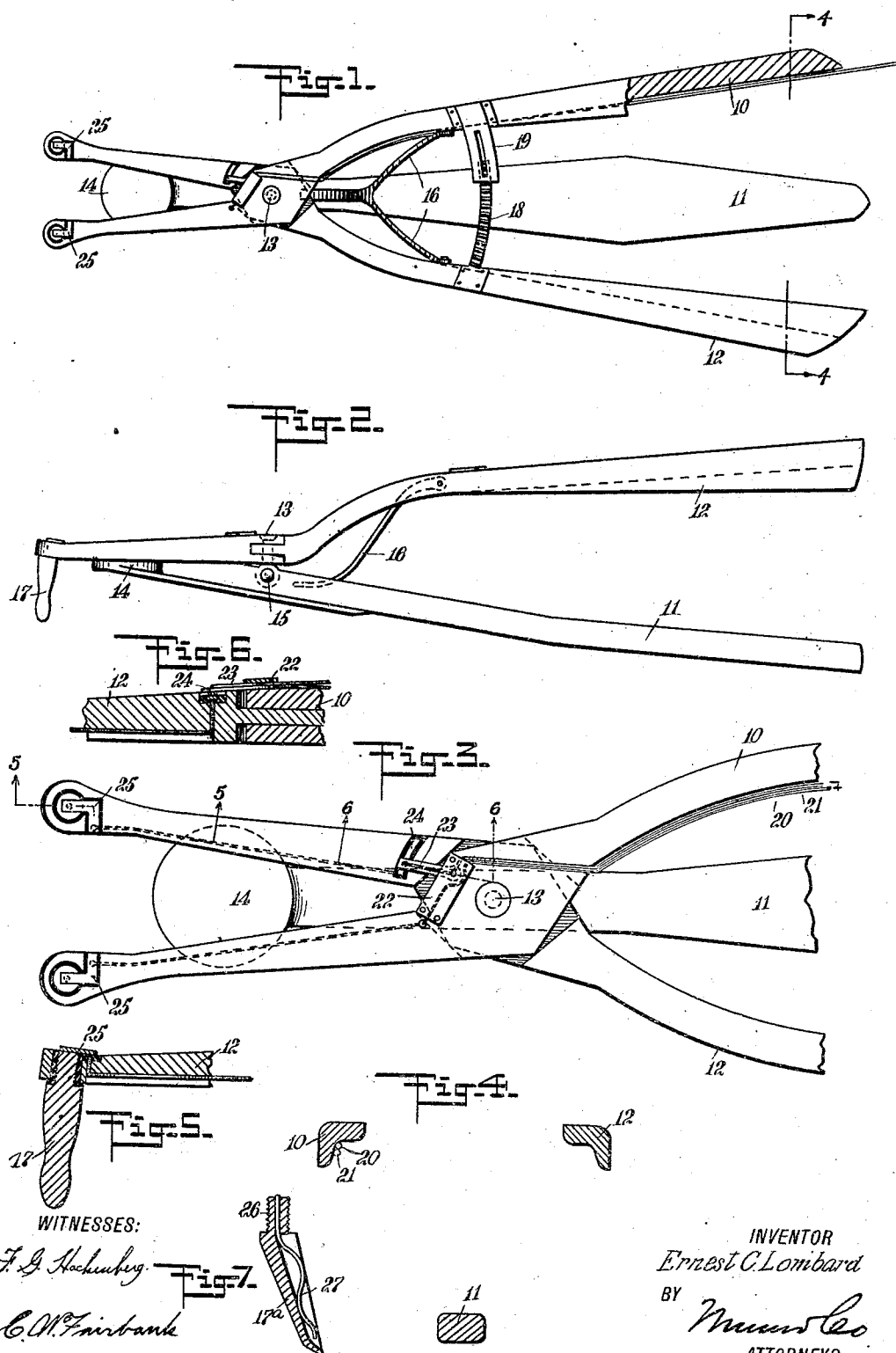


E. C. LOMBARD.
DENTAL FORCEPS.
APPLICATION FILED DEC. 16, 1909.

959,365.

Patented May 24, 1910.



WITNESSES:

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Fig. 7.

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DENTAL FORCEPS.

959,365.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed December 16, 1909. Serial No. 533,316.

To all whom it may concern:

Be it known that I, ERNEST C. LOMBARD, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Dental Forceps, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in dental forceps of that type commonly employed for the extraction of teeth, and the object of the invention is to so construct the forceps that a current of electricity may pass from one jaw of the forceps through the tooth or the gum to the other jaw of the forceps, while the forceps are in use.

In extracting teeth it is often necessary to force the jaws of the forceps down into the gums a considerable distance in order that a firm grip may be had on the tooth and this operation is usually very painful to the patient. The passage of a current of electricity through the gums from one jaw of the forceps to the other, tends to deaden the pain caused by the forceful insertion of said forceps jaws, and thus render the proper gripping of the tooth by the forceps a comparatively painless operation. By deadening the pain in this manner, no permanent injury or possible poisoning can occur, as is often the case where drugs or chemicals are employed for the purpose.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a plan view of a pair of dental forceps constructed in accordance with my invention; Fig. 2 is a side elevation thereof; Fig. 3 is a plan view of a portion of the forceps on an enlarged scale; Fig. 4 is a transverse section on the line 4—4 of Fig. 1; Figs. 5 and 6 are sectional details on the lines 5—5 and 6—6 of Fig. 3, and Fig. 7 is a longitudinal section through a modified form of jaw.

In the specific form of my invention which is illustrated in the accompanying drawings, I employ three main members 10, 11 and 12, all pivoted together. The two members 10 and 12 correspond to the two ordinary handle members of a pair of pliers or forceps, and these two members are secured together so as to turn about a pivot pin 13. The other

member 11 is a fulcrum member and has at one end a fulcrum plate 14, the function and operation of which will be set forth more fully hereinafter. The pivot pin 13, at one end, is connected to a second pivot pin 15, disposed at right angles to the pivot pin 13. This pivot pin 15 is mounted in the member 11, so that the member 11 may swing about this pivot pin to bring its ends toward or away from the ends of the other two members. The two members 10 and 11 thus move toward and from each other independent of any movement of the member 11, and the member 11 moves toward and from the other two members independent of any relative movement of the latter.

For normally holding the parts in the desired position I employ a spring 16. This spring preferably has one end thereof secured to or resting against the fulcrum member 11, and the opposite end is subdivided so as to form two branches for holding the handle ends of the main or gripping members 10 and 12 apart. Each of the handle members has an operating jaw 17, which is preferably made removable in order that different kinds of jaws may be employed for performing different kinds of work. In the use of the tool, these two jaws, which preferably extend substantially at right angles to the general length of the forceps, are forced down into the gum to grip the tooth. The handle members are then locked together, so as to hold the jaws in proper engagement with the tooth, and the fulcrum plate 14 is pressed down upon the top of the adjacent tooth by the forcing of the handle of the member 11 toward the handles of the other two members.

Any suitable means may be employed for locking the handles of the two members 10 and 12 together. As illustrated, the member 12 is provided with a curved spring bar 18, having a series of teeth or notches along its length, and the handle member 10 is provided with a curved receiver or sleeve 19, which receives the end of the curved bar 18 and engages with the notches or teeth in the latter. As the handles are forced toward each other, these two parts telescope and automatically lock the handles against separation, except upon the liberating or loosening of the parts by a pressing of the spring bar 18 away from operative engagement with the flange or catch on the part 19.

All of the features above described may

be varied in many particulars without departing from the spirit of my invention.

The main feature of the invention relates to the delivery of electric current to the jaws. As shown, two wires 20 and 21 are disposed within the groove or hole on the under side of the handle member 10, and at their outer ends may be connected to any suitable source of electrical energy. The wires extend inwardly along the member 10 to adjacent the pivot pin 13, and are there bent upwardly and lie along or within a groove in the upper surface of the member to a plate 22. The wires lie within a groove beneath this plate, and one of them, the wire 20, extends down through an opening in the member and thence along the under side of the jaw-carrying portion of said member 10. The other wire 21 terminates in a spring 23, the free end of which may slide over a contact plate 24 on the member 12. This contact plate is insulated from the member and is connected to a wire leading outwardly along the jaw-carrying portion of said member 12.

At the outer ends of the members 10 and 12, the jaws 17 are threaded into insulated sockets, so that they are not in electrical contact with the members. Upon the upper surfaces of the two members are contact plates 25, terminating above the upper ends of the jaws 17, so that when the latter are screwed into position, they engage with said contact plates. Thus with the outer ends of the wires 20 and 21 connected to the battery or other suitable source of electrical energy, the circuit will be normally opened and no current will flow, but as soon as the jaws 17 are projected into or come in contact with the moist gum or tooth, the circuit will be closed and a current will flow through the gum from one jaw 17 to the other. This passage of current tends to deaden the pain accompanying the forceful insertion of the forceps, so that said insertion of the forceps will be comparatively painless.

The jaws 17 may be removed from the forceps and replaced by others, and the connection with the wires will be automatically made upon the insertion of said substituted jaws. The jaws being insulated from the remainder of the forceps, there is no liability of a passage of current through the hand of the dentist or other operative, and the current cannot readily become short-circuited except through the tooth or gum when the forceps are being used.

Instead of forming the jaw of a solid body insulated from the remainder of the forceps, I may, if desired, form the jaw substantially as shown in Fig. 7. This jaw body 17^a is provided with an upper threaded end 26 adapted to screw directly into

one of the pivoted handle members instead of into a collar of insulated material as shown in Fig. 5. An insulated electric wire 27 extends through the threaded portion and terminates slightly above the upper end of said threaded portion so that it may engage with a contact spring similar to the contact spring 25. The body portion 17^a is provided with a groove along the inner surface thereof, within which said wire extends, and the lower portion or terminal of the wire is bare or uninsulated, so that when the forceps are inserted in place, the terminal portion of the wire will come in contact with a portion of the tooth or with the gum and the circuit will be closed.

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

1. A dental forceps having two members pivotally connected together and each terminating in a removable jaw portion, means for insulating each removable jaw portion from the remainder of its corresponding member, and electric connections insulated from said members and leading to said jaw members.

2. A dental forceps having two members pivotally connected together, and electric conductors extending along one of said members to a point adjacent the pivot thereof and thence separating and extending along both of said members to their outer or free ends, the circuit being closed between said ends by the tooth or gum when the forceps are in use.

3. A dental forceps having two members pivotally connected together, each having a jaw extending substantially at right angles to the general direction of the member, means for locking said members together, and a fulcrum member pivoted to the first-mentioned members adjacent the pivotal connections between the latter.

4. A dental forceps having two members pivotally connected together and each having a jaw, means for locking said members together, a fulcrum member pivoted to the first-mentioned members adjacent the pivotal connections between the latter, and a spring engaging with both of the first-mentioned members and normally tending to separate them and also engaging with said fulcrum member and normally tending to separate it from said first-mentioned members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNEST C. LOMBARD.

Witnesses:

ADA LOMBARD,
EDWARD BROOKS.