

W. E. WALKER.
ORTHODONTIST'S PLIERS.
APPLICATION FILED OCT. 14, 1911.

1,064,404.

Patented June 10, 1913.

2 SHEETS-SHEET 1.

Fig. 1.

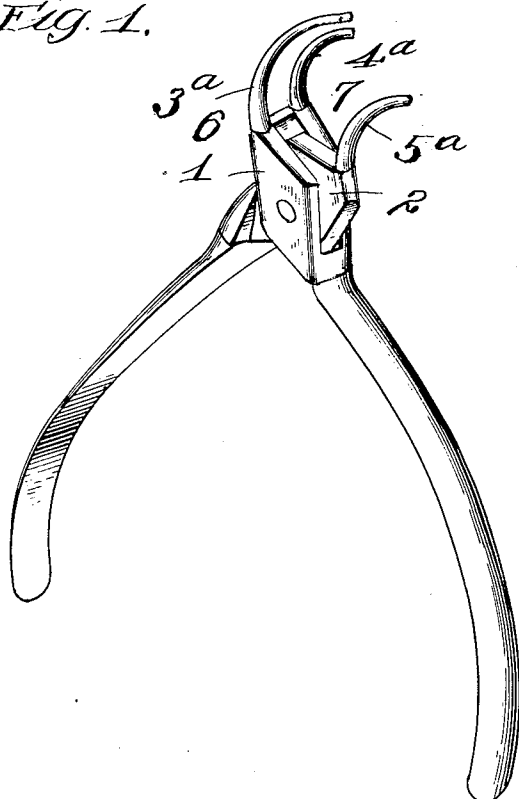


Fig. 1a.

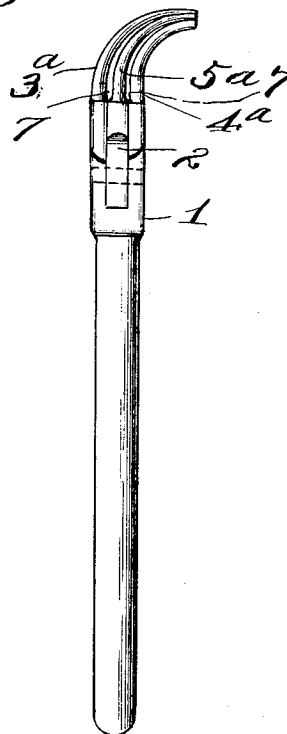


Fig. 2.

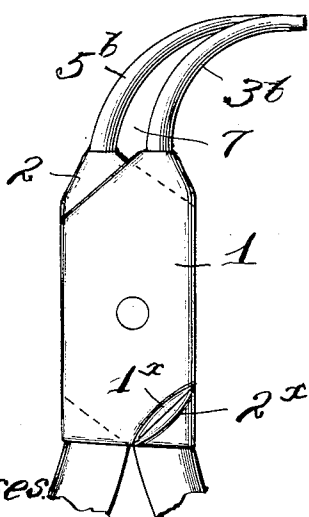
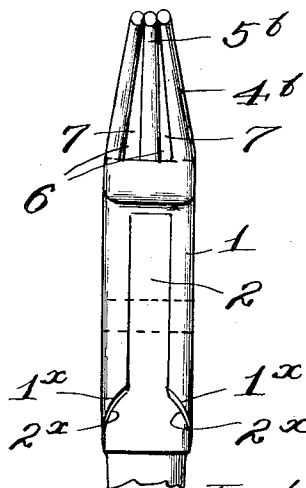


Fig. 2a.



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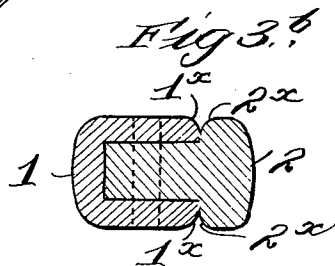
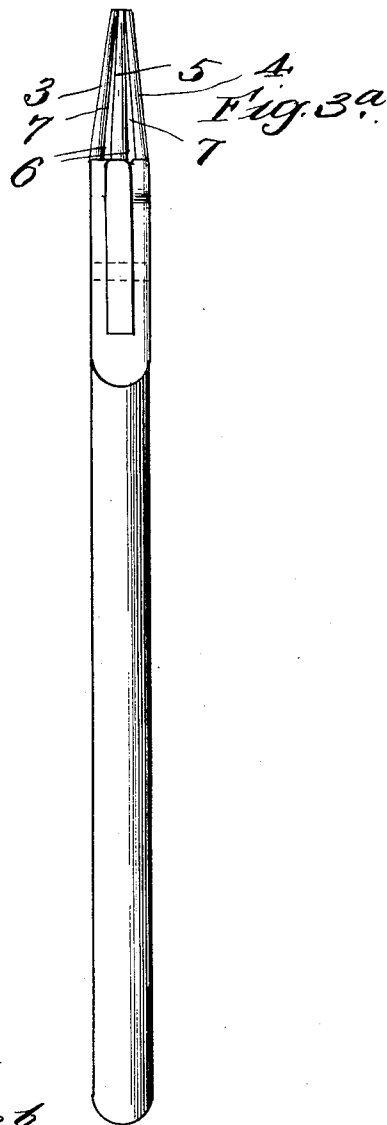
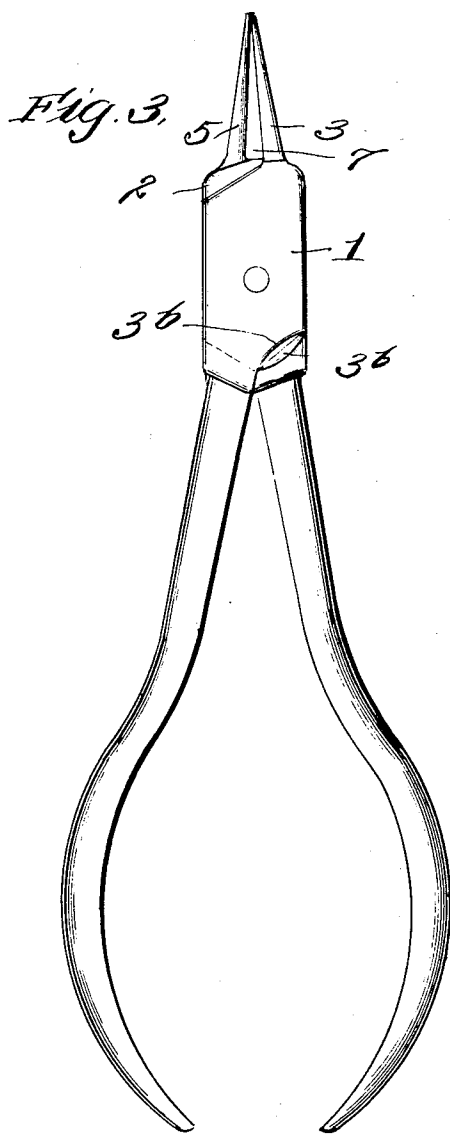
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM ERNEST WALKER, OF NEW ORLEANS, LOUISIANA.

ORTHODONTIST'S PLIERS.

1,064,404.

Specification of Letters Patent.

Patented June 10, 1913.

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To all whom it may concern:

Be it known that I, WILLIAM ERNEST WALKER, orthodontist, a citizen of the United States, and a resident of New Orleans, in the parish of Orleans and State of Louisiana, (whose post-office address is 629 Maison Blanche, in said city of New Orleans,) have invented certain new and useful Improvements in Orthodontists' Pliers, of which the following is a specification.

This invention relates to pliers designed primarily for the use in looping, bending, shaping, or otherwise manipulating the wire or other stock in the production or adjustment of carrying or bearing members, or connections employed in the practice of orthodontia. One of the adjustments frequently required to be made in that art is the looping or deflecting of thin wire, like stock-forming parts of appliances, without distorting the material elsewhere, and oftentimes while the part lies in close application within a patient's mouth, often behind the teeth or otherwise difficult of access; also to bend or set the material with accuracy in the original forming while avoiding distortion of other parts. These and other services required are very difficult to perform with tools as heretofore made.

My present invention provides a tool adapted for service of the kind stated, and will be fully understood upon reference to the accompanying drawings, in which,

Figures 1 and 1^a, Figs. 2 and 2^a, and Figs. 3 and 3^a, show by views at right angles to each other, each of three different embodiments of the invention; Fig. 3^b illustrates a cross section of the jaws.

In each form of the invention, the tool comprises a pair of jaws 1, 2, whose serving ends comprise three fingers 3^a, 4^a, 5^a, Figs. 1, 1^a, or 3^b, 4^b, 5^b, Figs. 2, 2^a, or 3, 4, 5, Figs. 3, 3^a. These fingers are of substantially circular section. Two of them (3, 4, or 3^a, 4^a, or 3^b, 4^b) constitute a pair, symmetrically mounted upon one jaw, 1, with a space 6 between them that is about the same at the top as, but somewhat greater at the base than the diameter of the third finger 5, which is carried by the other jaw 2 so that the latter fills up the space at the points between the pair of beaks first named in closing. The fingers are further spaced as at 7, so that a wire will be admitted between not only any pair of fingers, but between

the single finger and the pair of fingers. The pair of fingers 3, 4, etc., may enter a comparatively restricted space, behind a bow (for instance) to be deflected, the closing down of the single finger 5, etc., will deflect the material into the space between the pair and develop any desired depth of loop without distorting or bringing disturbing strains to bear upon the remainder of the material or anchorage or other parts holding it. Each finger 3, 4, 5, etc., is preferably tapered and given an inclination, and the degree of entrance of the single finger between the pair, diminishes toward the carrying jaws, so as to cause the inter-finger spaces 6 and 7 to enlarge toward the jaws and adapt the tool to receive different sizes of stock in handling the wire; also for the purpose of counteracting tendency of the wire to be displaced from the ends of the fingers, in gripping. Each finger 3, 4, 5, etc., stands alone and affords an independent mandrel about which to wind the material that may lie adjacent thereto or to receive an already formed loop or eye in bringing to bending position, a portion of the material adjacent thereto. To facilitate reaching the work, the three fingers may be deflected laterally from the longitudinal axis of the tool, by curving or otherwise, for instance as shown in Figs. 1 and 2, where they are shown curved through an arc of 90° to present the extreme gripping ends in a direction perpendicular to the general plane of the handles. The deflection may be, as shown in Figs. 1, 1^a, in planes perpendicular to the direction of occlusion between the jaws, in which case occlusion would occur between the straight sides of the curved finger 5^a and the curved fingers 3^a, 4^a, and tools would be made both right and left handed; or the deflection may take place, as in Figs. 2, 2^a, in planes parallel to the direction of occlusion, in which event the curved sides of the fingers would approach in occlusion.

According to Figs. 3, 3^a, the fingers 3, 4 and 5 are made straight and positioned lengthwise of the tool.

As will be seen from Fig. 3^b, the jaw 2 is without shoulders adjacent the fingers, while at the grip end of the jaws, the abutting shoulders are rounded as at 1^x, 2^x, to eject the lips of the patient coming in between the shoulders when the tool is used in the mouth, and thus avoid pinching.

I claim:

1. A pair of pliers comprising jaws provided, the one with a pair of fixedly related but separated fingers of substantially
5 circular section, and the other with a single finger of substantially circular section occluding the space between and touching the points of the pair of fingers.
2. A pair of pliers comprising jaws provided, the one with a pair of fixedly related
10 but separated fingers of substantially circular cross section, and the other with a single finger of substantially circular cross section said single finger occluding the space
15 between and touching the points of the pair of fingers, but standing apart from said pair of fingers at the base to leave a space between the single finger and the pair of fingers at their base.
- 20 3. A pair of pliers comprising jaws provided, the one with a pair of fixedly related but separated fingers of substantially circular cross section, and the other with a
25 single finger of substantially circular cross section said single finger occluding the space between the points of the pair of fingers, but standing apart from said pair of fingers at the base to leave a space between the single finger and the pair of
30 fingers at their base; said fingers converging toward their points in order to graduate the spaces left between the fingers, whereby they are adapted to receive stock of different diameters.
- 35 4. A pair of pliers comprising jaws provided, the one with a pair of fixedly related but separated fingers converging toward their points and of substantially circular cross section, and the other with a single
40 finger of substantially circular cross section said single finger occluding the space between the points of the pair of fingers, but standing apart from said pair of fingers at the base to leave a space between the single
45 finger and the pair of fingers at their base; said fingers being inclined in position to

graduate the spaces left between the fingers, whereby they are adapted to receive stock of different diameters, and said fingers being tapered from their bases outward so
50 as to present larger diameters to the larger stock.

5. A pair of pliers comprising jaws provided, the one with a pair of fixedly related but separated fingers converging toward
55 their points and of substantially circular cross section, and the other with a single finger of substantially circular cross section occluding the space between the points of the pair of jaws; said fingers being de-
60 flected laterally to present their ends at an angle to the longitudinal axis of the pliers.

6. A pair of pliers comprising jaws provided, the one with a pair of fixedly related but separated fingers converging toward
65 their points and of substantially circular cross section, and the other with a single finger of substantially circular cross section occluding the space between the pair of fingers; said fingers being curved laterally
70 in planes transverse to the direction of occlusion to present their ends at an angle to the longitudinal axis of the pliers.

7. A pair of pliers comprising jaws provided, the one with a pair of fixedly related
75 but separated fingers converging toward their points and of substantially circular cross section, and the other with a single finger of substantially circular cross section occluding the space between the pair of
80 fingers, and with the outer end of the single finger entering between the outer ends of the pair of fingers when the pliers are closed.

The foregoing specification signed at
85 Washington, D. C., this 16th day of September, 1911.

WILLIAM ERNEST WALKER.

In presence of—

HERVEY S. KNIGHT,
EDWIN S. CLARKSON.