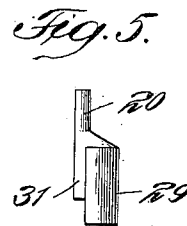
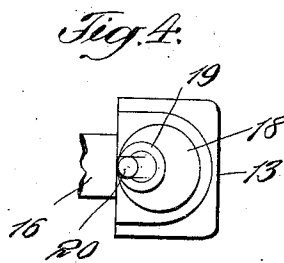
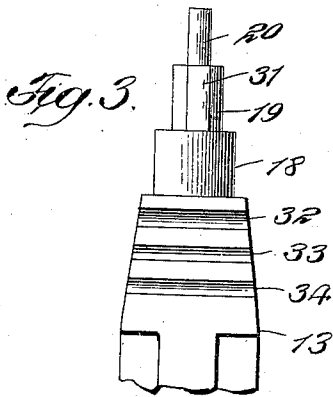
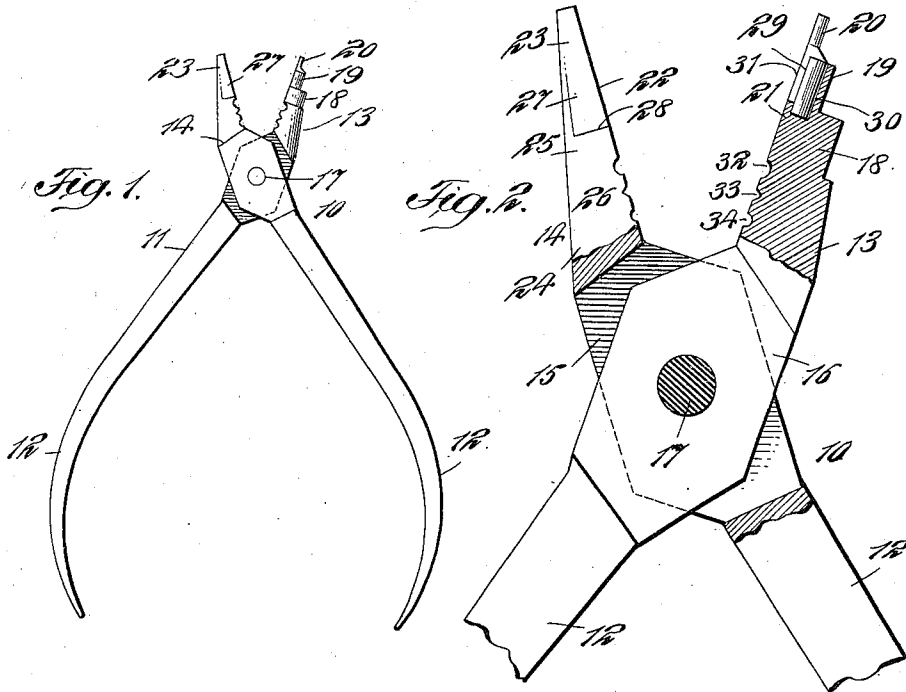


J. L. YOUNG.  
PLIERS.

APPLICATION FILED DEC. 15, 1910.

995,754.

Patented June 20, 1911.



WITNESSES  
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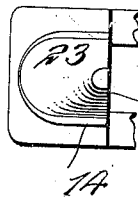


Fig. 6.  
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# UNITED STATES PATENT OFFICE.

JACOB LOWE YOUNG, OF NEW ROCHELLE, NEW YORK.

## PLIERS.

995,754.

Specification of Letters Patent. Patented June 20, 1911.

Application filed December 15, 1910. Serial No. 597,459.

### *To all whom it may concern:*

Be it known that I, JACOB LOWE YOUNG, a citizen of the United States, and a resident of New Rochelle, county of Westchester, and State of New York, have invented certain new and useful Improvements in Pliers, of which the following is a full, clear, and exact description.

This invention relates more particularly to pliers for bending wire for dental purposes.

The primary object of the invention is to provide a simple and efficient device in which the jaw of one member of the pliers may have a plurality of cylindrical parts about which the wire may be readily bent and be positively held by the jaws during the bending operation, and at the same time provide a device in which the cylindrical parts form a plurality of mandrels of different diameters in order that the wire or object may be bent to different degrees to adapt the wire for various purposes.

Another object of the invention is to provide a device in which the gripping jaws of the members may be made to hold and grip solid or tubular wire of different diameters either for bending or for other purposes.

A further object of the invention is to provide a device or tool in which one part forming a mandrel may be made very small and this part held in such a way that it may be removed in case of breakage, or to adapt the same to be separately tempered.

A still further object of the invention is to provide a device which may be used for various purposes and which device may be readily made.

With these and other objects in view, the invention will be hereinafter more particularly described with reference to the accompanying drawings, which form a part of this specification, and will then be pointed out in the claims at the end of the description.

In the drawings, Figure 1 is an elevation of one form of device embodying my invention, showing the members in an open position. Fig. 2 is an enlarged view, partly in section and partly in elevation, of the jaw portion of the device, the handle being partly broken away. Fig. 3 is an enlarged elevation looking at the gripping surface of one jaw of the device. Fig. 4 is a plan view of Fig. 3. Fig. 5 is a detail elevation of one part of the mandrel jaw; and Fig. 6 is a

plan view similar to Fig. 4 of the other gripping jaw.

The device comprises two members 10 and 11 each of which has a handle portion 12, and on the member 11 is a gripping jaw 13 while on the member 10 is a gripping jaw 14. One of the members, as the member 10 for example, has a slot 15 therethrough adjacent to the jaw 14 through which a reduced portion 16 of the member 11 passes, and passing through both jaws is a pin 17 by which the two members are pivotally held together in a manner similar to that of the ordinary pliers so that by moving the handle portions 12 toward each other, the jaws 13 and 14 of the members 10 and 11 will be also moved into gripping position or toward each other. The parts thus far described may be of the usual or of any preferred construction.

The jaw 13 has a plurality of cylindrical parts 18, 19 and 20 of different diameters, and these parts form mandrels about which the wire or object to be bent or formed is adapted to be forced, and one surface of all of these parts is in alinement to form a gripping surface 21, which is opposed to the gripping surface 22 of the jaw 14 in order that the wire or object to be bent or formed may be positively gripped between the surfaces 21 and 22 when brought together. These parts 18, 19 and 20 may vary in diameters as desired, and the number of said parts may vary according to the work for which the tool or device is to be used. The jaw 14 may have its gripping part 22 straight throughout the entire length to provide a relatively large gripping surface as compared with the surface 21, and said jaw may taper from the front as 23, to the rear portion 24 and have a rounded back 25 which may have the same curvature throughout the entire length of the jaw or the said curvature may vary. That is, the part 26 may be of greater diameter or greater curvature than the part 27 in which case the jaw 14 while tapering will be cut away to form a shoulder 28. By providing the jaws in the manner shown, the wire whether gold, silver or other metal, whether solid or tubular, may be readily bent to the desired shape and in a better and more effective manner than the means ordinarily employed for this purpose.

In order to avoid difficulty in tempering the jaws of the device, and owing to the

small size of the part 20 which may be broken while in use more easily than the other parts, owing to the smallness of the same, I prefer to make this part detachable  
 5 from the other part of the jaw 13. The mandrel part 20 is formed integral with the shank portion 29 and this shank portion 29 may be straight as shown or may be tapered if preferred and is adapted to fit  
 10 in an opening or socket 30 extending into the mandrel part 19, and also the mandrel part 18. The mandrel part 19 is cut away toward the gripping surface to form a groove and adapted to fit this groove is a  
 15 key portion 31 by which the mandrel part 20 may be held against rotation, the said part 31 being made to form a continuation of the peripheral surface of the mandrel member or part 19. The shank 29 with its  
 20 mandrel portion 20 forms a detachable part or member which may be readily replaced in case it is broken and which may be more easily tempered and handled than if it was made integral with the jaw 13.

25 A series of transversely-extending grooves 32, 33 and 34 is located in each of the jaws 13 and 14 on the gripping face or part thereof, and these grooves may vary in shape, as well as size, to adapt them to hold different  
 30 sizes of wire or whatever is to be clamped between the jaws for bending or for other purposes. As shown, each of the grooves are alined with the corresponding groove of the opposite jaw so that they form a complete  
 35 circle or square or other form according to the shape. Each groove 33 is V-shaped to form a square opening when the jaws are brought together and the grooves 32 and 34 are semi-circular so that when the jaws are  
 40 brought together they will form openings, so that whatever is clamped in said grooves may be held therein or the body thereof may be bent around the jaws according to the shape thereof. It will be seen that each of  
 45 the jaws at a point back of the mandrel part 18 provides a wide gripping surface and this surface may be made in such a way that it can grip objects of various kinds and shapes.

From the foregoing, it will be seen that a  
 50 simple and efficient device is provided which is particularly adapted for dental purposes though it may be used for other purposes; that said device is simple in construction; that said device is so made that wire or  
 55 similar objects may be clamped between the jaws and bent to various shapes and various sizes; and that said device provides simple means for either repairing or tempering the smallest and most delicate part of the device  
 60 in case of breakage.

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

1. A device of the character described,  
 65 comprising two members pivotally held to-

gether each having a jaw portion and a handle portion, and a plurality of cylindrical mandrel parts of relatively different diameters on one of the jaws, said mandrel parts having one part of their peripheral surface  
 70 in alinement.

2. A device of the character described, having two members pivotally held together and provided with a handle portion at one end and clamping jaws at the other, one of  
 75 said jaws having a plurality of cylindrical mandrel portions of relatively different diameters whose axes extend longitudinally of the pliers, and a smaller mandrel portion provided with a stem detachably held in one  
 80 of the other mandrel portions and forming a continuation thereof.

3. A device of the character described, having two members pivotally held together and provided with a handle portion at one  
 85 end and clamping jaws at the other, one of said jaws having a plurality of mandrel portions whose axes extend longitudinally of the pliers, and a smaller mandrel portion provided with a stem detachably held in one  
 90 of the other mandrel portions and forming a continuation thereof.

4. A device of the character described, having two members pivotally held together and jaws provided with tapered gripping  
 95 surfaces with rounded back portions, and each having transversely-extending grooves on said gripping portions in alinement with those of the opposite jaw, and one of said jaws being provided with a plurality of cylindrical mandrel portions of relatively different diameters and arranged in alinement to provide a common gripping surface.

5. A device of the character described, having two members pivotally held together  
 105 and jaws each having transversely-extending grooves on the gripping portions thereof in alinement with those of the opposite jaw, and one of said jaws being provided with a plurality of cylindrical mandrel portions of  
 110 relatively different diameters.

6. A device of the character described, having two members pivotally held together and jaws provided with tapered gripping  
 115 surfaces with rounded back portions, and each having transversely-extending grooves on said gripping portions in alinement with those of the opposite jaw, one of said jaws being provided with a detachable cylindrical mandrel portion.

7. Pliers comprising two members pivoted together and each having a jaw portion and a handle portion, one of the jaws having a plurality of curved mandrel parts of different curvature and all of which engage the  
 125 other jaw by their curved faces when the jaws are closed.

8. Pliers comprising two members pivoted together and each having a jaw portion and a handle portion, one of the jaws having a  
 130

plurality of curved mandrel parts of different curvature and all of which engage the other jaw by their curved faces when the jaws are closed, one of the mandrel portions  
5 being detachable.

9. Pliers comprising two members pivoted together and each having a jaw portion and a handle portion, one of the jaws having a plurality of curved mandrel parts of different curvature and all of which engage the  
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other jaw when the jaws are closed, the mandrels at the end of the jaw being smaller than the others and detachably held in the adjacent mandrel.

This specification signed and witnessed 15  
this 13th day of December A. D. 1910.

J. LOWE YOUNG.

Witnesses:

W. A. TOWNER, Jr.,

C. BARTELS.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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