J. B. McALLISTER.

DENTAL PLIERS.

APPLICATION FILED SEPT. 20, 1915.

1,190,180. Patented July 4, 1916.

Fig. 1.

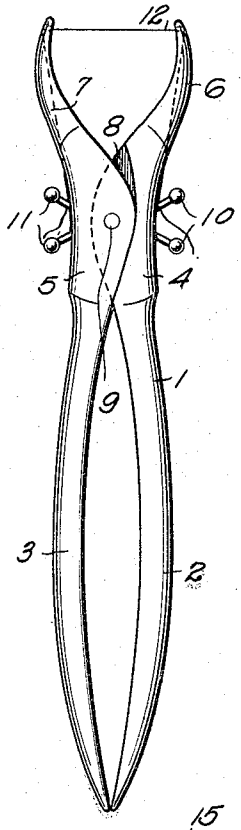


Fig. 2.

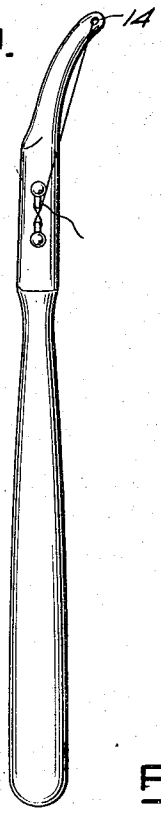


Fig. 3.

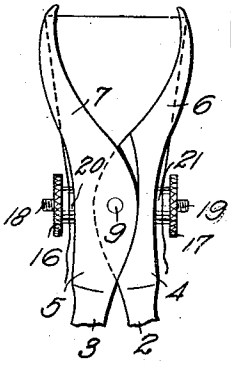


Fig. 4.

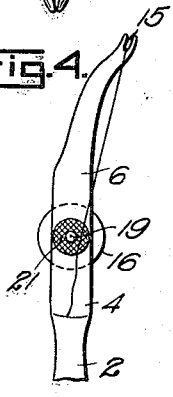


Fig. 5.

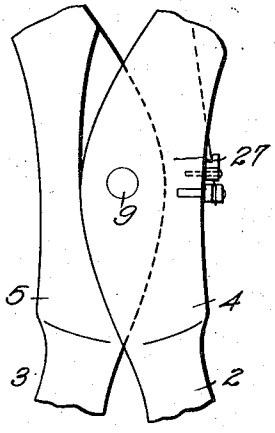


Fig. 6.

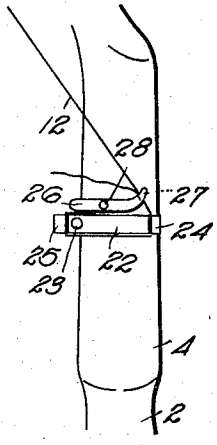
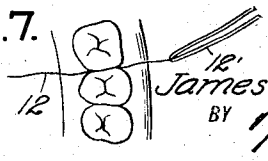


Fig. 8.



Fig. 7.



WITNESSES

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DENTAL PLIERS.

1,190,180. Specification of Letters Patent. Patented July 4, 1916.

Application filed September 20, 1915. Serial No. 51,570.

To all whom it may concern:

Be it known that I, JAMES B. McALLISTER, a citizen of the United States, and a resident of St. Johnsville, in the county of Montgomery and State of New York, have invented a new and Improved Dental Pliers, of which the following is a full, clear, and exact description.

This invention relates to pliers and particularly to dental pliers, and has for an object the provision of an improved arrangement whereby a ligature may be operated properly and easily for producing a separation of adjacent teeth.

Another object in view is to provide a pair of pliers with an improved arrangement for holding the cord or ligature of any suitable kind while the pliers are being operated so that a knot arranged in the ligature may be drawn to a position between adjacent teeth and thereby produce a separation of the teeth.

A still further object in view is to provide a pair of dental pliers with an improved arrangement of retaining and gripping or clamping members for holding the ends of the ligature in position while the pliers are being operated.

In the accompanying drawings:—Figure 1 is a plan view of a pair of pliers embodying the invention; Fig. 2 is an edge view of the structure shown in Fig. 1; Fig. 3 is a plan view of a pair of pliers embodying a slightly modified form of ligature retaining device to that shown in Fig. 1; Fig. 4 is an edge view of the structure shown in Fig. 3; Fig. 5 is an enlarged fragmentary side view of another ligature retaining device for pliers; Fig. 6 is an edge view of the structure shown in Fig. 5; Fig. 7 is a plan view of part of a jaw with several teeth arranged thereon together with a short section of cord; Fig. 8 is a fragmentary edge view of a tooth together with a ligature provided with a knot and one end of a pair of pliers associated therewith illustrating how the pliers may force the knot between adjacent teeth.

Referring to the accompanying drawings by numerals, 1 indicates the pliers in their entirety, which pliers are provided with gripping portions 2 and 3 of any suitable size and shape. The gripping portions 2 and 3 merge into what may be termed interlocking body sections 4 and 5 which in turn merge into operating jaws 6 and 7. The jaws 6 and 7 are slightly bent to one side, as shown in Fig. 2, so as to better straddle the teeth in operating the device. It will be noted that the body section 5 is provided with a slot for receiving the web 8 of the section 4, with two sections being connected together by a suitable pivotal pin 9. By this construction and arrangement the parts of the pliers are not crossed in the manner of an ordinary pliers. Pins 10 and 11 are connected to the respective sections 4 and 5 so as to receive the ends of the ligature 12. Preferably these pins are provided with enlargements or heads and are adapted to have the ends of the ligature 12 wrapped around the same so as to prevent any slipping of the ligature.

In operating the pliers it is necessary first to pass the ligature 12 between the teeth, as shown in Fig. 7, and if desired to draw an enlarged ligature 12′ between the teeth, after which the ligature is formed with a knot 13, as shown in Fig. 8. The ends of the ligature are then threaded through the apertures 14 provided in the ends of the jaws 6 and 7. After the ends of the ligature have been threaded through the apertures 14 they are secured to pins 10 and 11 and are drawn reasonably tight. The jaws 6 and 7 are then separated or spread from the position shown in Fig. 8 to their extreme open position, which will naturally cause the knot 13 to move downwardly between the adjacent teeth and cause the separation thereof. If the separation is not sufficient a second knot may be used, and so on until the desired separation is secured. It is of course evident that a larger ligature may be used for providing a greater opening than a small ligature. It will be noted that ample power is provided for forcing the knot between the teeth by the use of the jaws 6 and 7, which is not the case where the knot is drawn manually by the operator's hand. In using the ligature for providing a separation between some of the back teeth it is very difficult for the operator to properly pull the ligature for causing the knot to move between the teeth. By the provision of the jaws 6 and 7 and associated parts a knot may be readily forced between the back teeth for producing any desired separation without any appreciable discomfort to the patient except for the pain incident to the separation.

In Figs. 3 and 4 will be seen a modified

form of the invention in which the construction of the pliers is the same except that instead of the opening 14 in the jaws 6 and 7 the jaws are provided with slots 15 through which the ligature is passed and then held in place by thumb screws 16 and 17 threaded onto the posts 18 and 19, The posts are rigidly secured to the pliers in any suitable manner. The respective parts of the pliers are also provided with bosses 20 and 21 having serrated or roughened faces which coact with the serrated or roughened faces of the screws 16 and 17 for clamping the ends of the ligature against movement. It is evident that the construction shown in Fig. 2 and that shown in Figs. 5 and 6 could be provided with a slot similar to slot 15 without departing from the spirit of the invention, as any form of opening which will receive the ligature will answer the purpose.

In Figs. 5 and 6 will be seen a further modified form of the invention in which each of said parts of the pliers is provided with a pair of pawls, more clearly shown in Fig. 6, which are intended to receive and hold the ligature 12 against movement. The pawl 22 is pivotally mounted on a pin 23 rigidly secured in any suitable manner to the pliers whereby the pawl 22 may be freely moved. The pawl 22 is provided with notches 24 and 25 over which part of the ligature 12 is passed and then caused to extend between pawl 22 and pawl 26, the last mentioned pawl being provided with a notch 27 over which the ligature is passed. Pawl 26 is pivotally mounted at 28 to the pliers, said pivotal mounting being approximately midway of the respective pawls so that when there is any strain on the ligature 12 the pawls will move together to engage each other in such a manner that the entire length of the sides will be in contact, thus producing an effective pinching action against the section of the ligature between the pawls. This will positively prevent any slipping of the ligature when the knot is being drawn.

It will be evident that slight modifications and changes may be made without departing from the spirit of the invention and various adjustments and different assemblages of parts could be utilized, as for instance, only one of the securing members for the ligature could be used, as for instance, member 17, or only one set of pins, as for instance pins 10. It is also evident that if desired one aperture similar to aperture 14 could be used in one jaw and a slot 15 could be used on the opposite jaw, as this arrangement would serve exactly the purpose intended. No claim is made to the detail or specific construction shown in Figs. 3 and 4, as this structure is claimed specifically in my co-pending application Serial No. 101,467 filed June 3, 1916, and entitled Dental Pliers.

What I claim is:—

1. In a pair of dental pliers of the character described, a plier construction provided with a pair of jaws pivotally connected together and gripping portions for actuating the jaws, and means arranged on the pliers for receiving and holding against independent movement the ends of a ligature, said jaws being provided with openings through which said ligature passes.

2. In a pair of dental pliers of the character described, a plier construction provided with a body, gripping portions and a pair of jaws, said jaws being bent so as to extend to one side of the body, the outer end of the jaws being provided with openings for receiving a ligature, and ligature receiving gripping members arranged on said body portion for receiving and holding the ends of said ligature after the same have been passed through said openings.

3. In a pair of dental pliers of the character described, a plier construction including a pair of jaws having openings therein for receiving a ligature, a pair of pawls pivotally mounted on the plier structure, one of said pawls being pivotally mounted near the end thereof and the other near the center thereof whereby the sides of the pawls will engage when one pawl is pulled over against the other, said pawls being provided with notches for assisting in holding the end portions of the ligature on the pawls so that one section thereof will be between the sides thereof.

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

JAMES BELLINGER McALLISTER.

Witnesses:
LEONARD G. WALRATH,
GEORGE A. ALLEN.

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