Jan. 23, 1923. 1,442,986.

S. TOY.

GEM SETTING TOOL.

FILED MAY 5, 1921. 2 SHEETS—SHEET 1.

Fig. 1.

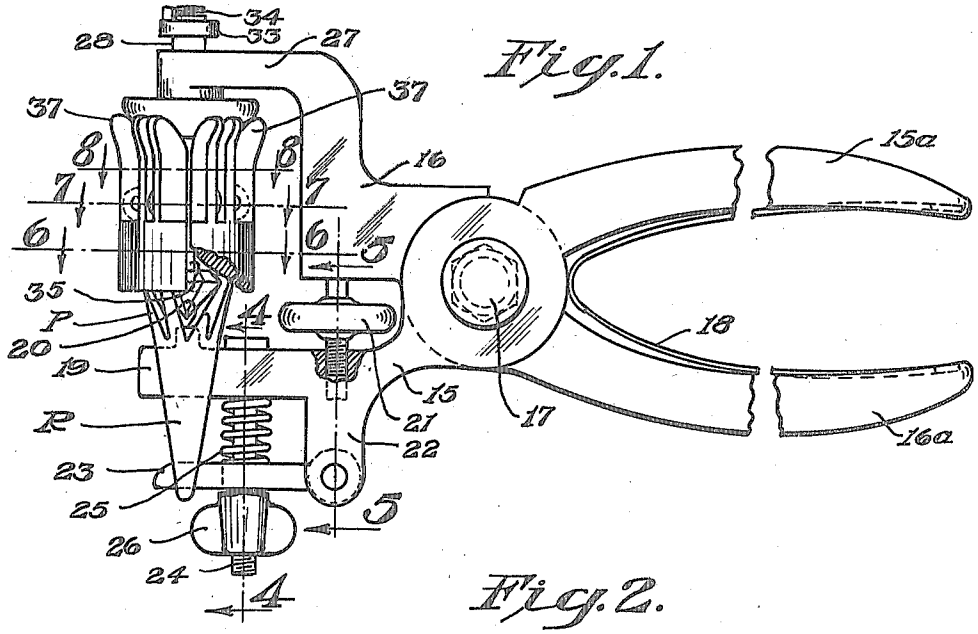


Fig. 2.

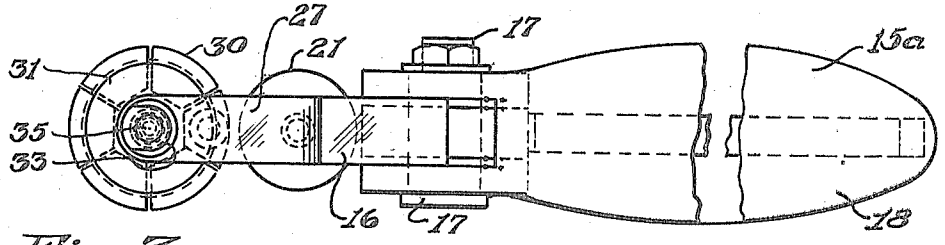


Fig. 3.

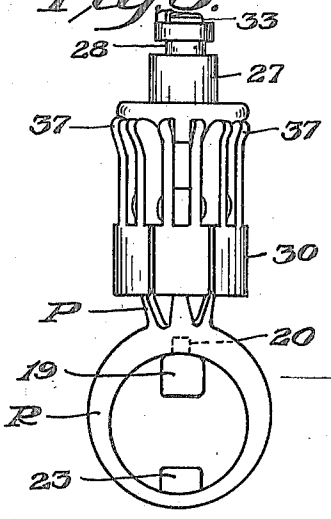


Fig. 4.

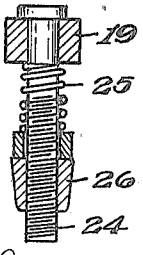
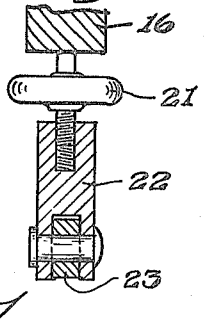


Fig. 5.



Samuel Toy INVENTOR.

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Fig. 6.

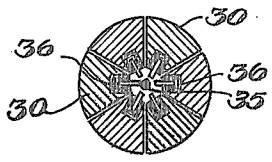


Fig. 7.

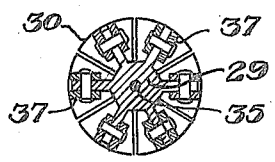
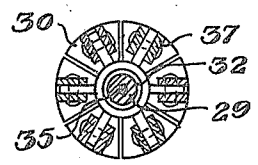


Fig. 8.



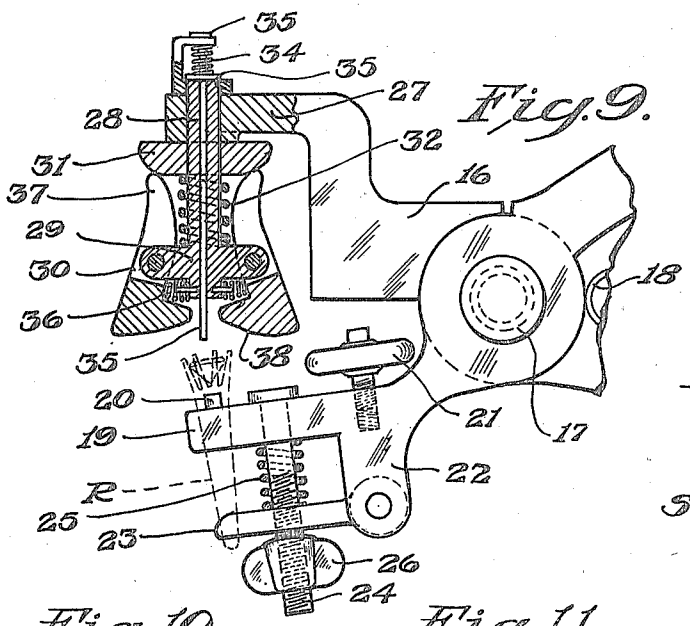


Fig. 9.

Fig. 12.

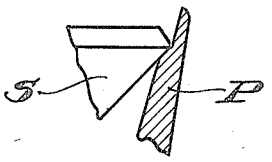


Fig. 10.

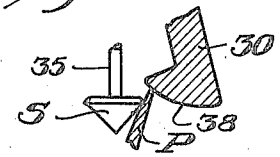


Fig. 11.

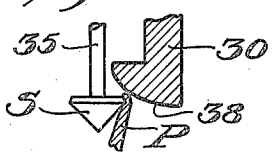


Fig. 13.

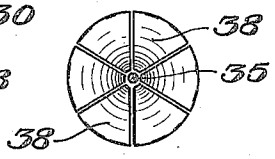
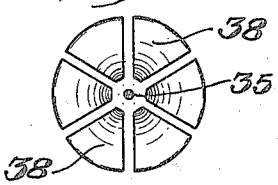


Fig. 14.



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Patented Jan. 23, 1923. 1,442,986

UNITED STATES PATENT OFFICE.

SAMUEL TOY, OF BOSTON, MASSACHUSETTS.

GEM-SETTING TOOL.

Application filed May 5, 1921. Serial No. 467,196.

To all whom it may concern:

Be it known that I, SAMUEL TOY, a subject of the Russian Government, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Gem-Setting Tool, of which the following is a specification, reference being had to the accompanying two sheets of drawings, forming part thereof.

My invention relates to gem setting tools, more particularly of the hand operated types, and has for its object to provide a pair of hand pliers or pincers which is designed to adjustably engage the article of jewelry in which the gem is to be set to hold said article securely in the tool, and further, to adjustably engage the gem retaining element or setting of said article under yielding pressure to force said setting to assume the bent or closed position about the gem inserted therein for permanently securing the gem in set relation with the article of jewelry.

Other objects and advantages of the invention will be gathered from the description following herein and considered in connection with the accompanying drawing wherein the invention is shown embodied.

The terms employed herein are used in the generic sense to designate the elements illustrated, and are therefore not primarily intended as terms of limitation.

In order to illustrate my invention, I have shown in the accompanying drawings an embodiment thereof, without being limited thereto, wherein:

Fig. 1 represents an elevational view of my gem setting tool, showing the same in "closed" position and supplied with a ring in which a gem is being set by the tool;

Fig. 2 represents a plan view of the tool shown in Fig. 1;

Fig. 3 represents a left end view of Fig. 1;

Fig. 4 represents a sectional view taken on line 4—4 on Fig. 1;

Fig. 5 represents a sectional view taken on line 5—5 on Fig. 1;

Fig. 6 represents a sectional view taken on line 6—6 on Fig. 1;

Fig. 7 represents a sectional view taken on line 7—7 on Fig. 1;

Fig. 8 represents a sectional view taken on line 8—8 on Fig. 1;

Fig. 9 represents a part sectional and part elevational view of the jaw end of the tool shown in Fig. 1, but shows the jaws of the tool "open."

Fig. 10 represents a diagrammatic view showing an individual prong bending element of the tool engaging with a prong of the ring to bend same over the gem;

Fig. 11 represents a similar view to Fig. 10, but shows the prong bent over the gem by the prong bending elements of the tool;

Fig. 12 represents an enlarged, sectional view taken through a ring prong showing the gem supporting shoulder usually provided the prong tips of the ring; and

Figs. 13 and 14 represent, respectively, the "closed" and "open" positions of the prong bending triggers, corresponding to Figs. 1 and 9, respectively.

Like numerals refer to like parts throughout the several views of the drawing.

The numerals 15 and 16 represent, respectively, the correlated ring supporting and gem setting elements of the plier member, as shown in Fig. 1, which are pivotally coupled together by the plier stud 17. 15^a and 16^a represent the hand-gripping operating handles of the correlated ring supporting and gem setting elements 15 and 16, respectively, and which ends are preferably provided with the expansion spring 18 which serves to keep same spread open for normally holding the working jaws of the tool in open position, as shown in Fig. 9.

The working jaws of the tool provide the ring supporting element 15 with the ring arm 19, the ring centering nipple 20, the adjustable stop stud 21, the clamp lug 22, the adjustable clamp finger 23, and the clamp finger adjusting stud 24 which is provided with the expansion spring 25 and the adjusting nut 26; and the gem setting element 16 with the goose neck 27 which floatably carries in a suitable bearing provided therefor the hollow spindle 28 of the spider mem-

ber 29 to which is pivotally coupled the prong bending elements or triggers 30 and on which spider member is mounted the cam disc 31 and the expansion spring 32, as shown in Fig. 9. Said spider member is preferably provided at the top thereof with the limiting collar 33 which is secured thereto in any suitable manner and which is preferably designed to provide an abutment for the expansion spring 34 and a guide for the tension rod 35, which telescopingly fits within the hollow of the spider member 29, as shown in said Fig. 9. Said spider member is further provided with the expansion springs 36 which are radially disposed to engage with the lower portions of the triggers 30 for normally engaging the operating fingers 37 thereof with the cam disc 31.

38 represents the prong engaging cams of the triggers 30, which are so shaped to engage the tips of the prongs P of the rings R, as shown in Figs. 10 and 11, to bend same over the gem or stone S for retaining the latter in set relation with the ring.

Having thus described the parts of my invention in detail, the manner in which the same may be employed is as follows:

First, it will be noted that the normal setting of the jaws of the tool is the "open" position, as indicated substantially in Fig. 9; secondly, that the normally setting of the cluster of prong engaging triggers is the "open" position, as shown in said Fig. 9 and Fig. 14; thirdly that the normal setting of the guide rod 35 is the "down" position shown in Fig. 9; and finally that the limiting stud 21 may be adjusted to limit the closing relationship between the jaws of the tool.

The ring R is set on the supporting jaw of the tool, while the tool is open, as shown in Figs. 1 and 9, with the centering nipple 20 thereof engaged in the setting aperture of the ring and the clamping finger 23 within the ring and frictionally held clamped against it by the action of the expansion spring 25; the nut 26 being backed off from the stud 24, as shown in Fig. 1, to yield clearance between it and the ring clamping finger 23 to effect said clamping function. With the ring thus set in the tool, the gem or stone S in then inserted within the open ring setting (Fig. 9) to set within the prongs P on the shoulders provided therefor, as shown in Fig. 12. The operator then grips the operating handles 15^a and 16^a, and by forcing them together against the tension of the spring 18 therebetween, closes the jaws of the plier elements 15 and 16, which, as may be understood, first engage the guide rod 35 with the top of the gem or stone S which serves to hold the gem seated in the set and proper position with the prongs of the ring, which, as the jaws continue to close, engage with the cam sections 38 of the prong bending triggers 30 of the tool. The further continued gripping operation of the tool forces the spider member 29 to floatably ride upward in its bearing provided in the jaw 27, which in so doing forces the operating ends 37 of the trigger 30 to move outward radially on the cam disc 31, and as shown in Fig. 11, such movement of said trigger 30 moves the cam ends 38 thereof radially inward towards the center of the ring setting and results in bending the prong tip inward under pressure against the gem or stone S, and in that manner permanently secures the latter in set position with the ring. As may be understood, all of the prong tips are bent in around the stone practically simultaneously as the triggers of the device are all operated together. The limiting stud 21 may be adjusted to abut the jaw 27 of the plier element 16^a at any desired point to prevent the possible jamming of the prong tips under excessive pressure applied thereto.

The ring supporting jaw may be adjusted to support any size of ring. The floating tension rod 35 engaging with the gem or stone, as above described, serves to retain the latter in set position with the ring setting, both before the triggers engage the prongs of the ring and during the bending operation of said prongs; thus insuring against the possibility of the gem or stone becoming unseated previous to or during the prong bending interval.

It will be understood that while I have shown in the drawings a scissor type of plier employed with the invention, I do not wish to be limited against using other types which may be suitable or equally advantageous, as for example, the so-called parallel jaw types of pliers.

It will also be understood that the cluster of trigger cams, when closed, form an uninterrupted surface, that is to say, the trigger cam surfaces are preferably finished off circumferentially or annularly to afford the latter the same relative bending effect, regardless of the radial position therein assumed by the prong tip; thus when the trigger cams are closed in they substantially form an annular socket for receiving the prong tips of the ring therein, and will handle settings of any number of prongs without limit.

The tool provides a convenient instrument for jewelers for rapidly and securely setting gems in ring settings, and is so designed and constructed as to enable the jeweler to watch the work as it is progressing therein to insure an absolutely good result.

While I have herein shown and described a specific, practical embodiment of my in-

vention, it is to be understood that this showing is merely by way of illustrating the principles of the invention, and I do not confine the invention to such illustration except in so far as the appended claims impart.

Claims:

Having thus described my invention, what I claim as new is:

1. A plier device having one jaw provided with means for securely supporting and centering a ring setting thereon, and the other jaw provided with yieldable pressure triggers adapted to engage the prongs of said ring setting for bending same over the gem to be retained in said ring setting; and means for normally holding said jaws in open position.

2. A plier device having one jaw provided with means for securely supporting and centering a ring setting thereon, and the other jaw provided with yieldable pressure triggers adapted to engage the prongs of said ring setting for bending same over the gem to be retained in said ring setting; means for normally holding said jaws in open position; and means for limiting the closing position of said jaws.

3. A plier device having one jaw provided with means for securely supporting and centering a ring setting thereon, and the other jaw provided with yieldable pressure triggers adapted to engage the prongs of said ring setting for bending same over the gem to be retained in said ring setting; and tension means provided the latter jaw, adapted to engage with the gem for temporarily retaining the same in set position in the setting previous to and during the prong bending operation of the tool.

4. A plier device having one jaw provided with means for securely supporting and centering a ring setting thereon, and the other jaw provided with yieldable pressure triggers, adapted to engage the prongs of said ring setting for bending same over the gem to be retained in said ring setting; tension means provided the latter jaw, adapted to engage with the gem for temporarily retaining the same in set position in the setting previous to and during the prong bending operation of the tool; and means for normally holding said jaws in open position.

5. A plier device, having one jaw provided with means for securely supporting and centering a ring setting thereon, and the other jaw provided with yieldable pressure triggers adapted to engage the prongs of said ring setting for bending same over the gem to be retained in said ring setting; tension means provided the latter jaw, adapted to engage with the gem for temporarily retaining the same in set position in the setting previous to and during the prong bending operation of the tool: means for normally holding said jaws in open position: and means for limiting the closing position of said jaws.

6. A plier device, having one jaw thereof provided with adjustable means for engaging and centering various sizes of ring settings for temporarily securing the latter in said jaw, and the other jaw thereof provided with a floating pressure applying member having a cluster of radially operated cam members adapted to engage the prong tips of the ring supported on the first mentioned jaw for bending the same inward onto the gem or stone set in said ring to permanently set the former with the latter.

7. A plier device, having one jaw thereof provided with adjustable means for engaging and centering various sizes of ring settings for temporarily securing the latter to said jaw, and the other jaw thereof provided with a floating pressure applying member having a cluster of radially operated cam members adapted to engage the prong tips of the ring supported on the first mentioned jaw for bending the same inward onto the gem or stone set in said ring to permanently set the former with the latter; tension guide means carried in said floating pressure applying member, adapted to engage the gem set in the ring setting for temporarily retaining the same in set position in the ring previous to and during the prong bending operation of the tool.

8. A plier device, having one jaw thereof provided with adjustable means for engaging and centering various sizes of ring settings for temporarily securing the latter to said jaw, and the other jaw thereof provided with a floating pressure applying member having a cluster of radially operated cam members adapted to engage the prong tips of the ring supported on the first mentioned jaw for bending the same inward onto the gem or stone set in said ring to permanently set the former with the latter; tension guide means carried on said floating pressure applying member, adapted to engage the gem set in the ring setting for temporarily retaining the gem in set position in the ring previous to and during the prong bending operation of the tool; and means for normally retaining the jaws of the tool in open position.

9. A plier device having one jaw thereof provided with adjustable means for engaging and centering various sizes of ring settings for temporarily securing the latter to said jaw, and the other jaw thereof provided with a floating pressure applying member having a cluster of radially operated cam members adapted to engage the prong

tips of the ring supported on the first mentioned jaw for bending the same inward onto the gem or stone set in said ring to permanently set the former with the latter; tension guide means carried in said floating pressure applying member, adapted to engage the gem set in the ring setting for temporarily retaining the same in set position in the ring previous to and during the prong bending operation of the tool; means for normally retaining the jaws of the tool in open position; and means for adjustably limiting the closing relationship of said jaws.

In testimony whereof, I hereunto affix my signature this third day of May, 1921.

SAMUEL TOY.

Witness:
DAVID LICHTENSTEIN.