Dec. 13, 1938. R. C. BANGS 2,140,465

GEM SETTING TOOL

Filed July 27, 1937

Fig. 1.

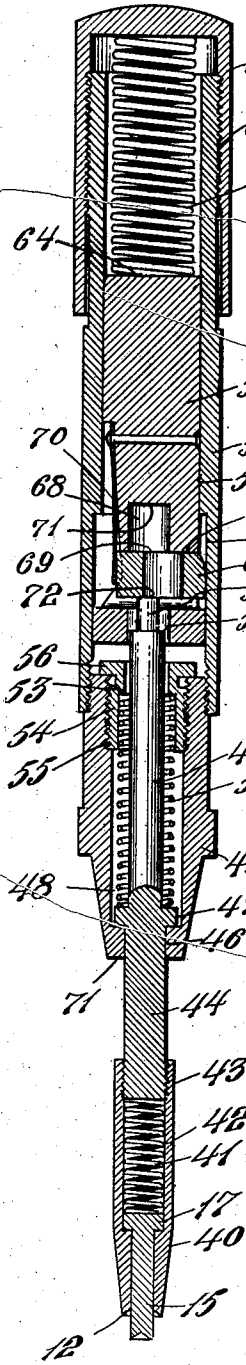


Fig. 2.

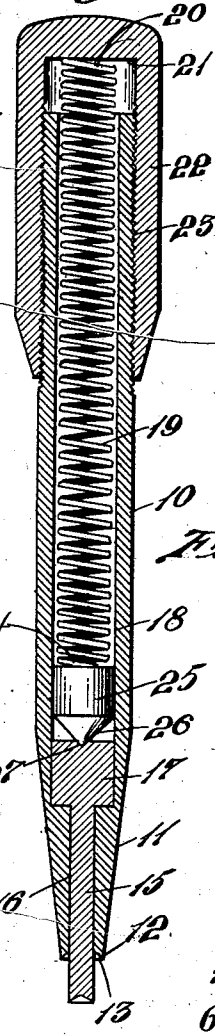


Fig. 3.

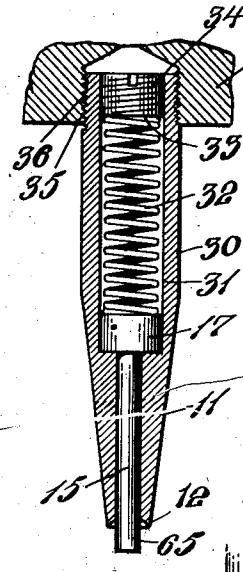


Fig. 8.



Fig. 9.



Fig. 5.

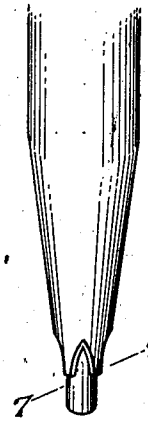


Fig. 4.

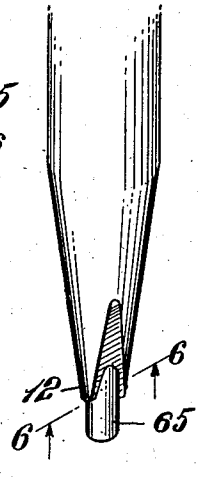


Fig. 7.

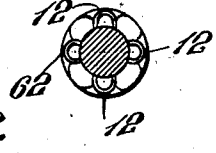


Fig. 10.

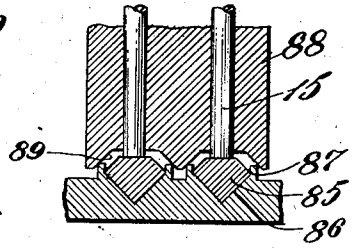


Fig. 6.



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GEM SETTING TOOL

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Application July 27, 1937, Serial No. 155,875

7 Claims. (Cl. 29—10)

This invention relates to the setting of gems; and has for one of its objects an improved tool for setting gems whereby the gems may be secured in their seats more quickly than by tools now in use.

Another object of the invention is an improved handling of the gems to be set so that the same instrument may pick up the gem and place it in its seat and thereafter be utilized for the securing of the gem in position.

Another object of the invention is the provision of a tool which will deflect portions of the stock about the gem toward and over the edge of the gem at a plurality of different points simultaneously so as to secure the gem in position.

Another object of the invention is the provision of a tool which will accomplish the setting of a gem by a single movement of the tool in one direction, such for instance, as axially of the gem so that a single pressure operation may be utilized for setting the gem.

Another object of the invention is the provision of a tool which will deflect the stock about a plurality of gems simultaneously so as to secure the gems in position all at the same time.

Another object of the invention is the provision of a tool the handle of which may be turned or rotated without the portion which applies pressure to the gem also turning, whereby an abrading of the stone is prevented.

Another object is the provision of a tool, the operating end of which may be interchangeable with other similar ends so that different size gems may be handled by mere interchanging of the tip portion of the tool.

Another object of the invention is the setting of a gem with a tool having a hammer action.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a sectional view of a hammer actuated tool for setting of a gem;

Fig. 2 is a sectional view of a hand operated tool without this hammer action;

Fig. 3 is a sectional view showing the setting mechanism as mounted in the head of a press which is illustrated fragmentally;

Fig. 4 is a perspective view of the working end of a tool shank on a somewhat larger scale;

Fig. 5 is a view similar to Fig. 5 of a modified form of shank;

Fig. 6 is an end sectional view on substantially line 6—6 of Fig. 4;

Fig. 7 is a sectional view on substantially line 7—7 of Fig. 5;

Fig. 8 is a sectional view showing an ornament and gem before the action of the setting tool;

Fig. 9 is a view similar to Fig. 8 after the action of the setting tool;

Fig. 10 is a sectional view of a modified form of tool showing a multiple setting arrangement.

In the setting of gems it is usual that the ornament into which the gems are set be cast or so formed as to provide recesses for the reception of the larger gems, such as the baguette or other shaped stones, while frequently the position of the smaller stones is indicated by a small depression such as would be made by a prick punch and a drill utilized for forming the desired seat for the gem, different sized drills being utilized for different sized gems. After the recesses or gem seats are provided in one or another way, the gems to be set therein are picked up either by tweezers or by some tool with a recessed end which is wet by the saliva of the mouth or some wax is used in the tool, so that the gem will stick to the tool for placing it in its seat, the gems being positioned one at a time, in their seats or recesses, after which another tool is taken and portions of the stock are deflected over these gems by hand at two, three or more locations about the gem so as to hold it in place. In the use of the larger gems the stock is usually raised somewhat about the gem seat, although this is not essential, whereas, in the setting of some gems the surface is entirely flat or in a single plane about the gem and a tool, sometimes a beading tool, is caused to dig into the stock close to the edge of the gem and this stock lifted and deflected over the edge of the gem to hold it in position. To provide a bead the beading tool is given a slight rotation to establish a smooth surface on the bead which holds the gem in position, and oftentimes in the setting of other gems the stock is trimmed by a highly polished tool to give a shine to the stock about the gem and also to smooth off the stock in this location.

All of this gem setting thus requires many hand operations and requires a skilled operator in order to accomplish the results; and in order to simplify this operation and provide an arrangement whereby skilled operation is not necessary, I have provided a tool which may pick up the gem and after placing the gem in its seat may be manipulated to in the same operation set the gem or deflect the stock over the edge of the gem. This may be done either by the rocking action of a hand tool or by a hammer action in the

hand tool by the hammer being a part of the equipment of the handle, or the gem may be set in a press, pressure being equivalent to the hammer action. Then again I may utilize this invention for the deflecting of the stock at a plurality of different points over not only one gem but I may provide a tool which will deflect the stock over a plurality of different gems at the same time, thereby setting many gems with a single pressure or hammer operation; and it may be possible in some constructions to set all of the stones in the ornament at the same time after they are positioned; and the following is a more detailed description of the present embodiment of this invention, illustrating the method or simplified operation by which these advantageous results may be accomplished:

With reference to the drawing, a tool which may be used for accomplishing the desired setting is illustrated in a rather simple form in Fig. 2. Here, the shank 10 is tapered as at 11 and provided with a plurality of prongs 12 arcuate on their inner face as at 13. These prongs may be four in number, as illustrated in perspective in Fig. 5 or in Fig. 7, or may be two in number, as illustrated in Figs. 4 and 6, it being usual and preferred that the prongs be equally spaced about the circumference or 360°, so that if two prongs are provided they will be at diametrically opposite points, whereas if four prongs are provided they will be equally spaced quarterly and diametrically opposite, as illustrated in Fig. 7.

While the tool so far described may be utilized to perform an improved setting by reason of its being able to lift a plurality of different points of the stock over the edge of the gem, I prefer to provide a resiliently mounted presser member designated 15 and extending through a bore 16 in the shank to telescope thereinto. The enlarged head portion 17 of this presser member 15 slides within the bore 18 in the shank and is forced downwardly by a spring 19 abutting at its outer end 20 against the inner surface 21 of a cap 22 which has threaded engagement as at 23 with the outer end of the shank. This spring engages at its opposite end 24 a presser member 25 which has a conical end 26 to engage a center opening 27 in the head 17 of the presser member which permits the shank to be turned about its axis without turning the presser member when the same is in engagement with the stone, and whereby the prongs may be conveniently located with reference to the setting or seat to perform their desired function.

In some cases instead of providing a handle and cap such as shown in Fig. 2, a shank 30 may be provided with its tapered end portion 11 and prongs 12, such as previously illustrated, with a presser member 15, also as previously described, with its head 17 sliding within a bore 31 of this shank, with a spring 32 forcing the presser outwardly and abutting at its upper end 33 with a threaded plug 34 which houses within the shank. The outer upper surface of the shank is threaded as at 35 and fits within a threaded opening 36 in a head 37 of a press.

In operation, the ornament 80 into which the gems 81 are to be set is positioned such for instance as beneath the plunger of the press shown in Fig. 3, and the foot applying suitable leverage causes the plunger to descend, whereupon the presser member 15 engages the gem forcing it snugly against its seat, after which the shank causes the setting prongs 12 to engage the metal or other material about the seat and lifts its stock 83 over the edge of the gem to firmly secure it in its seat, after which the plunger is raised and the gem is completely set by this mechanical operation.

In using the hand tool shown in Fig. 2 a similar operation is performed to that described in connection with the press, only the operator manually forces the shank downwardly. In some instances it may not be possible to secure enough pressure upon the shank by merely forcing the same downwardly in an axial direction, and in this case a rocking movement of the handle may be given from side to side.

In some cases instead of using a simple hand pressure tool a hammer acting tool such as shown in Fig. 1 may be utilized. In this case I have illustrated a shank 40 having a presser member 15 with setting prongs 12 on the shank, as above described, there being a head 17 and a spring 41 in the bore 42 of this shank, the same being threaded as at 43 at its upper end to threadingly engage the plunger 44 of a hammer actuating handle device.

The plunger 44 is slidably mounted in the tubular member 45 through the opening 46 by which it is guided, it being provided with an abutment member 47 within the bore 48 to limit its outward movement, and is provided with an upwardly extending pin 49 reduced as at 50 to provide a shoulder 51.

A spring 52 encircles the pin 49 and acts upon the abutment member 47 by reason of its engagement with the shoulder 53 of the nut 54 which threadingly engages as at 55 the bore 48 of the tube 45 and provides an abutment for the spring, there being a flange 56 at its upper end to limit its movement into the bore. A hammer 57 is slidingly mounted within the tubular member 58 which threadingly engages the tubular member 45 to provide a housing and guide for the parts. This tubular member 58 is provided with a bore 59 and guides the hammer 57 and also with a larger bore 60 which receives the latch 61 slidingly mounted in the cross opening 62. A spring 63 serves to force the hammer downwardly in the casing by acting on its upper end 64 with the other end of the spring 65 engaging the inner surface of the cap 66, which has threaded engagement as 67 with the casing 58.

A bore 68 in the hammer is of a size to receive the pin 49, while an opening 69 in the latch 61 is also of a size to receive this pin and to align with the bore 68 when the latch is within the bore 59, but when this latch is within the bore 60 a spring 70 forces it so that its bore 69 is out of line with the bore 68, such as shown in Fig. 1.

The action of the device is as follows: As the casings 58 and 45 are forced downwardly they slide along the plunger 44. By reason of the pin 49 engaging the latch 61, the hammer is forced upwardly against the action of its spring 63. When the latch 61 enters the bore 59 and is forced into the position of the hole 69 in the bore 68 aligning, the hammer 57 descends and the striking surface 71 hits the upper end 72 of the pin 49 with a blow which is transmitted to the shank 40 and causes a deflecting of the stock over the edge of the gem in a desired manner, such as at 83 in Fig. 9.

In some cases instead of the utilization of a tool for setting a single gem I may provide a tool having a multiple of setting members each of which will act similarly to the setting member above described, and in Fig. 10 I have illustrated a tool which may set gems 85 in settings 86 pro-

vided with prongs 87, there being plungers 15 in suitable parts 88 with recessed portions 89 to engage and deflect the projections 87 in order to hold the gem in position, or the shape of the tool might be similar to the shaping of each of the individual parts above mentioned.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. A tool for gem setting comprising a tubular shank having a plurality of stock engaging and deflecting projections arranged to contact different points about the gem setting, and a member telescoping within said shank, resilient means for urging said member outwardly and arranged to contact the gem and seat the same while the projections deflect said stock, and a conically pointed presser member through which the resilient means acts on said telescoping member.

2. A tool for gem setting comprising a tubular shank having a plurality of stock engaging and deflecting projections arranged to contact different points about the gem setting, resilient means within said shank and arranged to contact the gem and seat the same while the projections deflect said stock, and means connected to said shank adapted to apply a hammer action upon said shank.

3. A tool for gem setting comprising a tubular shank having a plurality of stock engaging and deflecting projections arranged to contact different points about the gem setting, resilient means within said shank and arranged to contact the gem and seat the same while the projections deflect said stock, a handle reciprocatingly mounted on said shank, and means responsive to the movement of the handle with reference to said shank arranged to apply a hammer action on said shank.

4. A tool for gem setting comprising a tubular shank having a plurality of stock engaging and deflecting projections arranged to contact different points about the gem setting, resilient means within said shank and arranged to contact the gem and seat the same while the projections deflect said stock, a handle reciprocatingly mounted on said shank, and means contained within said handle and responsive to the movement of the handle with reference to said shank arranged to apply a hammer action on said shank.

5. A tool for gem setting comprising a shank having a plurality of groups of stock engaging and deflecting projections arranged to contact different points about each of a plurality of different gems, and a resiliently mounted means for each group of projections located to engage the gem with reference to which the projections act to hold each gem on its seat during the action of said projections.

6. A tool for gem setting comprising a shank having a plurality of groups of stock engaging and deflecting projections arranged to contact different points about each of a plurality of different gems, a recess in the shank above each gem when the tool is setting the same, a plunger in each recess, and resilient means urging each plunger outwardly to engage the gem and hold the same against its seat as setting takes place.

7. A tool for gem setting comprising a shank having a plurality of groups of stock engaging and deflecting projections arranged to contact different points about each of a plurality of different gems, a recess in the shank above said gem when the tool is setting the same, a plunger in each recess, and a spring urging each plunger outwardly to engage the gem and hold the same against its seat as setting takes place.

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