G. W. BOWERS.

STAKING TOOL.

APPLICATION FILED DEC. 31, 1909.

996,053. **Patented June 27, 1911.**

2 SHEETS—SHEET 1.

Fig. 1.

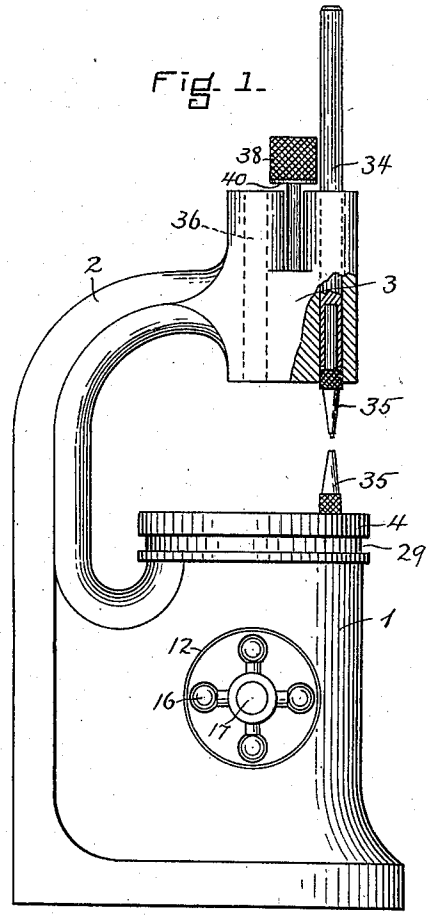


Fig. 2.

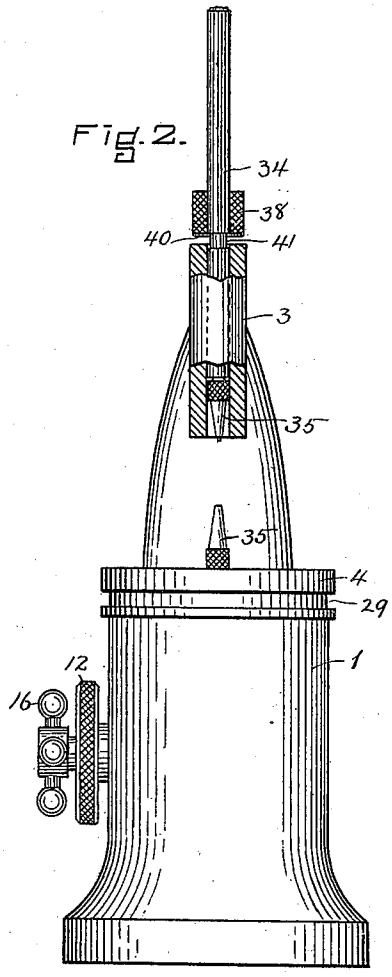


Fig. 8.

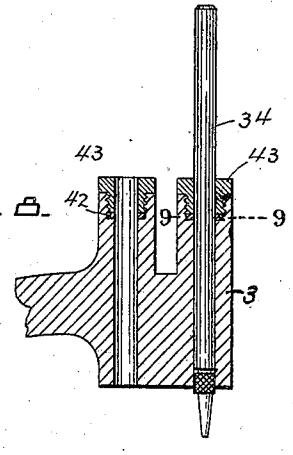
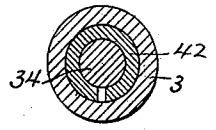


Fig. 9.



WITNESSES.
F. P. Ramsdell
H. L. Allen

INVENTOR
Geo. W. Bowers
by Wright Brown Quinby & May
Attys.

G. W. BOWERS.

STAKING TOOL.

APPLICATION FILED DEC. 31, 1909.

996,053.

Patented June 27, 1911.

2 SHEETS—SHEET 2.

Fig. 3.

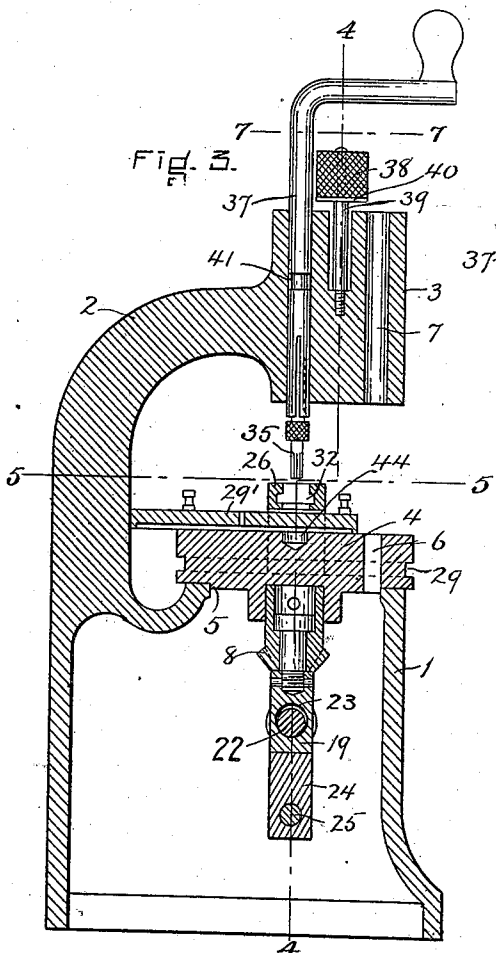


Fig. 7.

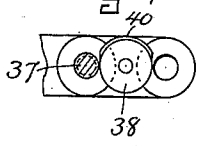


Fig. 4.

Fig. 5.

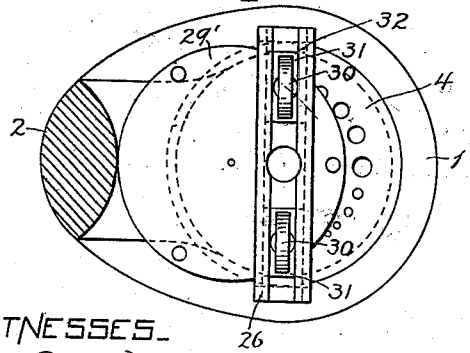
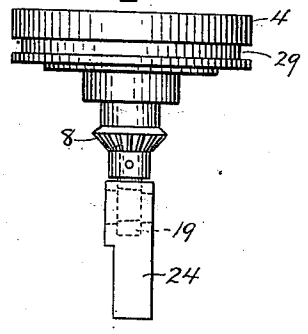


Fig. 6.



WITNESSES.

F. R. Rinlstone

H. L. Allen.

INVENTOR.

Geo. W. Bowers

by Wright Brown Quinby & May

Attys.

UNITED STATES PATENT OFFICE.

GEORGE W. BOWERS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO HAMMEL, RIGLANDER & COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

STAKING-TOOL.

996,053. Specification of Letters Patent. Patented June 27, 1911.

Application filed December 31, 1909. Serial No. 535,754.

To all whom it may concern:

Be it known that I, GEORGE W. BOWERS, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Staking-Tools, of which the following is a specification.

This invention relates to staking tools such as are used by jewelers and watchmakers and has for its object to produce an improved tool of this character, having means for rotating and adjusting the table or platen without requiring the latter to be touched by the hand of the user, to provide an improved means, in close proximity to a platen adjusting device for clamping the platen in any of its positions, to provide in connection with a staking tool platen, a removable clamp by which pieces may be rigidly secured to the platen, to provide an improved and easily operated means for holding the punch or other operating tool elevated above the table, and to provide the staking tool with capability of using other operating tools, than those usually employed, in a different position from the usual working position.

Referring to the drawing Figure 1 shows in side elevation a staking tool embodying the features of my present invention in the form at present preferred by me. Fig. 2 is a front elevation of the tool. Fig. 3 is a vertical central section of the tool. Fig. 4 is a cross-section on the line 4—4 of Fig. 3. Fig. 5 is a plan view of the parts represented below the line 5—5 of Fig. 3. Fig. 6 is a detailed view of the platen or die of the machine detached, with the associated members by which it is rotated and clamped. Fig. 7 is a sectional plan view of the part below line 7—7 of Fig. 3. Fig. 8 is a sectional view of the head of the tool, showing a modified construction. Fig. 9 is a cross-section on an enlarged scale on line 9—9 of Fig. 8.

The same reference characters indicate the same parts in all the figures.

In the drawings 1 represents the base portion of the tool from which rises a gooseneck 2, terminating in a head 3 which overlies the base. This head contains a number of passages adapted to receive operating tools, the purpose of which is more fully hereinafter described.

On the top of the base is mounted a platen or die 4, represented as a circular table which rests upon the base and is centered by a shoulder 5 projecting somewhat within the rim of the base, as shown in Figs. 3 and 4. This platen or die has the usual circular series of holes, these varying in diameter. One of the openings or passages in the head 3 and designated by the character 7 is directly over a line of perforations 6 so that a punch or other operating tool contained in the passage 7 is held in line with any one of the perforations 6 which may be brought beneath it by rotary adjustment of the platen, for performing the work usually required with tools of this character. The centering shoulder 5 does not make a tight fit within the rim of the base, but is sufficiently loose to enable the platen to be shifted slightly in any direction, in order to bring any of the circular holes into exact axial alinement with the passage 7, such exact alinement being effected by the usual centering tool having a shank which fits in the passage 7 and a conical point adapted to enter any of the holes 6 and to engage the edges of the hole when pressed therein. The function of the shoulder is mainly to guide the table and to retain it upon the base when rotated by the means provided for that purpose hereinafter described, and to maintain the connection with the rotating means.

One of the principal features of my invention is the capability of adjusting a platen or die rotarily without directly touching it with the fingers, so that it may be provided with a sharp clean edge, and the knurling with which the platens of staking tools are usually provided at their edges is eliminated, a smooth surfaced edge or periphery being preferable to a knurled edge. Incidentally also the manner of effecting the rotary movement of the platen enables it to be more rapidly adjusted than heretofore. The means which I find suitable for enabling this rotary adjustment to be made consists of beveled gearing, one member or pinion of which gearing is represented at 8 and is secured to the platen, while the complemental member or gear is represented at 9 and is fastened by a set screw 10 or other equivalent means to a sleeve 11, passing through the side of the base and having on its outer end a knurled flange or knob 12 by which it may be turned. The pinion 8 has a hub 13 which enters a recess in the under

side of the platen and is surrounded by a depending flange 14 thereof. Through this flange and the pinion hub passes a pin 15 by which these parts are secured together. As will be readily seen, rotation of the flange or knob 12, accomplished by rolling it between the thumb and fingers, will accomplish a rotation of the table, and this without requiring the table to be directly touched. Also as the pinion 9 may be made larger than the pinion 8, as shown in the drawings, an increased speed of rotation of the table is obtained.

The platen is secured in any of its adjustments by clamping means, of which the external and visible part is a knobbed operating wheel 16 secured to a shaft 17. This shaft passes through the sleeve 11, without touching it, into the interior of the base and is threaded into a boss 18 projecting from the opposite wall of the base. The shaft passes through a bar 19 fastened to a stud 20 contained within the depending member or pinion 8, of which stud the head 21 bears upon a shoulder within the pinion and is thus enabled to exert a downward pressure thereon without being withdrawn. The part of the shaft 17 which passes through the bar 19 is tapered as shown at 22, and is contained in an opening 23 in the bar. As the shaft 17 is screwed inward, its tapered portion bears downward upon the bar 19 and thus clamps the platen upon the base. This is due to the fact that the shaft has a bearing only on the lower boundary of the perforation 23. Conversely, unscrewing of the shaft 17 releases the platen so that it may be turned. The bar 19 is guided by a block 24 in which it is contained, and through which the shaft 17 passes. The lower end of this block is secured by a pin 25.

By reason of the propinquity between the handles 12 and 16, it is possible to release, adjust and clamp the platen in the least possible time, because the user's hand need be moved only a short distance in order to grasp either the handle 12 or 16 after releasing the other. This enables a considerable saving of time to be effected by this tool over those previously used, the saving of time being further augmented by the fact that the speed-increasing gearing between the adjusting knob 12 and the platen is used.

Another valuable feature of this invention is the detachable clamp forming a part or accessory of this tool, by which pieces such as parts of watches may be secured to the platen. The clamp is a bar 26, having end pieces 27 arranged so as to embrace the platen and spaced a sufficient distance apart to admit the full diameter of the platen between them. These end pieces have flanges or toes 28, which are turned inward so as to take into a peripheral groove 29 in the platen. The cross bar portion of the clamp is a sufficient distance above these toes to permit articles of the required thickness, such for instance as a watch plate 29′, to be admitted between it and the platen. When the article is thus located, as shown in Figs. 3, 4 and 5, it is secured by one or more clamp screws 30, which are threaded through slides 31, adjustably carried by the clamp. When these screws are turned down they press upon the upper surface of the watch plate or other article and force it against the surface of the table, as shown in Fig. 4. The slides 31 have ribs or flanges in their opposite sides which are contained in guiding grooves 32 in the cross piece of the clamp. The screws project through a longitudinal slot 33 in the cross bar which permits them to be moved with the slides so as to engage the watch plate 29′ or other article clamped on the platen at any points necessary to hold the latter securely. This staking tool is adapted to be used in the ordinary way for the purpose to which this type of tool is ordinarily adapted, and operating tools 35 which may be stumps (so called) of any suitable form may be detachably engaged with a holder or shank 34 which is adapted to be passed through the channel 7 in the tool head 3 in registry with the line of perforations 6. The larger of these perforations is also adapted to receive one of said operating tools.

In carrying out the possibilities of wider use of the staking tool afforded by the detachable clamp 26, I provide an additional passage or channel 36 in the head 3, which is preferably arranged as shown in Figs. 3 and 4, approximately in line with the pivotal axis of the table or platen 4. This is adapted to receive a removable tool or tool-holder of the general character represented by 37 in Fig. 3, for performing operations on watch plates and other articles capable of being secured by the clamping means hereinbefore described.

From the foregoing it will be seen that by the present invention I have provided a staking tool capable of much more extended use than any tool of this character hitherto used, the amplified use being occasioned by the clamping means which enables articles to be secured in any desired position upon the table or platen of the tool, and the provisions for guiding operating tools in line with different parts of the platen.

It is desirable to hold the operating tools clear of the platen at such times as the latter or the work held thereon are being adjusted, and for this purpose I have provided an improved and simple device which may be readily operated to hold the working tool in an elevated position and to release the same so that it may descend upon the work. Such means comprises prefer-

ably a rotary head 38 journaled upon a stud 39, which is secured as shown in Fig. 3 in the head 3 of the tool midway between the passages 7 and 36. This rotating head 38 is of such diameter as to be clear of the tool-holders 34 and 37, but it has a flange or rib 40 extending from one side, as shown in Figs. 4 and 7, of such extent as to intersect the passage 7 or 36 when turned toward one or the other. Each tool-holder has a groove 41 as shown in Figs. 2 and 3, adapted to receive the lip 40 when the tool is raised to a sufficient height, and the upper limit of which groove constitutes a shoulder that rests on the flange and holds the tool in an elevated position. Thus by raising the operating tool sufficiently high and giving the locking head 38 a slight turn, either tool may be held elevated without liability of falling, while it may be instantly released by simply turning the locking head through a small angle. A yielding frictional device may be used in place of the locking head 38 to hold the operating tool in any position. One such yielding frictional device is shown in Figs. 8 and 9 and is represented as a spring ring 42 contained in a recess surrounding the passage for the tool-holder and yieldingly embracing the latter. The spring ring is held in place by a nut 43 screwed into the recess.

By reason of the manner in which the locking bar 19 is connected with the platen as hereinbefore described, there is no exposed fastening device at the center of the platen, as has been the usual construction hitherto, but the platen clamping means is connected well below the upper surface of the platen, leaving the latter solid and continuous from side to side. This enables a recess as 44 of any desired extent to be formed centrally in the upper surface of the platen to allow cutting tools to pass freely through the work. Furthermore the form of connection between the clamping bar 19 and the table, which is a headed stud contained rotatively in the pinion 8, which latter is an internally shouldered sleeve, permits free rotation of the platen relatively to the locking bar whenever the latter is loosened by withdrawal of the tapered shaft or rod 17. The guiding block 24 for the clamping bar is so formed that when the lower portion of the shaft 17 presses downward upon the clamping bar, the reaction of its pressure is taken by the upper part of the guiding block, as shown in Fig. 4, so that there is no tendency to deflect the rod 17 and cause it to bind unduly in the tapped socket with which its threaded end engages.

The principal object of the guiding block 24 is to support the taper shaft 17 in a central position so that it will not be at any time in contact with the adjusting sleeve 11, and will therefore be free from liability to be rotated by said sleeve. As the platen when free to turn rests on the base and is therefore already in close engagement with the base only an infinitesimal downward movement of the locking bar is sufficient to produce sufficient pressure to lock the platen firmly. Consequently the longitudinal movement of the shaft 17 to effect this result is also very slight and is not so great as to be prevented by the resistance of the guide-block 24. There may also be latitude for a slight amount of spring of the pin 25 which anchors the guide-block permitting the latter to be raised by the tapered part of the shaft as far as the locking bar is drawn down by this tapered portion.

It is obvious that the shoulder above referred to as the upper end of a groove 41 between the ends of the operating tool-holder 34 or 37, may be the lower end of said holder and that the locking device 40, instead of being located above the head 3, may be below or within said head, in position to engage the lower end of the tool-holder.

The knob or handle 12, the sleeve 11, and the means rotatively connecting said sleeve with the platen, constitute a power feed mechanism which enables the operator to rotate the platen with sufficient force to cause the cutting of a piece of work by moving said piece against a cutting tool held by either the holder 34 or the holder 37. Either of the described tool holders is adapted to interchangeably hold the members of a series of differently sized or formed operating tools.

I claim,—

1. A staking tool comprising a base, a rotatable platen supported thereby, means independent of the platen for rotatably adjusting the latter, and locking means for said platen contiguous to said adjusting means and operable independently of the latter.

2. A staking tool comprising a base, a rotatable platen supported thereby and provided with a central depending member, means engaging said depending member for rotatably adjusting said platen, and means also connected with said depending member for locking said platen, said locking means being operable independently of said adjusting means.

3. A staking tool comprising a base, a rotatable platen supported thereby and provided with a central depending member, means engaging said depending member for rotatably adjusting said platen, and means also connected with said depending member for locking said platen, said locking means being operable independently of said adjusting means, said adjusting means and said locking means being provided with contiguous operating devices.

4. A staking tool comprising a base, a ro-

tatable platen supported thereby and provided with a central depending member, a platen rotating device projecting laterally through said base and engaging said depending member, and a platen locking device also projecting laterally through said base contiguous to said rotating device and also in operative relation with said depending member, said locking device being operable independently of said adjusting device.

5. A staking tool comprising a base, a platen rotatably mounted in said base, means for rotating said platen and including a hollow shaft, and means for locking said platen, said locking means including a controlling shaft passed through said hollow shaft.

6. A staking tool comprising a supporting frame or base, a platen supported rotatively upon said base, a bar projecting from said platen within the base and a shaft or rod having a tapered portion extending transversely into said bar and in threaded engagement with the base, whereby upon being rotated it is moved endwise and its tapered portion is caused to force the platen into frictional locking engagement with the base.

7. A staking tool comprising a base or frame, a platen or table supported on said base in a manner such as to permit of its rotation, a tubular platen rotating device extending laterally through the base beneath the platen geared to the latter, a locking device contained within said rotating device, and a bar depending from the center of the platen with which said locking device is engaged, the locking device being constructed to draw down and release the depending bar respectively when turned in opposite directions.

8. A staking tool comprising a base or frame, a platen or table supported on said base in a manner such as to permit of its rotation, a bevel gear secured to the underside of the platen, a bar hung from said bevel gear with respect to which the latter is rotatable, an adjusting sleeve or tubular shaft passing through the side of the base into geared relation with said bevel gear, and a locking shaft contained in said adjusting sleeve passing through an aperture in said bar and formed with a portion constructed to bear in a downward direction on the bar when turned in one direction.

9. A staking tool comprising a base or frame, a platen or table supported on said base in a manner such as to permit of its rotation, a locking member extending downwardly from the platen, a shaft extending through the side of the base and through an aperture in the said member, having a tapered portion lying in such aperture and being threaded into the base, and a guide bearing on the upper side of the shaft beside the member to resist deflection of the shaft.

10. A staking tool comprising a base, a rotatable platen supported thereby, a clamping bar suspended from the under side of said platen, and means for operating said clamping bar.

11. A staking tool comprising a base, a rotatable platen supported thereby and having a central depending member, a clamping bar suspended from said depending member, means for operating said clamping bar, and means engaging said depending member for rotating said platen.

12. A staking tool comprising a holder, a rotary platen or table mounted on said holder, and means for clamping said platen, comprising a member projecting from the platen into the interior of said holder, and a coöperating member extending into the holder transversely of said first member and having an inclined surface engaged therewith, said coöperating member being movable endwise, and when so moved acting through its inclined surface on the first-named member to crowd the platen against the holder.

13. A staking tool comprising a holder, a rotary platen or table mounted on said holder, a clamping bar extending from said platen, and a locking bar in threaded connection with the holder extending transversely of said clamping bar and having a tapered portion in engagement therewith, whereby endwise motion of the locking bar, due to rotation thereof, causes the platen to be crowded against the holder through the action of the tapered part of the locking bar on the clamping bar.

14. A staking tool comprising a hollow base, a head overhanging said base, a platen provided with apertures and loosely supported near its periphery on said base in such manner that it may be moved slightly in any direction by a centering tool guided by said head and entering one of such apertures, and a means extending into said base and engaging the said platen to rotate the same.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE W. BOWERS.

Witnesses:
C. F. Brown,
P. W. Pezzetti.