(No Model.)

S. ZOLOT.

SCREW POINT SWAGING MECHANISM.

No. 568,594. Patented Sept. 29, 1896.

Fig. 1.

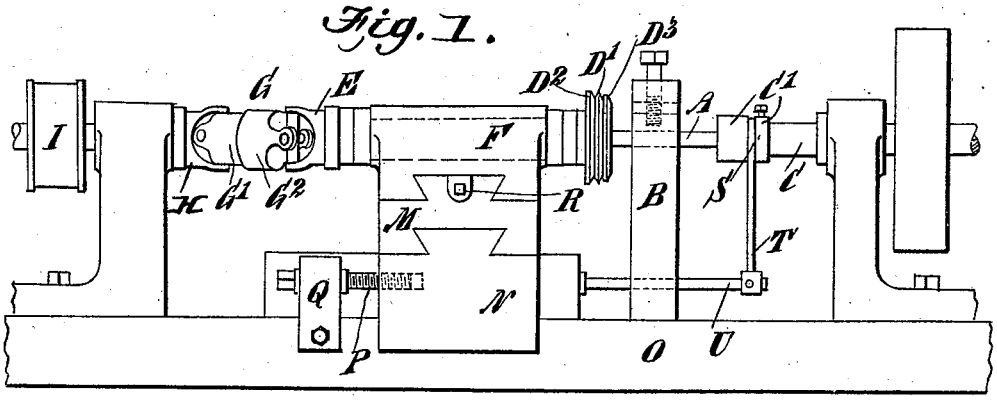


Fig. 2.

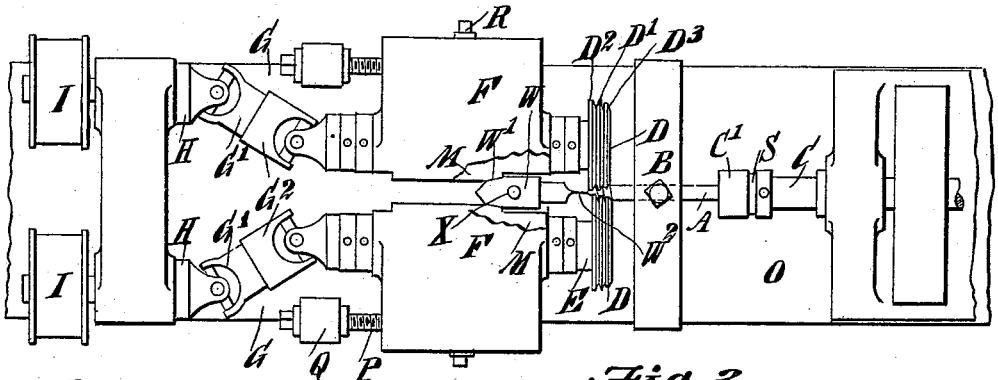
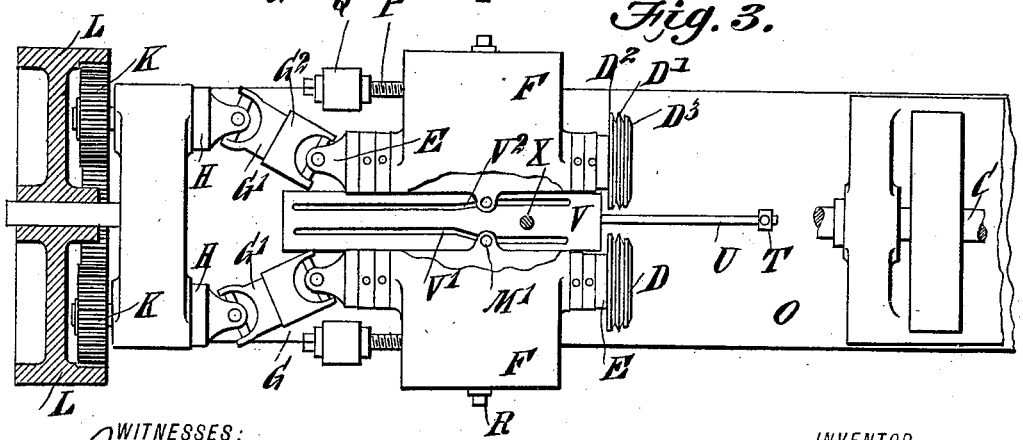


Fig. 3.



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SCREW-POINT-SWAGING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 568,594, dated September 29, 1896.

Application filed December 12, 1895. Serial No. 571,869. (No model.)

To all whom it may concern:

Be it known that I, SIMON ZOLOT, of New York, in the county and State of New York, have invented a new and Improved Screw-Point-Swaging Mechanism, of which the following is a full, clear, and exact description.

My invention relates to machines for producing gimlet-points on screws, and has for its object to provide improved cutters for the above-indicated purpose and improved means whereby said cutters are moved from each other while producing the gimlet-point.

The invention will be fully described hereinafter, and the features of novelty defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken side elevation of a screw-point-swaging mechanism provided with my improvements. Fig. 2 is a plan thereof; and Fig. 3 is another plan with certain parts removed and showing a cutter-driving mechanism slightly different from that shown in Figs. 1 and 2, the driving-pulley appearing in section.

A designates the blank, which is held in a suitable die or guide B and is carried at the end of the feed-spindle C, which, by means of any ordinary or approved mechanism, receives a simultaneous rotary and longitudinal or axial movement. Such mechanism being well known in the art I have not deemed it necessary to further illustrate or describe it.

The blank A is adapted to be engaged by the cutters D, which are located on opposite sides thereof. Each cutter, as shown, preferably consists of three disks—viz., a cutter-disk proper, D′, and two guide-disks D^2 and D^3, respectively—one of said disks being of the same diameter as the cutter-disk, and the other of smaller diameter, so that the periphery of the cutter is conical in part to conform to the shape of the screw's point. The edge of the cutter-disk D′ is sharp, while the edges of the guide-disks D^2 and D^3 are blunt.

The cutters D are secured to shafts E to rotate therewith, said shafts being journaled in bearings F. The other ends of the shafts are operatively connected, by means of universal extensible couplings G, (comprising two slidably-connected parts G′ and G^2,) with the operating-shafts H, carrying drive-pulleys I, Figs. 1 and 2, or pinions K, Fig. 3, may be substituted for said pulleys, said pinions engaging internal teeth on a drive-pulley L. The latter construction requires only one driving-belt and is used where comparatively little power is to be applied. It is preferable to drive each of the cutter-shafts by means of a separate belt, as in the construction illustrated by Figs. 1 and 2.

The cutters D are arranged to move transversely while cutting the gimlet-point, and for this purpose the bearings F, with their bases M, are mounted to slide transversely on supports N, the connection being preferably effected by means of a dovetail, as shown. In order to provide for a longitudinal adjustment of either cutter, the supports N are fitted to slide on the bed O of the lathe in a direction parallel to the spindle C, and screws P, held in stationary bearings Q, engage the supports N to move them on the bed and hold them when adjusted. In order to provide also for an independent transverse adjustment of either cutter, so that the blank A may occupy the correct central position relatively to the cutters, each bearing F is mounted to slide transversely on its base M, (preferably by means of a dovetail,) and a screw R serves to adjust the bearing and hold it after adjustment.

I further provide a mechanism for moving the cutters from each other as the blank is fed forward, said mechanism being actuated either by the feed-spindle C or by the blank itself. On the spindle C is loosely held a collar or strap S, from which depends a rod T. The strap is held between two collars C′, secured to the spindle, so as to prevent or limit longitudinal movement of the strap relatively to the spindle, while allowing the spindle to rotate freely. The rod T is adjustably connected to a longitudinally-movable bar U, connected to a slide V, fitted between the supports N. The slide is provided with grooves V′, engaged by pins M′, projected from the

bases M. These grooves have parallel end portions spaced at different distances from each other and inclined or wedge portions V^2, connecting said parallel portions.

It will be understood that in the initial position the pins M′ engage those end portions of the slots V′ which are nearest to each other, so that the bearings F and cutters D are in their innermost position. When the feed-spindle C and with it the slide V advance, the diverging portions V^2 of the slots V′ will gradually force the slides F M and cutters D apart, (see Fig. 2,) and finally the cutters D will be held in their outermost position, Fig. 3, when the pins M′ engage the other parallel portions of the slots V′.

It will be obvious that in order to secure an accurate operation of the above-described mechanism the end of the blank A must engage the cutters at exactly the same time that the pins M′ reach the inclined portions V^2 of the slots V′, and this may be effected by adjusting the bar U longitudinally. In practice, however, such careful adjustment of the said bar may be difficult, and to obviate this I have provided an additional mechanism for accurately timing the spreading of the cutter-carrying slides F M. This mechanism consists of a slide W, having a wedge-shaped portion W′ adapted to engage the inner sides of the slides F M, preferably the bases N. The slide W has a thin point W^2, adapted to project between the cutters D and to be engaged by the free end of the blank A. The slide W is connected to the slide V by means of a rod X.

The operation of the machine will be obvious.

The connection between the bar U and the rod T being loosened the blank is inserted and the slide W is moved toward the spindle C until the front or free end of the blank engages the point W^2 of said slide. The slide W therefore forms a gage to properly control the position of the slide V, so that the cutters will be moved apart at the right movement irrespective of the length of the blank.

It will be obvious that it is not necessary that the slide W should have any direct spreading action on the cutters, since such motion may be performed exclusively by the slide V, which is rigidly connected thereto. As above explained, the slide W, although a very useful part of the machine, is not absolutely necessary.

The operation of the cutters will be very uniform and steady, as the guide-disks D^2 and D^3, by engaging the blank in advance and in the rear of the cutter-disks D′, hold the said blank against lateral bending.

Various modifications may be made without departing from the nature of my invention. Instead of the slots V′, I may employ other forms of guides, such as ribs, or the slide V may be formed as a wedge, similarly to the slide W. These changes are so obvious that further illustration is not deemed necessary. The cutter D may have a plurality of cutter-disks D′ between single guide-disks or between a plurality of guide-disks, and I desire it to be understood that the claims drawn to the special construction of the cutter cover the same whether the cutter-disks and guide-disks be provided single or in plurality.

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

1. The combination of the feed-spindle, the cutters carried on supporting-slides, mounted to move transversely of the direction of the feed, and a slide mounted to move longitudinally of the spindle and operatively connected thereto, said slide being provided with diverging guides engaging the cutter-supporting slides to move them in opposite directions, substantially as described.

2. The combination of the spindle adapted to feed the blank, the cutters mounted to move transversely of the direction of the feed, a spreading mechanism located in the path of travel of the blank and operatively connected to the cutters to move them from each other, and another spreading mechanism connected to the first-named mechanism and also connected to the feed-spindle, said spreading mechanisms being capable of a longitudinal movement relatively to the spindle, substantially as described.

3. The combination of the spindle adapted to feed the blank, the cutters mounted to move transversely of the direction of the feed, a spreading mechanism connected to the cutters to move them from each other, said spreading mechanism being movable longitudinally in relation to the feed-spindle, and a gage rigidly connected to the spreading mechanism and located in the path of travel of the blank to control the relative position of the spindle and the spreading mechanism according to the length of the blank, substantially as described.

4. The combination of the revoluble feed-spindle, adapted to carry the blank, the transversely-movable cutter-carrying slides, said slides consisting of sliding bases and cutter-bearings adjustable transversely on said bases, and a spreading device actuated by the feed-spindle, for moving the cutter-carrying slides from each other, substantially as described.

5. The combination of the revoluble feed-spindle, adapted to carry the blank, the longitudinally-adjustable supports, the cutter-carrying slides movable transversely on said supports, and a spreading device, actuated by the feed-spindle, for moving the cutter-carrying slides from each other, substantially as described.

6. A cutter for producing gimlet-points, comprising a cutter-disk, a guide-disk of equal diameter located at the rear thereof,

and a guide-disk of less diameter than the cutter-disk and located in advance thereof, substantially as described.

7. The combination of the revoluble spindle adapted to feed and rotate the blank, the cutters mounted to turn about axes approximately parallel to the direction of the feed, said cutters being also movable transversely of the direction of the feed, and a spreading mechanism for moving the cutters in opposite directions as the blank is fed forward, substantially as described.

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