J. TANGYE.

Screw Threading Machine.

No. 56,339. Patented July 10, 1866.

Fig. 1.

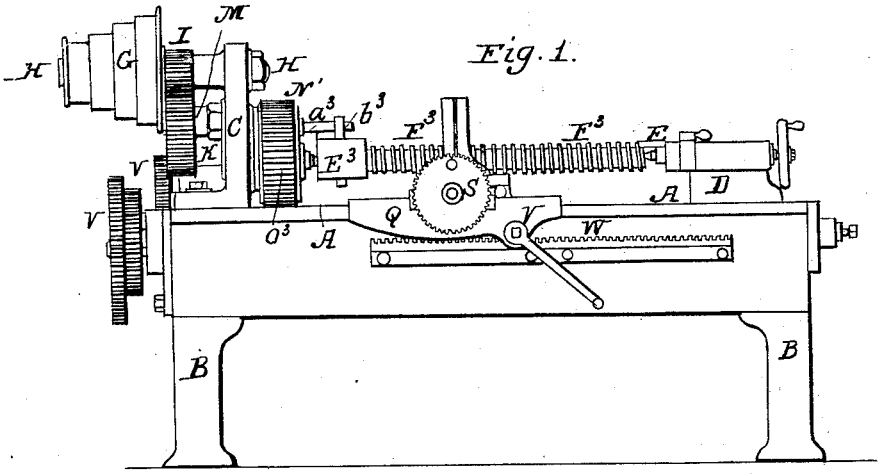


Fig. 2.

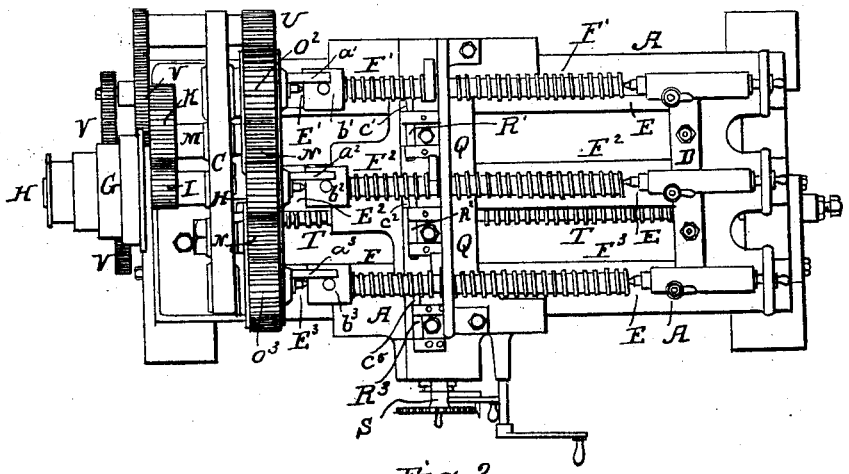
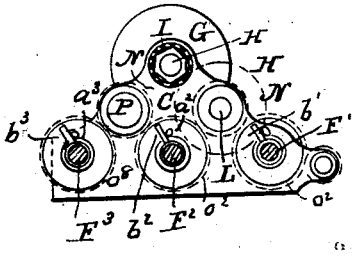


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH TANGYE, OF BIRMINGHAM, ENGLAND.

IMPROVEMENT IN LATHES FOR CUTTING SCREWS.

Specification forming part of Letters Patent No. **56,339**, dated July 10, 1866.

To all whom it may concern:

Be it known that I, JOSEPH TANGYE, of Birmingham, England, have invented an Improvement in Lathes for Cutting Screws, of which the following is a specification.

This invention relates to a peculiar arrangement and combination of machinery or apparatus for cutting screws, whereby a considerable saving in time is effected, inasmuch as I am enabled to cut two, three, or more screws simultaneously.

In carrying out my said invention in practice I construct a lathe-bed similar to an ordinary screw-cutting lathe-bed, but of a sufficient width to accommodate two or more screw-blanks side by side, upon which screw-threads are to be cut in lieu of being only wide enough to receive a single screw-blank, as heretofore. The several screw-blanks are carried between two sets of corresponding centers, one set being arranged and constructed in the ordinary manner and made adjustable in order to admit of the blanks being inserted and removed, while the other set is fitted in a head-stock secured to the driving end of the lathe-bed. This head-stock extends the full width of the bed, and carries on its outer face a fixed axis or stud-center, upon which revolves freely a cone of driving-pulleys, to which is secured so as to rotate with them a spur-pinion in gear with a spur-wheel on a short shaft working in a bushed bearing in the head-stock. On the inner end of this short shaft there is keyed a spur-pinion, which is in gear with and drives simultaneously two spur-pinions, respectively, carried by two of the fixed centers in the head-stock, and round which they rotate freely. The third center, (when three are used,) or that next to the front of the lathe, carries a spur-pinion corresponding to the pinions on the other two centers, and deriving its motion from the other two by a carrier-pinion working loose on a stud-center in the head-stock.

It will thus be seen that on rotating the driving-pulleys the whole of the pinions on the centers in the head-stock will be rotated simultaneously and in the same direction.

The rotatory motion of the pinions above referred to is imparted to the three screw-blanks to be cut into screws by means of a projecting pin from the face of each pinion coming in contact with a radial pin secured to the head of each of the blanks, and hence as the pinions revolve they will carry round with them their respective screw-blanks.

The slide-rest which carries the cutting-tools is provided with as many holders as there are tools required, each holder being provided with its own tool adjusting or setting screw.

The traverse motion is imparted to the slide-rest in the usual manner from a leading-screw working in a split nut on the slide-rest and driven by any convenient or well-known arrangement or combination of change-wheels, according to the pitch of the screw-thread to be produced.

The depth of cut of the several tools is regulated by a single feeding-screw carried by the slide-rest, as in single screw-cutting lathes, with this difference, that it operates upon two, three, or more tool-holders simultaneously.

The rest of the parts are similar to those hitherto employed in machines of this class and need no further description.

Having set forth the nature of my invention, I shall now proceed more particularly to describe the same, and for that purpose I shall refer to the explanatory figures on the sheet of drawings hereunto annexed, the same letters of reference indicating corresponding parts in all the figures.

Figure 1 represents a side elevation of a multiple screw-cutting lathe constructed and arranged so as to cut three screws simultaneously in accordance with my invention. Fig. 2 is a corresponding plan of the same; and Fig. 3 is an inside view of the head-stock, showing the arrangement of the gearing which rotates to the screw-blanks.

A is the lathe-bed supported on the standards B B, and carrying the fixed head-stock C and adjustable poppet-head D. E' E^2 E^3 are three centers fitted into the head-stock C, and E E E are corresponding adjustable centers carried by the movable poppet-head D. Between these two sets of centers E' E are supported the three screw-blanks F' F^2 F^3, to which a rotatory motion is imparted from the driving-pulleys G by means of the following arrangement of gearing: The driving-pulleys revolve loosely on the stud-center H, fixed in the upper part of the head-stock, and with

them rotates the spur-pinion I, which may be made in one piece with or secured to the driving-pulleys. This pinion gears into the wheel K fast on the outer end of a short shaft, L, which works in a bushed bearing, M, on the head-stock. On the inner end of the short shaft L there is keyed the pinion N, Fig. 3, which gears into the spur wheels or pinions O′ O^2, revolving loosely upon the corresponding centers E′ E^2. The wheel or pinion O^3 on the center L^3 derives its motion from the wheel or pinion O^2 by the intervention of the carrier-pinion N′ working loose on a stud-center, P, in the inner face of the head-stock C. Into the face of each of the wheels O′ O^2 O^2 there is fitted a projecting stud or pin, a' a^2 a^3, which pins, on being carried round, come in contact with radial arms or studs b' b^2 b^3, fixed into the ends of the respective screw-blanks F′ F^2 F^3 and impart a rotatory motion thereto in a uniform direction.

Q is the slide-rest, which extends across the lathe-bed and carries as many tools or cutters c' c^2 c^3 as there are screws to be cut at one time. The several cutters are all separately adjusted in their respective holders R′ R^2 R^3, and these holders are fed up to or removed from the work by means of the ordinary feeding-screw S, which works the three holders simultaneously.

T is the usual leading-screw, which works through a split nut on the under side of the slide-rest and derives its motion from the spur-wheel O′ through the intervention of the pinion U and train of change-wheels V V, which is well understood by mechanics. On the slide-rest arriving at the end of its traverse it is run back by means of the rack W and pinions Y, worked by a winch-handle or otherwise.

It will be obvious that by increasing the number of centers and adding gearing to correspond any additional number of screws may be simultaneously cut, provided the bed be made wide enough to accommodate a slide-rest of a length sufficient to carry the number of tools required.

Having now described and particularly ascertained the nature of my invention and the manner in which the same is or may be used or carried into effect, I would observe, in conclusion, that I do not claim the combination of a slide-rest with a tool or cutter; but

What I do claim is—

1. The combination, in a screw-cutting lathe, of a single slide-rest with two or more tools or cutters which operate simultaneously upon two or more different screw-blanks, all constructed and arranged substantially as herein described.

2. The combination, in a screw-cutting lathe, of a head-stock and poppet-head, each provided with two or more centers, when constructed and arranged substantially as herein described.

3. In a screw-cutting lathe constructed and arranged as herein described, the special gearing actuated by the driving-pulleys for the purpose of rotating two or more screw-blanks simultaneously in the same direction, as hereinbefore described.

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

JOSEPH TANGYE.

Witnesses:

C. E. MATHEWS,
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CROWTHER DAVIS,
His Clerk.