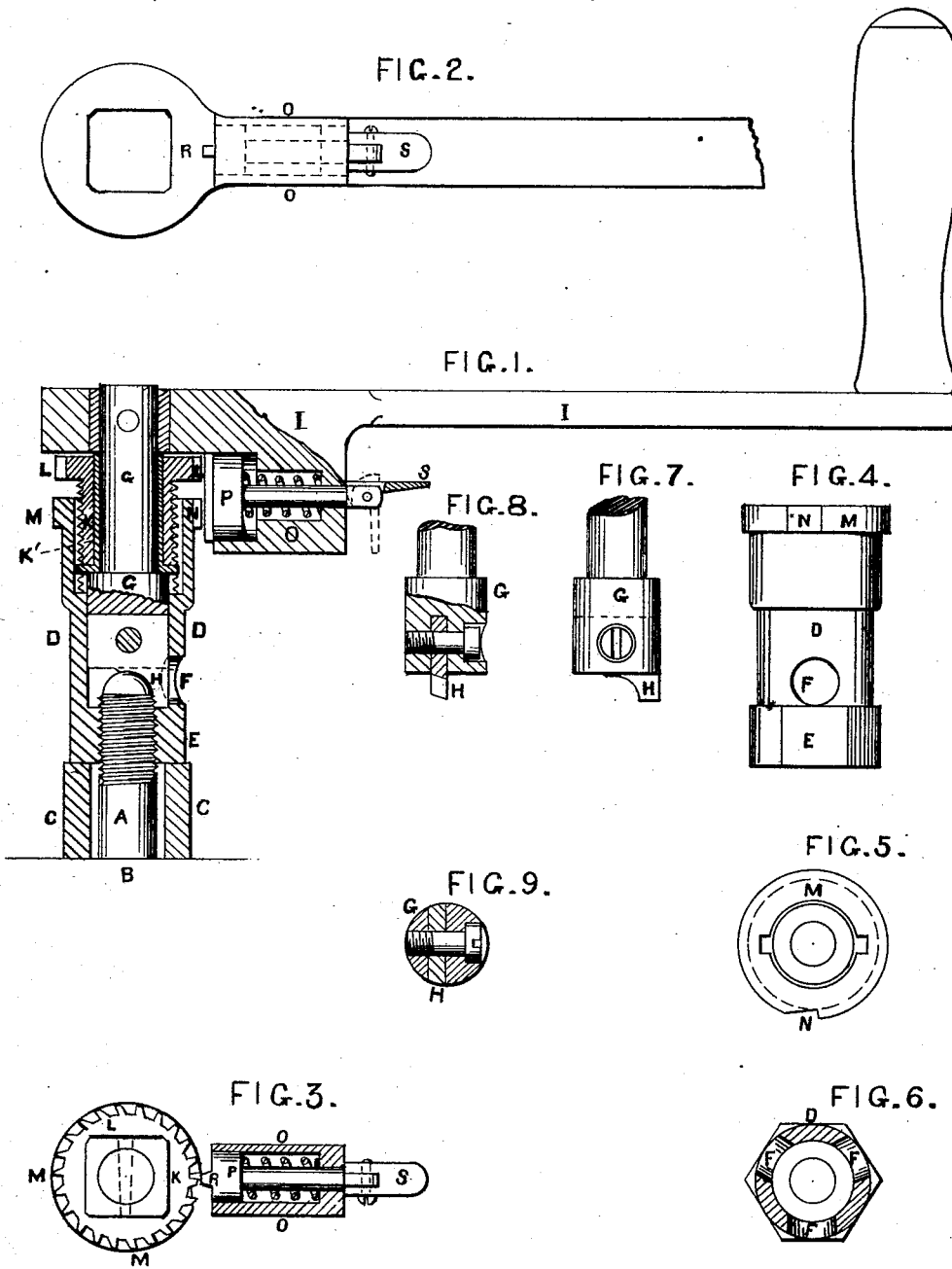


J. NELSON.

Device for Rounding the ends of Bolts.

No. 163,797.

Patented May 25, 1875.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JAMES NELSON, OF SUNDERLAND, ENGLAND.

IMPROVEMENT IN DEVICES FOR ROUNDING THE ENDS OF BOLTS.

Specification forming part of Letters Patent No. **163,797**, dated May 25, 1875; application filed December 12, 1874.

To all whom it may concern:

Be it known that I, JAMES NELSON, of Sunderland, England, engineer, have invented or discovered a new and Improved Device for Trimming Studs and Bolts; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures marked thereon.

The machine which forms the subject of this invention is intended for cutting and finishing the ends of studs and bolts, more particularly when in their places, but it may also be used to cut and finish their ends before they are put into place.

One important feature of my invention consists in a spindle, bearing a cutter on its lower end, and a crank or equivalent rotating device on its upper end, the said spindle revolving in a cylindrical guide-body axially with the stud to be cut.

Another important feature is the device for producing an automatic intermittent feed of the cutter up to the work.

Another feature of importance consists in providing the guide-body with a threaded opening at the bottom, by which the said body is firmly secured to the bolt or stud to be cut, and in the proper position for the cutter to operate thereon.

Figure 1 of the accompanying drawings is a sectional view of a machine constructed according to my invention. Fig. 2 is a view of the under side of the handle. Fig. 3 is a plan of the self-acting feed-gear which I prefer to employ; Fig. 4 a side elevation, Fig. 5 a plan, and Fig. 6 a horizontal section, of the body; Fig. 7 an elevation, Fig. 8 a vertical section, and Fig. 9 a horizontal section, of the spindle and cutter.

The same letters of reference indicate the same parts in all the figures.

A is the stud or bolt the end of which it is desired to cut and finish. B represents the part of the engine or machine from which the stud A projects. C represents a washer or ring placed temporarily over the stud, the depth of such washer or ring being regulated according to the extent to which it is desired to cut the bolt. D is the body of my machine, the lower part of which has an internal screw

or nut, E, by which it is fastened to the stud A. Above the nut E the body D is cylindrically hollow, and is formed with holes F, to allow lubricants to be injected and the cuttings to be removed. G is a spindle, contained within the cylindrical portion of the body D, and having fixed in its lower end (or it may be made in a piece with it) a cutter or knife, H. The cutting-edge of this cutter is shaped according to the configuration required to be given to the stud end, and the cutter is fixed in the spindle so that the cutting-edge is exactly in the center of the spindle, as seen in Figs. 8 and 9. I is a handle on the top of the spindle G, by which the spindle and cutter are rotated.

It will be readily understood that, by rotating the handle and giving a slow feed to the cutter, the end of the stud will be cut as required. Any ordinary and suitable self-acting feed-gear may be employed for this purpose; that shown in the drawings, and which I now proceed to describe, will be found to answer well.

In the upper end of the body D, which is screw-threaded for the purpose, I screw a sort of gland, K, upon the top of which the handle I rests; or a bush, K', may be interposed to receive the friction. The upper part of the gland is formed on its periphery with teeth L, the points of which are slightly within a flange, M, on the body D. At one portion of this flange M is an inclined recess, N. At the under side of the handle I is a box, O. In this box are a slide, P, and a spring, Q, which spring has a tendency to force the said slide outward, so as to cause a pawl or catch, R, on the slide to enter the teeth L. The flange M of the body, however, keeps the pawl back out of the teeth; but once in every revolution of the handle I the pawl comes opposite the recess N of the flange, and, being then no longer kept back, is allowed to enter between two of the teeth L, and to move the gland K the distance of one tooth before the incline of the said recess, by acting against the pawl, again compels it to recede. Supposing there are twenty-two of the teeth L, twenty-two revolutions of the handle will impart one revolution to the gland K. The gland K is thus screwed gradually farther into the body D, and the

handle I, with the spindle G and cutter H, is, therefore, gradually advanced.

It will be understood that, at the commencement of the operation, the flange of the gland K must not be in contact with the flange M of the body D, and that when it reaches the flange M, as seen in Fig. 1, the feed cannot proceed farther.

To allow of a few finishing turns being given to the cutter after the feed has stopped, I mount a lever or arm, S, eccentrically on a back prolongation of the slide P, in such manner that, by lifting this lever from the position shown in dotted lines, Fig. 1, to that shown in full lines, the pawl R of the slide is drawn clear of the teeth L.

By means of my machine, stud or bolt ends may be finished in their places to the required length and shape much better and in very much less time than they can be chipped and filed by hand, and thus much skilled labor, in the manufacture of engines and other machinery and constructions, is saved.

What I claim, and desire to secure by Letters Patent, is—

1. In a device for trimming studs and bolts, a rotary spindle, G, provided with a cutter, H, affixed removably to its lower extremity, and a rotating crank or handle, I, at the top, in combination with a stationary cylindrical guide-body, D, and an intermittent and arrestable feeding mechanism for feeding the said cutter

up to a stationary stud or bolt, substantially in the manner shown, and for the purposes specified.

2. In a device for trimming studs and bolts, the combination of the rotating spindle G, provided with a cutter, H, and handle I; the stationary guide-body D, with a threaded opening, E, and an intermittent feeding mechanism, consisting of the threaded gland K, bearing a toothed flange, L; the stationary flange M, with beveled recess N; the spring detent or pawl R on the piston P, actuated by a spring, Q, and cam-lever S, all arranged to operate in the manner and for the purposes substantially as set forth.

3. In a device for trimming studs and bolts, in combination with the rotating cutter H on the spindle G, the stationary cylindrical guide-body D, provided with a threaded opening, E, in the bottom of the same, by means of which the said stationary body may be securely attached to the stud or bolt to be operated upon, in the manner substantially as shown, and for the purposes specified.

In witness whereof I, the said JAMES NELSON, have hereunto set my hand this twenty-first day of September, one thousand eight hundred and seventy-four.

JAMES NELSON.

Witnesses:

ROBERT SMITH CANDLISH,
GEORGE NIXON PATTERSON.