2 Sheets—Sheet 1.

G. SANFORD.

COMBINED PIPE-CUTTER AND SCREW-THREADER.

No. 180,649. Patented Aug. 1, 1876.

Fig. 1.

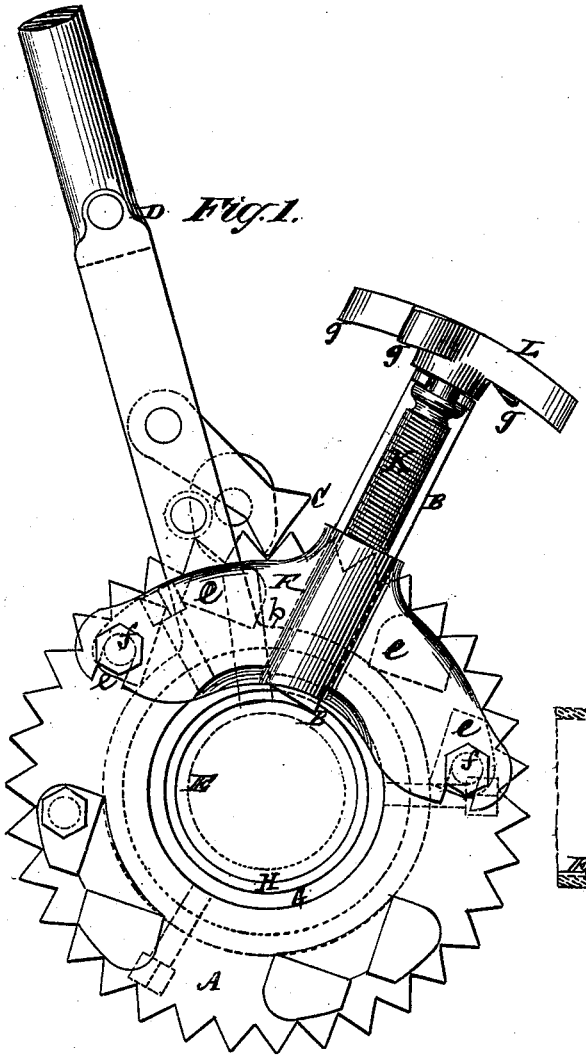
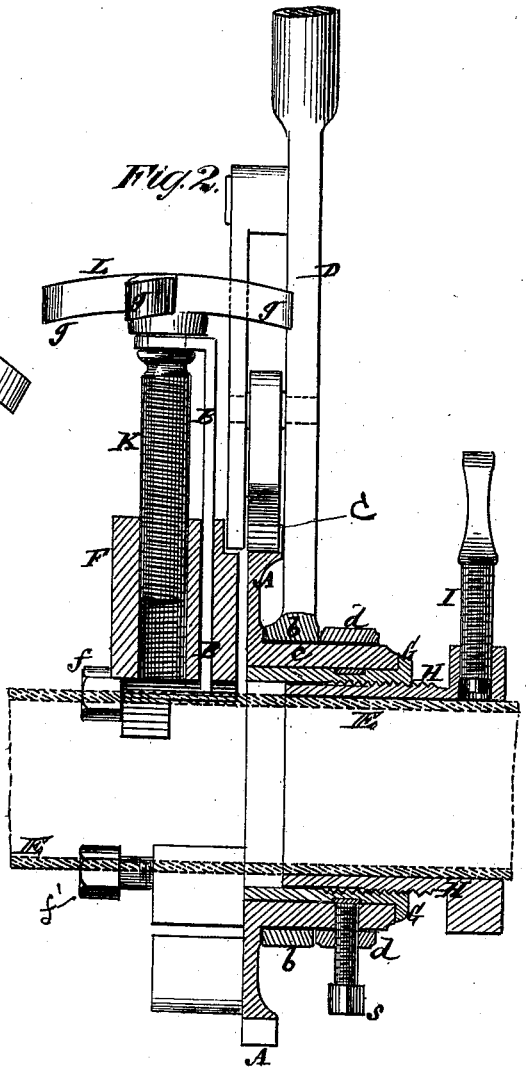


Fig. 2.



Witnesses
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Fred. Haynes

Gelston Sanford
by his Attorneys
Brown & Allen

2 Sheets—Sheet 2.

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COMBINED PIPE-CUTTER AND SCREW-THREADER.

No. 180,649. Patented Aug. 1, 1876.

Fig. 3.

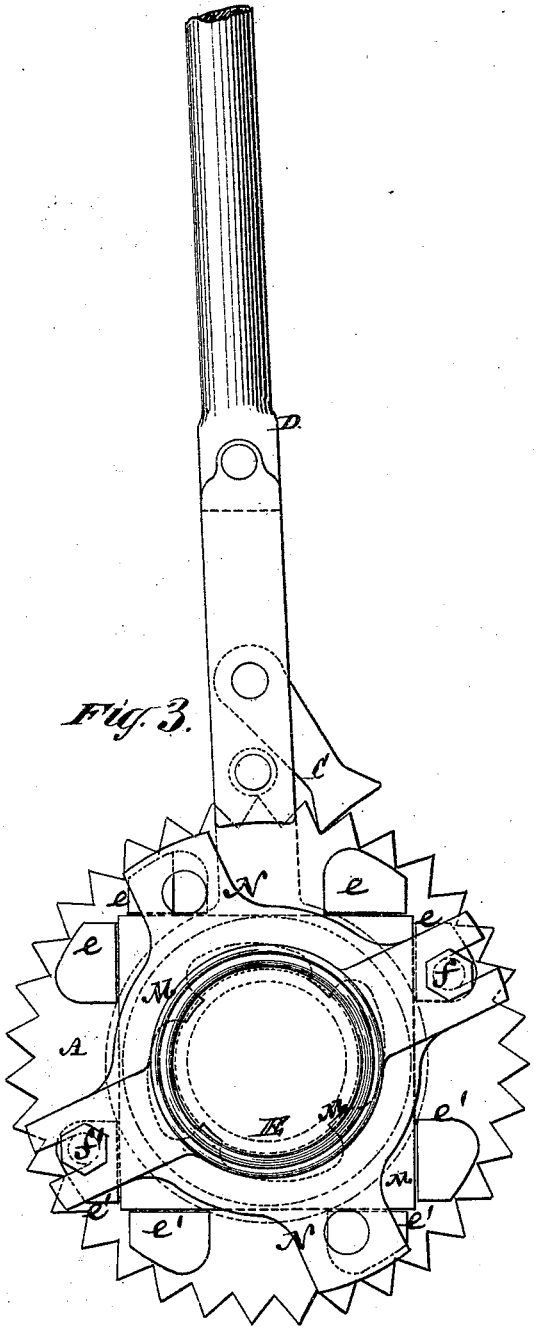
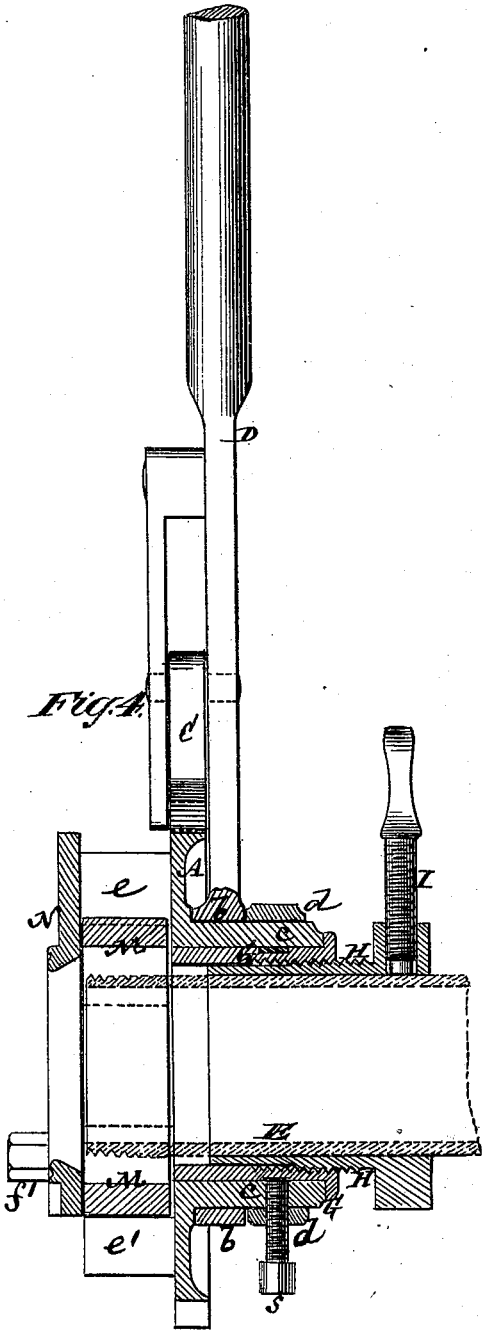


Fig. 4.



Witnesses
John Becker
Jno. Haynes

Gelston Sanford
by his Attorneys
Brown & Allen

UNITED STATES PATENT OFFICE.

GELSTON SANFORD, OF STROUDSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN W. QUINCY, OF NEW YORK, N. Y.

IMPROVEMENT IN COMBINED PIPE-CUTTERS AND SCREW-THREADERS.

Specification forming part of Letters Patent No. **180,649**, dated August 1, 1876; application filed June 23, 1876.

To all whom it may concern:

Be it known that I, GELSTON SANFORD, of Stroudsburg, in the county of Monroe and State of Pennsylvania, have invented certain new and useful Improvements in Tools for Cutting Pipes and Bolts; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to hand tools or devices for transversely severing or dividing pipes and bolts, and for cutting screw-threads thereon, in which the severing-cutters or the threading-die carried by the tool are rotated by a ratchet through the instrumentality of a hand-lever having an attached pawl.

The invention consists in certain novel constructions and combinations of parts, including an automatic feeding device of the severing-cutter, deriving its motion by rotation of the ratchet; also, including a leading nut or screw-sleeve for obtaining bite or hold of the die or dies when cutting a screw-thread on the pipe or bolt, whereby not only simplicity is combined with efficiency, but time is largely economized in the performance of the work. As the invention is mainly designed for cutting and threading pipes, it will here be described accordingly.

Figure 1 represents a face or side view of my improved tool as adapted to work a severing-cutter, and is applied to transversely cutting or dividing a piece of pipe. Fig. 2 is a central section of the same in a plane at right angles to the former figure. Fig. 3 is a face or side view of the tool as adapted and applied to cutting a screw-thread on a pipe, and Fig. 4 a central section of the same in a plane at right angles to Fig. 3.

In Figs. 1 and 2 of the drawing, A is a ratchet-wheel, having an open eye or center, and with its teeth shaped to admit of its rotation in opposite directions when required, accordingly as its operating-pawl C is thrown over to either side of the lever D, which carries it. This lever D forms the handle by which the tool is operated, and the same may be of any desired length, or may be sectionally constructed to vary its length as required—as, for instance, by making it capable of receiving over its outer end a tubular extension of the handle when it is necessary to lengthen the latter. Said lever, which is operated by vibrating it backward and forward to rotate the ratchet A, has its inner end constructed to form a ring, *b*, which encircles, and has its bearing on, the hollow eye or nave *c* of the ratchet, between the back of the ratchet and a collar, *d*, which is fitted over the nave *c*, and is secured by a screw, *s*. E represents a piece of pipe designed to be cut or divided transversely by a cutter, B, which is carried by the ratchet A, or by a cutter-stock, F, applied to the face of the ratchet, and constructed to rest on and within studs *e e e e* on the face or outer side of the ratchet, and so that when in place, and in lock with one or more of said studs to prevent it being drawn out radially in relation to the ratchet, said cutter-stock is held facially to its seat on the studs by screw-bolts *f f*. By slackening or removing these screws said cutter-stock may be removed from the ratchet when required. The pipe E to be cut is firmly held in a vise or otherwise, and the cutting-tool is slipped over it till the cutter B is adjusted to its proper position in the length of the pipe. The pipe being a fixture, the ratchet and cutter portion of the tool is rotated on it, preferably by means of a bush or sleeve as a bearing-surface, arranged within the eye of the ratchet. Thus G is a bush arranged to fit within the nave *c* of the ratchet, and secured, by the set-screw *s*, to rotate along with the ratchet. This bush has another bush or sleeve, H, fitted within it, and the interior diameter of which corresponds with the outer diameter of the pipe. This last-named sleeve H has a screw-thread on its exterior, fitting a corresponding thread on the interior of the bush G, and it is furthermore provided with a locking-screw, I, which, however, is loosened, or may be removed, when simply cutting pipe; and the object of which, as well as of the duplicate bushes in the hollow eye or nave of the ratchet, (the inner one, H, of which I denominate a leading nut or sleeve,) will be explained when describing the tool as adapted to threading a piece of pipe. By slackening the screw I, however, the same sleeve, H,

forms a rotating bearing for the tool on the pipe when simply cutting the latter. The cutter B has a sliding fit within its stock F, and is automatically fed once during each rotation of the ratchet around the pipe, to continue the cut, by a screw, K, working within the cutter-stock, and attached to the cutter; also carrying on it an irregular-formed handle or wheel, L, which, as the ratchet comes round, strikes the vibrating or operating lever D, and turns the screw to give the cutter a fresh feed. This handle or wheel L has its irregularities formed by projections *g*, so shaped and arranged as to actuate the screw K as they successively strike and ride over the lever D, or a projection thereon, and to successively assume a like operating position during each rotation of the ratchet. Said wheel L may also be used to adjust the cutter by hand. In this way, or by these means, it is only necessary to continue vibrating the lever D to effect both the rotation and feed of the cutter around and through the pipe. Any number of cutters B may be used, with attached means for feeding or adjusting them, as described.

In Figs. 3 and 4 of the drawing, which represent the tool as applied to cutting a screw-thread on the end of the pipe E, one or more screw-cutting dies, M, is substituted for the cutter B and its stock F, said die (supposing there to be only one) being seated on or against the face of the ratchet within the studs *e*, and other studs, *e'*, as walls to the die, and, when thus placed, being held in position, or kept from falling out, by means of a plate, N, secured to the outer end of the studs by the bolts *f f'*.

When the tool is thus applied the screw I is turned to lock or hold the leading nut or sleeve H fast on the pipe E, so that as the ratchet A is rotated, by working the lever D with its attached pawl C backward and forward, as before, the die M is led to take a fair bite or hold on the pipe by the screwing of the bush G onto the sleeve H, the bush G rotating with the ratchet. After the die M, however, has got a fair bite or hold on the end of the pipe, the screw I may be loosened, and the sleeve H be allowed to rotate, together with the bush G and ratchet A; or the sleeve H may be kept permanently fast to the pipe by the screw I, provided the length of thread to be cut on the pipe does not exceed the length of the threaded portion of the sleeve H. The bushes or sleeves G and H may be substituted by others of different diameters or pitch as regards their screw-threads, to suit different diameters of pipe, and different screw-threads thereon.

I claim—

1. The combination of the cutter-feeding screw K and its operating-wheel L with the rotating ratchet A and the vibrating lever D, with its attached pawl C, by which the ratchet and cutter are rotated and the cutter advanced, essentially as described.

2. The leading nut or screw-sleeve H, in combination with the rotating ratchet A and screw die or dies M, carried by the latter, essentially as specified.

GELSTON SANFORD.

Witnesses:

BENJAMIN W. HOFFMAN,

FRED. HAYNES.