(No Model.)

E. HAY.

ROTARY SHEAR STAY BOLT CUTTER.

No. 434,597. Patented Aug. 19, 1890.

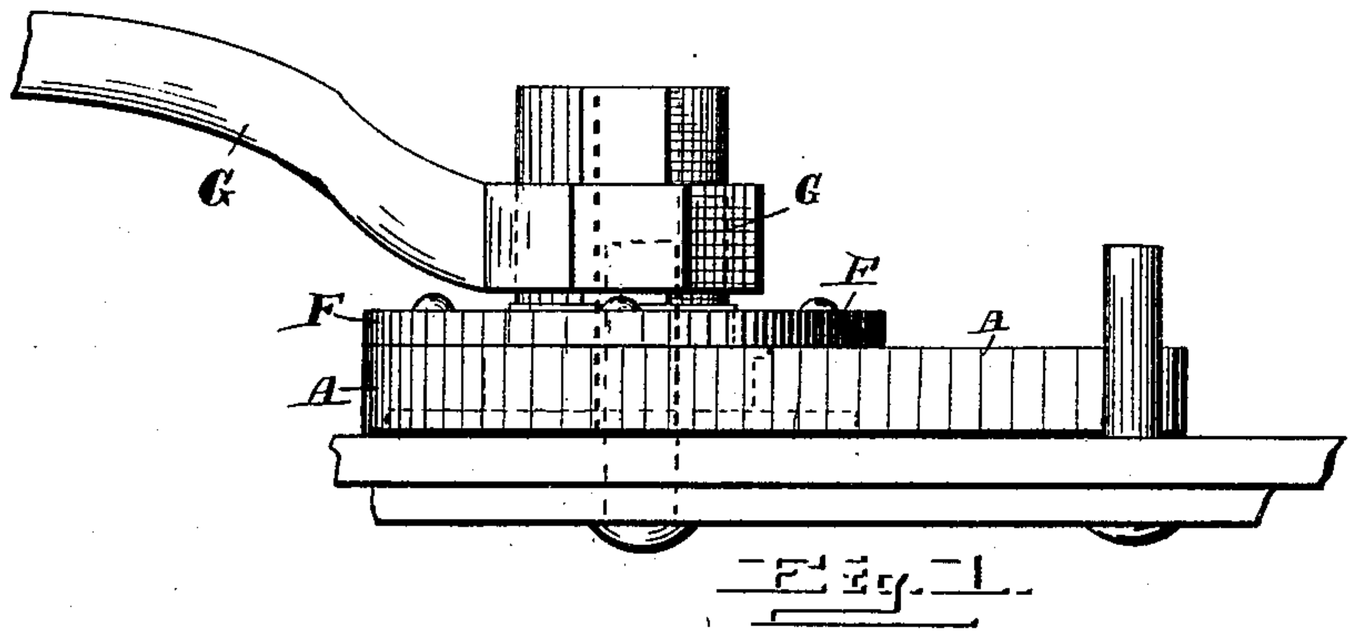

Fig. 1.

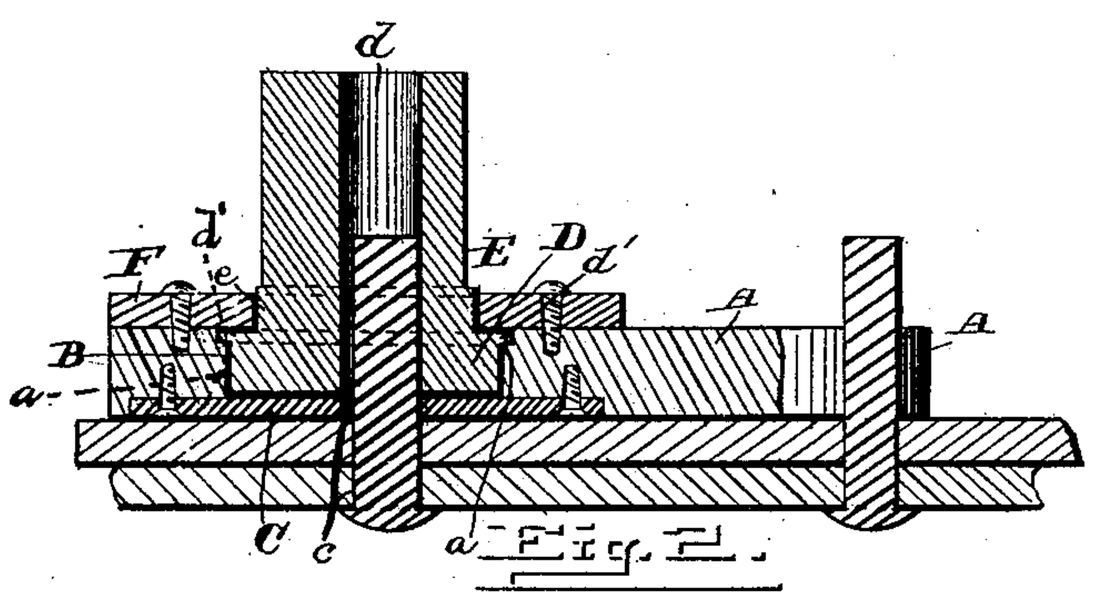

Fig. 2.

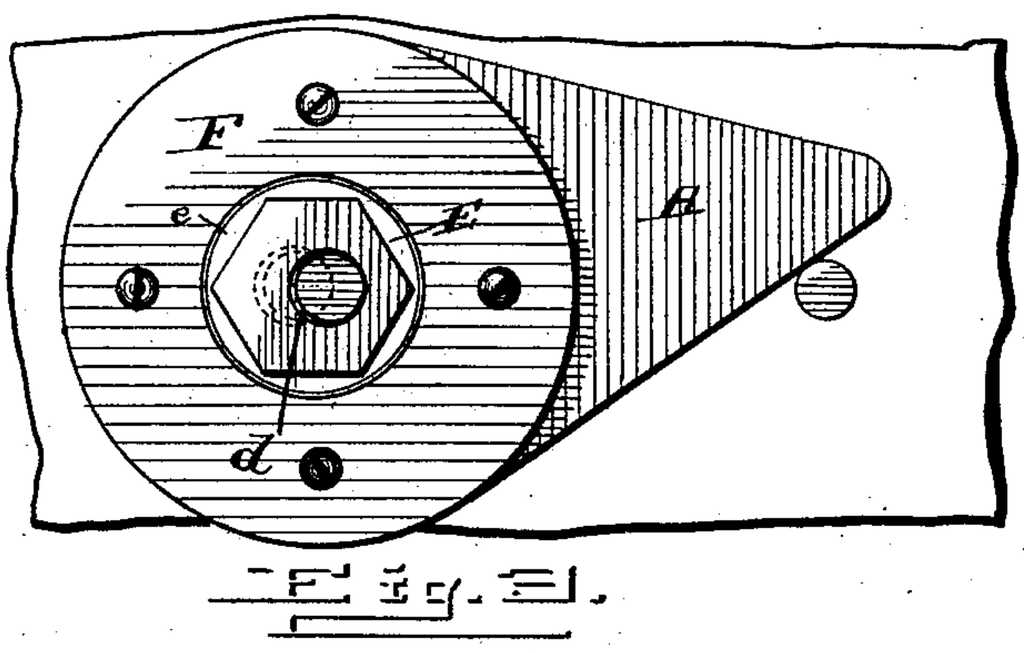

Fig. 3.

Witnesses:
P. L. Brooks.
A. E. Towell.

Inventor:
Elwood Hay
by
W. Alexander
Attorney.

UNITED STATES PATENT OFFICE.

ELLWOOD HAY, OF PHILLIPSBURG, NEW JERSEY.

ROTARY-SHEAR STAY-BOLT CUTTER.

SPECIFICATION forming part of Letters Patent No. 434,597, dated August 19, 1890.

Application filed June 15, 1889. Serial No. 314,383. (No model.)

To all whom it may concern:

Be it known that I, ELLWOOD HAY, of Phillipsburg, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Rotary-Shear Stay-Bolt Cutters; 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 of reference marked thereon, which form part of this specification, in which—

Figure 1 is a side view of my improved stay-bolt or rivet cutter. Fig. 2 is a central longitudinal section through the same. Fig. 3 is a plan view thereof showing it in position for receiving the end of a rivet or stay-bolt in full lines and showing it turned to cut off the stay-bolt in dotted lines.

This invention is an improvement in rod and stay-bolt cutters, and is a machine especially designed for cutting off the ends of stay-bolts or rivets of boilers, for cutting rods, &c.; and it consists in the hereinafter-described novel construction and combination of parts.

Referring to the drawings by letters, A represents a metal block having a cylindrical opening B through it at its widest part and an offset portion or arm, as shown. C designates a plate closing one end of said opening, the edges of said plate being seated in recesses in the lower face of the block, so that the outer face of said block and plate are flush. Plate C is secured to the block by screws or in other convenient firm manner and has an opening *c* eccentric to and of much less diameter than opening B.

D represents a circular disk fitted neatly in opening B, and having a central upstanding hub E of less diameter than the disk, and having a shoulder *e* next the disk, above which it is made hexagonal or angular sided, as shown. The disk and its hub are bored vertically, as at *d*, said bore being eccentric to the axis of the hub and disk, but coincident with the opening *c* of plate C when the disk is properly turned, opening *c* then forming a portion of the bore *d*.

F is an annular plate slipped over hub E and secured to the face of block A by screws, or in other convenient manner, thus confining disk D in position, but permitting it to be turned with hub E, which is engaged by a wrench or lever G, as shown. The annular shoulder *e* bears against plate F and partly relieves the disk from strain in operation.

The openings in disk D and plate C are of a slightly greater diameter than that of the stay-bolts or rivets to be cut, and if varying sizes of stay-bolts are to be cut disks D and plates C, having varying sizes of bores, may be employed with the same block A, since the plates and disk, being removably secured to the block, can be readily interchanged. The openings in plate C and disk D are eccentric to the axis of opening B, yet so near the axial line thereof that when the disk is turned the openings therein will move eccentrically to and around opening *c*, but not entirely to one side thereof.

In operation the stay-bolt or end of the rod is slipped through openings *c* and *d* in the plate and disk. The block A is then held fast by means of its arm, which can be engaged by a suitable tool, or where the stay-bolts are close together will abut against an adjoining stay-bolt, as indicated, and thus prevent turning of the block. A wrench G is then applied to hub E and the latter turned with disk D. This turning forcibly twists the upper end of the stay-bolt and partially shears it off between the edges of plate C and disk D and partially breaks it off by twisting it torsionally. Owing to the eccentric movement of the opening in the disk to the opening in the plate all portions of the circumference of the rod are subjected to a slight shearing strain not sufficient to choke the machine by undue compression of the metal, and a fracture is made in the plane of the meeting edges of the disk and lower plate. When the stay-bolt is first introduced into the machine, the bores of the disk and plate coincide. Then when the disk is turned its bore assumes a position eccentric to the bore of the plate, and in this position travels concentrically to said bore, severing the stay-bolt, as described. Owing to the light eccentric movement of the parts in the cutting operation a comparatively slight leverage exerted on hub E will sever a stay-bolt of large diameter.

The machine is simple and portable, and as its parts can be made interchangeable, as described, it is convenient and inexpensive.

If the machine is to be used in cutting but

one size of stay-bolts or bolts varying but slightly in diameter, the bottom plate C may be formed integral with the block; but for cheapness and convenience I prefer making them as described, since it would be expensive to make the block and plate integral of metal sufficiently hard to stand the wear of usage, and with the removable parts any damage thereto can be cheaply repaired. The block D has an annular flange *d'* at its upper edge, which engages an annular recess or shoulder *a* in block A, as shown in Fig. 2, and assists in preventing rocking of block D during the shearing operation.

I am aware that rotatable dies perforated concentrically, but mounted so as to rotate eccentrically, and thus break or shear a rod passed between the dies, and that eccentrically-perforated partially-rotatable dies have been before used. Therefore I do not claim a rotary-shear cutter broadly; but,

Having described my invention, I claim—

The herein-described rotary-shear-cutting device for rivet-bolts, &c., consisting of an oblong base-plate A, having a cylindrical opening in its larger end, annularly shouldered at its upper edge, as at *a*, a die-plate C, inserted and secured in a recess in the bottom of the plate below said opening, having bore *c* eccentric thereto, in combination with the disk D, fitted in said opening and having an annular flange *d'*, engaging shoulder *a* to prevent binding of the disk in the opening, and also having an integral upstanding angular hub portion E, annularly shouldered at *e*, and an annular plate F, slipped on said hub and engaging shoulder *e* to retain the disk in the opening, and secured to plate A, said hub and disk being eccentrically perforated, the elongated portion of the plate A being adapted to engage an adjoining rivet to prevent rotation thereof while the hub and disk are turned by a wrench, substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ELLWOOD HAY.

Witnesses:
E. D. CHIDSEY,
JOHN S. NOBLE.