No. 812,452. PATENTED FEB. 13, 1906.

F. A. RICHARDS.

HAND POWER SHEARS.

APPLICATION FILED NOV. 3, 1905.

Fig. 3

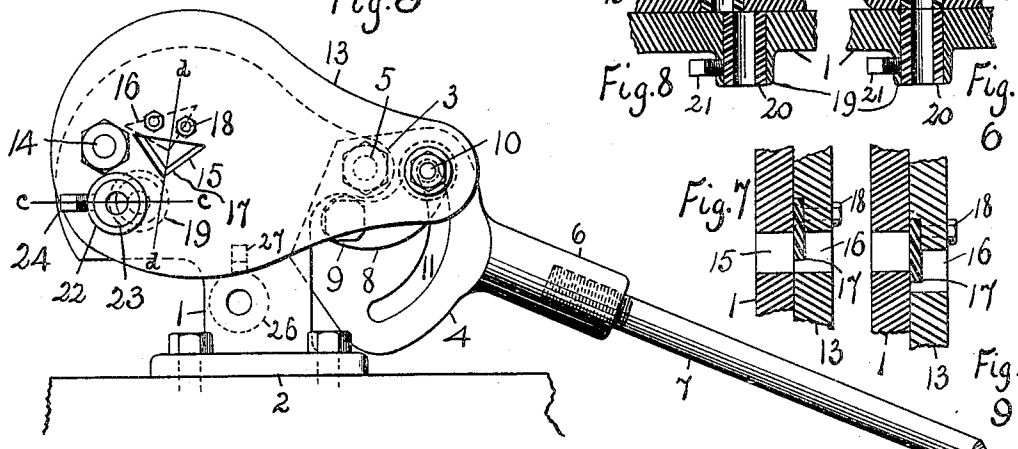


Fig. 8

Fig. 6

Fig. 7

Fig. 9

Fig. 4

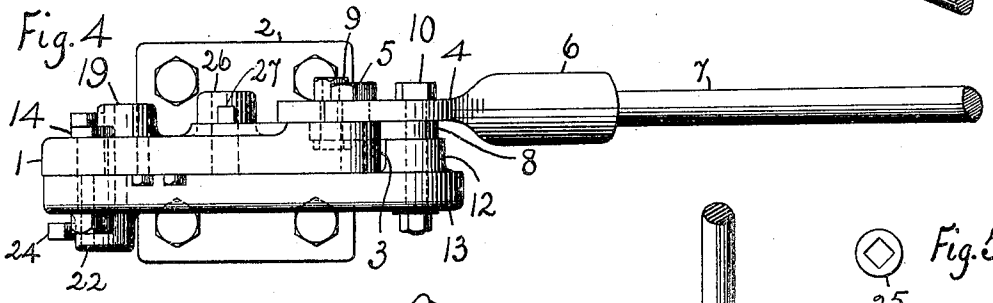


Fig. 5

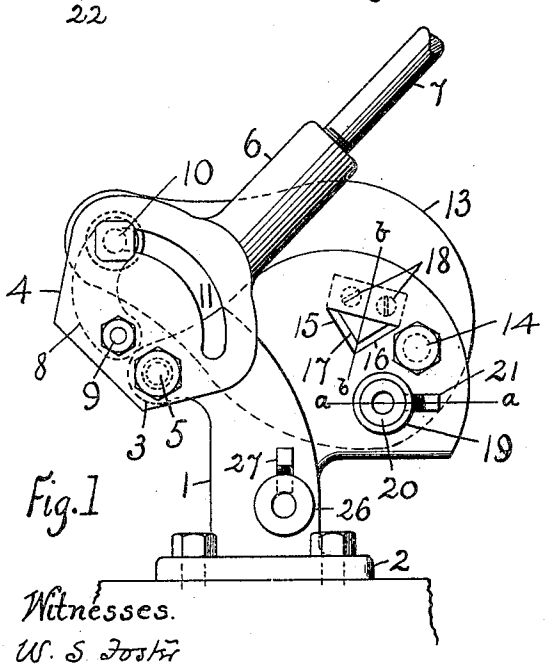


Fig. 1

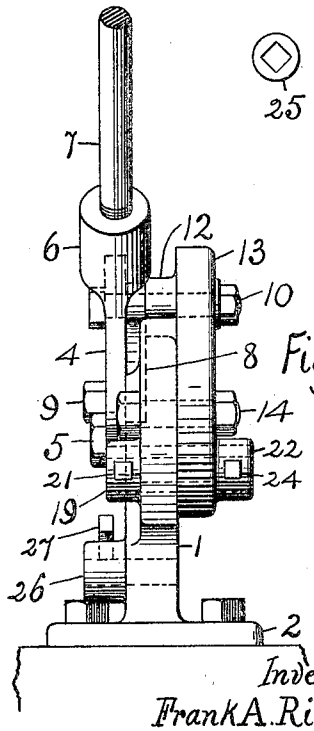


Fig. 2

Witnesses.

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UNITED STATES PATENT OFFICE.

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HAND-POWER SHEARS.

No. 812,452. Specification of Letters Patent. Patented Feb. 13, 1906.

Application filed November 3, 1905. Serial No. 285,699.

To all whom it may concern:

Be it known that I, FRANK A. RICHARDS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hand-Power Shears, of which the following is a specification.

This invention relates to machines for shearing or cutting off metal bars or rods of round, square, or flat sections and angle-irons, and for the latter it is especially adapted, as the cut is made, not as usual heretofore, by force, which moves the cutter in a right line, but by the movement of the cutter in a circuitous direction, which requires a minimum amount of power or force and makes a clean cut free from ragged edges.

By the means employed this machine occupies but a small space while very powerful, and it is adapted to many situations and purposes where a large power-driven machine could not be employed owing to the lack of power facilities, space, and the cost involved.

The invention is illustrated in the accompanying drawings, in which each figure of reference indicates the same part wherever shown, and in which—

Figure 1 is an elevation of the standard side with the parts ready to receive a bar or angle for shearing. Fig. 2 is an end elevation of Fig. 1. Fig. 3 is an elevation of the shear-plate side—the reverse side from Fig. 1—with the parts in the positions assumed after completing a shear or cutting off. Fig. 4 is a top view of Fig. 3. Fig. 5 is an end view of a bushing-die for use in shearing square bars or rods. Fig. 6 is a section on line *a a*, Fig. 1. Fig. 7 is a section on line *b b*, Fig. 1. Fig. 8 is a section on line *c c*, Fig. 3. Fig. 9 is a section on line *d d*, Fig. 3.

The machine is built around and supported on a standard 1, having a plate or foot 2, by which it is secured to a bench or other object. The standard has a lug 3 at one side, to which a lever-plate 4 is pivotally attached by a bolt 5, the plate being provided with a hub 6, into which is inserted a handle-bar 7 of any desired length. A curved connecting-link 8 has one end pivotally attached to the inside of lever-plate 4 by a bolt 9, and at its opposite end it has a bolt 10, which passes through a slot 11 in the lever-plate 4, then through the link 8 and boss 12 of the shear-plate 13, and the shear-plate end opposite to its end which is pivotally attached to the standard 1 by a bolt 14. Standard 1 has an opening 15, through which to insert angle and flat bars, and shear-plate 13 is provided with a similar opening 16, with a knife or cutter 17 secured to the inside of plate 13 by screws 18. Standard 1 also has a boss 19, in which a hardened-steel bushing-die 20 is held by a set-screw 21, while shear-plate 13 is similarly provided with a boss 22, bushing-die 23, and set-screw 24.

When the machine is set to receive an angle bar or rod to to be cut, the openings 15 16 and bushings 20 23 will exactly coincide, as seen in Figs. 1, 2, 6, 7. Bushing-die 25 (seen in Fig. 5) is preferably used instead of 20 23 for square section-bars. When a bar, rod, or angle-iron is inserted in the machine ready for the reception, as seen in Fig. 1, and power is applied to handle-bar 7, lever-plate 4 will swing down radially from its pivot 5, link 8, through its connections 9 10, will carry down the free end of shear-plate 13, moving its cutter or knife 17 and its bushing-die 23 (or 25) radially from the fulcrum 14, when the parts will be in the positions seen in Figs. 3, 4. By compounding the leverage, as shown, and by moving the cutters in a radial or shearing direction the machine does its work with a minimum expenditure of power.

A boss 26, with a set-screw 27, is formed on standard 1 for holding a stop or gage to limit the length of metal to be cut; but it is deemed unnecessary to show one, as they are of various well-known forms suitable to the work in hand.

Minor modifications or variations from the above will be deemed to be within the spirit of my invention.

I claim—

1. In a metal-shearing machine, a standard, a slotted lever-plate and a shear-plate pivotally attached thereto, on opposite sides and at opposite ends, a link having one end attached to the lever-plate and its opposite end attached to the shear-plate and guided by a slot in the lever-plate, and a knife or cutter secured to make a circular-arc movement when cutting or shearing.

2. In a metal-shearing machine, a stand or standard, a slotted lever-plate pivotally fulcrumed thereto at one side, a shear-plate also pivotally fulcrumed to the standard at its op-

posite side, a link pivotally connected to the lever-plate independent of the lever-plate's pivot, and located between the lever-plate and the shear-plate, with its opposite end connected to the shear-plate and guided by the slot in the lever-plate, openings through the standard and shear-plates for the insertion of bars, rods and angles to be cut, and knives or cutters moving in a circular arc for such cutting purposes.

3. In a metal-shearing machine, a standard, a slotted lever-plate pivotally fulcrumed thereto at one side, a shear-plate also pivotally fulcrumed to the standard at its opposite side, a link pivotally connected to the lever-plate independent of the lever-plate's pivot, and located between the lever-plate and the shear-plate, with its opposite end connected to the shear-plate and guided by the slot in the lever-plate, an angular opening through the standard, a corresponding opening through the shear-plate and a cutter therefor, a circular opening through the standard, a corresponding opening through the shear-plate, and a bushing die in each opening.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK A. RICHARDS.

Witnesses:
WILLIAM C. STOEVER,
RANSOM C. WRIGHT.