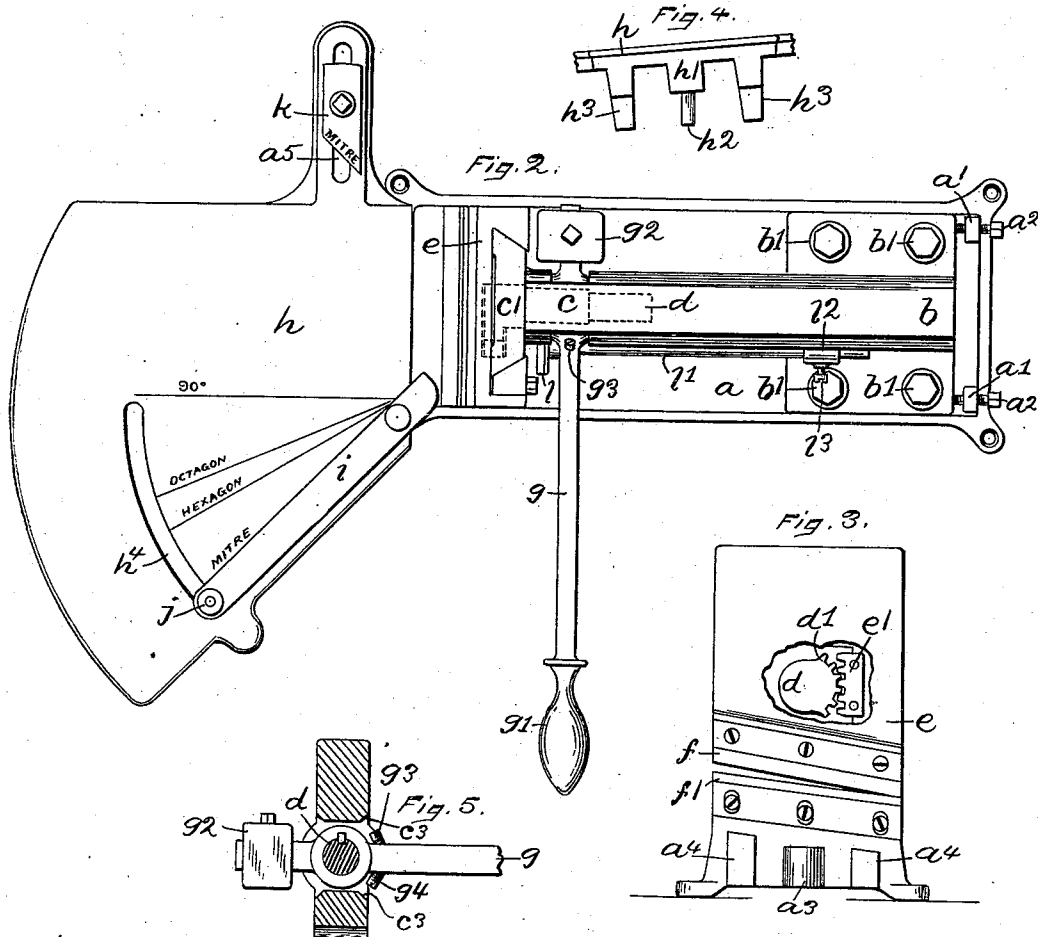
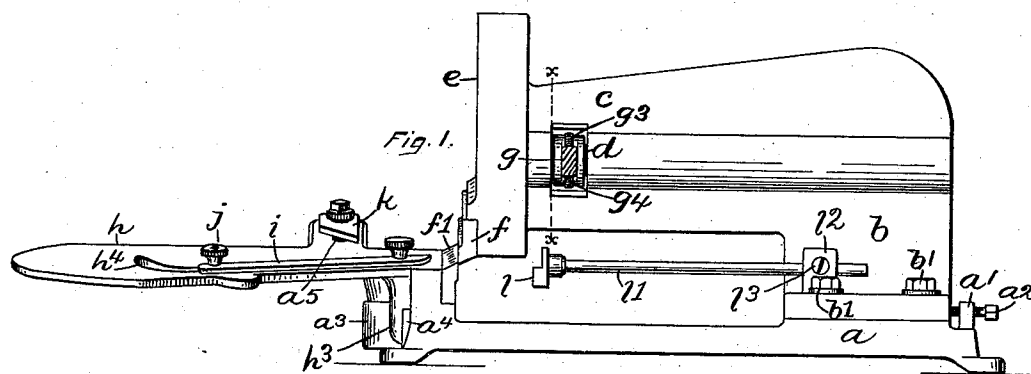


(No Model.)

W. J. BAYRER.
SHEARS FOR METAL.

No. 372,784.

Patented Nov. 8, 1887.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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SHEARS FOR METAL.

SPECIFICATION forming part of Letters Patent No. 372,784, dated November 8, 1887.

Application filed August 1, 1887. Serial No. 245,799. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. BAYRER, a citizen of the United States, residing at Southington, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Shears, of which the following is a specification.

My improvement relates to the class of shears that have a fixed blade and a vertically-reciprocating blade, which are used for cutting sheet metal.

The object of my improvement is to provide a tool that will operate more effectually, with greater facility, that is capable of finer adjustment, and that can be used to cut metal into a greater variety of shapes with more ease and accuracy than will any prior machine. The machine is also intended to do much work that is ordinarily done with common bench-shears, besides doing work that no other shears have ever been adapted to do.

Referring to the accompanying drawings, Figure 1 is a side view of my improved device. Fig. 2 is a plan view of the same. Fig. 3 is a face view of the blades, part of the plate bearing the cutter being broken away to show construction. Fig. 4 is a detail view showing the means employed to connect the table or rest to the bed of the device; and Fig. 5 is a detail view, the frame being sectioned on line *x x* of Fig. 1, showing the stops made use of to regulate the length of cut to be made by the blades.

As illustrated in the drawings, the standard *b* rises from the bed *a* of the machine at one end, and has a forward-projecting arm or horn, *c*, the standard being secured to the bed by bolts *b'*, which pass through slots in the base of the standard into the bed.

In the forward end of the horn *c*, in a suitable chamber, a shaft, *d*, is borne, and this shaft has on one side, near its outer end, teeth *d'*, that mesh with a rack, *e'*, that is fastened to the cutter-bearing plate *e*. This cutter-bearing plate or slide *e* is grooved to fit and slide on the tenon *e'* on the forward end of the horn *c*, and by rocking the shaft *d*, which is provided with a lever, *g*, and handle *g'* for that purpose, the plate *e* and attached blade *f* are recipro-

cated in a vertical plane toward and from the complementary cutter *f'*, that is secured to the bed of the machine by screws that pass through slots in the blade into the bed.

In threaded sockets in lugs *a'* that rise from the rear of the bed *a*, are fitted screws *a''*, so as to bear upon the back of the standard *b*, and by the aid of these screws the horn, and blade borne on the end of the horn, can be pushed forward and a fine adjustment obtained between the blades *f* and *f'*, the bolts *b'*, as was before mentioned, passing through slots in the standard to permit this movement of the standard.

The lever *g*, which is keyed or otherwise connected so as to rock the shaft *d*, extends on both sides of the horn, passing through an opening therein, and it is provided with a handle, *g'*, at one end and a counterbalancing weight, *g''*, at the other. This lever is tapped near the point of its connection with the shaft, and is provided with screws *g'''* *g''''*, that are set in such position as to limit the oscillating movement of the lever by striking against the surface *e''* on the walls of the opening through the horn *c*, this construction limiting the movement of the lever, consequently the rocking movement of the shaft and the reciprocating motion of the blade *f*.

The forward end of the bed *a* is provided with a hollow boss, *a''*, and ears *a'''*, the function of the boss being to receive the stud *h''*, that projects from the leg *h'* on the bottom of the rest or table *h*, and the function of the ears *a'''* being to support the legs *h''*, which are cut away to fit on the ears. These ears are so formed on the bed that the top of the rest, when in place, will be about even with the cutter *f'* and inclined to the same degree, so that a sheet of metal will be flat on the rest when ready to be cut.

The guide *i* is pivotally connected at one end of the rest *h*, and can be clamped at any desired angle with relation to the plane of the shears by tightening up the clamp-screw and nut *j*, the body of the screw passing through the guide and slot *h''*, and the head projecting on the under side of the rest. The function of this guide *i* is to direct a sheet of metal to-

ward the blades of the shears, so as to make an angular cut and insure the same angle each time.

On the opposite side of the rest is pivoted another guide, k , the pivot of this guide passing through a slot, a^5 , so as to permit an adjustment of the guide toward or from the guide i . One edge of this guide k is cut on an angle, when the guides are set as shown in the drawings for use in cornering roofing-plates.

When a straight cut is to be made, the guide l is used to support one edge of the metal, also to determine the width of the strip to be cut. This guide l is a flanged strip of material attached to the end of a rod, l^1 , that is borne in a socket in a boss, l^2 , formed on the side of the standard. This rod is free to slide in the socket in the boss, except when clamped by the set-screw l^3 .

In cutting on a line it facilitates the work greatly if the blades do not open widely apart, although it is sometimes necessary that they should open clear of each other; and one of the advantages of my improvement resides in the fact that the distance of separation of the blades is controlled by a simple and efficient device. The screw g^1 is screwed or unscrewed to determine the degree of height to which the blade will rise, and the screw g^1 turned to control and limit the downward movement of the said blade. Another advantage lies in the fact that the action of the cutters is positive and equal in all parts of the length of the cut. A further advantage accrues from the simplicity of the guides and gages and their ready adjustment, also the ease with which the rest can be removed or replaced for cutting straight lines, or for cutting various shapes, the latter being accomplished by setting the guides on the index-lines shown on the face of the rest.

A few of the shapes that can readily be cut with my shears are as follows: holes or plates of hexagon, octagon, pentagon, star-shaped, square, round, and oval, or other shapes. I can also cut a series of V-shaped slots of a given size and uniform angles. In cutting holes the lower corner of the blade f will puncture the metal at the commencement of each cut.

The lower blade of the shears is stationary, so that when cutting to line the mark may easily be followed with accuracy. The blades are so constructed that the line drawn is always exposed to the view of the operator.

I claim as my invention—

1. In shears of the within-described class,

the combination of a reciprocating blade, a shaft connected to said blade, and a lever to oscillate said shaft, provided with adjustable stops, all substantially as described.

2. In shears, the combination of a base, a horn projecting from said base, a shaft borne by the horn, a lever to oscillate said shaft, stops to limit said oscillation, a blade connected to said shaft, and a fixed blade attached to the bed, all substantially as described, and for the purpose set forth.

3. In shears, the combination of a base, a horn projecting from said base, screws for adjusting said horn, a shaft borne by the horn and provided with gear-teeth, a lever attached to said shaft and bearing screw-stops to limit the movement of the shaft, a blade bearing a rack in mesh with the teeth on the shaft and held to the horn and guided in its reciprocation by a tongue and-groove connection, and a complementary adjustable blade fast to the bed, all substantially as described.

4. In combination with a reciprocating shears of the within-described class, a rest detachably connected to the bed and provided with a swinging guide, i , all substantially as described, and for the purpose set forth.

5. In combination with shears of the within-described class, a rest attached to said shear and provided with a swinging guide, i , and a guide, k , all substantially as described.

6. In shears, in combination, a bed, a standard rising from said bed, a horn projecting from the standard, screws a^2 for adjusting the standard, a shaft borne in a chamber in said horn, a lever provided with adjustable stops connected to said shaft, a plate connected to the horn by a tongue-and-groove joint and bearing a rack with teeth in mesh with teeth on the shaft, a blade attached to said plate, the complementary cutter fast to the bed, the gage l , the rest h , with feet h^1 and h^2 , the swinging guide i and the adjustable guide k , all substantially as described, and for the purpose set forth.

7. In shears, the combination of the bed having the cutter f secured thereto, and having also the ears a^1 and a^4 and hollow boss a^3 adjoining said cutter, and the table h , having legs h^1 and h^2 and stud h^3 , fitted, respectively, to said ears and boss, substantially as described, and for the purpose specified.

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Witnesses:

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