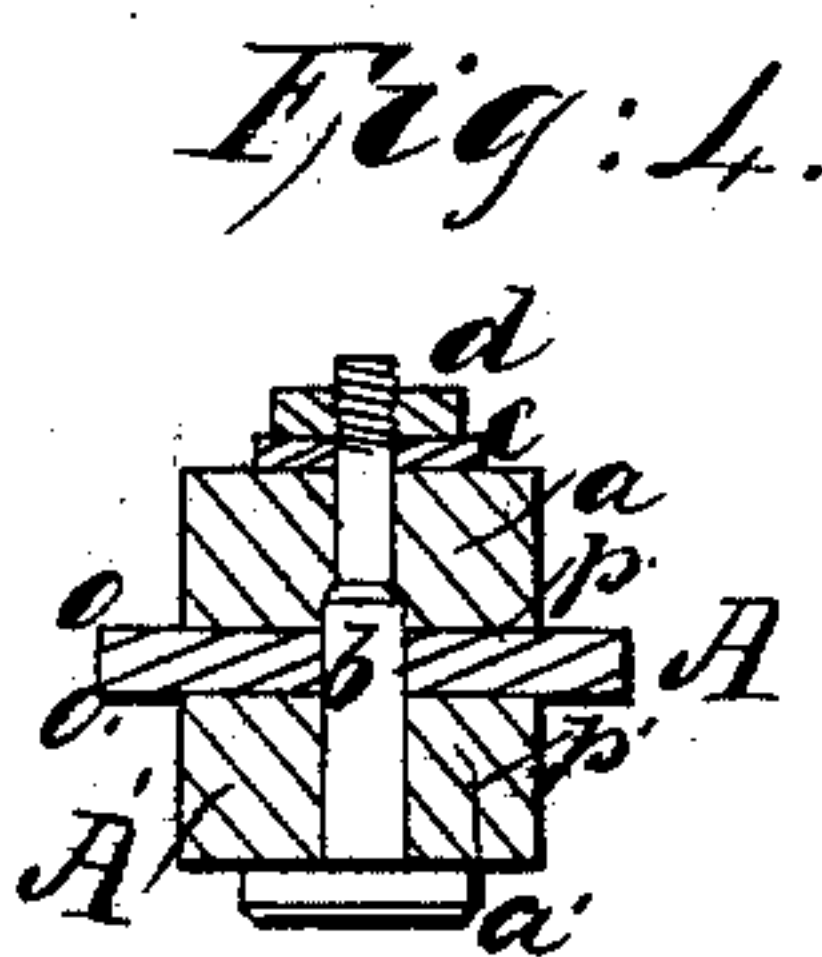
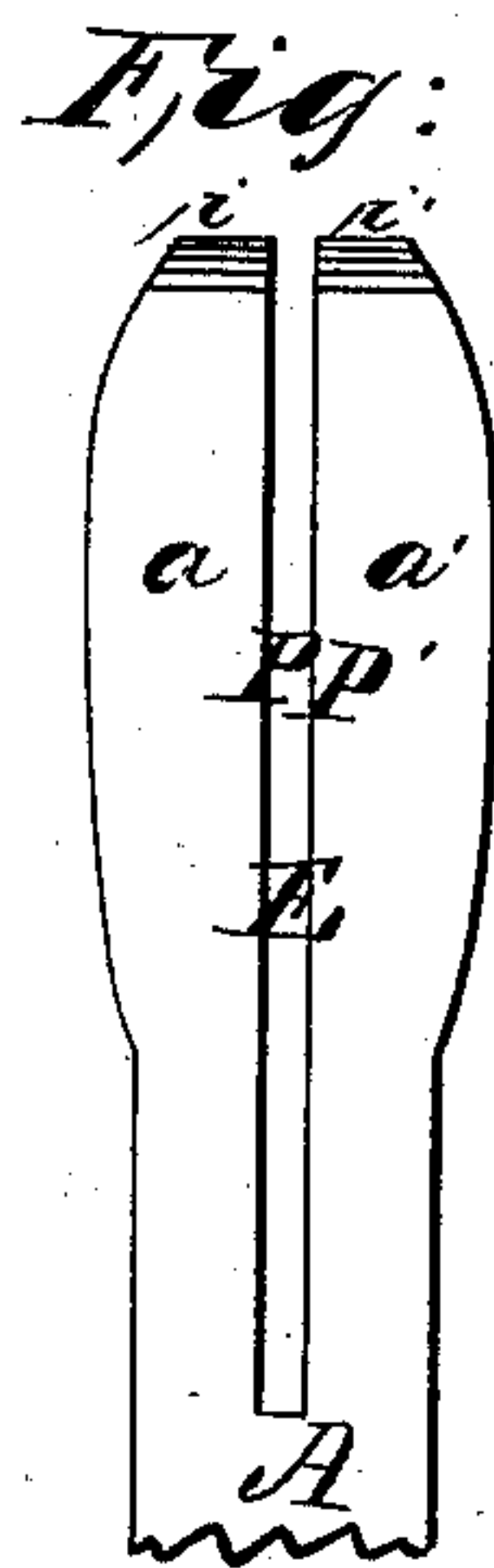
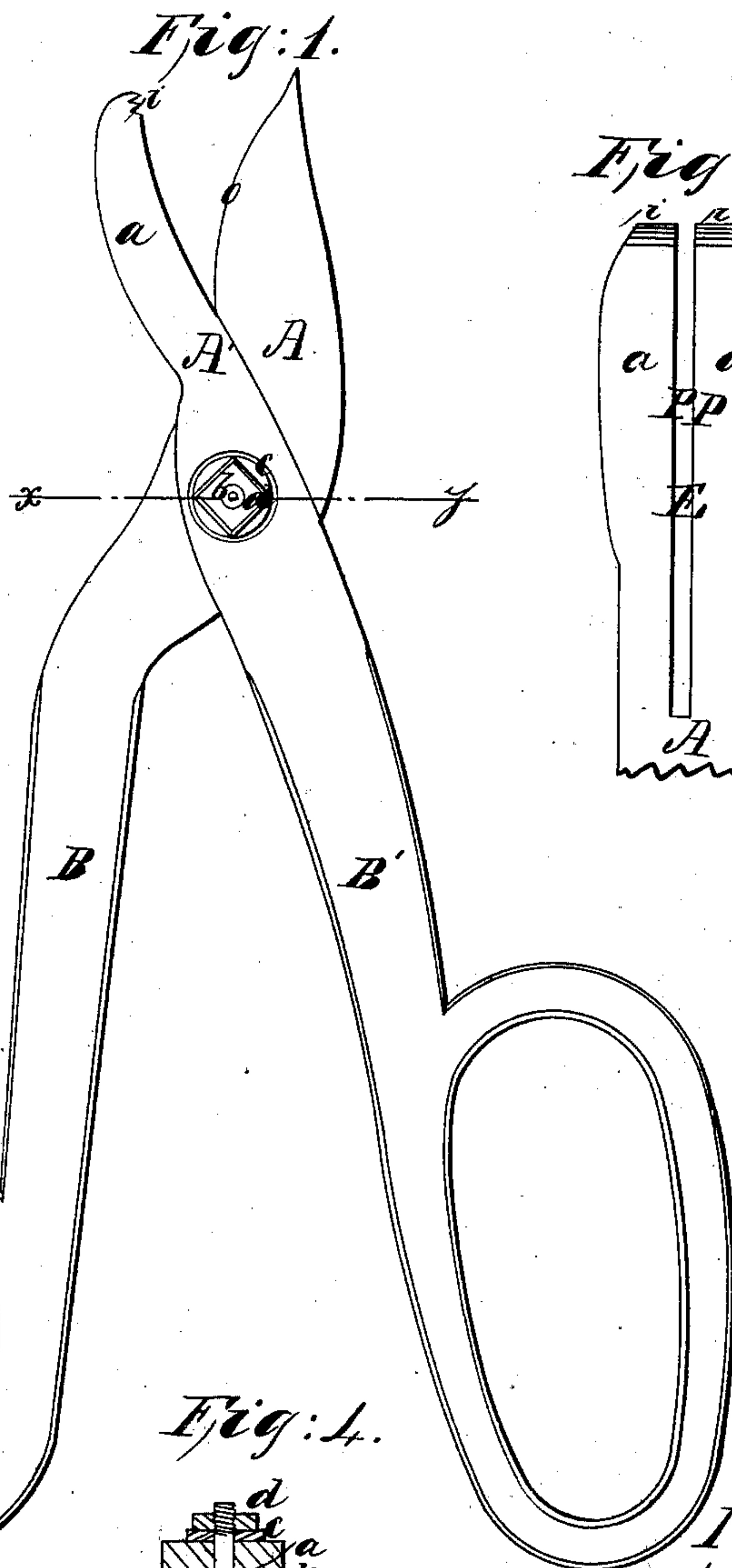
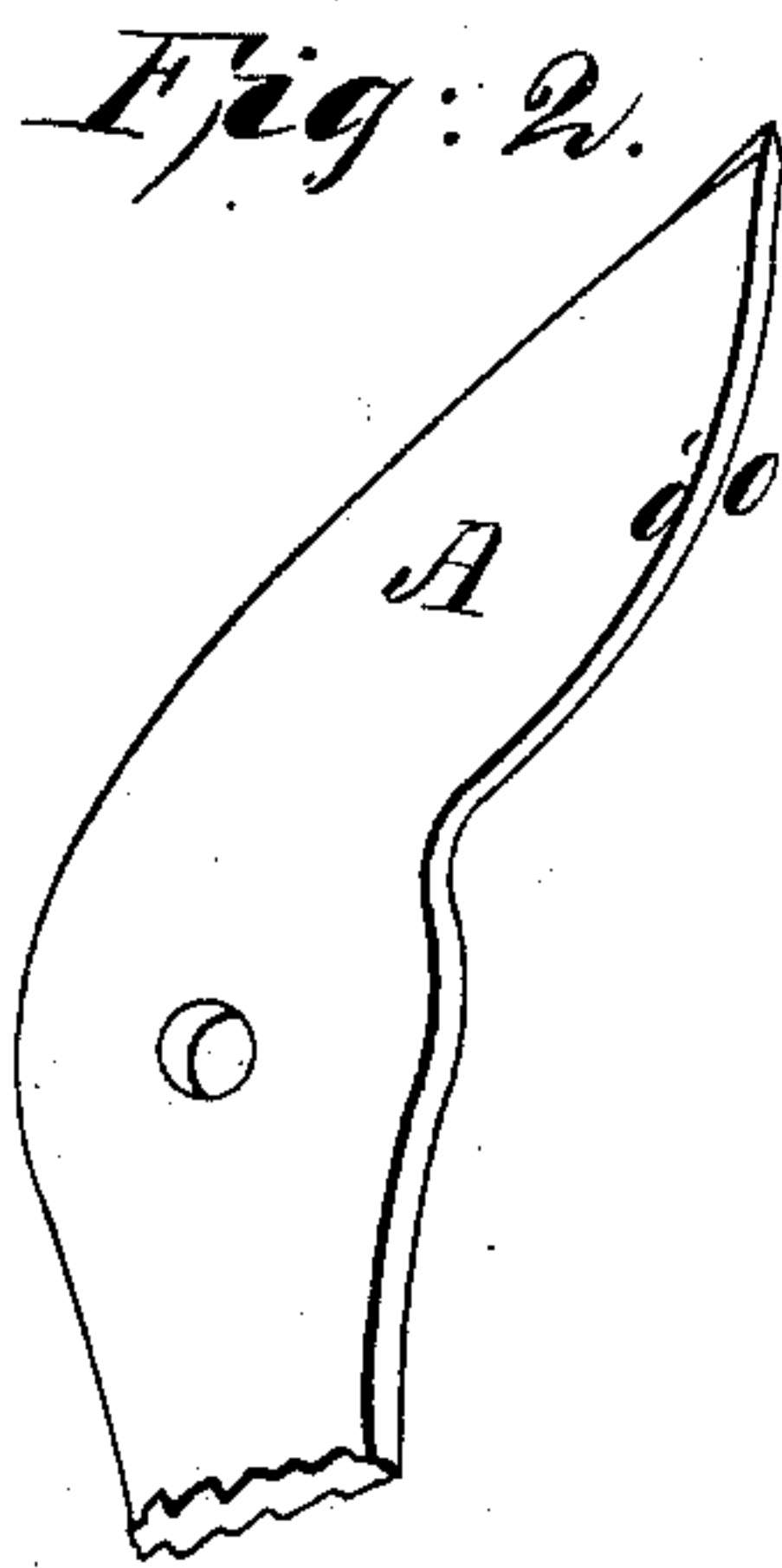


Buell & Root,

Shears.

N^o 78,255.

Patented May 26, 1868.



Witnesses:
Am W. Stebbins
by Overand

Inventor:
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Geo. H. Root
By their attorney
Edw. Sanders

United States Patent Office.

ALFRED B. BUELL AND GEORGE W. ROOT, OF PITTSFIELD, MASSACHUSETTS.

Letters Patent No. 78,255, dated May 26, 1868.

IMPROVEMENT IN SHEARS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, ALFRED B. BUELL and GEORGE W. ROOT, of Pittsfield, in the county of Berkshire, and State of Massachusetts, have made and invented certain new and useful Improvements in Shears for Cutting Sheet Metal; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan or side elevation of the shears.

Figure 2, a perspective view of the thin blade.

Figure 3, an elevation of the face or concave side of the slotted or forked blade; and

Figure 4 a transverse section through the line *x y*.

Our invention relates to shears for cutting sheet metal, which are particularly adapted to cutting around thin metal pipes, or severing them transversely, without injury to the form of such pipes, and without material loss of stock.

The nature of our invention consists in the combination of four cutting-corners or edges, in such a manner that a sheet of tin or iron is thereby cut simultaneously in two parallel lines, and a narrow ribbon or strip of metal entirely removed, thus forming a narrow opening or catch, and allowing a straight and steady progress, without that binding of the shears or twisting of the metal common to other shears.

In carrying out our invention, we construct the handles, B B', in the ordinary form of heavy shears, as seen in fig. 1.

The thin blade, A, we prefer to make essentially as seen in figs. 1, 2, and 4, that is to say, about one-eighth of an inch in thickness by two and one-half inches in length, the inside or cutting-face thereof being longitudinally convex, while the extreme outer end thereof, extending a little beyond the end of the opposite blade A', is brought nearly or quite to a point.

The inside or cutting-face of the blade A, which in common shears is made a more or less perfect edge, we make flat and smooth, of the same thickness as or a little thicker than the rest of such blade.

By this means, two parallel cutting-corners *o o'*, are formed, which may be changed into more or less perfect edges by grooving or making the cutting-face of the blade A slightly concave, similar to the bottom of a skate-runner. And further, we construct the blade A in such a manner that when open, that part nearest to but outside of the blade A' is slightly thinner than the other parts of such blade A, in order that the shears may move forward readily and without pinching in the catch or opening formed by the removal of the ribbon or narrow strip of metal.

The blade A' we make essentially in form and size as seen in figs. 1, 3, and 4, that is to say, about two and one-half inches in length by three-fourths of an inch in breadth, and three-eighths of an inch in thickness.

Lengthwise in blade A' we form a slot, *e*, fig. 3, extending from the outer end thereof somewhat below the rivet-hole, thus dividing such blade into two semi-blades, *a a'*, between which the thin blade A shuts, the width of the slot *e* being barely sufficient for the easy play of the blade A therein.

The inner or cutting-faces of the semi-blades *a a'* we make longitudinally concave, as seen in fig. 1, while in the other direction they are flat, and even, as seen in fig. 3.

The inner faces of the semi-blades *a a'*, bordering on slot *e*, form parallel cutting-corners, P P', fig. 3, which may be made into more or less perfect edges by grinding or bevelling off the semi-blades *a a'* from the outsides thereof, but this necessarily destroys the broad faces of *a a'*, seen in fig. 3.

Thus formed, the blade A and handle B, the blade A' and handle B' being respectively in one piece, we drill or punch a rivet-hole through each, and connect them in the ordinary manner by means of the rivet *b*, washer *c*, and nut *d*, figs. 1 and 4.

By this arrangement the semi-blades *a a'*, in connection with the thin blade A, form a combination of four cutting-corners or edges, *o o'*, *p p'*, which act simultaneously, cutting in two parallel lines, and removing a

ribbon or narrow strip of metal. On the faces of the semi-blades $a a'$, and at the outer ends thereof, we form three or four teeth, $i i'$, as seen in figs. 1 and 3.

Our object in forming the cutting-faces of the blades $A A'$ correspondingly convex and concave, as seen in fig. 1, is to facilitate cutting around tin or sheet-iron pipes, without impairing the circular form thereof. Our object in forming the blade A pointed, and in providing the semi-blades $a a'$ with teeth, is also to facilitate the cutting of pipes; and for other purposes, the faces of such blades may as well, perhaps, be made straight.

To cut a tin or sheet-iron pipe in two at any given point with our improved shears, it is only necessary to punch a slight hole in the pipe, insert therein the point of blade A , and commence cutting, the teeth on the semi-blades $a a'$ operating as grippers, to prevent the slipping back of the shears.

Our improved shears are intended for the hand, but may be arranged to operate by power. The blades $A A'$ we prefer to make of steel, and the handles $B B'$ of iron, uniting the steel and iron by welding or brazing near the rivet-holes, but other materials may be used if desirable.

The shape and proportions of our improved shears herein given are not always essential, but may be varied according to circumstances.

The gist of our invention consists in the combination of four cutting-corners or edges, whereby a narrow ribbon or strip of metal is removed, and an opening made for the progress of the shears; and further, in forming the cutting-faces of the blades $A A'$ correspondingly convex and concave; and finally, in making the point of one blade sharp, and providing the other with teeth, for the reasons stated.

The operation of our improved shears is, of course, by opening and shutting, as in the use of ordinary shears.

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

The shears, consisting of blade A , with its two cutting-edges $o o'$, blade A' , with its jaws $a a'$, slot e , and cutting-edges $p p'$, constructed as described, as a new article of manufacture.

A. B. BUELL,
G. W. ROOT.

Witnesses:

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I. H. FOOTE.