

C. P. S. Betts,
Shearing Metal,
N^o. 18,130. *Patented Sep. 8, 1857.*

Fig 1.

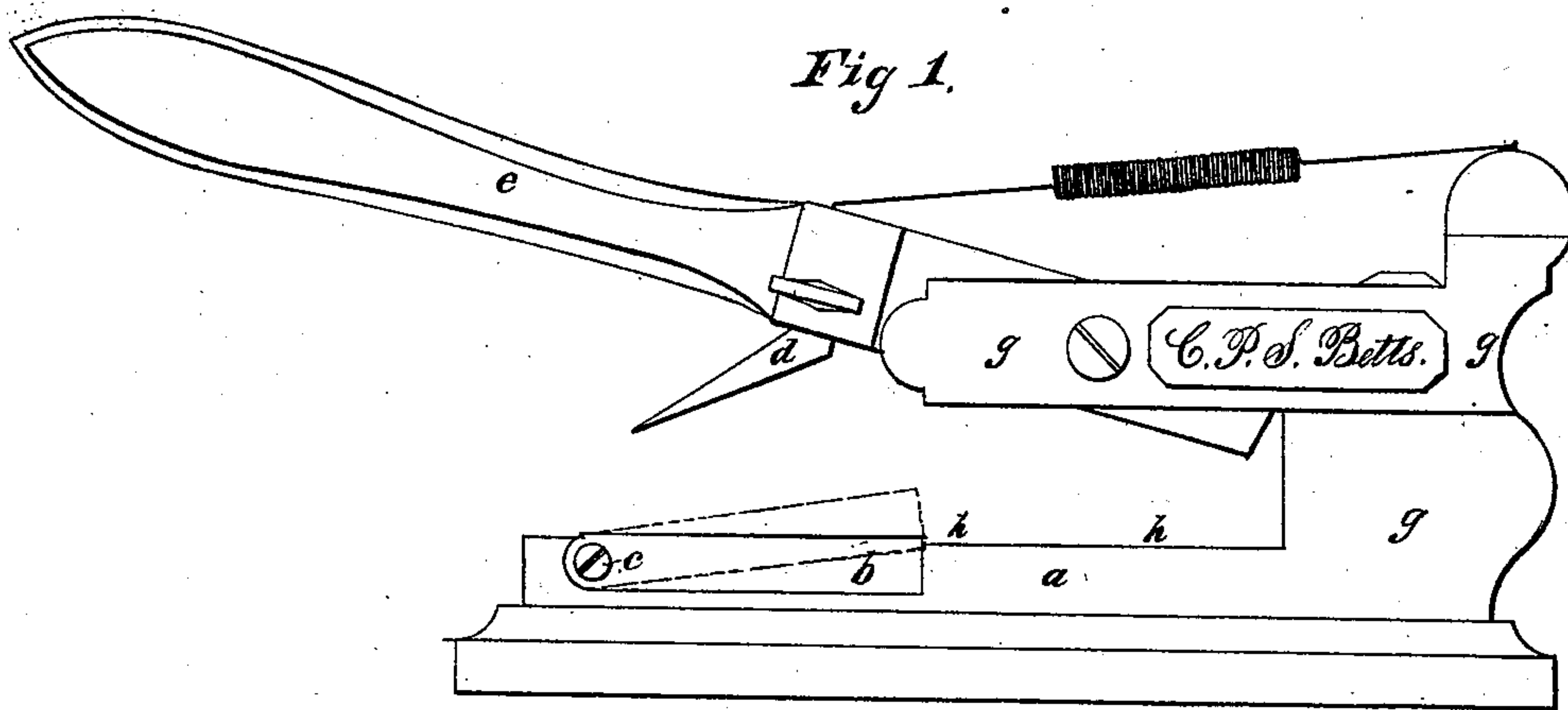
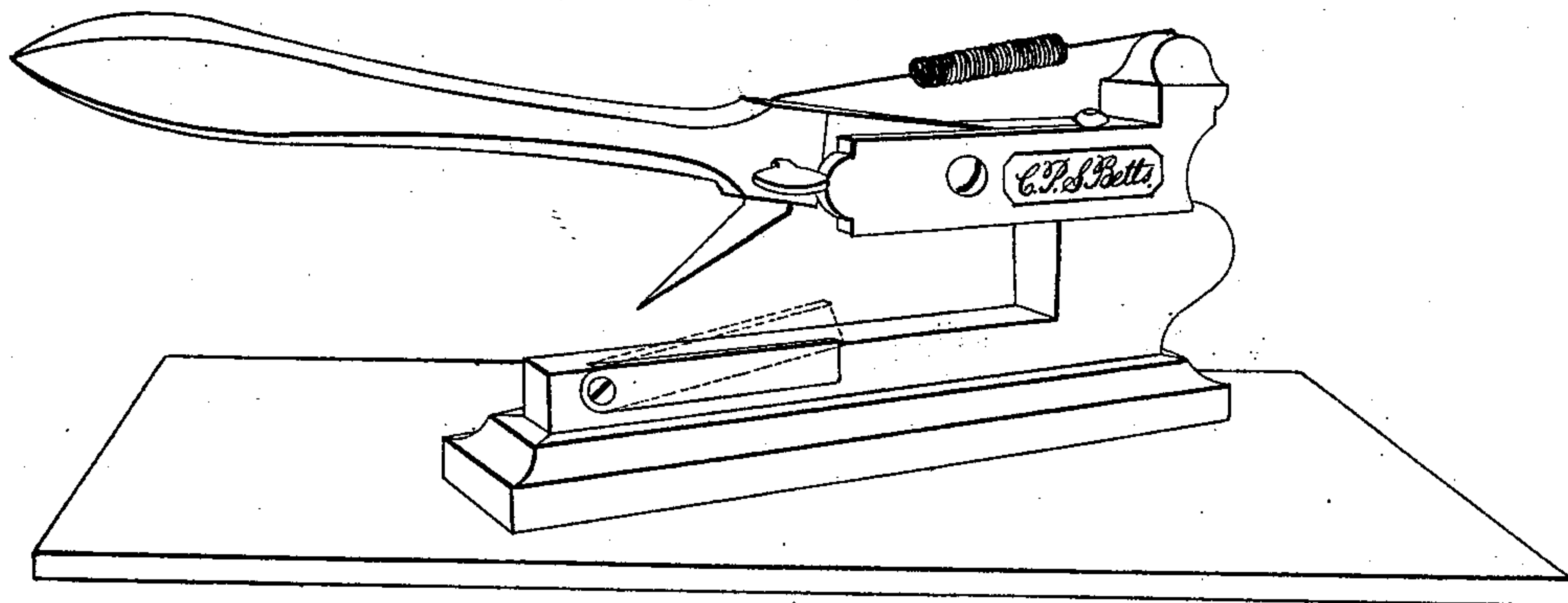


Fig 2



UNITED STATES PATENT OFFICE.

C. P. S. BETTS, OF NEW YORK, N. Y.

MACHINE FOR CUTTING FIGURES OUT OF SHEET METAL.

Specification of Letters Patent No. 18,130, dated September 8, 1857.

To all whom it may concern:

Be it known that I, COURTLANDT P. S. BETTS, of the city of New York, State of New York, have invented a machine for cutting letters, figures, and other characters of any desired shape or size in and from the center of sheets of metal and other substances, leaving the outer edges of such substances or of such material uncut; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature and object of my invention consist in providing a machine for the use of tanners, sheet iron workers, stencil plate cutters and others by which they will be enabled without the use of chisels, punches, &c., now in use for such purposes to cut letters, figures and other characters of any desired shape or size in and from the center of sheet metal and other substances leaving the outer edges of such substances uncut.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

I construct my said machine as follows:

I attach to a permanent bed piece (*a*, Figure 1) a cast steel shear blade (*b*) with the cutting edge uppermost, by means of a screw (*c*) bolt, or otherwise, as may be most expedient passing through one end of said knife.

The object of making but one end fast is that at times it will be found useful to raise the unfastened end to form a new and more acute angle with the upper blade (*d*) thereby cutting straight lines in heavy metal more easily. For the purpose of illustrating this principle, it will be seen that at present in the model a wedge is provided to be placed under the knife when so raised, but I contemplate in making these machines attaching a small set screw that shall raise and fix the knife very readily in any position. 2d. I then attach another blade (*d*) to a lever or handle (*e*) or (as I intend eventually to do) a mandrel (see 1, Fig. 3) moving perpendicularly and accurately toward the other blade below (*b*) and in such position that the cutting edges are made to meet exactly as in ordinary shears, but differing from them, thus: In my machine the point of the upper blade commences the cut

to be made, instead of the angle as in ordinary shears, which has the desired effect of commencing a cut in the center of a sheet and dispenses entirely with punches, &c., heretofore used. The edge of the upper blade when at rest stands at an angle of about 45 degrees to the edge of the lower blade, the pointed end downward (*d*).

To accomplish the cutting of curves of any required sweep, I have ground this upper blade to a point for puncturing and instead of one flat side as in ordinary shears, I make both sides of a somewhat oval form (see blade *d*) thus allowing the metal to turn as it is cut around and over the top of the upper blade.

I contemplate making this machine by attaching the upper knife to the lower end of a mandrel as before mentioned (Fig. 3) moving perpendicularly in a closely fitted groove thus insuring in all cases the exact meeting of the edges of the two knives. This mandrel will be moved in its place by any of the well known methods now in use.

The general style of the machine as contemplated will be seen in Fig. 3, as also Fig. 4 shows a sketch of a small machine or shears on the same principle for light work. The knives will be attached to the machine in such manner as to be readily removed for grinding or replacing larger or smaller ones as the nature of the work may require.

The advantages of this machine over the other methods of cutting out metal from the center of the plate are numerous and obvious and among them, 1st, the work is done more rapidly and correctly and the cuts are uniformly clear and smooth, no filing being necessary; 2d, the machine may be operated by any one and can be made of such size that the same machine may be used for all kinds of work by simply changing the upper knife.

It will be observed that in the drawings the arm (*g g g g*) supporting the lever or mandrel with the upper knife is made in such way that there is a long horizontal space (*h h h h*) between it and the bed supporting the lower knife, the reason for which is, that in cutting a circle in the middle of a plate say 20 inches in diameter there must be room to turn the plate around the blade, as the work progresses. The up-

per knife may be hung with the point either toward or away from the operator as he may choose.

What I claim as my invention and desire
5 to secure by Letters Patent is—

The combination of the blade or shear *d*,
with the stationary blade or bed shear *b*,
made and acting substantially as specified;
whereby the said shear or blade *d*, acting
10 against the shear or blade *b*, first perforates

and then cuts the sheet of metal or other material; and this I claim whether the shear or blade *b*, be made stationary or adjustable for varying the cutting angle as specified.

C. P. S. BETTS.

Signed and executed in presence of—

GEORGE OWEN,
M. S. BROMLEY.