

(No Model.)

G. HAYES.

MACHINE FOR FORMING CLAMPS IN SHEETS OF METAL.

No. 326,557.

Patented Sept. 22, 1885.

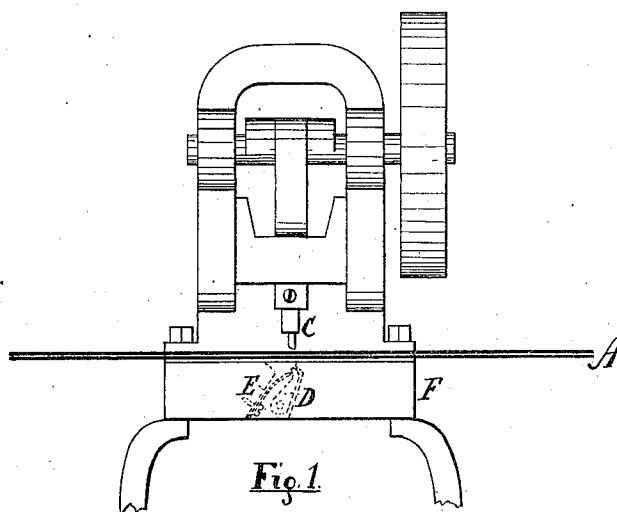


Fig. 1

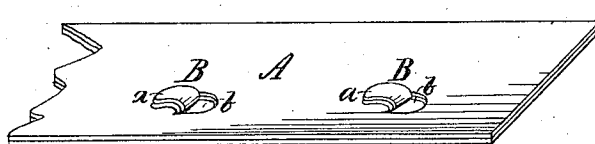


Fig. 3

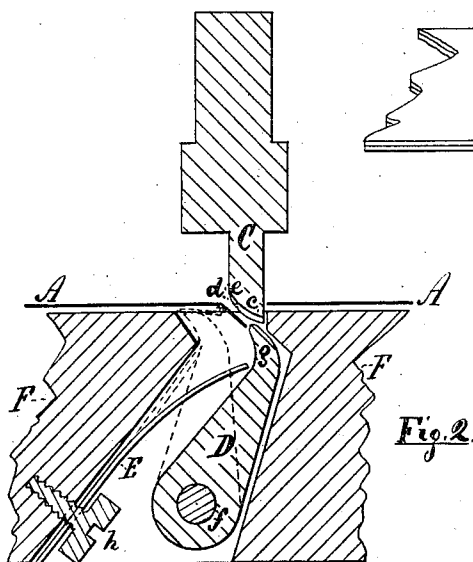


Fig. 2

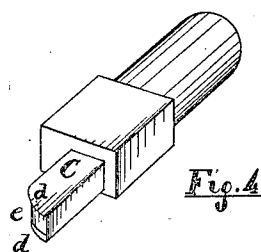


Fig. 4

WITNESSES:

Richard H. Reilly
Jacob Koch

INVENTOR

G. Hayes

UNITED STATES PATENT OFFICE.

GEORGE HAYES, OF NEW YORK, N. Y.

MACHINE FOR FORMING CLAMPS IN SHEETS OF METAL.

SPECIFICATION forming part of Letters Patent No. 326,557, dated September 22, 1885.

Application filed May 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HAYES, a resident of the city, county, and State of New York, and a citizen of the United States, have invented a new and useful Machine for Cutting, Punching, and Clipping or Clamping Two or More Sheets of Metal together, of which the following is a specification.

The object of this invention is to cut into (or make an incision in) and through two or more sheets of sheet metal, forming a tongue, bending the said tongue out of place by means of a plunger or cutting-die, and then, by means of a bending and pressing device operated by the pressure given by the cutting-die, turning backward against the side of the sheet the said tongue, so that it forms a clip or clamp, securing the two or more sheets together firmly, it thereby serving the same purpose as rivets, and thus dispensing with the necessity of rivets and the labor and time consequent upon their use, the clamping by the tongue being, through the medium of this machine, a more expeditious and economical method of securing the sheets together. The machine forms the clamp and also unites or fastens the sheets together.

The nature of my invention consists in the combination of a cutting device with a bending, folding, and pressing device with operative mechanism; secondly, it consists in the peculiar construction of the operating face or end of the cutting-die; thirdly, it consists in the peculiar construction of the bending, folding, and pressing die; fourthly, it consists in the peculiar combination of the two dies or device whereby they act together, the folding-die movement being caused by the downward or toward movement of the cutting-die; and, fifthly, in the combination therewith of a set-back spring, whereby the folding-die is returned to its normal position after the bend or fold given the tongue is finished.

In the accompanying drawings, Figure 1 represents a machine adapted for making the clamp. Fig. 2 represents the cutting and folding devices with sheets of metal therein in section. Fig. 3 represents part of sheets of metal clamped together. The sheets are shown turned over. Fig. 4 represents the cutting device in perspective to show the cutting-edges.

A represents two sheets of metal together flatwise.

B represents the clamp, *a* being the tongue; *b*, the opening from whence the tongue has been turned. All the sheets, no matter what the number may be together, are operated upon and the tongue formed therefrom.

C represents the plunger or cutting-die, having a rounded face, *c*, about as shown, with three cutting-edges, *d*; or the cutting-edge may be rounded or "toed," as desired, constituting one edge. The back edge at *e* has no cutter, as the tongue must still remain a part of the sheets. As this die is forced down upon the metal it cuts through, making a thin incision of the shape required. The die also presses out the tongue from the sheet in position shown in Fig. 2, when the said die engages with the folding device, forcing that backward.

D represents the folding-die, pivoted at *f*, giving the resistance. The folder D has its upper end at *g* rounded about as shown in Fig. 2, and it is moved by contact with the cutting-die or plunger C into the position shown by the dotted lines in said Fig. 2, in its movement bending backward the tongue to position shown in Fig. 3.

A spring, E, secured to the machine-block F at *h*, forces back into its normal position the folder D. Any form or kind of spring may be used in lieu thereof as an equivalent, as I do not confine myself to the precise form shown.

The plunger C, I operate by means of any suitable operative mechanism, and it may be driven in any direction by any means suitable, or from above, as shown, and using either steam-power, treadle, hand, horse, or water, as most convenient.

There may be several of the clamps formed at once by having the forming devices arranged in gangs in the same machine and operated by the same power.

The heel *e*, I form with a flat portion, as shown, to hold the sheets back against the folder and prevent its bulging.

The folder and spring may be placed in a block, which may be set upon the bed of any press to which the plunger may be applied.

The style of press illustrated in the drawings is given to show how the devices are operated

by suitable power. I do not confine myself to the precise form shown.

The drawings show knife-edges to the plunger. Where such edges are used the folder must be narrowed to pass between them; but sharp angle-edges may be used instead.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A machine containing a plunger or cutting-die, C, provided with rounded or curved face *c*, having cutting-edges *d*, adapted to cut through two or more sheets of metal to form the tongue *a*, the face *c*, to press the tongue *a* outwardly, (the plunger operated by any suitable mechanism which will give it reciprocating motion,) and in combination therewith a folder or bender, D, pivoted in a block or bed-plate, F, as at *j*, its upper end having a rounded face, *g*, and adapted to be set in motion and forced backward by the plunger as it presses downward, and by its coaction with the plunger to turn over and force backward and upward the tongue and form it into the clamp B, substantially as set forth.

2. The plunger or cutting-die C, provided with a curved face, *c*, and the cutting-edges *d*, the curve of the face being convex, and its heel *e* higher than the toe and without a cutting-edge, the form being such that as the plunger is forced down upon one or more sheets of metal the sharp angles will cut from toe to heel a tongue, *a*, in the metal, and at the same time the curved face will force outward the tongue with a bend at the heel of the die, substantially as shown and described.

3. In combination with plunger C, having a convex curved face, *c*, adapted to form the tongue *a* in sheet metal, the folder D, operated by the downward pressure of the plunger C to curl or turn back the tongue *a*, formed by the plunger, and coacting therewith to form the clamp B, substantially as set forth.

GEO. HAYES

Witnesses:

RICHARD H. REILLÉ,
JACOB KOCH.