R. S. TILDEN.

Metal Punch.

No. 6,154. Patented March 6, 1849.

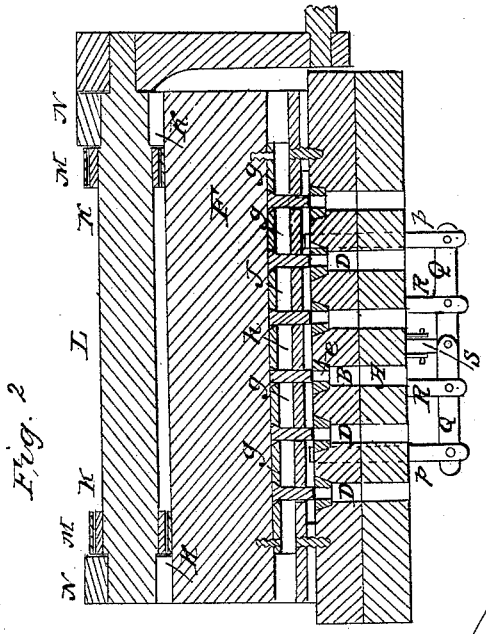

Fig. 2

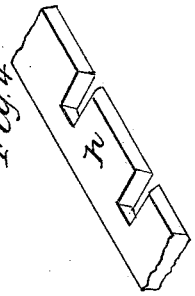

Fig. 4

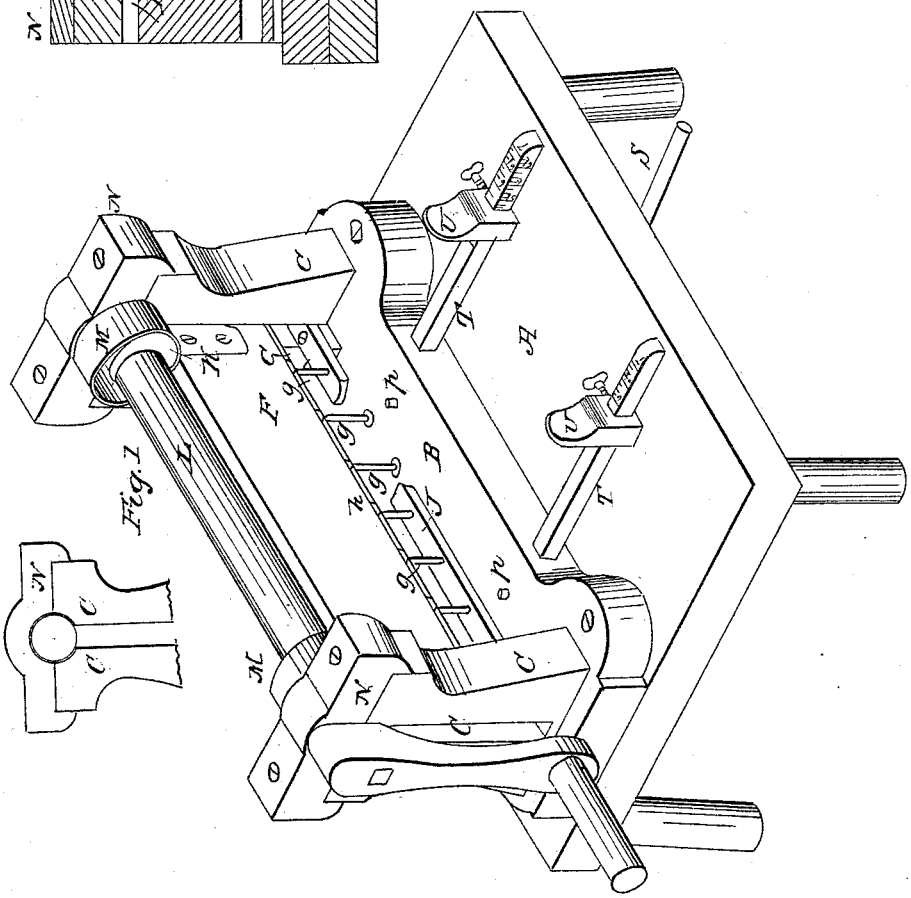

Fig. 1

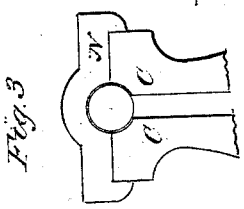

Fig. 3

UNITED STATES PATENT OFFICE.

R. S. TILDEN, OF ST. LOUIS, MISSOURI.

PUNCHING-MACHINE WITH A COMBINATION OF ADJUSTABLE GAGES.

Specification of Letters Patent No. 6,154, dated March 10, 1849.

To all whom it may concern:

Be it known that I, RICHARD S. TILDEN, of the city of St. Louis and State of Missouri, have invented a new and Improved Punching-Machine for Punching the Holes in the Edges of Metallic Sheets Preparatory to Converting them into Pipe; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

Figure 1, is a perspective view of my improved punching machine; Fig. 2, a vertical longitudinal section thereof, and Figs. 3 and 4, are representations of portions of the same detached.

Similar letters indicate like parts in all the figures.

A, is a suitable table or platform, on which the punching machine is placed and firmly secured; B, is the base of the machine, which is usually cast in one piece with the pairs of standards C, C, rising from each end of the same; D, D, are vertical apertures formed through the base B, having conical enlargements at their upper ends which receive the dies *e*, *e*. The apertures D, D, in the base B, open into corresponding apertures in the platform A, for the discharge of the pieces punched from the metallic sheets.

F, is a stiff beam, to the lower edge of which, the series of punches *g*, *g*, are connected, by means of the metallic plate *h*, as represented in Fig. 2. The plate *h*, has transverse slits with inclined sides, cut into one of its edges, as represented in Fig. 4—, that receive the heads of the punches, and from which they can be readily removed, by elevating the beam F, to such a height as to draw the punches out of the guiding apertures in the bar J. The ends of the bars J, pass a short distance within the space between the standards C, C, and are secured to the base (B,) by tap screws, (or by any other suitable means,)—leaving a sufficient space between the bar and the base (B,) for the insertion of the sheet metal to be punched.

A reciprocating vertical movement is imparted to the punch beam F, by means of the rotation of the eccentrics or cams K, K, on the shaft L, working within the eyes or rings M, M, made fast to the upper edge of each end of the beam—as represented in Fig. 1. Tenons project from each end of the beam (F,) into the spaces between the standards C, C, which serve to accurately guide the beam as it ascends and descends. The journals of the shaft L, rest in concavities formed at the upper inner extremities of the standards C, C,—as shown in Fig. 3, and are retained in their places by the caps N, N.

The bar J, it will be perceived, serves the purpose of steadying and guiding the punches *g*, *g*, and also of releasing the sheet of metal from the punches after it has been operated upon by the same.

Gage pins P, P, pass up through the platform A, and base B,—in front of the series of dies (*e*, *e*,)—against which pins the edge of the sheet of metal strikes, as it is passed under the punches from the rear of the machine, and thereby the distance between the holes punched, and the edge of the sheet is regulated. The gage pins P, P, rise from the outer ends of the vibrating jointed levers Q, Q; which levers Q, Q, are supported by fulcrum pins passing through the supports R, R,—descending from the under side of the platform—as shown in Fig. 2. A pivot on the working lever S, serves to connect the inner ends of the levers Q, Q; the lever S, works on a fulcrum pin between supporting jaws descending from the under side of the platform. The gage pins can be elevated above the face of the base B, or depressed below the same, by elevating or depressing the front end of the working lever S.

T, T, are graduated gage rods projecting at right angles from the front edge of the base B; U, U, are adjustable gages on the rods T, T, for regulating the distance of the second series of holes punched in a metallic sheet, from the first series of holes in the opposite side of the same, (punched in the manner before described,—by inserting its edge from the rear of the machine under the series of punches.)

The whole number of sheets to be converted into pipe, are first punched on one side by inserting one of their edges under the punches from the rear side of the machine—as above described; the sheets are then brought to the front of the machine and placed one at a time upon the gage rods T, T,—with the outer edge of the sheet to be operated upon bearing against the gages U, U, and its inner edge passing a proper distance under the series of punches.

The proper position of the gages U, U, for

so governing the holes punched in a sheet as to form pipe of different sizes, and for giving the requisite taper to each joint,—is indicated by graduated scales laid off on the rods T, T. The left hand rod has but one scale, and that is laid off upon its upper surface; the spaces on this scale are so graduated and numbered, that the figures indicate the diameter of the joint of pipe in inches at its smallest end; for instance,—when the gage is placed at $4\frac{1}{2}$ on the scale, the holes in opposite sides of the sheet will be at such a distance from each other as to form, when the edges are brought together, pipe of $4\frac{1}{2}$ inches diameter;—and so on throughout the entire range of the scale.

The figures on the scale on the right hand gage rod T, correspond with those on the scale rod to the left;—but the transverse space lines on which the figures are placed on the right hand gage rod, are a little farther removed from punches and dies than are those on the rod to the left, for the purpose of so regulating the position of the holes punched in a metallic sheet, as to cause each joint of pipe to be a little larger in diameter at one end than at the other; for the purpose of enabling the small end of one joint of pipe to be readily inserted into the large end of another joint, when they are put together into a continuous pipe. Scales are formed on the top and on both sides of the right hand gage rod, which scales vary from each other in position a sufficient amount to enable the operator to graduate the diameter of the largest end of a joint of pipe to suit the different thicknesses of metallic sheets to be operated upon.

The gages U, U, are secured in any desired position upon the rods T, T, by set screws—as shown in Fig. 1.

Having thus fully described my improved punching machine, what I claim therein as my invention and desire to secure by Letters Patent is—

The combination of the graduated scale rods T, T, and adjustable gages U, U, with the movable gages P P: and also, the combination of the said radiated scale rods, and adjustable and movable gages, with the series of dies and punches, substantially in the manner and for the purpose herein set forth; not intending by this claim to limit myself to the exact form, proportion, and arrangement of parts as herein represented and described, but to vary the same as I may deem expedient while I attain the same end by means substantially the same.

RICHD. S. TILDEN.

Witnesses:

G. C. ROBBINS,

S. TEMVETER.