

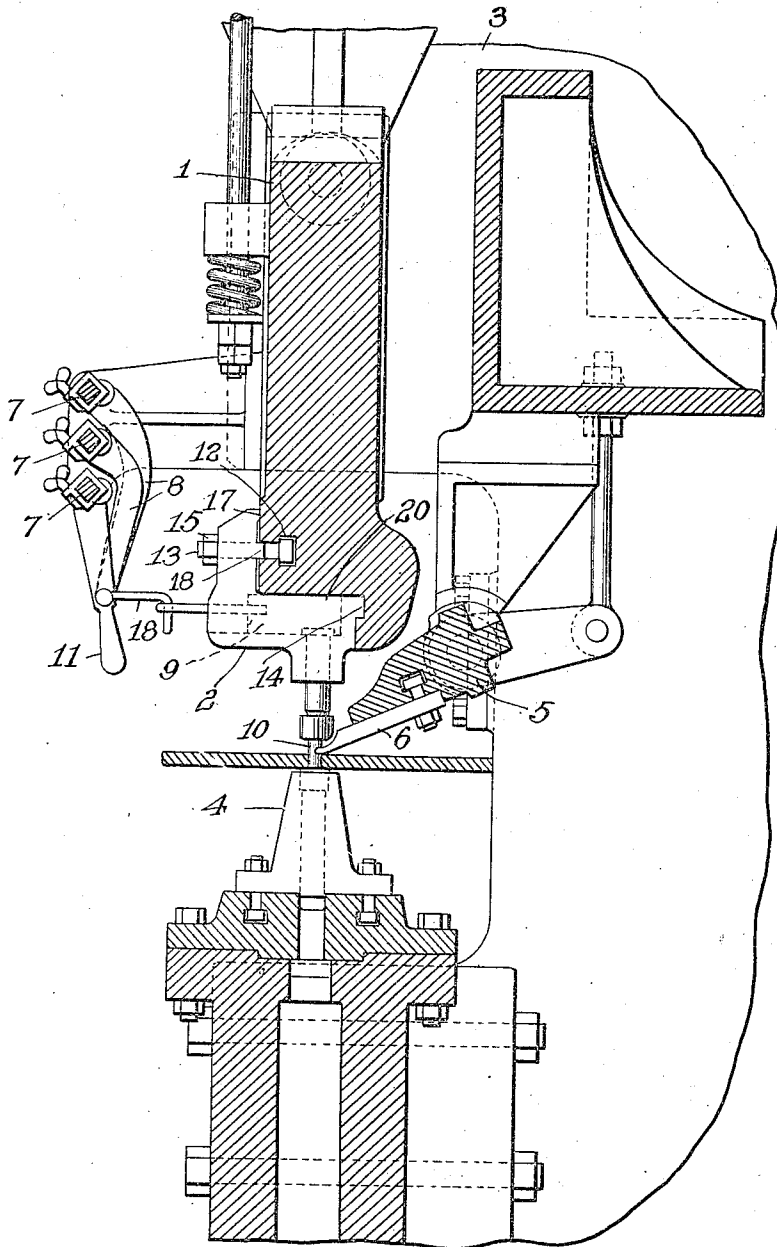
G. P. THOMAS.
PUNCHING MACHINERY.
APPLICATION FILED OCT. 17, 1911

1,064,397.

Patented June 10, 1913.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

J. Herbert Bradley
Francis J. Tomassone

INVENTOR

George Paul Thomas
by Christy and Christy
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2 SHEETS—SHEET 2.

FIG. 3.

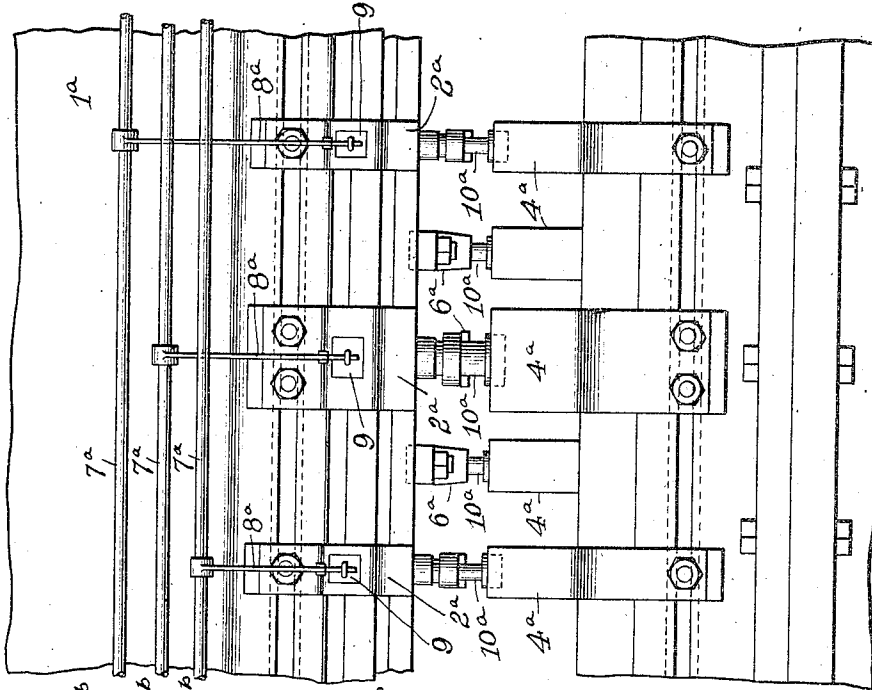
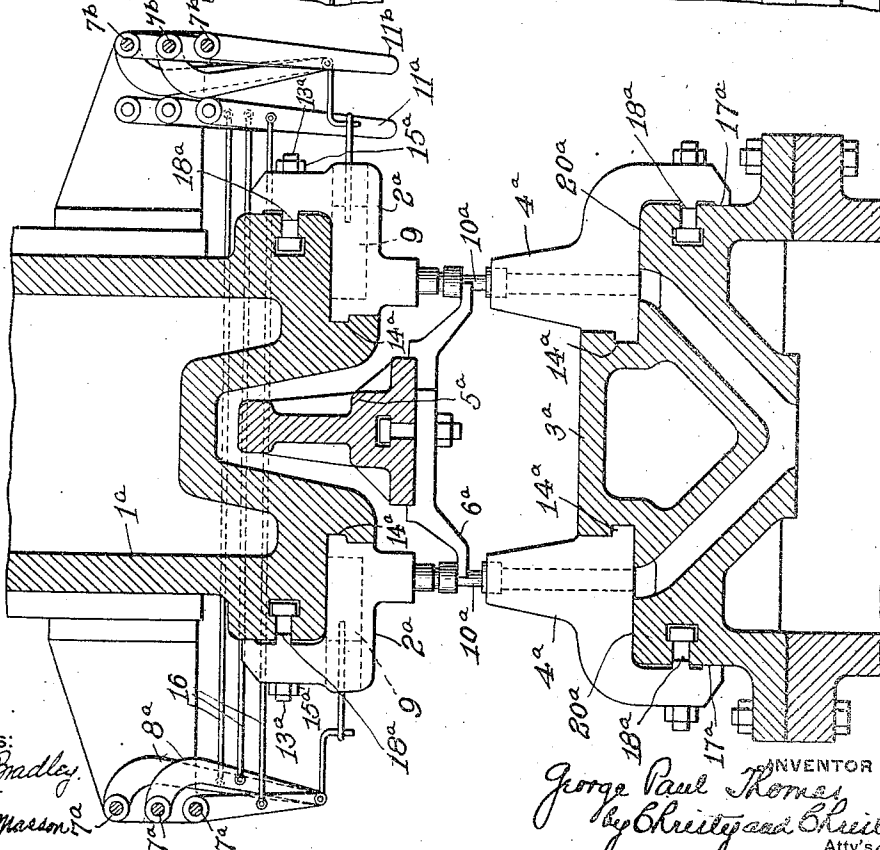


FIG. 2.



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UNITED STATES PATENT OFFICE.

GEORGE PAUL THOMAS, OF PITTSBURGH, PENNSYLVANIA.

PUNCHING MACHINERY.

1,064,397.

Specification of Letters Patent. Patented June 10, 1913.

Application filed October 17, 1911. Serial No. 655,222.

To all whom it may concern:

Be it known that I, GEORGE PAUL THOMAS, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Punching Machinery, of which improvements the following is a specification.

In modern structural-iron and steel shop-practice various sections and plates (particularly the latter) are frequently punched by what are commonly called "multiple plate-punches," which usually consist of a vertically reciprocating head, mounted within a suitable stationary frame and provided with a series of horizontally adjustable punch-holders. Oppositely disposed with reference to such punch-holders a series of die-holders is mounted upon the stationary frame, each of which is also horizontally adjustable to the end that a die may register with each punch; and, to complete the machine, a carriage, suitably mounted upon a skid is employed to operatively engage and drag the blank of material over the dies and beneath the punches. Usually, before the blank has been engaged by such a carriage, the several punch and die holders are adjusted to be in a position wherein holes may be punched, lying along predetermined longitudinal parallel lines of the blank.

My invention has to do with machines of the character described, and the object thereof is to facilitate the accomplishment of the adjustment of punch and die-holders.

In the accompanying drawings, which form part of the specification, Figure 1 is a vertical sectional view of a portion of a multiple-punch embodying my invention; Fig. 2 a similar view of a modification of the punch, shown in Fig. 1; and Fig. 3 a side elevation of the punch, shown in Fig. 2.

In the several figures like numerals are used to designate like parts.

In the machine, shown in Fig. 1, a reciprocating block 1, adapted to adjustably sustain punch-holders 2, is mounted within the upper part of a stationary frame 3; and adjustable die holders 4 are secured to the lower part of the said frame. On the right side of the machine a vertically adjustable stripper 5, having horizontally adjustable stripping-blocks 6, is also secured to the

frame 3, while on the left is shown the usual series of shafts 7, carrying horizontally adjustable levers 8, which are connected to the gags 9, to the end that the operation of the several punches 10 may be controlled as desired. And it will be understood of this last-named feature that as many as and whatever punches are desired may be controlled, by any of the shafts, through an operating hand-lever 11, after the proper connections have been established.

As usually constructed, the punch-holders 2 are secured to the reciprocating-block 1 each by means of securing members, such as bolts, disposed on opposite sides of the said block. Such a method of securing the punch holders is frequently undesirable in so much as the bolts on one or the other side of the blocks may be rendered inaccessible by adjacent machine parts, such as the stripper 5, so that, in order to make an adjustment of the punch-holders, the interfering part must be partially removed. To overcome this objectionable feature of a two-bolt attachment of the punch-holder to the reciprocating block and at the same time sacrifice none of the advantages of security obtained by the ordinary two-bolt construction, I provide the block 1 and the punch-holder 2 with suitable interlocking and bearing surfaces to the end that the punch holder may be held firmly and adjustably in position by a single bolt 13. Preferably, I arrange such interlocking means and bearing surfaces as are shown in the drawings. Referring particularly to Fig. 1 the head 1 has a slot 12, adapted to receive and operatively sustain the head of the bolt 13, and further adapted to receive a lateral extension 18 of the holder 1. Oppositely disposed with reference to the mounting of the punch 10 within the punch-holder, a second tongue-like extension 14 is formed on the punch-holder, which extension is engaged by a suitable recess in the block 1. And the two extensions 18 and 14, disposed on opposite sides of the punch, act as detents to withstand that strain upon the punch-holder, which tends to pull it vertically downward when the stripper 5 disengages the blank from the punch. The adjacent surfaces of the punch-holder and the head may be finished to bear against each other throughout their entire extent, but preferably I form a vertical thrust surface 17 above the bolt 13 to co-act with the

vertical thrust surface formed on the end of the tongue-like extension 14, and a horizontal bearing surface extending on both sides of the punch 10. It will be understood that the horizontal surface 20 receives the vertical pressure due to the operation of the punch, and the vertical thrust surfaces withstand the strain due to the tightening of the bolt 13. And by unloosening the nut or nuts 15 of the bolt or bolts 13, passing through a punch-holder 2, the punch-holder may be easily slid transversely along the head 1 to accomplish any desired adjustment.

In the machine shown in Figs. 2 and 3, the reciprocating head 1^a is provided with two series of punch-holders 2^a of the same general construction as that shown in Fig. 1, and in this construction each series of punch-holders is adjustable from the side on which it is disposed. In the construction of such a double series machine, the stripper 5^a is usually disposed, as shown, between the two series of punch-holders, and in consequence of this position of the stripper it becomes desirable to mount the die-holders in such a manner that they may be adjusted by manipulating securing members disposed on the side which is freely accessible. To this end I make the die-holders 4^a of substantially the same form as the punch holders 2, heretofore described, having extensions 14^a and 18^a, thrust surface 17^a and bearing surface 20^a, and I make the die-holder mounting portion of the frame 3^a of substantially the same form as the corresponding part of the head 1^a. Furthermore, in this construction, the several operating shafts 7^a and 7^b may be manipulated from one side of the machine by the levers 11^a and 11^b respectively, the lever 8^a of the shafts 7^a being connected, as by rods 16, to the levers 11^a, as will be clearly understood from the drawing.

I do not wish to limit myself to the details of construction shown herein or to the specific use of my tool holder, for, obviously, many changes and different applications may be made by those skilled in the art without departing from the spirit of my invention.

I claim herein as my invention:

1. In a tool-operating machine, the combination with a tool-carrying member, of a tool-provided tool-holder attachable to and removable from said member at one side thereof and in a line at right angles to the line of action of the said tool, means located on the said attachment-side of the said member for securing said holder to said member, said holder provided with detents at each side of the line of action of said tool, and said holder further provided with

a bearing surface transversely to and extending across the line of action of the said tool, substantially as described.

2. In a punching-machine, the combination of a movable head provided with an adjustable punch-holder, a frame provided with a die-holder, a securing bolt and a punch mounted in said punch-holder, said head having a longitudinal recess enlarged at its inner end to receive and sustain the said securing bolt, and with a second recess to receive a tongue extension of the said punch-holder, said punch-holder and movable head provided with cooperating thrust and bearing surfaces, substantially as described.

3. In a tool operating machine, the combination with a tool-carrying member, of a removable tool holder laterally applicable to said member, two pairs of thrust surfaces formed one upon said member and the other upon said holder, each of the said surfaces facing in the direction of lateral applicability and transversely thereto, the relative positions of said pairs of surfaces being on opposite sides of the line of strain and offset or staggered relative to one another, and clamping means effective in the direction of assembling.

4. In a tool operating machine, the combination with a tool-carrying member, of a removable tool holder laterally applicable to said member, detents formed upon said holder, cooperating recesses formed upon said member and effective to engage said detents, said detents being disposed on each side of the line of action of said tool and effective to resist the strain upon said tool in said line of action thereof, and clamping means effective in the direction of applicability of said tool holder.

5. In a punching machine the combination of a reciprocating head provided with two series of laterally adjustable punch-holders and a second member provided with two series of oppositely disposed laterally adjustable die-holders, a stripper disposed between said two series, said adjustable punch-holders and die-holders each secured to their sustaining members by securing bolts disposed in their outwardly extending portions, the said punch-holders and die-holders having thrust and bearing surfaces cooperating with the securing bolts to hold the said holders in operative position, substantially as described.

In testimony whereof I have hereunto set my hand.

GEORGE PAUL THOMAS.

Witnesses:

PAUL N. CRITCHLOW,
BEATRICE FITZGERALD.