G. P. THOMAS.

METAL PUNCHING MACHINE.

APPLICATION FILED OCT. 1, 1913.

1,122,440. Patented Dec. 29, 1914.

FIG. 1.

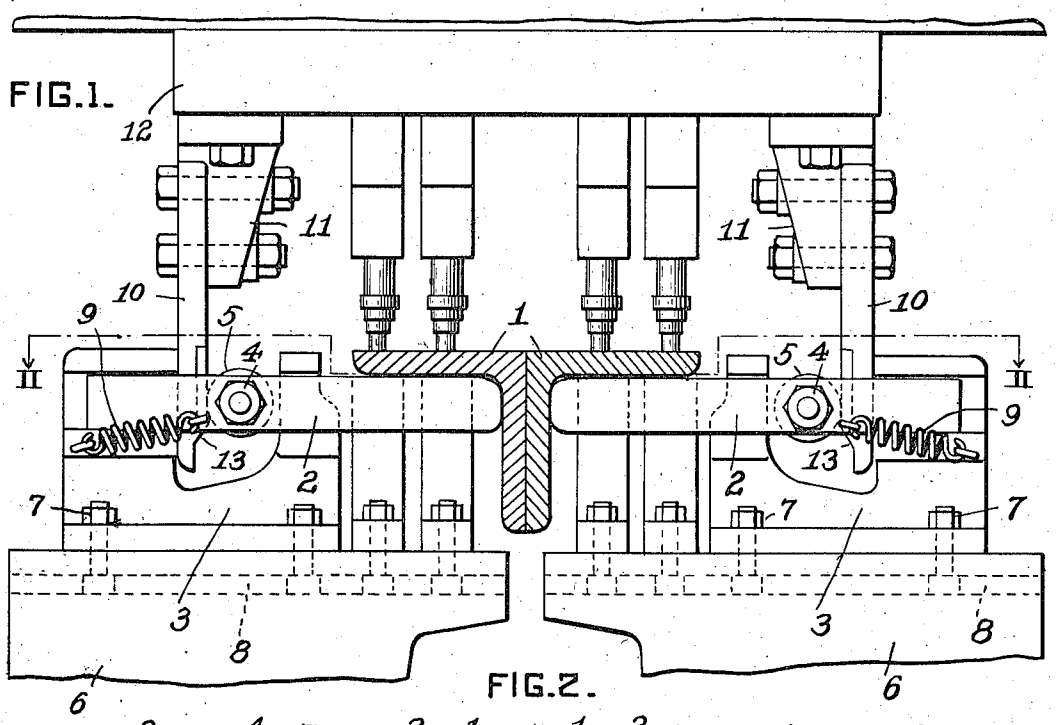


FIG. 2.

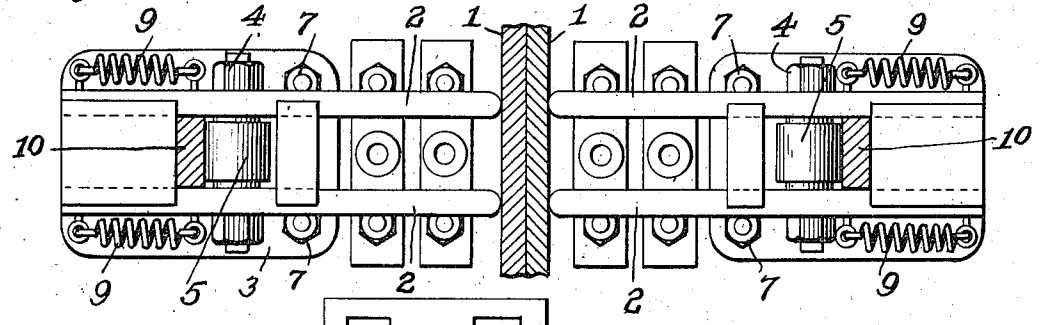
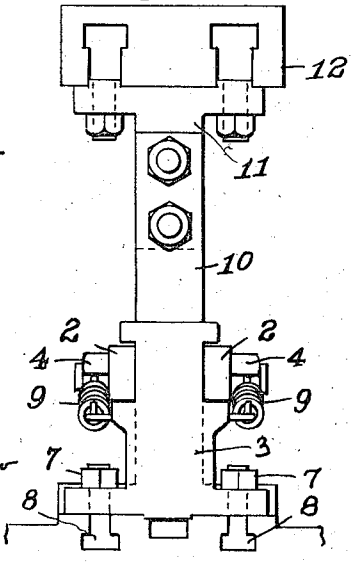


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE P. THOMAS, OF GLENSHAW, PENNSYLVANIA.

METAL-PUNCHING MACHINE.

1,122,440. Specification of Letters Patent. Patented Dec. 29, 1914.

Application filed October 1, 1913. Serial No. 792,850.

To all whom it may concern:

Be it known that I, GEORGE P. THOMAS, residing at Glenshaw, 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 Metal-Punching Machines, of which improvement the following is a specification.

It is the object of my invention to provide a metal punching machine with means for holding an elongate piece of work firmly in proper punching position while being punched, but which will permit of a free longitudinal movement of the work in either direction between successive strokes of the punch.

While my invention may be employed in machines for punching various kinds of long work, it is particularly applicable to machines for punching heavy structural steel sections, such as angles, channels, etc., which, on account of their tendency to bend while being punched, have been found difficult to punch accurately. It has been found, however, that the difficulties encountered in punching such sections may be largely eliminated by holding them firmly in a back-to-back position during the punching operation, the best practice being to attach the ends of the sections to a spacing table and to engage and hold them firmly during each stroke of the punch at the point of punching. My invention finds particular application in this manner of punching, and is thus illustrated in the accompanying drawings, forming part of my specification.

Figure 1 of the drawings is an elevation of a portion of a punch frame and reciprocating head with one form of my improved holding means attached thereto; Fig. 2 is a plan view taken on the broken line II II, Fig. 1; and Fig. 3 is a side elevation of the disclosure of Fig. 1.

Like numerals are used to designate like parts in the several figures.

The improved means which I provide for holding the work while being punched comprise a movable member borne by the fixed frame of the punch and adapted in one position to engage and hold the work in proper punching position, and a second member secured to the reciprocating punch head and adapted upon the downward stroke of the head to move the work-engaging member to its operative position.

Referring to the particular embodiment of my invention illustrated in the drawing, two holders, alike in every respect, are shown disposed at opposite sides of a pair of back-to-back angles 1. The movable member of each holder is a plunger formed of two bars 2, slidably mounted one on each side of a carrier block 3, and rigidly connected to each other by a bolt 4, having a roller 5 rotatably mounted thereon between the bars. Each block 3 is adjustably secured to the fixed frame or anvil 6 of the punching machine by bolts 7 extending into slots 8 with enlarged inner ends. As will be readily seen the plunger bars 2 are held yieldingly from engagement with the vertical legs of the angles 1 by means of springs 9. The means carried by the punch head and effective on the downward stroke thereof to move the plunger 2 to work-engaging and holding position, comprise fingers 10, secured to blocks 11, adjustably secured to opposite sides of the reciprocating head 12 in the same manner as the carriers 3 are secured to the frame 6. The lower end of the fingers 10 are tapered or provided with inclined faces 13, the relative arrangement of the parts being such that, as the head 12 moves downwardly, the tapered finger faces 13 will strike the rollers 5 and thus cause the plungers to move toward the angles and hold them firmly beneath the punches.

The fingers 10 and plungers 2 will, of course, be adjusted through their respective carriers, to the proper positions to effect the desired result, the thickness of the angles being taken into consideration in each instance. Because of the variations in width of an angle of a given size, the plungers, rather than exerting their pressure against the outer edges of the horizontal legs of the angles, are arranged to exert their pressure against the vertically disposed legs, the thickness of which in a given size angle varies but slightly throughout its length. When thus arranged and the punching machine put in operation, it will be seen that the work will, at the successive points of punching, be firmly held during each stroke of the punch, and that between strokes the work will be free to move in either direction.

I claim as my invention:

In a work holder for punching machines, the combination with a frame, and a reciprocating head; of a block adjustably secured

to said frame, a plunger consisting of a pair of bars slidably mounted one on each side of said block and held yieldingly from engagement with a piece of work, a roller-provided connecting member between said bars, a finger adjustably secured to said head and having an inclined face adapted on the downward stroke of said head to engage the roller of said plunger connecting-member and thereby move said plunger to work-engaging position.

In testimony whereof I have hereunto set my hand.

GEORGE P. THOMAS.

Witnesses:
PAUL N. CRITCHLOW,
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