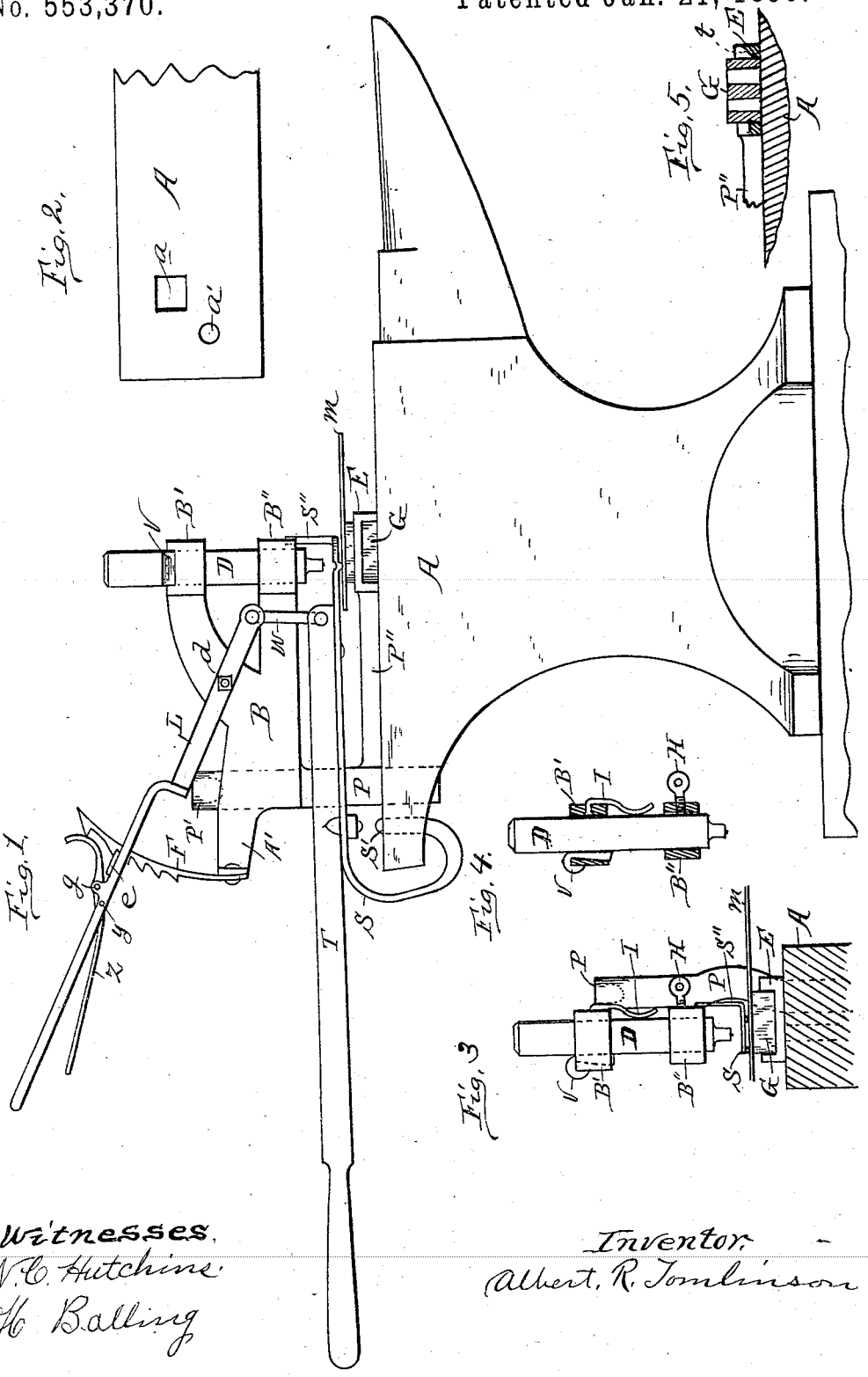
(No Model)

2 Sheets--Sheet 1.

A. R. TOMLINSON.

METAL PUNCHING MACHINE.

No. 553,370. Patented Jan. 21, 1896.



Witnesses.
W. C. Hutchins.
H. Balling

Inventor.
Albert. R. Tomlinson

(No Model.) 2 Sheets—Sheet 2.

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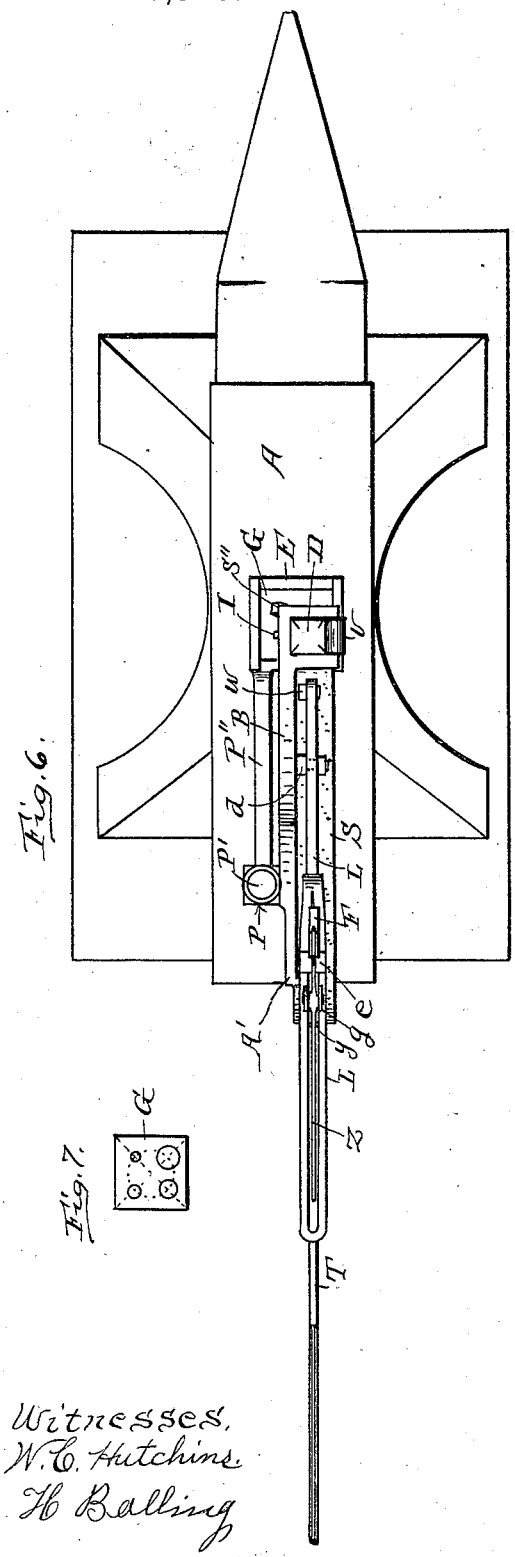

Fig. 6.

Fig. 7.

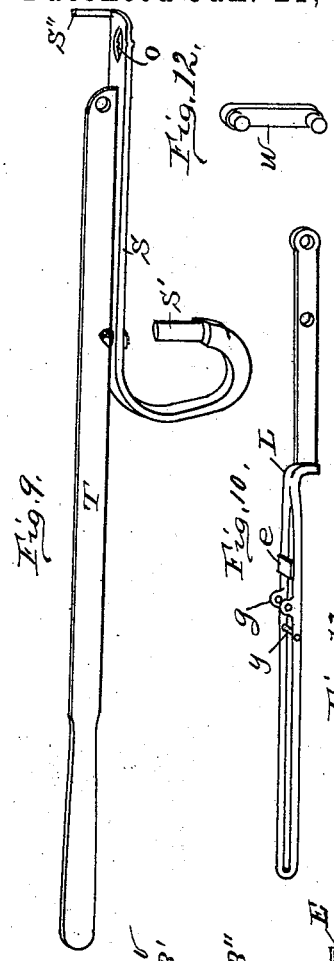

Fig. 9.

Fig. 12.

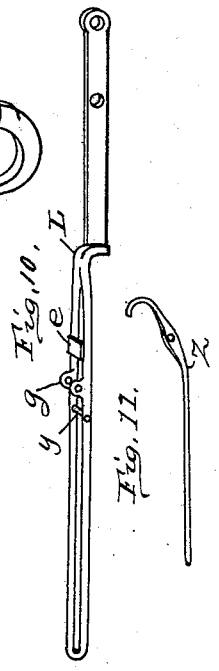

Fig. 10.

Fig. 11.

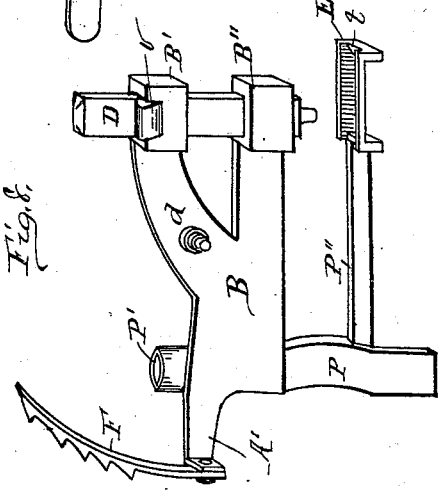

Fig. 8.

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UNITED STATES PATENT OFFICE.

ALBERT R. TOMLINSON, OF SEVERY, KANSAS.

METAL-PUNCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 553,370, dated January 21, 1896.

Application filed March 20, 1895. Serial No. 542,551. (No model.)

To all whom it may concern:

Be it known that I, ALBERT R. TOMLINSON, a citizen of the United States of America, residing at Severy, in the county of Greenwood and State of Kansas, have invented certain new and useful Improvements in Metal-Punching Machines, of which the following is a specification, reference being had therein to the accompanying drawings, and the letters of reference thereon, forming a part of this specification, in which—

Figure 1 is a side elevation of the machine mounted upon an anvil. Fig. 2 is a top view of one end portion of the anvil-face. Fig. 3 is a front end elevation of the machine, showing the anvil in section. Fig. 4 is a sectional elevation of the punch-holding-arm boxes and a side view of the punch and other parts relative thereto of the machine. Fig. 5 is a detail sectional view of the machine-die and die-holding frame and of a portion of an anvil upon which the die is seated. Fig. 6 is a top view of the machine mounted upon an anvil. Fig. 7 is a top view of the machine-die; and Figs. 8, 9, 10, 11, and 12 are detail perspective views of parts of the machine.

This invention relates to certain improvements in metal-punching machines designed as an attachment to anvils; and it consists in certain novel construction and arrangement of parts, which are fully set forth and described in the following specification, and pointed out in the claims.

The object of this invention is to provide an attachment to anvils adapted to hold a bar or plate of metal which is to be punched, and also hold the punch and die for effecting the punching of the metal, in such manner that the operator may be free to handle a sledge-hammer or other suitable implement to strike the punch to accomplish or effect the punching of the metal, and to that end and purpose I have devised the machine constructed and adapted to be attached to an anvil in the manner following.

Referring to the drawings, A represents an ordinary anvil, which is provided with vertical holes through one end portion thereof, as represented in Fig. 2 at a and a', the former of which is square and the latter round.

Especially referring to the parts constituting the punching-machine, P represents a post made with a square base portion adapted to be placed in the square hole a of the anvil, and has connected with it a laterally-extending arm P″, terminating with a die-holding frame E adapted, when the post is attached to the anvil, to rest centrally upon the face of the anvil, and is further provided with a laterally-extending arm B arranged above said arm P″, which arm B branches and terminates with two punch-holding boxes B′ and B″ in line with each other above said die-holding frame E.

Fixed to the side of arm B is a stud d, and extending rearwardly from post P and said arm B is an arm A′, which has fixed to its end an upright curved spring ratchet-arm F, made with its curve radiating from stud d. L is a lever fulcrumed on said stud d, as shown in Figs. 1 and 6, and made with its handle portion recessed vertically and placed with the spring ratchet-arm F extending up through the handle-recess, whereat said handle portion is provided with a cross-plate e, against which the teeth of the said spring-arm engage, as represented in Fig. 1. Said lever-handle portion is further provided with a pair of oppositely-stationed ear-lugs g, between which lugs is fulcrumed a lever Z, having one end curved and brought adjacent the face of the spring ratchet-arm F and the opposite end extending obliquely below said lever-handle portion, where it is supported against movement too far down by means of a cross-pin y of said handle portion.

D represents the punch, which is shown as being square in cross-section, but may be of any other cross-sectional form and is placed in the holding-boxes B′ B″, as shown. In one side of box B′ is placed a wedge-shaped key V, adapted, if raised, to grip and thereby lock the punch D against upward movement; but when suspended in its normal position to permit free upward movement of said punch, and fixed to one side of said box B′ is a depending curved spring-arm I, which yieldingly bears against the side of punch D with sufficient tension to hold said punch in a raised position in boxes B′ and B″, and tapped through one side of the lower box B″ is a thumb-screw H, adapted to be turned hard against the punch D, at times, to fixedly hold said punch in position.

G represents the machine-die, and is made as a compound die, having its face-surface laid off into four equal parts or sections and provided with a vertical hole placed centrally in each said quarter-section, as represented in Fig. 7. Said die, thus made, is placed in frame E, so that a hole thereof will be centrally under punch D, which frame E is so held as to thus hold said die, so that when said punch is lowered to meet the die it will register with said die-hole. The said die is placed subject to being turned bodily to bring either of its four holes under the punch, and the said punch is placed subject to being removed and substituted for others adapted to punch different-sized holes corresponding with the size of hole in the die brought under the punch.

As a means of easily placing and removing die G from frame E one side bar of said frame is beveled inwardly, as represented at *t* in Figs. 5 and 8.

S represents the spring-metal holding-arm of the machine, comprising a flat spring-bar bent at one end to curve downward and upward, as represented, and terminating at said upturned end with a shank S′, adapted to be placed up into the hole *a′* of anvil A, as shown in Fig. 1, and provided at its opposite end with an opening or hole *o*, as shown in Fig. 9, which is brought to rest upon die G centrally under punch D, and further provided at said end with an upright post S″, which is brought to rest with its upper end against the rear side of box B″, or side of said box opposite to that shown in Fig. 1, and fixed to and extending from said spring holding-arm S is a lever or handle T, for the purpose of adjusting and springing said arm S when attaching it to the anvil, and W is a link connecting said spring-arm S or handle thereof with the lever L, as shown, whereby when said lever is operated by moving its handle portion down the end of spring-arm S, at the die G, will be raised, and such raised position retained by reason of the spring ratchet-arm F latching with the cross-plate *e* of said lever-handle portion, and when it is desired to release said latch and lower said spring-arm S the handle portion of lever L is grasped and lever Z thereof pressed upward by the fingers of the operator, which will cause the curved end of said lever Z to engage and force said spring ratchet-arm from its latch engagement with said cross-latch plate *e* of the lever.

The upper end of post P of the machine terminates with a cup P′, which is adapted for holding oil into which the operative end of punch D may be dipped to lubricate it before using, to render it more easily stripped from the metal punched.

In use, metal to be punched is placed upon die G and under the spring holding-arm S, as represented at M in Figs. 1 and 3, which placing is effected by first raising the punch D and by secondly raising said spring holding-arm by operating the lever L, and finally lowering said holding-arm to rest yieldingly upon the metal, and by reason of the tension of said arm S being sufficiently great the metal is thereby firmly held, and thus held the punch is struck by the operator with a sledge-hammer with sufficient force to drive it through the metal and in so doing cause it to shear with the die in the manner usual in the use of punch and dies, and thereby punch from the metal a section equal to the diameter of the punch.

In raising the punch D after it has been operated to punch a hole, should the metal bind thereon, the lever L is operated to raise the spring holding-arm S, and thereafter the punch, together with the metal binding thereon, is raised and locked in such raised position by tightening thumb-screw H against the punch, when the said spring holding-arm S is released, when should the tension of said arm not be sufficiently strong to strip the metal from the punch said holding-arm is given a slight jar, which will effect such stripping. By such manner of operating the punch D it is subject to rebound at times when struck, and as a means of preventing such rebounding I have provided the wedge-shaped key V placed as described and shown, which key is also subject to rebounding when the punch is struck, and by reason of such rebounding tendency of said key when a stroke is given the punch the said key by a slight rebounding raise wedges close against the punch and thereby forms a clutch to prevent the rebounding of the punch.

It will be understood that by the construction of the machine described it is adapted to be attached to an anvil or removed therefrom at will, and hence serves as a convenient device in any shop or factory where anvils are used, to punch holes in metal and thus avoid the use of other more expensive and heavy machinery for such purpose, and in attaching the spring holding-arm S it is first brought to a position crosswise of the anvil, when its shank S′ is placed up into the hole *a′* of the anvil, after which the lever or handle T is grasped and brought about parallel with the anvil, which likewise brings about said spring-arm S, and when there is no metal to be operated upon resting on the die G the end of said spring-arm will be low enough to permit the post S″ thereof to move under box B″, and when thus bringing about said spring-arm lever L is adjusted to engage the highest notch of spring-latch arm F, which lowers the link W to a point where it will register its lower hook in the hole of handle T of the said spring-arm S, and it will further be observed that said link W is placed with its back against arm B, so that further movement of spring-arm S toward the under side of said arm B is prevented by said link, and that after said spring-arm is raised, as when metal is placed under it on die G, its post S″ comes at the opposite side of box B″, and thus prevents reverse movement of said spring-arm, and also one side

rail of the die-holding frame E is elevated so that by lifting the die G in the frame a cleaner may be entered under said frame, side rail and die and the punchings or slugs removed from under the die, as they will fall therefrom when the die is raised.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows:

1. The combination with the frame adapted to be attached to an anvil and provided with the die holding frame, of the punch holding boxes and the lever-holding spring-ratchet arm; the die adapted to be seated in said frame; the punch adapted to be held in said boxes; the spring metal-holding arm adapted to be attached to the anvil; and the lever, and link thereof, fulcrumed to said frame for adjusting said spring holding arm, substantially as and for the purpose set forth.

2. The combination with the frame adapted to be attached to an anvil and provided with the post P, the die holding frame E, the punch holding boxes B′, B″, and spring ratchet arm F, the compound die G in said die holding frame, the punch D in said boxes above and in line with a hole of said die, the spring metal holding arm S, provided with the handle T and with the end openings *o* and post S″, and the latch lever L and link W, thereof, fulcrumed to said frame and connected with said spring holding arm, substantially as described.

3. In the punching machine described in combination with the frame thereof, and with the spring metal-holding arm; the lever L fulcrumed to said frame and provided with the cross-latch plate *e* and with the latch releasing lever Z; the link W, connecting said lever and spring holding arm; and the spring ratchet arm for holding the adjustment of said lever, substantially as and for the purpose set forth.

4. In the machine described, the combination with the punch holding box, or boxes, and the punch, the wedge key V placed within the box adjacent to the side of the punch, substantially as and for the purpose specified.

5. In a machine of the character described the combination with the frame, the punch holding boxes and punch, of the spring arm having a handle adapted to be attached to an anvil, the die holding frame having one side beveled, and the compound die having differential holes, removably seated in said holding frame, substantially as described.

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Witnesses:
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