No. 826,130. PATENTED JULY 17, 1906.

L. H. VOLD.

SWIVEL PUNCH HOLDER.

APPLICATION FILED APR. 4, 1906.

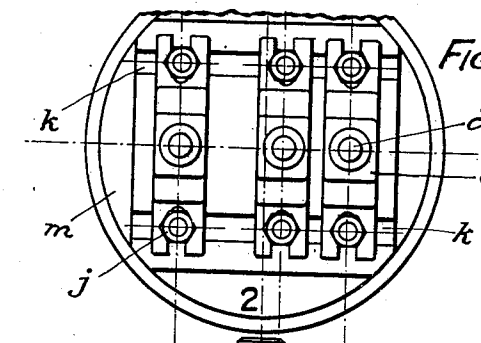


FIG. 4.

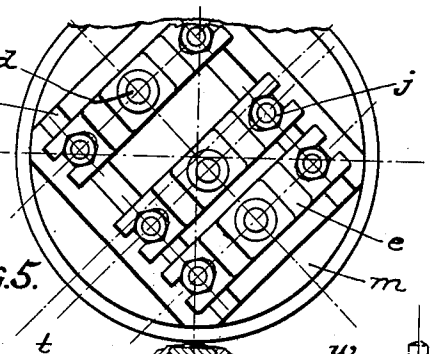


FIG. 5.

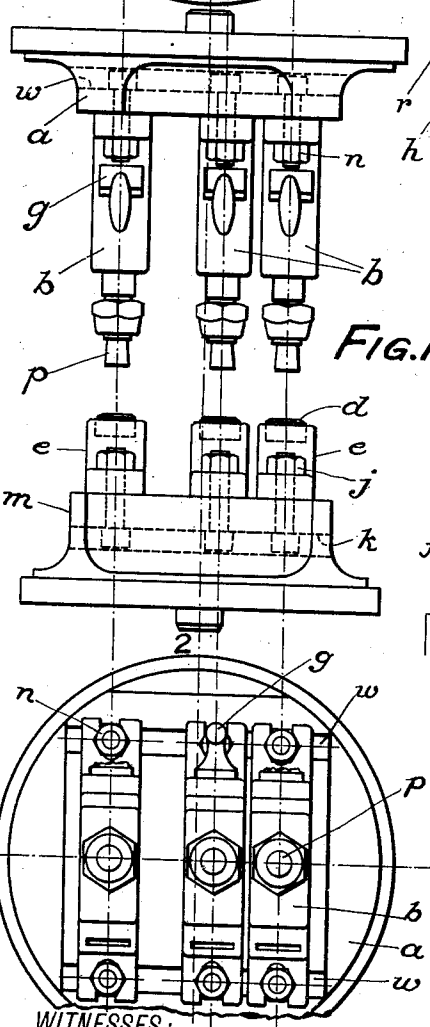


FIG. 1.

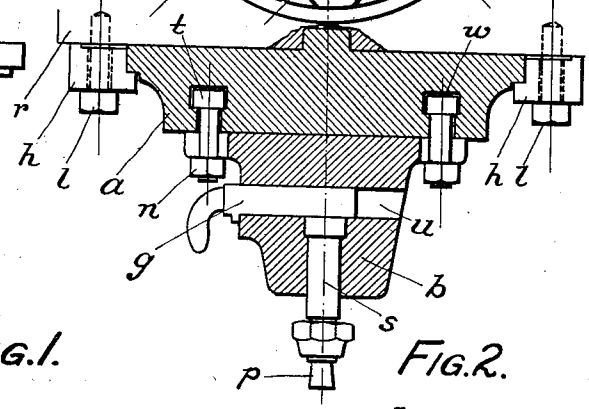


FIG. 2.

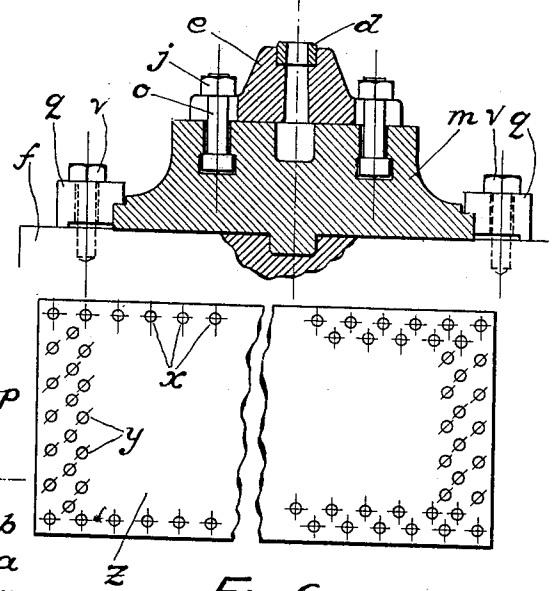


FIG. 6.

FIG. 3.

WITNESSES:

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SWIVEL-PUNCH HOLDER.

No. 826,130. Specification of Letters Patent. Patented July 17, 1906.

Application filed April 4, 1906. Serial No. 309,761.

To all whom it may concern:

Be it known that I, LARS H. VOLD, a citizen of the United States, residing at Westville, county of Gloucester, and State of New Jersey, have invented a new and useful Improvement in Swivel-Punch Holders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to metal-punching machines, and has for its object to provide a means of holding a number of punches in such a manner that they can be readily adjusted for punching simultaneously two or more rows of holes in parallel lines, the distance between the lines and between the individual punches in the lines being adjustable to suit requirements.

The invention consists in an arrangement of rotatable punch and die blocks carrying adjustable punches and dies, as hereinafter set forth.

A punching-machine embodying my invention is especially adapted for punching the holes for the connecting-rivets in the ends of plates forming sections of boilers or other cylindrical constructions of riveted plates. In such plates it is frequently desirable to punch three parallel rows of holes, these holes being staggered or in different lines parallel with the longitudinal axis of the plate.

By means of my punch and die blocks several such rows of holes can be punched by passing the plate once through the machine and punching two, three, or more holes at each stroke of the machine. The distance between the holes longitudinally and transversely may be varied at will. To accomplish these ends, I arrange the blocks which carry the punches and the dies so as to swivel about a common axis, and I provide means whereby the punches and dies, respectively, may be adjusted toward or from each other, and I further provide means by which the punch and die blocks may be rotated, so as to bring the punches and dies in a line inclined to the edge of the plate to be punched.

In the accompanying drawings, illustrating one form of my invention, Figure 1 is a side elevation. Fig. 2 is a transverse section taken at a right angle to the plane of Fig. 1 along the line 2 2. Fig. 3 is a bottom view of the punch-block. Fig. 4 is a top view of the die-block. Fig. 5 is a top view of the die-block with the die-holders swiveled about the axis of rotation. Fig. 6 is a view of a plate such as might be punched with this arrangement and shows two usual arrangements of holes.

a represents the rotatable punch-block underlying the moving ram *r* of a punching-machine and having the punch-holders *b*. The punch-blocks are provided with guideways *w*, extending at right angles to the punch-holders, and bolts *t* each extend through a flange on one of the punch-holders and also into the corresponding guideway, the head of the bolt being in the widened upper part of the guideway. By this means the punch-holders are supported from the punch-block and adjustable toward or from each other, nuts *n* on the lower end of the bolts being tightened to hold the punch-holders in their adjusted positions.

Each punch-holder is provided with a vertically-slidable stock *s*, to which may be attached in the usual manner any size of punch *p* desired.

The movement of the punch-stock is controlled in the usual manner by means of a gag *g*, slidable in a way *u* above the stock. By sliding the gag inwardly, so that it overlies the punch-stock, the punch is compelled to operate.

h represents shoes bolted to the under side of ram *r* and having shoulders underlying the overhanging upper part of the punch-block. The bolts *l* are loosened to enable the punch-block to be turned on its axis and tightened to clamp the punch-block in its working position.

m represents the rotatable die-block, resting on the bed or frame *f* of the punching-machine and whose axis of rotation coincides with that of the punch-block. The die-block supports the die-holders *e*. The die-blocks are provided with guideways *k*, extending at right angles to the die-holders, and bolts *o* each extend through a flange on one of the die-holders and also into the corresponding guideway, the head of the bolt being in the widened lower part of the guideway. By this means the die-holders are adjustable toward or from each other, nuts *j* on the upper ends of the bolts being tightened to hold the

die-holders in their adjusted positions. Each die-holder carries a die *d*.

q represents shoes bolted to the machine bed or frame and having shoulders overlying the foot portion of the die-block. The bolts *v* are loosened to enable the die-holder to be turned on its axis and tightened to clamp the die-holder in its working position.

The holes *x* are punched in the plates *z*, three at a time, by turning the die-block and punch-block so that the lines of dies and punches extend parallel with the edge of the plate. The holes *y* are punched, three at a time, by turning the die-block and punch-block so that the lines of dies and punches extend at an angle with the edge of the plate.

It is not necessary to have all the die-holders and punch-holders adjustable. For example, the central die-holder and punch-holder may be fixed concentric with the axis of rotation of the die and punch blocks.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a punching-machine, the combination with a die-block rotatable in a horizontal plane and a superposed punch-block also rotatable in a horizontal plane, of die-holders carried by the die-block one or more of which are adjustable thereon, and punch-holders carried by the punch-block one or more of which are adjustable thereon.

2. In a punching-machine, the combination with a die-block rotatable in a horizontal plane and a superposed punch-block also rotatable in a horizontal plane, of die-holders carried by and adjustable on the die-block and punch-holders carried by and adjustable on the punch-block.

3. In a punching-machine, the combination with the punch-block rotatable upon its own axis and a die-block rotatable upon its own axis, each swiveling upon a common axis, of punch-holders arranged in line and carried by the punch-block, die-holders arranged in line and carried by the die-block, means to adjust two or more of the punch-holders to vary the distance between them, and means to adjust two or more of the die-holders to vary the distance between them.

4. In a punching-machine, the combination with a punch-block and a die-block swiveling about a common axis, of punches carried by the punch-block and dies carried by the die-block, one or more of said punches and one or more of said dies being rotatable about said axis, and one or more of said punches and one or more of said dies being adjustable to vary the distance between the punches and dies respectively.

5. In a punching-machine, the combination with a punch-block and a die-block swiveling about a common axis, of punches carried by the punch-block and dies carried by the die-block, one or more of said punches and one or more of said dies being rotatable about said axis, and one or more of said punches and one or more of said dies being adjustable toward or from said common axis.

6. In a punching-machine, the combination with the machine-frame and movable ram, of three or more punches arranged in line, three or more dies arranged in line, means to support the punches on the ram and the dies on the frame and to adjust the angle of the line of punches and the line of dies with relation to the ram and frame respectively, means to adjust the distance between adjacent punches, and means to adjust the distance between adjacent dies.

7. In a punching-machine, the combination with the machine-frame and the movable ram, of a punch-block swiveled on the ram, punches carried by the punch-block, means to adjust the distance between adjacent punches, a die-block swiveled on the machine-frame, dies carried by the die-block, and means to adjust the distance between adjacent dies, the punch-block and die-block being swiveled on a common axis.

8. In a punching-machine, the combination with a punch-block and a die-block swiveling about a common axis, of punch-holders carried by the punch-block and die-holders carried by the die-block, punches carried by the punch-holders and dies carried by the die-holders, means to adjust the punch-holders to vary the distance between adjacent punches, and means to adjust the die-holders to vary the distance between adjacent dies.

9. In a punching-machine, the combination with a punch-block and a die-block swiveling about a common axis, of punch-holders carried by the punch-block and die-holders carried by the die-block, there being guideways respectively in the punch-block and die-block extending at an angle to the punch and die holders, and bolts extending into said guideways and engaging the adjustable punch and die holders respectively.

10. In a punching-machine, the combination with a punch-block and a die-block swiveling about a common axis, of adjustable punch-holders carried by the punch-block, adjustable die-holders carried by the die-block and shoes by which the punch-block and die-block respectively may be clamped in the position to which they are turned.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 16th day of March, 1906.

LARS H. VOLD.

Witnesses:

COLEMAN SELLERS, JR.,

MARY I. BRADLEY.