(No Model.) 2 Sheets—Sheet 1.

F. M. LEAVITT & A. O. KITTREDGE.

PRICKING MACHINE.

No. 343,180. Patented June 8, 1886.

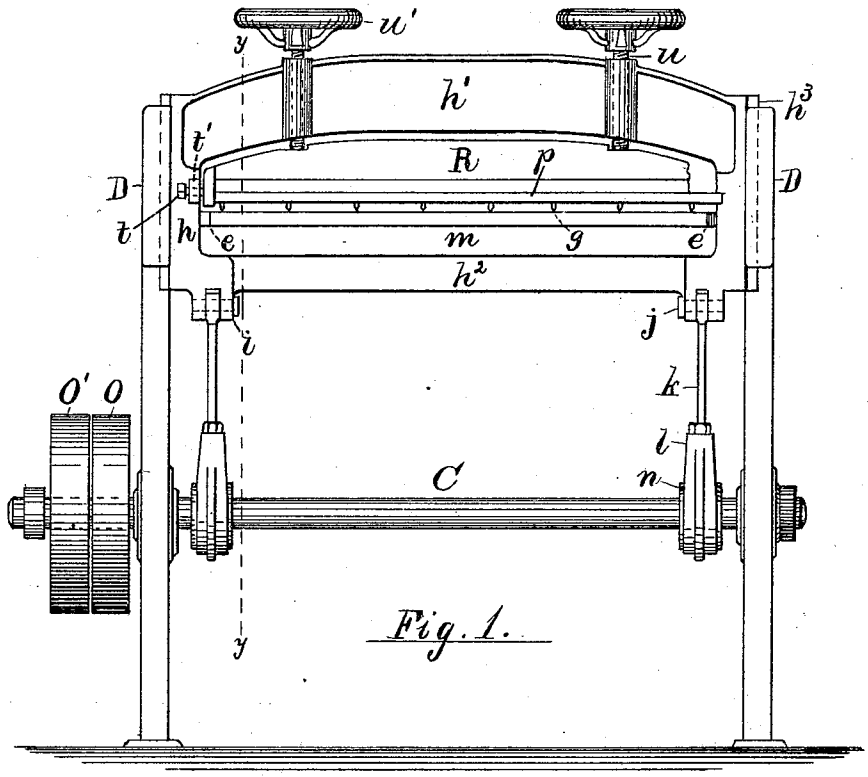
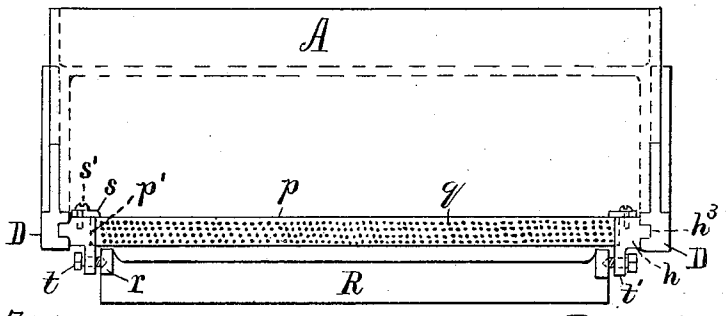


Fig. 1.

Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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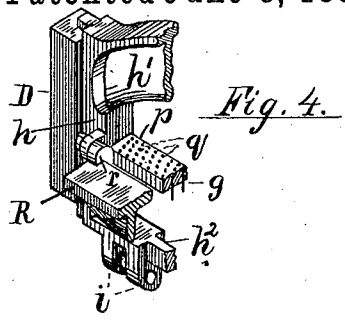


Fig. 4.

Fig. 3.

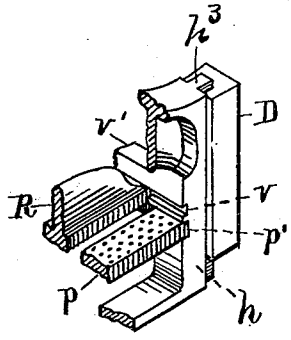


Fig. 5.

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UNITED STATES PATENT OFFICE.

FRANK M. LEAVITT, OF BROOKLYN, AND ANSON O. KITTREDGE, OF SLATE HILL, NEW YORK.

PRICKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 343,180, dated June 8, 1886.

Application filed October 29, 1885. Serial No. 181,309. (No model.)

To all whom it may concern:

Be it known that we, FRANK M. LEAVITT and ANSON O. KITTREDGE, citizens of the United States, residing, respectively, in Brooklyn and Slate Hill, counties of Kings and Orange, and State of New York, have invented certain new and useful Improvements in Pricking-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to an improvement in the machine patented to Clark, Kittredge & Clark, August 11, 1874, No. 153,888, for a "machine for marking lines of bend of sheet metal for moldings;" and our invention consists in an improved means for retaining the removable prick-punches in the holes, and for freely exposing the heads of the same when it becomes necessary to remove or adjust any of such punches. In such machine the beam is provided with a large number of holes to facilitate the convenient adjustment of the punches to the required points upon the sheet metal; and the means for retaining the prick-punches in the beam heretofore consisted in a "fillet" or straight strip inserted in a groove in the side of the beam; and the location of the punches in holes in the bottom of such groove therefore rendered them almost inaccessible and difficult to handle and adjust. As such holes are in practice made very numerous and close together, to afford a minute adjustment for the pins, it is obviously difficult to insert the pins in the right holes unless the latter be plainly exposed to view. The difficulty of access to the punches has been aggravated by the construction of the pricking-machine, in which the operator is compelled to stand at one edge or the front of the bed-plate, while the punches to be adjusted are at the farther edge of the sheet, at a considerable distance from him. In our improved construction we have therefore formed the series of holes in a punch-plate having its upper side entirely exposed, so as to afford the fullest access thereto for inserting and removing the pins, and have provided a removable cap conveniently arranged to cover the upper side of the plate after the pins are fully adjusted. To facilitate the removal of such cap we pivot it eccentrically at one side of the plate, and to clamp it firmly thereon to resist the pressure of the pins when in operation we provide clamping-screws upon the beam in a bar above the cap, to press the same upon the plate when turned over the latter.

The construction will be fully understood by reference to the annexed drawings, in which Figure 1 is a rear view of a machine provided with our improvement, the cap and its pivot being partly omitted at the right-hand end to show the insertion of the punch-plate in a notch at one end of the cross-head. Fig. 2 is a plan of the same, taken in section on line *x x* in Fig. 3. Fig. 3 is a vertical section taken on line *y y* in Fig. 1, the front of the machine being shown at the right hand. Fig. 4 is a perspective view, from the rear side, of one end of the cross-head in section, with one of its guides detached from the main frame; and Fig. 5 shows in perspective an alternative construction for the cap.

In Figs. 2 and 4 the cap is turned away from the punch-plate, its position when thus turned being indicated by dotted lines at R in Fig. 3, and its movement when turned to and from its inoperative position indicated at dotted curve at *z z* in the same figure.

A is the bed-plate of the machine, upon which the sheet metal is laid to be prick-punched. B are legs supporting the same and carrying an eccentric-shaft, C, in boxes C′ affixed to the back of the legs, beneath the rear edge of the bed or table. The rear edge of the table is provided with a projecting ledge, (shown in Fig. 1 as extending from *e* to *e*, and in section in Fig. 3 at *e*,) and provided with a dovetail groove having a filling of soft metal to form a seat, *f*, upon which the punches *g* operate.

The beam to actuate the punches is shown in the drawings as an open frame consisting of vertical end bars, *h*, an upper cross-bar, *h′*, and a lower cross-bar, h^2. This structure forms a cross-head with an open center, *m*, within which the ledge *e* projects, and its lower cross-bar is provided at each end with lugs *i* and pins *j*, to receive connections *k* from eccentric-straps *l*, fitted to eccentrics *n* upon the shaft C. The shaft is provided with fast and loose pulleys O and O′, by which it is continuously rotated and the cross-head reciprocated up and down

at a moderate speed, so that the operator may easily remove a sheet of metal from beneath the punches and replace it with another. The ends of the cross-head are fitted into vertical guides D, fixed upon the bed of the machine, on a line with the seat *f*, to guide it when moved up and down by the rotation of the eccentrics, by which the punches *g* are pressed upon the seat with sufficient force to puncture or indent the sheet metal laid thereon.

The punch-plate *p* consists in a plain flat bar extended across the open space *m*, between the top and bottom bars of the cross-head, and is preferably fitted into horizontal notches in the vertical bars *h*, as indicated in Fig. 1, and at the dotted lines *p'* in the section of the bars *h* in Fig. 2, the notches admitting the punch-plate into the bars, so that its front edge is flush with the front side of the cross-head. Buttons *s* are secured to the bars *h* by screws *s'*, adjacent to the notches *p'*, as shown in Figs. 2 and 3, so as to hold the punch-plate removably in the notches. As thus placed, the bar *p*, with all its punch-holes *q*, is plainly visible from the front of the machine, where the operator is required to stand to handle the sheet metal or to adjust the pins.

The means for clamping the pins in the punch-plate consist in a swinging cap, R, pivoted upon the bars *h*, adjacent to the notches *p'*, and the cap is shown as a T-shaped beam provided at each end with a lug, *r*, to which are applied pointed set-screws *t*, fixed in ears *t'* upon the bars *h*, and the pivots are so arranged that the under side of the cap rests evenly upon the upper side of the punch-plate when the cap is turned toward the front of the machine.

In the upper bar of the cross-head are provided screws *u*, to press upon the top of the cap and hold it firmly down upon the heads of the punches *g*.

Hand-wheels *u'* are applied to the upper ends of the screws, to actuate them when desired, and the application of the screws to the cap removes all the pressure of the punches from the punch-plate and transfers it to the upper bar, *h'*, and from thence to the bars *h* and connections *k*.

When the operator desires to alter the arrangement of the punches in the plate *p*, he rapidly retracts the screws *u*, and throws the cap R backward upon its pivots *t* into the position shown in dotted lines at R in Fig. 3. The entire upper side of the punch-plate is then plainly exposed to view from either the front or rear side of the cross-head, as is plainly shown in the rear view in Fig. 4, which was constructed chiefly to exhibit the relations of the punch plate and cap to the upper and lower bars of the cross-head independently of the seat *f*. The operator may then easily distinguish the location of the punches, and may lift them from their respective holes by pressure upon their points, and arrange them in other holes or remove them, as may be desired.

If the punch-plate be intended to remain permanently in the cross-head, it may be secured by other means than the buttons *s*, but the latter afford a convenient means of releasing it from the notches *p'* and removing it from the cross-head for repairs or for the substitution of a different plate.

As the prick-punches require to be rearranged for every new pattern that is to be marked upon the sheet metal by their aid, it is obvious that they require shifting frequently, and that a convenient means for securing them in the cross-head, for freely exposing them to access, is a matter of great importance in the use of such a machine.

A treadle or intermittent-clutch mechanism may be used to reciprocate the cross-head in place of the eccentrics, as the reciprocating mechanism forms no part of our present invention.

It is obviously immaterial how the cap is sustained adjacent to the punch-plate, provided it be readily removable therefrom, as the essential part of our invention is the construction of the punch-plate itself without any obstructive member above it, and the provision of a removable cap and means for holding it rigidly in contact with the heads of the punches. Our invention requires, however, an open frame-like cross-head, such as we have shown herein, to permit the cap to be moved to and from the heads of the punches, and to transmit the strain firmly to the upper bar of the cross-head at *h'*. It is also immaterial how such strain be transmitted from the cap when in its operative position, as it is obvious that wedges or screws might be inserted between the cap and the bar *h* to effect such object.

The cap, instead of turning on pivots, may also be arranged to slide in horizontal notches in the bars *h*, just above the punch-plate, as shown in Fig. 5. This view shows the end of the cross-head in perspective, like Fig. 4, but is taken from the opposite side of the same, with the upper bar, *h'*, broken off to expose the other constructive features.

The notch for the cap is indicated at *v*, and is extended upon the rear side of the cross-head in ears *v'*, so as to support the cap when pushed back from the top of the punch-plate, as shown in Fig. 5.

Having thus set forth the nature of our invention, we disclaim anything shown in the aforesaid Patent No. 153,888, and claim herein as follows:

1. In a pricking-machine, the combination, with a cross-head formed as an open frame, of the punch-plate *p*, supported in the ends of such frame and entirely exposed upon its upper side, a movable cap, also sustained upon the cross-head by its ends, and means for clamping the cap upon the heads of the punches, substantially as and for the purpose set forth.

2. In a pricking-machine, the combination, with a cross-head formed as an open frame, of the punch-plate *p*, supported inside the ends

of such frame and entirely exposed upon its upper surface, a removable cap applied to the top of the punch-plate, and screws inserted in the top bar of the cross-head and operated, substantially as described, to clamp the cap to the punch-plate, as and for the purpose set forth.

3. In a pricking-machine, the combination, with a reciprocating cross-head, of a punch-plate provided with a series of holes for removable punches, as described, and a cap, R, pivoted upon the cross-head and adapted to lie over the punches when in operation, and to swing away to expose the same for adjustment or removal, the whole arranged and operated substantially as herein set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

FRANK M. LEAVITT.
ANSON O. KITTREDGE.

Witnesses:
WILLIAM F. SMITH,
THOS. S. CRANE.