(No Model.)

G. A. GOODSON.

MATRIX MAKING MACHINE.

No. 478,257. Patented July 5, 1892.

Fig. 1.

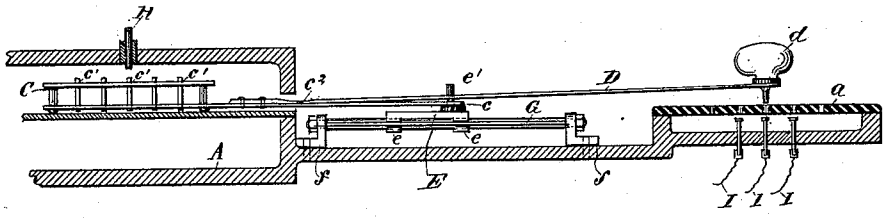


Fig. 3.

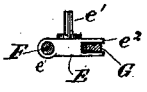


Fig. 2.

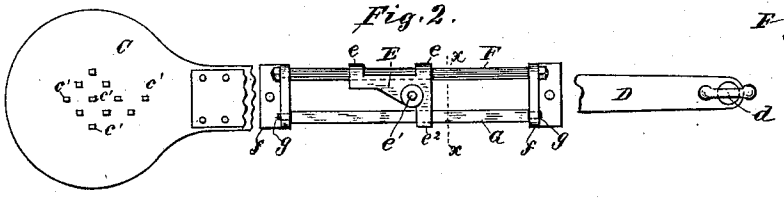


Fig. 4.

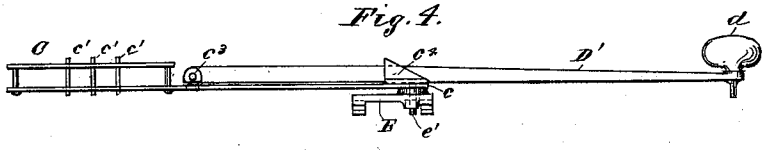
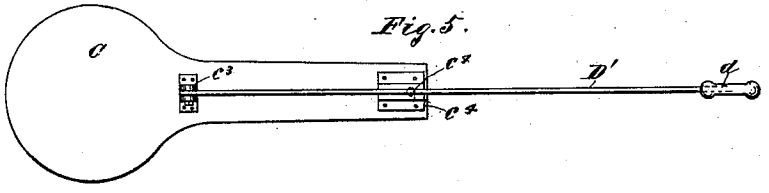


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE A. GOODSON, OF MINNEAPOLIS, MINNESOTA.

MATRIX-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 478,257, dated July 5, 1892.

Application filed November 11, 1889. Serial No. 329,846. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. GOODSON, a citizen of Canada, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Matrix-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to matrix-making machines of the kind fully disclosed in the application filed by myself and Alex. Capehart May 21, 1887, Serial No. 239,735, and in Patent No. 414,400, dated November 5, 1889. These machines are provided with an index-plate or character-board having a series of apertures, each of which is designated by a letter or character marked on the plate adjacent to it, and with a combined key-lever and type-alignment plate or carriage pivoted about midway of its length to a small cross-head movable rectilinearly in a guideway of the bed-plate. At its rear end this device is provided with a series of type-dies and at its front end with a key for fitting into the perforations of the character-board, and the dies are so arranged that they can be brought in succession to a common central point whenever the key is depressed to enter the desired perforation. In this form of machine trouble sometimes arises from the tendency of the small cross-head, to which the combined key-lever and type-alignment plate or carriage is pivoted, to bind in its guideway, and thereby resist the movement necessary to bring the key over the desired perforation in the character-board. Furthermore, as the key-lever and alignment-plate are made integral the key necessarily descends through a short arc of motion, causing difficulty in properly seating the key in the desired perforation.

The present invention is an improvement on the prior form of construction, and has for its object to provide means that will enable the cross-head to slide freely back and forth without the least danger of binding, and also to so connect the key-lever to the alignment-plate or die-carriage as to enable the key to travel through a longer arc of motion, whereby it can be readily depressed without danger of binding, thus affording a facility of touch and easiness of operation far superior to the old form of construction and enabling the speed of the machine to be largely increased.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of part of the bed-plate of a matrix-making machine with my invention represented in side elevation. Fig. 2 is a plan view of my invention. Fig. 3 is a section on line $x\,x$ of Fig. 2. Figs. 4 and 5 are respectively a side elevation and plan view of a modified construction.

Similar letters refer to similar parts throughout the several views.

A is the bed-plate of the machine, having the index-plate or keyboard a, which for purposes of insulation is made of vulcanized rubber.

C is the type-alignment plate or die-carriage, mounted at its front end or extension c on a vertical pivot of a small cross-head hereinafter described and provided at its rear end with a series of dies c'.

D is a key-lever made of spring metal, attached at its rear end to the die-carriage and carrying at its front end the key d. The metal of this lever is compressed or otherwise thinned or reduced at c^2 to enable it to be more easily depressed, and the lever is perforated to fit over the pivot-pin e' of the cross-head, and is thereby retained in line with the extension of the die-carriage.

E is a cross-head having eyes $e\ e$ fitting upon a rod F, rigidly connected to brackets $f\ f$, attached to the bed-plate. Upon this cross-head is a vertical pivot-pin e', which enters the perforations in the extension of the alignment-plate or die-carriage before described and the key-lever. Cross-head E is provided with an arm e^2, slotted at its end to receive and loosely fit upon a rectangular rod G, having round journals $g\ g$ mounted in bearings in brackets $f\ f$.

In the modification represented in Figs. 4 and 5 a key-lever D′ is provided, which is pivoted at c^3 between vertical standards on the alignment-plate C. This key-lever is a rigid bar mounted edgewise on pivot c^3 and guided in its vertical movement by ears $c^4\ c^4$, projecting from the forward edge of the alignment-plate, said ears also keeping it in line with the extension of the die-carriage.

H is a part of the die-depressing device employed with this class of machines, and I I are the contact-points and electrical connections for establishing the circuit through parts of the machine, which are not shown, when the key is depressed to enter any one of the perforations in the character-board.

The operation of the machine is the same in its main details as in the invention set forth in my applications heretofore mentioned; but by connecting the key-lever to the alignment-plate in the manner described a much longer arc of motion is established, and the key can therefore be entered with much less trouble and far more accuracy into the perforations of the character-board. By mounting the cross-head as set forth all danger of its binding in its reciprocal motions is completely avoided, as rod G will rock on its journals, and the connection between the cross-head and rod is sufficiently loose to permit free motion with a minimum of friction. In both constructions described the swinging and reciprocal motions of the die-carriage are accomplished with ease and efficiency.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a die-carriage having a sliding and a swinging motion, of a lever independently connected to said carriage and adapted to move in a plane at right angles to the plane of the swinging motion thereof, said lever being provided with a key, substantially as and for the purpose specified.

2. The combination, with a die-carriage and a character-board, of a movable cross-head between the two, on which said carriage is pivoted, and a key-lever independently connected to said carriage between said cross-head and the dies, substantially as and for the purpose specified.

3. The combination, with a movable cross-head and a character-board, of a die-carriage provided with an extension pivoted on said cross-head, a swinging key-lever independently connected to said carriage between the cross-head and the dies, and a retaining device for holding said key-lever in line with the extension of the die-carriage.

4. The combination, with a cross-head, of a character-board, a die-carriage provided with an extension pivotally secured to the cross-head, and a key-lever attached to the carriage and perforated to fit upon the pivot of the cross-head, said key-lever having a reduced portion, substantially as and for the purpose specified.

5. A cross-head guide consisting of two parallel bars, one of which is fixed and the other movable, substantially as and for the purpose specified.

6. A cross-head guide consisting of a fixed cylindrical bar and a rectangular bar having journals at its ends, substantially as set forth.

7. The combination, with a guide consisting of parallel rods, of a cross-head pivotally mounted on one rod and guided by the other, substantially as set forth.

8. The combination, with a guide consisting of parallel rods, one of which is fixed and the other adapted to rock in its bearings, of a cross-head mounted to have rectilinear movement on the fixed rod and limited in pivotal motion only by the other rod, substantially as and for the purpose set forth.

9. The combination of the die-carriage having a projecting arm perforated at its forward end and the key-lever connected to said carriage to permit of its movement in the arc of a circle, of a cross-head, guide-rods, one fixed and the other movable, upon which the cross-head may be reciprocated, and a device on the cross-head for keeping the key-lever in alignment with the die-carriage, substantially as and for the purpose specified.

10. In a matrix-making machine, the combination, with the cross-head guides consisting of parallel rods, of the cross-head pivotally mounted on one of said rods and guided by the other, and a combined die-alignment bar and key-lever pivotally mounted on said cross-head, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE A. GOODSON.

Witnesses:

EMMA F. ELMORE,

JAS. F. WILLIAMSON.