

J. S. SHANNON.
EYELETING MACHINE.

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Witnesses:-

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JAMES S. SHANNON, OF CHICAGO, ILLINOIS.

EYELETING-MACHINE.

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To all whom it may concern:

Be it known that I, JAMES S. SHANNON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Eyeletting-Punches; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in punching mechanisms in which two or more dies or punches are employed in connection with a matrix consisting of a perforated bed, upon which the sheets of paper or other material to be perforated are supported, and through which portions of the material are forced by the dies or punches, so as to form the required perforations. The double or multiple punch, which is herein illustrated, and which is included in said class of punching mechanisms, is more especially designed for forming several eyelet-holes simultaneously through a number of sheets of paper; and my improvement therein consists of certain novel features of construction and combination, hereinafter described and claimed, and illustrated in the annexed drawings, in which—

Figure 1 is a top plan view of my improved mechanism with a portion of the operating lever broken away at one edge in order to more clearly illustrate a spring-plate below the same. Fig. 2 is a transverse section on line *xx* of Fig. 1. Fig. 3 is a section taken through the same on line *yy* of Fig. 1.

On the drawings, A denotes a suitable tablet or base, to which is secured the bed A' of the punching mechanism. The bed consists of a metal plate, which is preferably formed so as to bear upon the tablet or base A at three points—namely, the middle and the front and rear end edges of the plate constituting the said bed. This configuration of the bed-plate provides certain raised portions in the bed, and also a space below the same, for purposes which will be hereinafter set forth.

The dies or punches B pass through and are rigidly secured to a bent or curved spring-plate, C, which is supported at one end on the bed A', and at its remaining upper free end adapted to overhang the said bed. The punches

are set in a line parallel with and adjacent to the end edge of the plate at its upper free end, which said plate at its rear end curves downwardly, and is provided with a pair of arms, *c*, which are secured upon a raised portion, *a*, of the bed.

The short rods, which constitute the dies or punches, extend both above and below the spring-plate C, and to provide an increased bearing for the punch or die rods, and more effectively hold them in rigid connection with the spring-plate, washers *c'* are slipped over the upper projecting end portions of the rods and soldered down upon the spring-plate. The dies or punches thus secured to the free end of the spring-plate are normally maintained at a suitable distance above the bed by reason of the tendency on the part of the plate to assume at its free end an elevated position above the bed as soon as a pressure excited upon the die or punch rods by a hand-lever, D, has been removed. This hand-lever is pivoted at one end between a pair of standards or upturned ears, *a*, which rise from the bed-plate, and which are conveniently formed in one piece with the latter. The hand-lever is hung or pivoted back of the set of dies or punches, and is at such end made of a width sufficient to cause it to bear upon the top ends of all of the punch or die rods when it is swung forward and over the dies or punches, as in dotted lines in Figs. 1 and 2. From its said wide pivoted end the lever is preferably tapered to its remaining free end, so as to admit of its being conveniently handled.

When the hand-lever is in position to rest upon the punch or die rods, it can be depressed so as to simultaneously depress the dies or punches, together with the free end of the spring-plate, which latter, together with the punches, will rise as soon as the hand-lever is released or swung up.

The bed-plate is provided with a raised portion, *a'*, formed transversely to the length of the plate and extending under the entire set of dies or punches. This elevated portion of the bed-plate is provided with apertures *a''*, through which portions of the paper are forced by the dies or punches, and in which the dies or punches are received when they are brought to the termination of their downstroke. This perforated portion of the bed-plate consti-

tutes a stationary matrix for the movable dies or punches, and also serves as a bed or seat for the paper or other material to be punched.

The stripper E consists of a plate, which is perforated for the passage of the dies or punches and supported at one end by the spring-die or punch-carrying plate C. The spring-plate constituting the stripper is, by preference, provided at its rear end with a pair of arms, *e*, which are secured to the under side of the arms of the spring-plate C. The stripper-plate is bent or curled up and back along its front edge, as at *e'*, so as to extend over the front edge of the spring-plate which carries the dies or punches.

When the free end of the spring-die or punch-carrying plate is in its normal raised position, its front edge will bear against the under side of the bent lip *e'* of the stripper-plate, which latter will assume its normal position below the spring-plate to an extent sufficient to leave an open space between the two plates and above the matrix to an extent which will leave a clear space sufficient for the papers to be punched. When the free end of the spring-plate carrying the dies or punches is depressed, the stripper-plate will move simultaneously therewith until the stripper-plate is arrested by the resistance of the papers or material to be punched. The papers or other material will then be held upon the bed or matrix by the stripper-plate, while the descending dies or punches will pass through the stripper-plate and the material under the same and force portions of the paper or other material through the holes in the matrix. During such time as the stripper remains stationary and the spring-plate C and its dies or punches descend the spring-plate will be forced down against the resistance of a spring, F, which is arranged between the said spring-plate and the stripper. This spring consists of a flat bent spring, which is perforated so as to permit the dies or punches to work freely through it. After the paper or other material has been punched and the dies or punches have been relieved from the down pressure, the spring F, which during the downstroke of the dies has been compressed or forced against its inherent elasticity will, during the upward movement of the free end of the spring-plate C, serve to maintain the stripper down upon the paper or other material, so as to hold the same, and in effect strip it from the ascending dies or punches. This action of the spring F continues until the spring is permitted to regain its normal condition, at which moment the dies or punches will have cleared the paper or other material and their lower ends have been retracted within the openings through the stripper.

G indicates a gage, which is arranged to slide on the base or tablet A in position for determining the proper position of the paper or other material relatively to the punches, and also for assisting in bringing the edges

of a number of sheets flush with one another. This gage consists simply of an angular plate having a flat base portion, *g*, connected with the base A by a sliding connection—such as a couple of studs, *g'*, passing through a slot, *g''*, in the plate and secured in the base or tablet A. The remaining portion of the gage consists of an upturned end, *g'''*, rising from one end of the base portion, *g*, and adapted to stand against the edge or edges of the material which is to be punched.

What I claim as my invention is—

1. In an eyeletting-punch, the combination, with a stationary matrix, of a series of dies or punches, a spring-plate sustaining said dies or punches in position for engagement with the matrix and normally free from the latter, and a pivoted lever located in position to bear upon the upper ends of all of the dies or punches, whereby the latter may be simultaneously operated, substantially as described.

2. The combination, with a stationary matrix, of two or more dies or punches, B, a spring-plate sustaining the said dies or punches over the matrix, and normally free from the latter, and a pivoted lever located in position to bear upon the upper ends of all of the dies or punches, said dies or punches being secured to the said spring-plate, so as to extend both above and below the latter, substantially as described.

3. The combination, with the dies or punches B, and a spring-plate, C, sustaining said dies or punches, of a perforated stripper, E, secured to the said spring-plate, a spring interposed between the spring-plate and the stripper, and a lever, D, pivoted in position to engage the top ends of the said dies or punches, substantially as described.

4. The combination, with a bed-plate, A', perforated to form a matrix, of a spring-plate secured at one end to said bed-plate, a series of dies or punches attached to the free edge of the spring-plate in position to engage the perforations of the matrix, a perforated stripper, E, secured to the spring-plate at a point between the free and secured ends of said spring-plate, a perforated leaf-spring interposed between the spring-plate and stripper, and a pivoted lever bearing upon the upper ends of all of the said dies or punches, substantially as described.

5. The combination, with the spring-plate C, provided at its free edge with a set of dies or punches, of a bed-plate provided with elevated portions *a'* *a''*, the former providing a seat for the secured end of the spring-plate, and the latter being perforated to form a matrix for engagement with the said dies or punches, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

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