S. C. KINGMAN.

Machine for Punching the Eyes of Machine-Needles.

No. 162,175. Patented April 20, 1875.

Fig. 6.

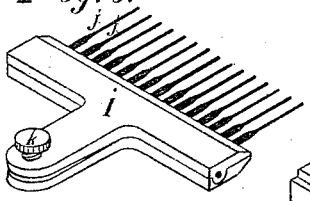


Fig. 1.

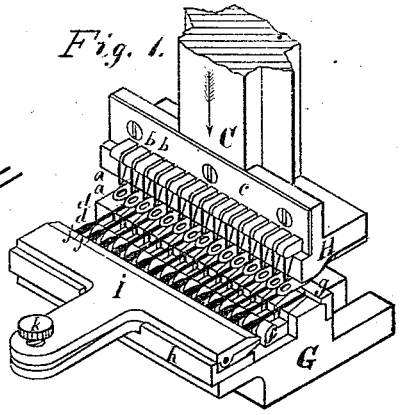


Fig. 7.

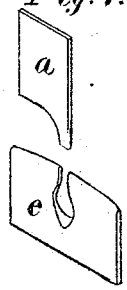


Fig. 8.

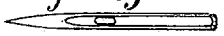


Fig. 4.

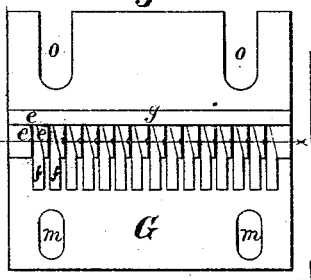


Fig. 5.

Fig. 2.

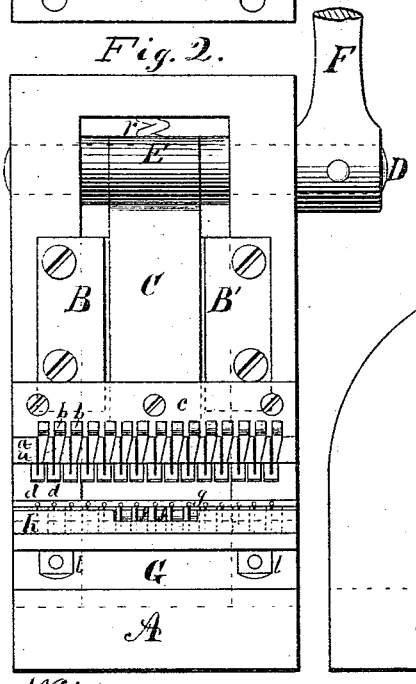
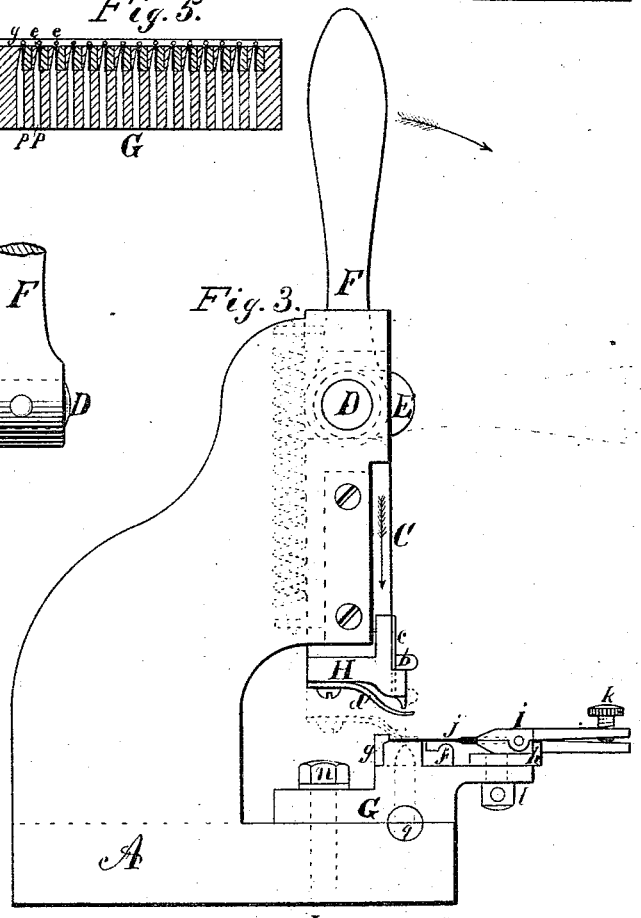


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL C. KINGMAN, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR PUNCHING THE EYES OF MACHINE-NEEDLES.

Specification forming part of Letters Patent No. **162,175**, dated April 20, 1875; application filed February 15, 1875.

To all whom it may concern:

Be it known that I, SAMUEL C. KINGMAN, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and Improved Machine for Punching the Eyes of Sewing-Machine Needles; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings making a part of this specification.

The usual manner of punching the eyes of sewing-machine needles has been for the operator to hold half a dozen needles, more or less, by the shanks of the same, between the thumb and fore-finger of the left hand, and place each one of the blades of the same successively on the die, which is directly under a single punch, and operate upon one needle only at the same time, thus making it not only a very slow but a very inaccurate process, for, as the grooves of each needle must necessarily be placed in the same plane, and in a proper position with respect to said punch anddie, great care, skill, and experience are required on the part of the operator to produce perfectly central and well-formed eyes, and avoid obliquely or otherwise badly punched eyes. And the object of my invention is to more accurately, and at the same time more rapidly punch the eyes in a given quantity of needles than by the process above described. And my improvement consists in controlling a series of two or more needles, and operating a series of two or more punches, in such a manner that the eyes of all of said needles may be punched simultaneously, and at the same time, with greater accuracy than by the method heretofore adopted.

I will now proceed to describe the construction and operation of my improved machine with reference to the accompanying drawings.

Similar letters of reference indicate corresponding parts.

Figure 1 is a perspective view of the series of punches and dies, and parts connected therewith, together with the needle-clamp and series of needles placed in position, for punching the eyes in said needles. Fig. 2 is a front elevation of my improved machine, with the needle-clamp and needles removed. Fig. 3 is a left-side elevation of the same, with the needle-clamp and needles placed in position for punching the eyes in said needles. Fig. 4 is a plan of the die-seat, with dies and keys in position on the same. Fig. 5 is a sectional view of the die-seat, dies, and keys through the line *x x*, Fig. 4. Fig. 6 is a detached perspective view of the needle-clamp, and series of needles secured by the same. Fig. 7 is an enlarged perspective view of a die and punch removed from the machine, in order to more clearly show the general construction of the same. Fig. 8 is an enlarged view of a portion of a sewing-machine needle, designed to show the form and relative position of the eye punched in the same.

A is the bed and frame of the machine. B B′ are adjustable gibs, fitted to recesses in the front edge of the upright frame A. C is a slide fitted to V-shaped grooves in said gibs. D is a shaft fitted to bearings in the upright frame. E is a cam secured to the shaft D. F is a lever secured to said shaft on the right side of the upright frame. G is the die-seat secured to the bed of the machine. H is the punch-seat secured to the slide C. *a a* are a series of punches fitted to grooves in the front side of the punch-seat H. *b b* are a series of tapering keys fitted to the grooves by the sides of the punches *a a*. *c* is a thin bar secured to the face of the punch-seat, and is designed to serve as a stop or gage for the top end of the series of punches. *d d* are a series of springs secured to the bottom side of the punch-seat. *e e* are a series of dies fitted to grooves on the top side of the die-seat G. *f f* are a series of tapering keys fitted to the grooves by the sides of the dies *e e*. *g* is a gage-bar secured to the rear side of the die-seat. *h* is an adjustable gage-bar secured to the front edge of the die-seat. *i* is a clamp for securing the series of needles *j j*. *k* is a screw passing through one of the levers of the clamp *i*. *l l* are screws passing through slots *m m*, near the front edge of the die-seat and into the gage-bar *h*, for securing the latter in a proper position with respect to the dies *e e*. *n n* are bolts passing through slots *o o*, near the rear end of the die-seat, and into the bed of the

machine, for the purpose of securing said die-seat in a proper position with respect to the punches *a a*. *p p* are a series of holes through the die-seat on the left side of the dies *e e*, to allow the punched chips to pass from said dies. *q* is a grooved opening in the bed, under the holes *p p* in the die-seat, for the purpose of receiving the punched chips as they pass from said holes. *r* is a spring for the purpose of raising the slide C, and parts connected therewith, after the operation of punching the eyes in the needles.

I will now describe the practical operation of my improved machine with reference to the accompanying drawings.

It is to be understood that this machine is to be used in connection with the compound needle-grooving machine for which Letters Patent were granted to me January 19, 1875, and the series of needles, together with the clamp *i*, to be taken from said grooving-machine, after the operation of grooving the blades in the same, and placed in position on the die-seat of this machine, by first inserting the points of the needles in the series of holes in the gage-bar *g*, and then placing the clamp on the adjustable gage *h*, bringing the edge of said clamp, which is opposite the needles, against the stop which is on the front edge of said gage, in the manner shown in the drawings, Figs. 1 and 3, the clamp and needles being held in this position by the left hand of the operator. The series of punches *a a* are now brought in contact with the needle-blades by means of the lever F and cam E, the former being pulled forward by the right hand of the operator in the direction indicated by the arrow drawn in front of the same, Fig. 3, until it reaches about the position shown in broken outlines of the same, Fig. 3, which causes the series of springs *d d* to reach the blades of the needles in advance of said punches, and press said needle-blades firmly upon their respective dies in the manner shown in broken outline, Fig. 3, while the points of said punches pass through the blades, thus piercing and forming the eyes in a series of needles simultaneously.

The lever F is now raised to its original position, the slide C and parts connected therewith being raised by the action of the spring *r*. As the springs *d d* reach the needle-blades in advance of the punches, and press firmly upon said blades during the operation of punching the eyes in the same, so also do said springs retain the pressure upon said blades until after the points of the punches have passed from the eyes which have been pierced by said punches, thus serving as a pull-off from the punches and preventing the blades from being raised with the same.

It will be noticed that as the several needles are taken from the hereinbefore-described machine and placed in their respective positions on the die-seat in this machine before removing them from the clamp, the grooves in said needles must necessarily be exactly at right angles with said clamp and in the same plane with the punches and dies, thus insuring perfectly central and well-formed eyes, and avoiding all liability of punching oblique or otherwise badly-punched eyes, by my improved method of punching the eyes of sewing-machine needles.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine for punching the eyes of sewing-machine needles, the series of two or more punches, *a a*, series of two or more tapering keys, *b b*, punch-seat H, series of two or more dies, *e e*, series of two or more tapering keys, *f f*, die-seat G, and adjustable gage-bar *h*, with the clamp *i*, all constructed, arranged, and operated for the purpose of punching the eyes of a series of two or more sewing-machine needles, substantially as and in the manner and for the object set forth.

2. In a machine for punching the eyes of sewing-machine needles, the series of two or more springs, *d d*, secured to the bottom of the reciprocating punch-seat H, in combination with the series of two or more needle-eye punches, *a a*, and tapering keys *b b*, for the purpose of pressing the series of two or more needles firmly upon the series of two or more dies, *e e*, during the operation of punching the eyes in said needles, constructed and operating substantially as specified.

3. In a machine for punching the eyes of sewing-machine needles, in combination with the series of two or more needle-eye punches, *a a*, and the series of two or more needle-eye dies, *e e*, the adjustable gage-bar *h*, secured to the front edge of the die-seat G, for the purpose of gaging the series of two or more needles and clamp, *i*, to a proper position with respect to the series of two or more dies, *e e*, and punches *a a*, during the operation of punching the eyes in said needles, substantially as specified.

4. The combination of the frame A, adjustable gibs B B′, slide C, shaft D, cam E, lever F, die-seat G, punch-seat H, series of two or more punches, *a a*, series of two or more tapering keys, *b b*, gage-plate *c*, series of two or more springs, *d d*, series of two or more dies, *e e*, series of two or more tapering keys, *f f*, gage-bar *g*, gage-bar *h*, with the clamp *i*, all constructed, arranged, and operated substantially as and for the object set forth.

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