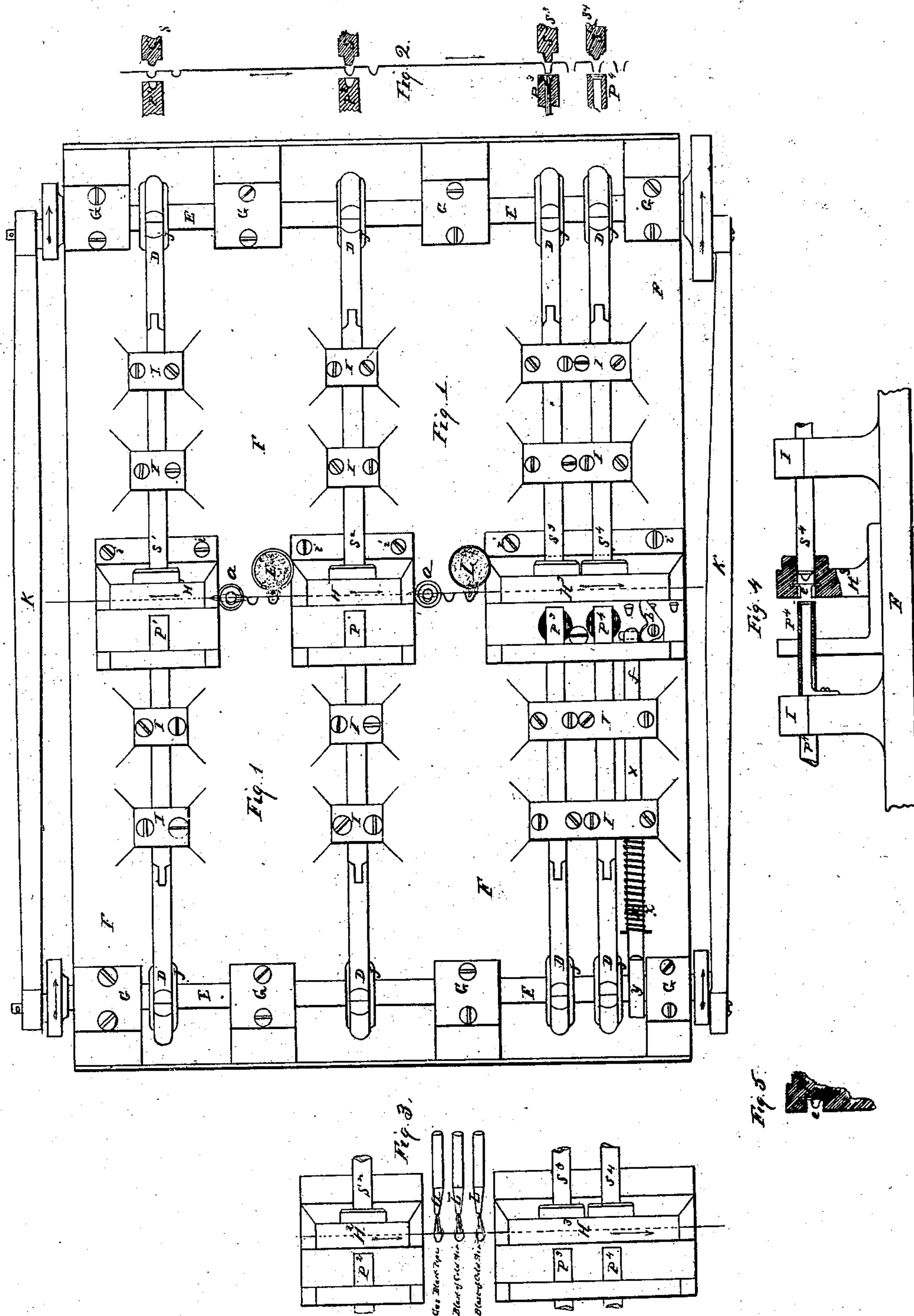


No. 92,185.

PATENTED JULY 6, 1869.

T. GARRICK.
MACHINE FOR MAKING EYELETS.



Witnesses.
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Letters Patent No. 92,185, dated July 6, 1869.

IMPROVED MACHINE FOR MAKING EYELETS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, THOMAS GARRICK, of the city and county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Eyelet-Making Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a plan of my improved machine.

Figure 2 is a detached view of the series of eyelet-making tools or instruments.

Figure 3 is a view of one kind of heating and cooling-apparatus, to be employed in said machine, for annealing-purposes.

Figure 4 is a side elevation and section of one of the sets of eyelet-making instruments, and the guide or clearer.

Figure 5 is a vertical section of said guide or clearer, showing the strip of stock therein.

Similar letters indicate corresponding parts in all the figures.

My invention consists—

First, of a combination of a set of punches or instruments, that operate simultaneously upon both sides of a strip of metal, for performing some one of the operations of making eyelets therefrom, with a compound guide and clearer, for guiding and holding the metal between said punches, for the performance of the operation, and for clearing the metal from the punches as the operation is completed.

Second, in combining and arranging, in an organized machine for making eyelets, several sets of punches, with their guides and clearers, as described, for performing successively the consecutive operations of raising, shaping, cutting out, and delivering eyelets in a complete and perfect form.

Thirdly, in combining, in an organized machine for making eyelets from a strip of metal, by a number of consecutive operations, a heating-apparatus and a cooling-apparatus, for annealing the strip of metal at any suitable stage of the operation, so that the several operations may follow each other in rapid succession, without interruption, and so that the eyelets may be finally delivered, perfectly annealed and ready for use.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same.

In the said drawings, F is the frame-work of the machine, upon which there is a number of stands, G G, &c., which afford bearings for the two driving-shafts E E, and other stands, I I, which afford bearings or guides, within which the eyelet-making punches or instruments, P¹ P² P³ P⁴ and S¹ S² S³ S⁴ slide accurately, to co-operate with each other, to make the eyelet from a strip of metal that is held between the said instruments, by means of the guides and clearers H¹ H² H³.

These guides are stands, which are secured upon the

face of the frame-work E, by set-screws i, or otherwise, so that they may be set or adjusted in position.

The upper portion of the stands H is formed with a recess, that will hold and admit of a free passage of the strip of stock between the two punches, as shown in figs. 4 and 5.

On one side, at e, of the said recess or guide, a groove, is cut parallel with the recess, and sufficiently wide to permit the raised portion of the stock to pass without hindrance, as shown in fig. 5, and upon each side of the said recess, the eyelet-making punches or instruments, P and S, enter the stand H, and meet the strip of stock upon opposite sides thereof, and shape the same with great accuracy and precision, and then, after so doing, withdraw from contact with the stock, as it is held firmly, and thereby clears from the punches by the guides H, and the stock is permitted to pass along, so as to present a fresh surface to be operated upon in like manner.

The office of the guide and clearer is, to hold the stock in position for the punches or eyelet-instruments to operate upon both sides of it simultaneously, and after such operation is completed, and when the punches are withdrawn, to hold the stock firmly in the same position, and by so doing, clear or free it from the punches.

The machine represented in the drawings has four sets of punches or instruments, but a greater or less number may be used, according to the nature of the operation, or the apportionment of the same among the number of punches, and the said punches are operated to effect the sliding movement by means of suitable cams or eccentrics, J, and connections D, from the two shafts E E, which are connected together, so that each shall move alike and at the same time, by means of the two connecting-rods K K, and cranks, at each end of the two shafts, or by means of an intermediate shaft and gears, or in any other suitable manner, to effect the purpose.

As represented in the said drawing, the first of the four sets of punches, P¹ S¹, meets upon the stock, and raises a cup-shape thereon, as shown in fig. 2.

The second set of punches, P² S², elongates the said cup-shape.

The third set of punches, P³ S³, forms the cup-shape into an eyelet-shape, and punches out the small closed end, and the fourth set of punches, P⁴ S⁴, cuts the eyelet from the strip of stock, and drops it, completed, into a receptacle.

The second, and perhaps the third of these operations, as described, may be dispensed with in making certain kinds of eyelets, as, for instance, the medium and larger sizes; or one or more intermediate drawing, or other operations, may be introduced in the making of the smaller or longer varieties.

In either event, however, in thus making eyelets by a number of consecutive operations, each tending

to develop the eyelet-shape more and more, it is not only desirable, but necessary, to anneal or soften the stock before each operation is performed, to facilitate the working of the same; and in order to dispense with the necessity of performing these several operations, above described, or those analogous thereto, in separate machines, and afterwards removing the stock from each machine, and plunging it first in fire and then in water, to anneal the same, I have essayed to accomplish the same result in the machine above described, at suitable stages of the operation, by combining a heating-apparatus and a cooling-apparatus with the machinery which shapes the eyelet, and by so doing, being enabled to combine several consecutive operations in the same machine, and this may be done in the manner shown in the drawings; that is to say, between the first and second sets of punches, I arrange a gas-burner, *a*, of a suitable kind for heating quickly; and beside this burner, I arrange a tank or receptacle, *L*, containing water, which may be delivered therefrom by an absorbent, (composed of wicking or other suitable material,) directly against the flat surface of the stock, the burner *a* serving as a heating-apparatus, and the water-tank *L* serving as a cooling-apparatus, conjointly to heat and cool, and thereby anneal the strip of stock between the two operations.

I would also place a similar heating and cooling-apparatus between the second and third sets of punches, so that the stock may be so completely annealed, just before the two final operations of cutting, as that the eyelet will require no after-process of annealing, as is usually the practice.

Instead of a jet of gas for a heating-apparatus, and a tank of water for a cooling-apparatus, a blast-flame from a gas blow-pipe, and a blast of cold air, each emanating from two pipes, arranged side by side, and delivered against the surface of the stock, may be used, as shown in fig. 3; or any other suitable and convenient means of heating and cooling the stock, with sufficient rapidity to continue the several operations without interruption, may be employed.

It will be apparent, that by this mode of performing several consecutive operations upon a strip of stock, it will be unequally contracted from its original length, as well as in the relative distance between any two sets of punches; and in order to compensate for this, and to provide for the complete and perfect performance of each operation in its turn, considering this difficulty, I feed the strip of stock through the ma-

chine, to the several sets of punches successively, by means of a vibrating finger, *b*, operated near the fourth or last set of punches, by means of the sliding bar *x* and cam *y*, on shaft *E*, which finger catches into the last perforation formed by cutting out the finished eyelet, and thus moves the stock along, by a movement, the extent of which is graduated by the actual contraction of the metal between any two of the formations; and I further provide for overcoming this difficulty, by making the last, as well as the preceding punches, a centring as well as a punching-instrument.

There should also be an appreciable difference of motion or lead in the position of the several cams or eccentrics upon the shafts *E*, so that no two sets of the tools would be operating, and thereby confine the stock at two places at the same time, which, being skilfully carried out, will remove this difficulty entirely.

Claims.

What I claim, and desire to secure by Letters Patent, is—

1. The combination and arrangement of a set of eyelet-forming instruments, which move and operate simultaneously upon both sides of a strip of metal, with a stationary slotted block to guide the metal, and prevent its removal by the withdrawal of the instruments, substantially as described.

2. The combination and arrangement, in an organized machine, of a number of sets of eyelet-forming instruments, with their guides, as described, in such a manner that the consecutive operations of raising, shaping, cutting out, and delivering eyelets in a complete form, may be performed in rapid succession, substantially as specified.

3. Combining, in an organized machine for making eyelets from a strip of metal, by a number of mechanical devices, operating consecutively, substantially as described, a heating-apparatus and a cooling-apparatus or device, for the purpose of annealing the strip of metal at any suitable stage of the operation, so that the successive operations may be performed uninterruptedly, and for the purpose of delivering the eyelets from the machine completely annealed and ready for use.

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Witnesses:

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