A. C. CAREY.

Machine for Reinforcing Stocking-Heels.

No. 162,028.

Patented April 13, 1875.

Fig. 1

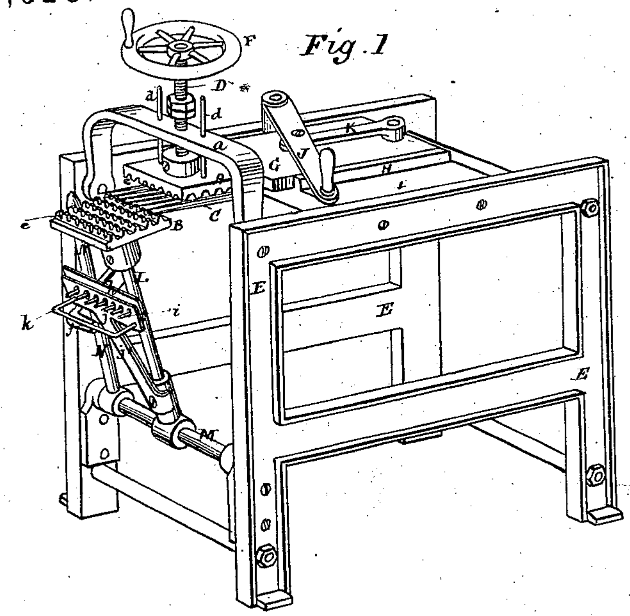
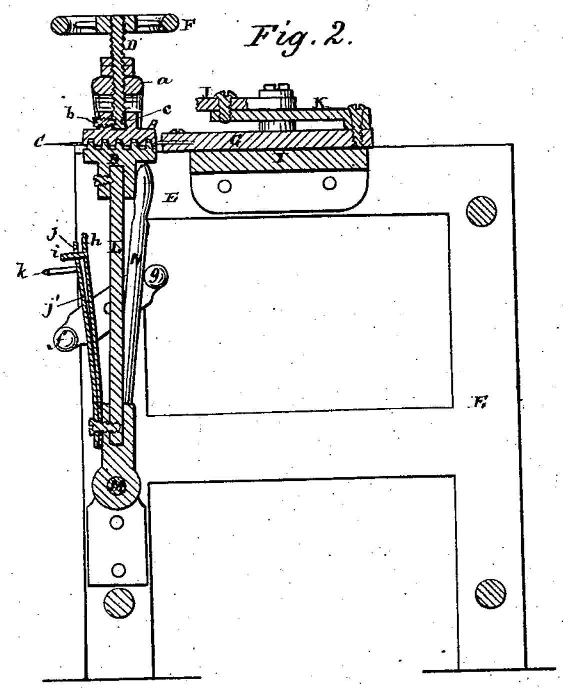


Fig. 2.



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UNITED STATES PATENT OFFICE.

AUGUSTUS C. CAREY, OF MALDEN, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR RE-ENFORCING STOCKING-HEELS.

Specification forming part of Letters Patent No. **162,028**, dated April 13, 1875; application filed June 15, 1874.

To all whom it may concern:

Be it known that I, AUGUSTUS C. CAREY, of Malden, Massachusetts, have invented certain new and useful Machinery for Running or Strengthening the Heels of Stockings, of which the following is a specification:

This invention is designed for the purpose of "running" the heels of stockings — that is to say, strengthening or re-enforcing the heels by the introduction therein of threads, which are drawn through and interwoven with the heels of the otherwise finished stocking.

The invention can best be explained and understood by reference to the accompanying drawing, in which—

Figure 1 is a perspective view, and Fig. 2 is a longitudinal vertical central section, of an organized machine embodying my invention.

The main portion of the machine consists of two crimping plates or jaws, A B, and a reciprocating gang of needles, C. The crimping-plates have their contiguous faces ribbed or corrugated transversely to the path of the needles, and are so arranged that the ribs on the one may fit into the recesses or spaces between the ribs on the other, so that when the two plates are brought together they will crimp the material previously put between them. The two plates are arranged to move toward or away from each other, as occasion demands—an arrangement which, in the present instance, is provided for by furnishing the upper crimping-plate with a screw stem or spindle, D, screwing through a bracket or bearing, *a*, on the main frame E of the machine, and fitting at its lower end in a socket in the crimper, where it is held so as to revolve independently of the crimper by a pin, *b*, the inner end of which enters an annular groove, *c*, in the lower end of the screw-spindle. Guide-rods *d*, passing up loosely through the bracket *a*, serve to assure the position of the crimping-plate during its up-and-down movements. The screw-spindle is operated by a hand-wheel, F, on its upper end. The ribbed crimping-plates are grooved longitudinally on their contiguous faces, so that when brought together they will form the longitudinal needle-passages *e*. The needles C are eye-pointed, and are located in the same plane with these passages, so that in their reciprocatory movement they may play back and forth between the plates and in these passages. The needles are fastened in a stock, G, which is adapted to slide back and forth in dovetailed ways H on a bed, I, fixed to main frame E. The stock is moved by suitable means, consisting, in this instance, of a vibratory handle, J, mounted at one end on a vertical stud or axis attached to main frame E, and connected to the stock by a rod, K, jointed at one end to the handle, and at the other end to the stock.

The stocking to be operated on is designed to be drawn over one of the crimping-plates—the lower one in this instance—and it is, therefore, necessary that the two plates should have the capacity of moving apart far enough to allow the stocking to be thus placed. This obviously may be effected in many ways. I prefer, however, to provide for it by mounting the lower plate on a radial standard, L, carried by a rock-shaft, M, mounted in bearings on frame E, and operated by handle N. The handle plays between stops *f g*, which limit its movement and the movement of the rock-shaft. When the handle is against stop *g* the lower crimper-plate will be directly under the upper one. When it rests against the stop *f*, then the lower crimper-plate will be carried out from under the upper one, and will be in position, as seen in Fig. 1, to allow the stocking to be drawn over it.

As accessory to the main parts of the machine above described, I provide means for giving to the needles the proper quantity of yarn or thread needed for running the heel of the stocking.

This device consists of a plate, *h*, carrying a series of pins, *i*, equal in number to the needles employed, and secured to the standard L. In front of and against this plate lies another plate, *j*, perforated to permit the pins to pass through it, and carried by a spring-strip or extension, *j'*, fastened to the supporting-arm of the pin-plate *h*, or to the standard L. A loop or handle, *k*, is provided for the perforated spring-plate, by means of which said plate may be drawn outwardly from the pin-plate, so as to clear entirely the pins. Upon release of the perforated plate it will spring back into its normal position.

The machine thus described operates as follows: The upper crimping-plate is raised, and the lower plate, by means of handle N, is moved or tilted to the front, in which position the stocking, previously turned inside out, is drawn over it, bringing the heel on top of the plate, preferably in such position that the "running" threads about to be inserted will extend longitudinally of the stocking. The crimping-plate is then returned to its normal position, and the upper plate is screwed down onto it, so as to crimp that part of the stocking held on the ribbed face of the lower crimping-plate. The needles are now advanced, passing through the elevated portions or ridges of the stocking-heel, until their eye-pointed extremities project through and out beyond the crimping-plates. The thread or yarn is now passed in succession through the eyes of the needles, from one side to the other of the series, the same thread serving for all the eyes. Then commencing at one end of the series—say at the left—the yarn between the first and second needles is drawn down and looped under the first pin *i*, the yarn between the second and third is drawn down and looped under the second pin *i*, and so on through the series. Thus with a continuous thread each needle will have sufficient yarn to enable it to run its own thread through the heel. The spring-plate *j* is now drawn outwardly, so as to disengage all the loops from the pins; and when this is done the needles are retracted through the heel, drawing with them the yarn, which thus becomes interwoven with and incorporated into the fabric of which the stocking-heel is composed. After the needles are fully drawn back, so as to clear the heel, the yarn is cut close to the eyes of the needles, and the stocking is removed.

I desire to remark, in conclusion, that, while I prefer to construct the crimping devices in the manner herein specified, yet it is obvious that their construction may be considerably varied without departure from my invention, so long as they are so formed as to crimp the fabric into ridges, and permit the passage of the needles through said ridges.

It is also obvious that the devices for providing a measured supply of yarn to each needle may be made adjustable, to allow this supply to be greater or less, as occasion demands.

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

1. An organized machine for running stocking-heels, comprising the combination, with crimping devices adapted to hold and crimp the fabric in ridges, as described, of a gang of reciprocating needles, moving in fixed guides in the plane of the needle-passages in the crimping devices, substantially as and for the purposes set forth.

2. The combination, with the reciprocating gang of needles, moving in fixed guideways, and the crimping devices, operating together as described, of means, substantially as specified, for obtaining a measured supply of thread for each needle.

3. In combination with the vertically-adjustable upper crimping-plate, the lower vibratory crimping-plate, its supporting-standard, and rock-shaft, substantially as shown and set forth.

4. In combination with the crimping-plates and reciprocating needles, the looping-pins and their supporting-plate, for operation substantially as shown and set forth.

5. In combination with the looping-pins and their supporting-plate, the perforated loop-disengaging spring-plate, arranged and operating substantially as shown and set forth.

In testimony whereof I have hereunto signed my name this 12th day of June, A. D. 1874.

AUGUSTUS C. CAREY.

Witnesses:
PETER THACHER,
PATRICK MCKENNA.