

THOMAS LILLEY.

Improvement in Machines for Making the Blanks for Sewing Machine Needles.
No. 124,276.

Patented March 5, 1872.

Fig. 1.

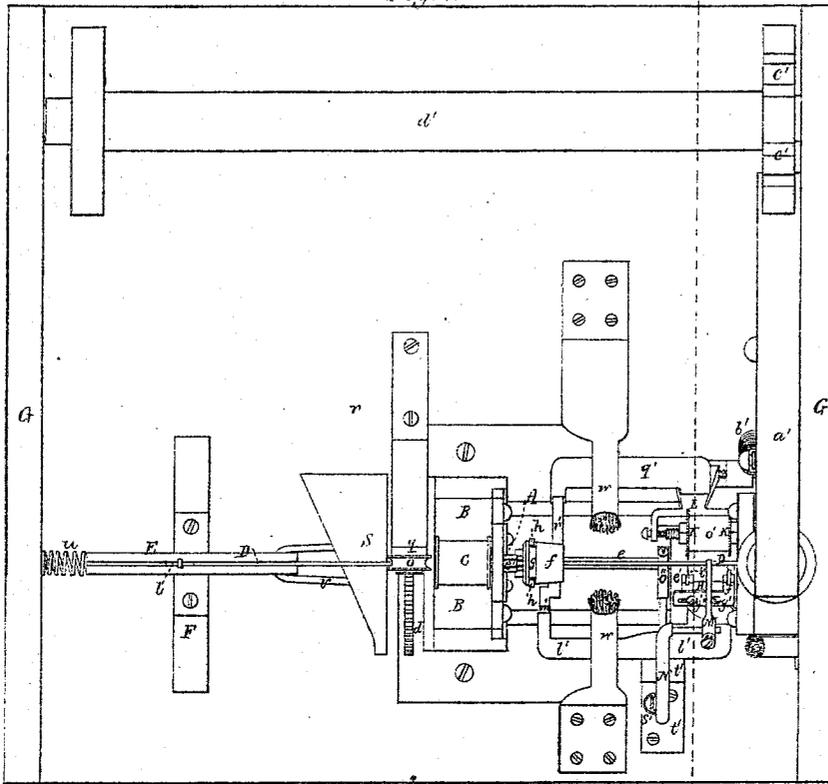
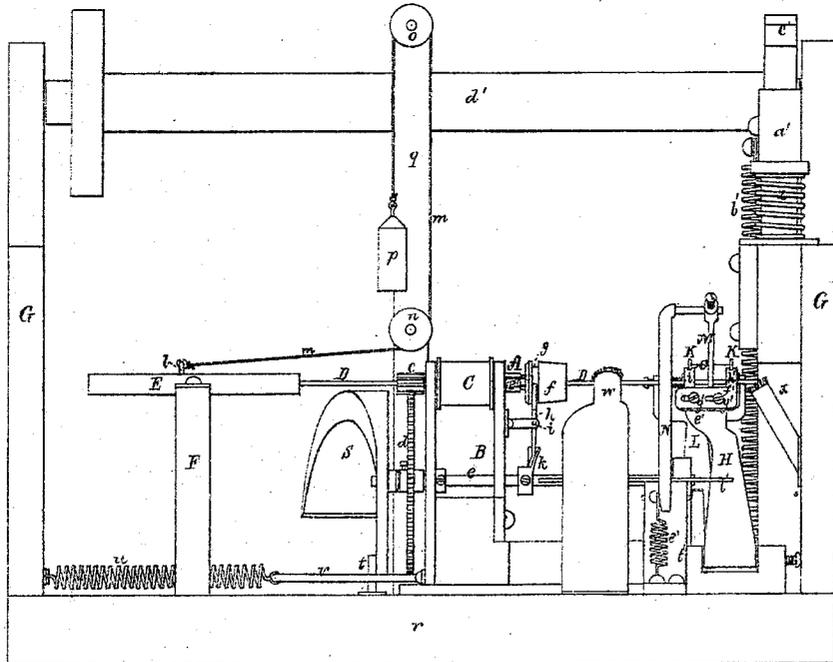


Fig. 2.



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Fig. 3.

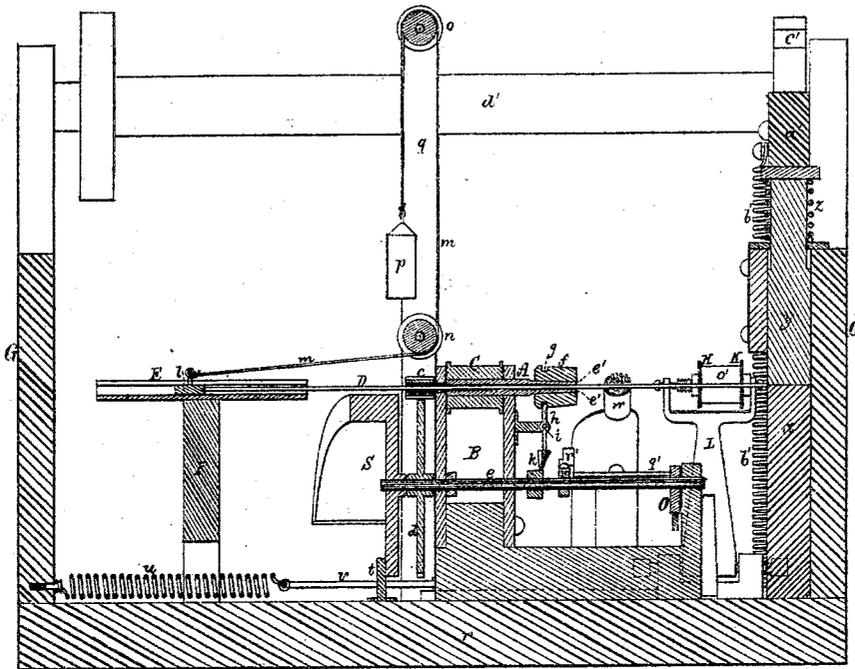


Fig. 6.

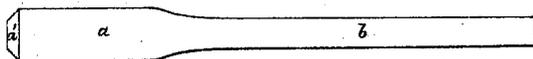
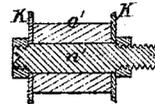


Fig. 7.



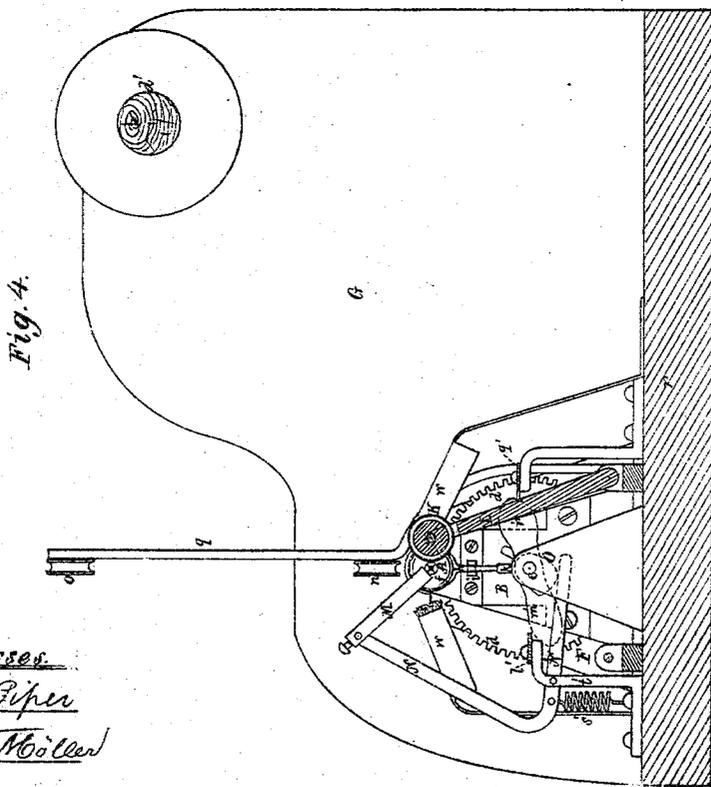
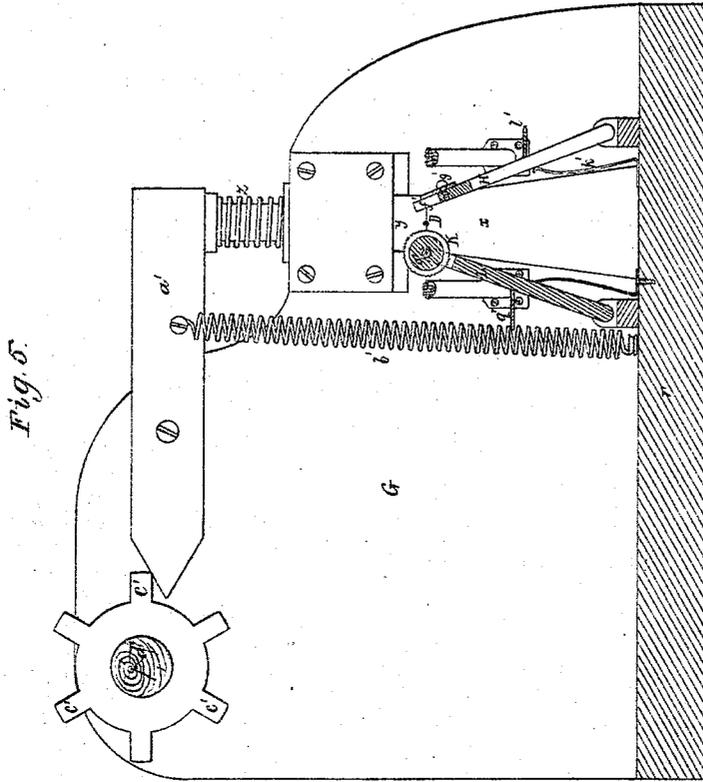
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UNITED STATES PATENT OFFICE.

THOMAS LILLEY, OF MILFORD, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MAKING THE BLANKS FOR SEWING-MACHINE NEEDLES.

Specification forming part of Letters Patent No. 124,276, dated March 5, 1872.

To all persons to whom these presents may come:

Be it known that I, THOMAS LILLEY, of Milford, of the county of Worcester and State of Massachusetts, have invented a new and useful Machine for Reducing Wire for its Conversion into Sewing-Machine Needles or various other tools; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view; Fig. 2, a front elevation; Fig. 3, a longitudinal section. Figs. 4 and 5 are transverse sections of it, one showing the mechanism to the right and the other that to the left of the plane of section.

In this machine, which is automatic, a piece of wire is heated, and, while heated, is advanced and is revolved between dies, and by such is reduced to the requisite taper or form, after which the wire is retracted from between the dies, is cut, or has a piece or needle-blank separated from it. Such needle-blank is formed with a tapering head, *a*, and a tapering shank, *b*, on an enlarged scale, as shown in Fig. 6. The taper of the head is as shown at *a'*.

In the drawing, A denotes a tubular arbor, supported in a sliding puppet or frame, B, and being provided with a drum or wheel, C, for reception of a driving-belt. This arbor carries at its rear end a pinion, *c*, which engages with a gear, *d*, fixed upon a horizontal or cam-shaft, *e*, arranged under and parallel with the tubular shaft or arbor A. The said arbor A, at its front end, is furnished with a series of elastic and tapering jaws, *e'*, provided with a jaw-closer, *f*. This jaw-closer is a conic frustum, having around it and in it a groove, *g*, to receive a forked lever, *h*, whose fulcrum *i* is properly supported by the carriage or frame B. A duplex cam or wiper, *k*, is fixed on the shaft *e*, and, while being revolved, serves, at proper times, to move the frustum or jaw-closer either backward or forward, in order to cause the series of jaws to grasp the wire or be released from it. The piece of wire to be reduced is shown at D as extended through the tubular arbor A and into a stationary tubular guide, E, supported by a standard, F, such guide being slotted on its top throughout its length. There is within the guide a slider or propeller, *l*, which is fastened to a cord, *m*. The said cord is extended around two pulleys, *n o*, and pro-

vided with a weight, *p*, all being arranged as shown. The grooved wheels or pulleys *n o* are supported on journals extended from a standard, *g*, erected on the bed *r* of the main frame G of the machine. The cam-shaft *e* carries a cam-wheel, S, which bears against a stationary stud, *t*, erected on the bed *r*, all being represented. Furthermore, a retraction spring, *u*, is fastened to the frame G and to a yoke or projection, *v*, extended from the carriage or frame B. The cam-wheel serves to effect the advancement of the carriage, the spring being to retract it at the proper times. There is arranged in front of the arbor A a means of heating the wire, such being one or more burners or blow-pipes, they being shown at *w w*. There are also arranged in advance of the said arbor the dies *x y*, one being stationary and the other movable. The movable die *y* is provided with an elevating-spring, *z*, to raise it off the stationary die. A trip-hammer, *a'*, rests on the head of the movable-die shank, and is provided with a depressing-spring, *b'*, arranged as shown. A series of wipers or cams, *c'*, applied to a rotary-shaft, *d'*, serves, when revolved, to effect with great rapidity repeated elevations of the hammer, it being as often thrown down by its springs. After the wire may have been reduced by being inserted and revolved between the dies and subjected to this operation, it is, or will next be, withdrawn from the dies, so as to come between a movable duplex rest, H, and two cutter-wheels, K K, which being moved up to the wire and the said wheels being in revolution, they will be caused to cut from it a needle-blank, not only of the length required, but form it with the taper to its head, as shown at *a'* in Fig. 6. The movable duplex rest H is composed of two parts, *e' f'*, formed as represented, the portion *f'* being applied to the part *e'* by clamp-screws *g' g'* going through slots in said part *f'*, the same being to enable the bearing part *a'* of the portion *f'* to be moved nearer to or further from the bearing part *e'* of the portion *e'*, as occasion may require, to adapt the said parts *h' i'* to the two cutting-wheels, which, placed on one shaft, are adjustable in distance apart. The portion *e'* of the said rest H is pivoted at its foot, and has a retraction spring, *k'*, applied to it, the same being so as to enable the said duplex rest to be moved toward and away from the wire on the cutting-wheels, the

forward movement of the rest being effected by a lever, *l'*, arranged as shown. A cam, *m'*, projecting from the cam-shaft *e* serves to effect the movement of the lever necessary to advance the duplex rest, whose return movement will be caused by the spring *k'*. The two cutter-wheels *K K*, with the shaft and its carrier, are shown in vertical section in Fig. 7. The said wheels are to be so applied to their shaft *n'* as to be capable of being adjusted thereon nearer to or further apart, according as the blank to be cut from the wire may vary in length, such shaft being provided with a driving-pulley, *o'*, arranged between the wheels. An endless belt, from a proper motor suitably arranged, is to run about such pulley, in order to cause the cutter-wheels to be revolved. The cutter-wheel carrier *L*, pivoted at its foot to the frame of the machine, is advanced, (so as to move the cutter-wheels toward the rest *H*) by means of a lever, *q'*, arranged as shown, and a cam or wiper, *r'*, fixed upon the shaft *e*. The next portion of the mechanism to be described is the gauge for stopping the wire on its being next shot forward. This gauge is shown at *M* as projected from the upper arm of a bent lever, *N*, arranged as shown. A cam, *O*, fixed on the cam-shaft *e* serves, while the shaft is in revolution, to move the said lever so as to cause the gauge to be moved inward and there held still for a while, or until the wire may have been advanced up to and estopped by it. The rearward movement of the gauge is effected by a spring, *S'*, applied to the lever *N* and its supporting-standard *l'*. Immediately after a blank may have been severed from the wire, the jaw-closer is to be moved so as to release the wire from the hold of the jaws and allow it to be shot forward up to the gauge. The advance of the wire will be produced by the gravitating weight and slides hereinbefore described; and after such advance may have taken place the

jaw-closer is to be moved so as to close the jaws upon the wire. After this the wire is to be moved up between the dies, and, after having been properly reduced or tapered by them, it is to be drawn backward from them and subjected to the operations of the cutter-wheels, as hereinbefore described.

The essential elements of the combination constituting the above-described automatic machine may be stated as follows:

1. The mechanism for holding and revolving the wire, such consisting of the tubular arbor, its jaws, and driving-pulley, and the mechanism, as described, for operating the jaws.
2. The mechanism for heating the wire, such being one or more burners, or their equivalents.
3. The mechanism for reducing the wire, such consisting of the dies and the mechanism for operating the upper of them.
4. The duplex rest *H* and mechanism for operating it, as described.
5. The two cutter-wheels *K K* and their operative mechanism.
6. The mechanism for supporting and advancing the wire, the same consisting of the slitted tube *E*, the slider *l* and its actuating-cord *m*, weight *p*, and support-wheels *n o*.
7. The gauge *M* and mechanism for operating it, as set forth, the said elements being arranged, constructed, and applied together, substantially in manner and so as to operate essentially as and for the purpose as set forth.

I claim as my invention—

The automatic combination or machine, substantially as described, composed of the mechanical elements as herein last enumerated, all being to operate essentially as and for the object or purposes as specified.

THOMAS LILLEY.

Witnesses:

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J. R. SNOW.