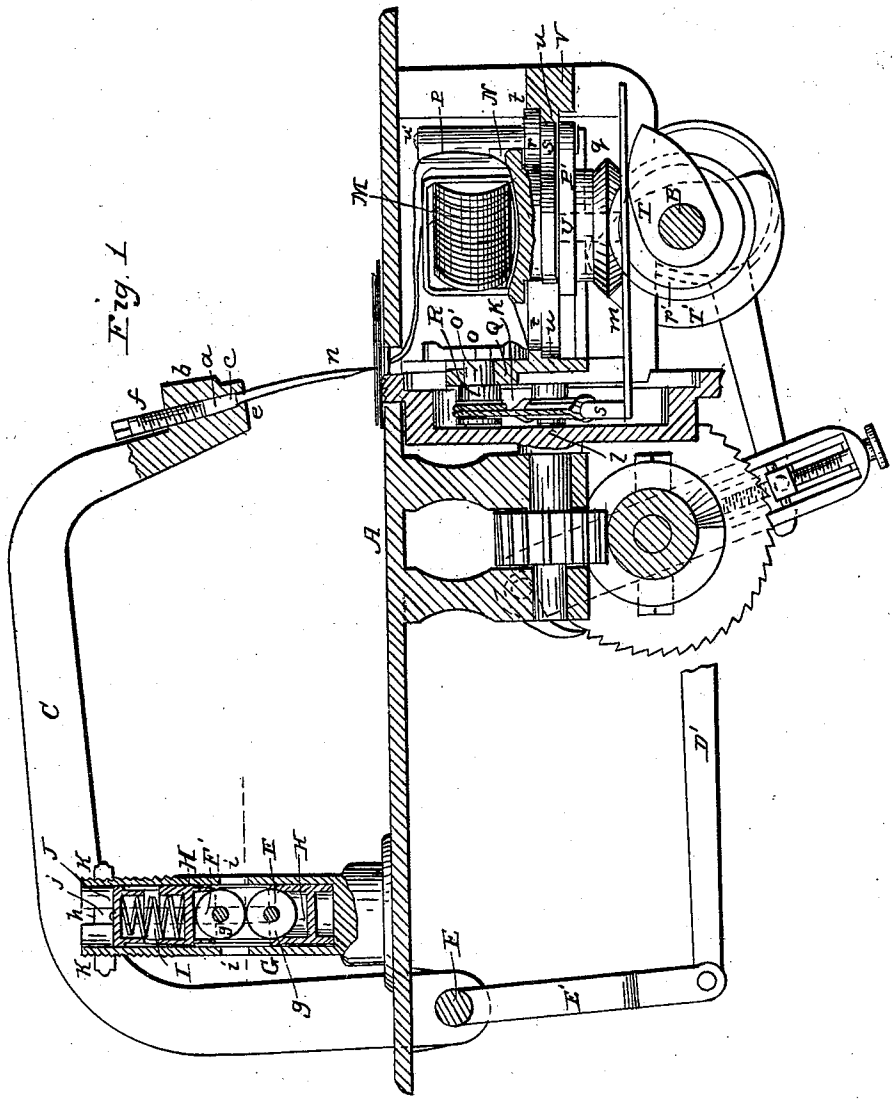
3 Sheets—Sheet 1.

A. LEYDEN.

Sewing Machine.

No. 28,877.

Patented June 26, 1860.



Witness:

R. S. Spencer

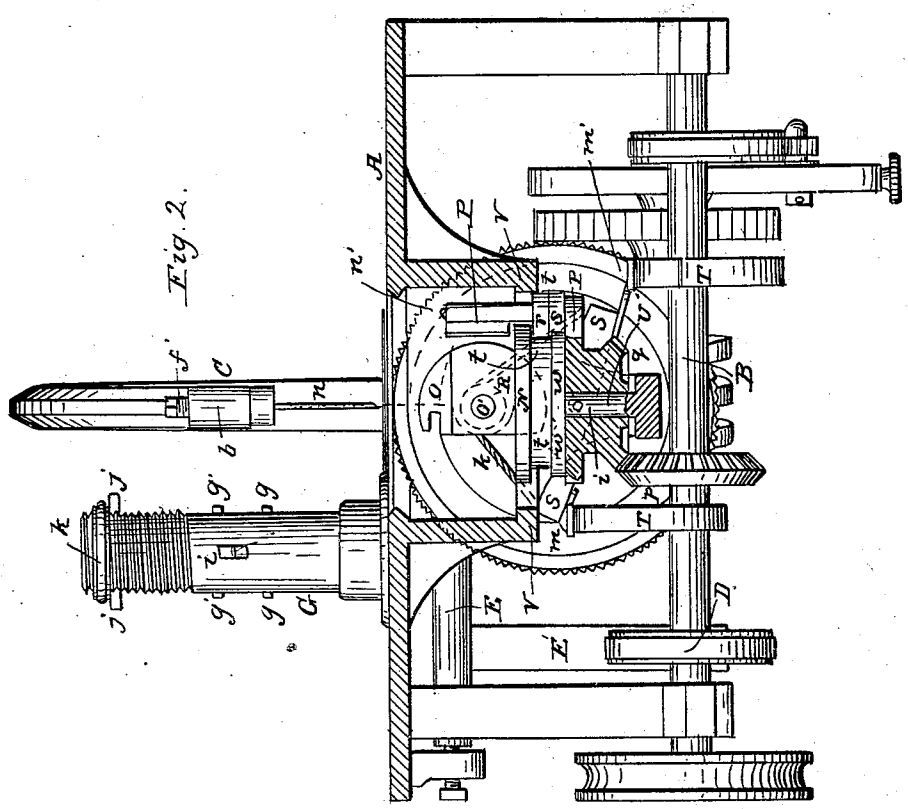
3 Sheets—Sheet 2.

A. LEYDEN.

Sewing Machine.

No. 28,877. Patented June 26, 1860.

Fig. 2.



Witness
R. S. Spencer

3 Sheets—Sheet 3.

A. LEYDEN.

Sewing Machine.

No. 28,877. Patented June 26, 1860.

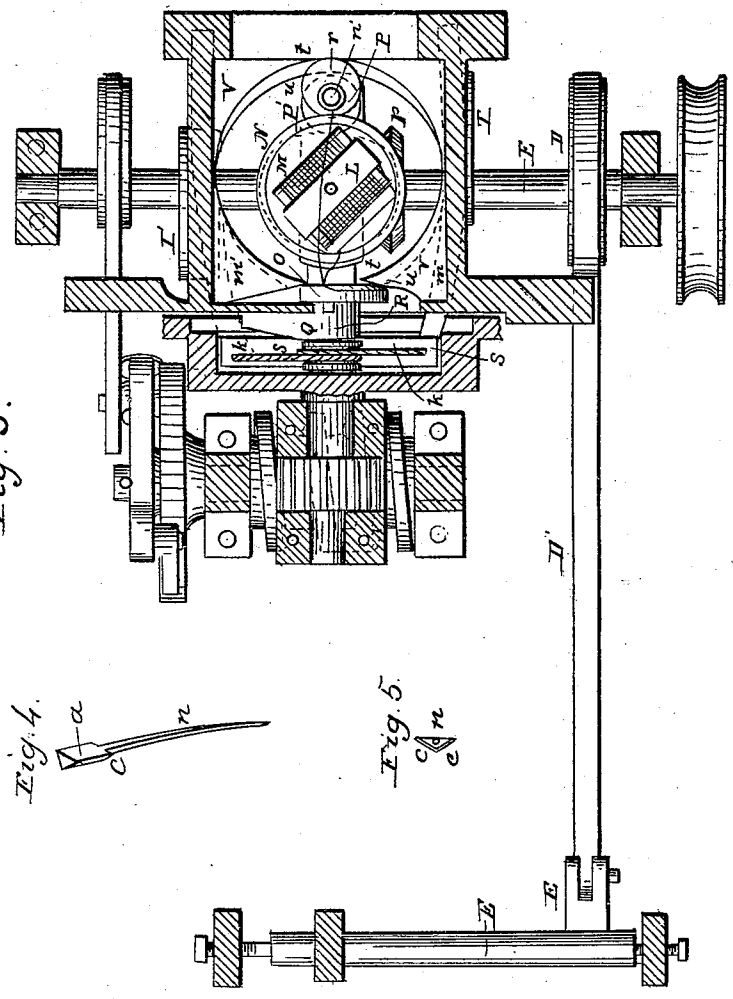


Fig. 3.

Fig. 4.

Fig. 5.

Witnesses.

R. S. Spencer

UNITED STATES PATENT OFFICE.

AUSTIN LEYDEN, OF ATLANTA, GEORGIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **28,877**, dated June 26, 1860.

To all whom it may concern:

Be it known that I, AUSTIN LEYDEN, of Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Sewing-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, forming part of this specification, in which—

Figures 1 and 2 are vertical sections at right angles to each other of those parts of a sewing-machine which are necessary to illustrate my improvements. Fig. 3 is a horizontal section of the same below the bed. Fig. 4 is a perspective view of the needle. Fig. 5 is an end view of the needle, looking toward the point.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in an improved mode of operating what I term the "swivel-hook," employed in combination with a spool applied as described and claimed in my Letters Patent dated January 3, 1860.

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

A is the bed of the machine, on which the material to be sewed is laid.

B is the main shaft, arranged in bearings in hangers below the bed.

C is the needle-arm, carrying the perforating-needle *n*, secured to a rock-shaft, E, which is arranged between centers below the bed, and which derives the motion necessary to operate the needle from an eccentric, D, on the main shaft B, and a rod, D′, connected to its arm E′. The perforating-needle *n* has a head whose transverse section is of the form of an isosceles triangle, one side, *a*, of the said head being at the side of the needle which works next to the looper or other device employed to extend the loop, and being continued up in a straight line from the body of the needle, and the other two sides being formed with a shoulder or projection, *c*, as represented in Figs. 4 and 5. The needle-arm C or other needle-carrier is made with a projection, *b*, (see Fig. 1,) on its front or one side, and with an opening right through such projection, through which the needle is inserted from the top, the lower part of the said opening being of a form for the taper triangular head of the needle to fit snugly into, and having a shoulder, *e*, near the bottom, for the shoulder *c* of the needle to rest upon, but having its upper part larger than the said head and tapped to receive a set-screw, *f*, which screws into it from the top and screws down upon the head of the needle for the purpose of fastening it securely and tightly in its place. Instead of the head of the needle and the opening provided in the carrier to receive it being of isosceles triangular form in their transverse section, they may be of irregular or any other triangular form not equilateral; or they may be of the form of a segment of a circle or ellipse, either of which forms will prevent the head entering the opening in any other but the correct position—that is to say, with the straight flat side *a* toward the looper-shuttle or other device for extending the loop. If the needle-head and lower part of the opening in the carrier be made taper, the shoulder *c* will be unnecessary, and if the head and opening be shouldered, the taper may be unnecessary.

F F′ are two cylindrical rollers, which are employed to produce the tension on the thread which is supplied to the needle *n*, the thread passing between the said rollers, and the said rollers being fitted to turn easily on separate axles *g g′*, arranged one above the other in two separate boxes, H H′, which are fitted into the interior of a hollow cylindrical standard, G. The lower box, H, rests at the bottom of the standard G, and the upper one, H′, which is free to slide up and down, rests upon its roller F′, which rests upon the thread. The boxes H H′ are prevented turning in the standard by the axles *g g′* being extended through slots *h h* in opposite sides of the standard. The thread, which is represented in red color, passes on its way between the rollers to the needle through narrow slots *i i*, provided in the standard G, and is subject to the pressure of the weight of the roller F′ and its box H′, and to the additional pressure produced upon the said box by a spiral spring, I, which is applied within the standard G and held down upon the said box by means of a saddle, J, and a screwed collar, K, the said saddle resting upon the spring within the standard, and having lugs *j j* on its sides projecting through the upper parts of the slots *h h*, and the said screwed collar fitting to a screw-thread on the exterior

of the standard and bearing on the lugs *j j* of the box H′. By screwing down the collar K on the standard it is made to press down the saddle J upon the spring I, and so made to increase the pressure on the top roller, F, and so to give an increased draft and tension to the thread between the rollers and the needle, and by screwing up the said collar the opposite effect is produced. The tension is thus produced without any rubbing friction on the thread, the rollers turning freely, and the pressure on the upper roller, being of a yielding character, allows it to rise and fall in case of any uneven places in the thread presenting themselves; but as good sewing-twist is of very nearly uniform thickness, such rise and fall of the rollers will never be such as to materially affect the pressure produced by the spring J on the roller and the tension thereby produced upon the thread; and the collar K, when once adjusted to produce the requisite tension for a thread of given size, will not require to be altered while thread of that size is used in the machine, and the thread from any number of spools may be used up without any adjustment for tension. To introduce the thread between the rollers, the projecting ends of the axle *g′* are taken hold of by the operator to raise up the top roller, F, and the thread is passed directly through the two slots *i i* of the standard G. The spool may be arranged in any convenient position in such manner that it may turn freely. A spring may be applied to press the bottom roller upward instead of or as well as one to press the top roller downward. This tension apparatus may be applied to the under thread of many kinds of sewing-machines as well as to the upper one.

L is a spool-holder containing the spool M, which supplies the locking-thread, constructed and applied, in combination with a stationary bed, N, below the cloth-bed A, in the manner covered by my Letters Patent dated January 3, 1860.

O is the looper for taking the thread from the needle and so extending it in the form of a loop that it will be taken by the swivel-hook P, which passes it over the spool-holder L. The looper and swivel-hook are constructed and applied substantially as described in the specification of my before-mentioned Letters Patent, but operated by different means, which I will now proceed to describe. The looper O is attached securely to or made in the same piece with a short horizontal shaft, O′, which is fitted to a bearing in a stationary upright plate, Q, below the cloth-bed A, and at one side of the spool-holder bed N, and the said shaft O′ has secured to it or formed upon it a pulley, R, to which is secured the middle of a cord or chain, *k*, preferably a chain, and round which one or more turns of the said cord or chain are taken. The ends of this cord or chain are secured to opposite arms of a short rocking beam, S, which is arranged to rock upon a fixed stud, *l*, which is secured in the plate Q below the looper-shaft O′. The arms of the said rocking beam S are bent in such form, as shown at *m m′*, as to project over two cams, T and T′, on the main shaft B, the axis of which is parallel with the plane of oscillation of the looper and of the rocking beam. These cams by their revolution with the main shaft are caused to act upon the parts *m m′* of the arms of the rocking beam in such manner as to give the said beam an intermittent oscillating motion, by which the said beam is made to unwind the cord from and wind it on the pulley R in opposite directions alternately, and so by turning the said pulley back and forth to give the necessary oscillating movement to the looper. This movement of the loopers depends, of course, on the form of the cams T T′, which may be varied to suit loopers of different kinds, as this method of operation is not limited to the kind of looper represented, but may be adapted to the operation of any kind of oscillating looper, whether it be employed simply to extend the loop of the thread which passes through the cloth or to carry a locking-thread through the said loop.

The swivel-hook P is fitted to turn on an upright spindle, *n′*, which is caused to revolve horizontally round the stationary spool-holder bed N by its being secured to a revolving carrier, P′, which is fitted to the fixed upright stud U, which supports the said bed, and which derives motion from the main shaft B through a pair of miter-gears, *p q*, as described in the specification of my before-mentioned Letters Patent; but the movement of the hook P upon the spindle *n′* to bring it to a position to catch and throw off the loops is effected by its having secured to its hollow stem, below the bed N, two eccentrics, *r* and *s*, arranged one below the other to revolve between eccentric-ways *t* and *u*, that are formed between the under part of the bed N and a stationary plate, V, which surrounds the said bed.

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

Giving the swivel-hook the necessary movement upon the spindle *n*, which carries it round the spool-carrier bed N, by means of two eccentrics, *r* and *s*, attached to its hollow stem and working in eccentric-ways *t* and *u*, surrounding the said bed N, substantially as herein described.

AUSTIN LEYDEN.

Witnesses:

ELIAS HOLCOMBE,

T. L. THOMAS.