G. W. Stedman

Sewing Machine.

No. 12074 Patented Dec. 12, 1854.

Fig: 1

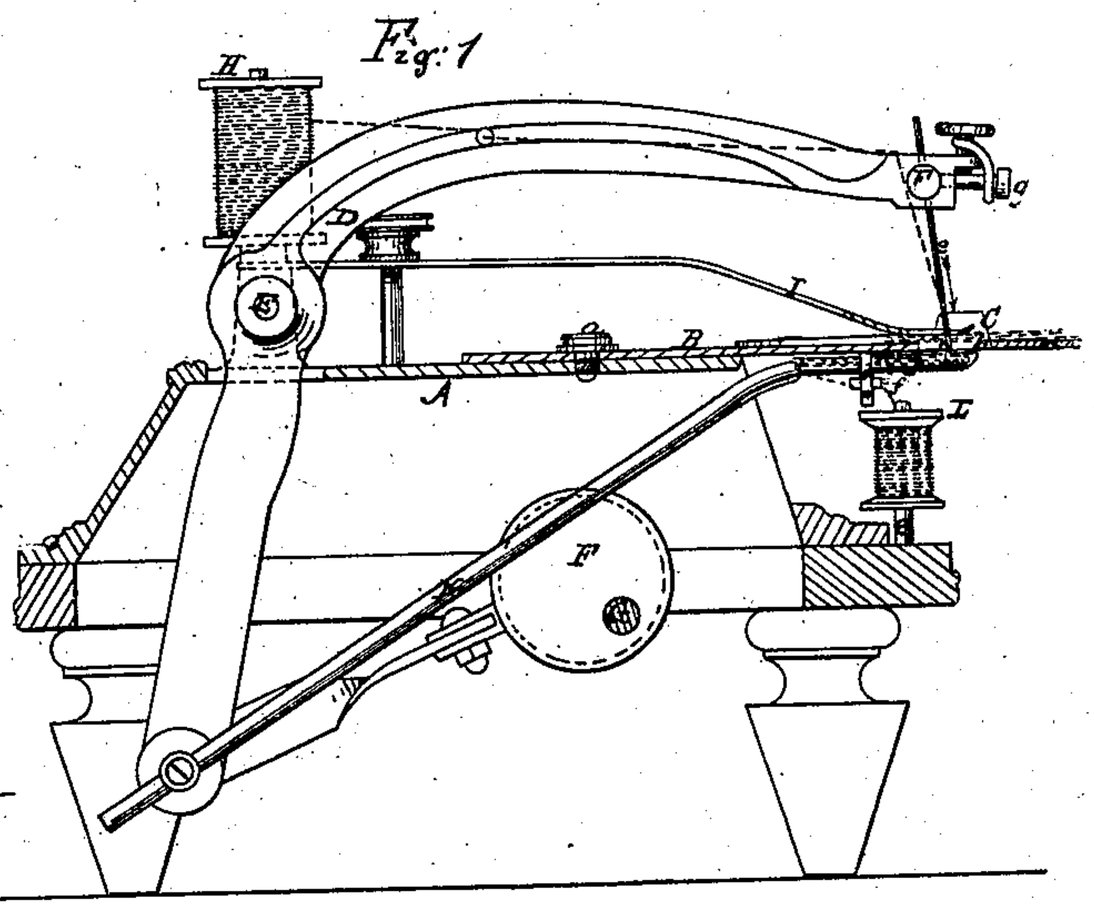


Fig: 5

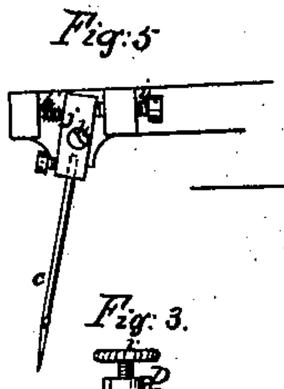


Fig: 3.

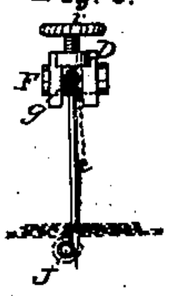


Fig: 4.

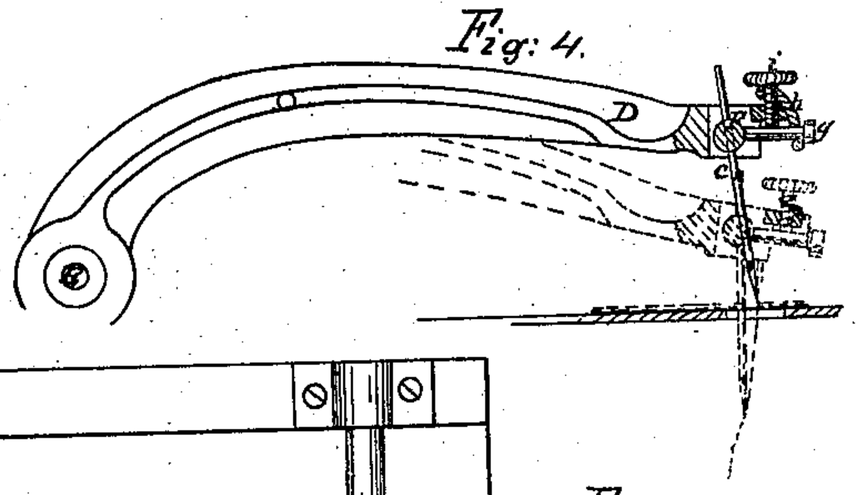
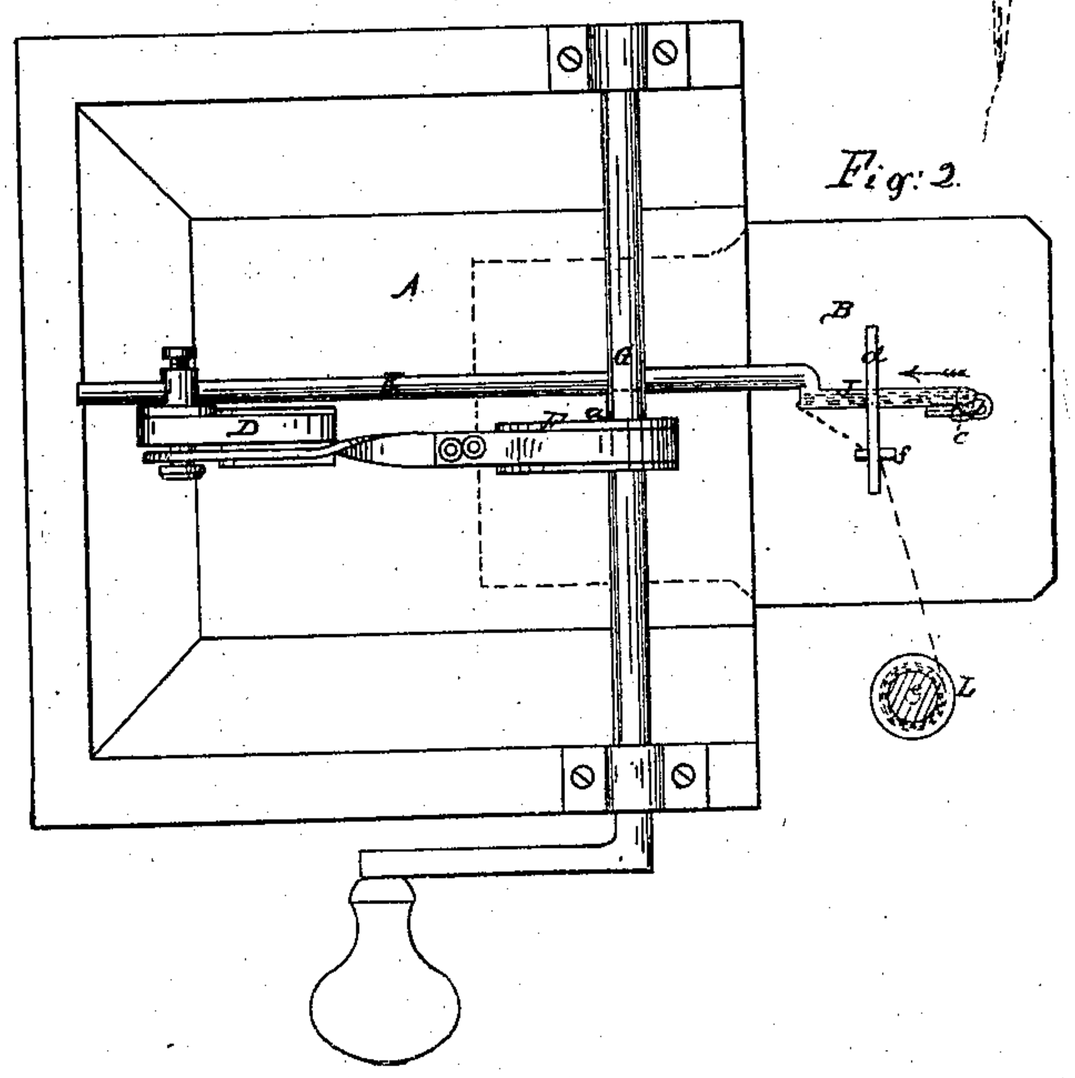


Fig: 2.



UNITED STATES PATENT OFFICE.

GEORGE W. STEDMAN, OF VIENNA, NEW JERSEY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **12,074**, dated December 12, 1854.

To all whom it may concern:

Be it known that I, GEORGE W. STEDMAN, of Vienna, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Machinery for Sewing Cloth; 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—

Figure 1 is a longitudinal vertical section of a sewing-machine with my improvements. Fig. 2 is an inverted plan of the same. Fig. 3 is a front view of the needle and tube which carries the locking-thread. Fig. 4 is a side view of the needle-arm, showing the method in which the needle operates for the purpose of feeding the cloth. Fig. 5 is a side view of a modified arrangement of the needle.

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

This invention consists in a certain new and simple device employed in combination with a needle to effect the interlacing of two threads, one of which is protruded through the cloth by a needle in the same manner as in most of the sewing-machines now in use, and the other of which passes through the said loop and forms another loop, through which the needle and the first thread pass, thus forming a double series of interlacing loops on one side of the cloth.

A is the bed-plate or table, to which all the parts of the machine are attached.

B is a plate secured at its back part to the table A by a screw-bolt, *a*, which serves as a pivot, upon which it is movable when desired. This plate B receives upon the cloth or material to be sewed. It contains the slot *b*, through which the needle works, and has attached to it the gage C, which guides the cloth.

D is the needle-arm, which is attached to a small rock-shaft, E, working in bearings upon the bed-plate, and which receives the usual motion to carry the needle *c* through the cloth or other material laid upon the plate B from an eccentric, F, on the main shaft G, connected with it at the opposite extremity to where the needle *c* is attached.

H is the spool which supplies the needle with thread.

I is a spring-presser, which confines the cloth to the plate B during the sewing.

J is a short tube, which is open from end to end, and arranged to work under the plate B, close to the needle and opposite to one side of the eye thereof, in a similar manner to the shuttle commonly employed. This tube works in a guide, *d*, under the plate B, and is connected by a rod, K, at its rear end with that part of the needle-arm below the rock-shaft E, so that it will work back and forth as the needle works up and down, always retreating from the needle as the latter enters the cloth, and advancing toward it when it is being retracted from the cloth. This tube is so formed at the front end (see Fig. 2) as to throw its point toward the needle, so that it may not fail to pass through the loop in the needle-thread (which thread is shown in blue color) left by the needle on the under side of the cloth. This tube has a thread, which, for the sake of distinction, I will call the "tube-thread," (shown in red color,) passing through it from a spool, L, placed on an upright pivot, *e*, entering it at the back and leaving it at the front end. This thread before it enters the tube passes through a hole in the guide-piece *d*, in which friction is produced upon it by a plug, *f*, of leather or other material. Every time the needle passes through the cloth and leaves a loop, the tube enters it during the retraction of the needle, and the thread protruding from the point of the tube lies along that side of the tube which is next to the needle. By the time the tube has advanced as far as it is allowed, the needle, having been retracted to its greatest distance from the cloth, has drawn its loop tight around the tube and that part of the tube-thread lying by the side of the tube, and as the tube recedes that portion of its thread which has been protruded through the loop on the needle-thread is caused to form a loop, into which the needle enters as it makes its next descent through the cloth simultaneously with the retraction of the tube. As the tube is retracted, it leaves its own loop in the loop of the needle-thread and draws it tight around the needle, so that when the needle is withdrawn from the cloth the new loop in the needle-thread is left protruding through and tightly grasped by the above-described loop of the tube-thread. The loop of the needle-thread, though drawn tight around the tube on the first ascent of the needle after leaving the loop, does not receive its final tightening till the

succeeding ascent of the needle. It will be understood by the foregoing description that the tube-thread is left in the form of a loop through a loop in the needle-thread, and then receives a loop of the needle-thread, and therefore the action of the needle and tube differs entirely from the action of the needle and shuttle, which the tube appears to resemble. In Figs. 1, 2, and 3 of the drawings the tube is supposed to be just withdrawn from the loop of the needle-thread and the needle to be just entering the loop in the tube-thread.

The above operation can be effected with a needle attached to the arm in the usual way, and is entirely independent of the attachment and operation of the needle to feed the cloth, which I am about to describe, and is particularly illustrated in Fig. 4, though also shown in Figs. 1 and 3. F in those figures represents a roller or short rock-shaft fitted with journals to transverse bearings in the end of the needle-arm D. This roller carries the needle *c*, which is inserted through it and secured transversely to its axis, and it carries also a stud or screw, *g*, which is to be connected by a spring, *h*, of india-rubber or other elastic substance, with a screw, *i*, screwed into the arm, or with some part of the arm, in such a way as to throw the stud *g* against the front of the screw *i*, or some fixed part of the arm, to hold the needle in a position tangential or otherwise oblique to an arc described from the pivot E. The force applied to the needle to drive it through the cloth tends to push the stud *g* hard up against the screw *i* or other stop provided for the purpose, and thus make a rigid connection with the arm. The point or any part of the length of the needle while fixed relatively to the arm describes an arc from the center E, as indicated by the dotted arc in Fig. 4; but the point describes a larger arc than any other part. Consequently as the needle moves through the cloth the cloth is drawn toward the center E to the extent indicated by the change of position of the part in contact with the cloth in black and red outline. The strength of the spring *h* must be insufficient to overcome the friction of the presser I, or its equivalent, upon the cloth, and then, as the needle is being withdrawn from the cloth, the roller F will move in its bearings to allow every part of the needle to move in the same arc, and thus prevent the cloth being moved back; but as soon as the needle leaves the cloth the spring will throw it to the tangential or oblique position first described. The length of the movement of the cloth may be varied to alter the length of stitch by means of the screw *i*, by which it is brought nearer to or farther from the arc. The feed may be given in any direction by placing the needle obliquely in that direction to the path in which it moves, whether it be attached to an arm or to a straight bar moving in a right line. The modification of this arrangement of the needle in Fig. 5 consists in securing it in a small stock, *j*, which is pivoted by a screw or pin, *k*, to the arm D, and has a spring, *h'*, applied above the pivot to drive it back against the screw *i'*.

The proper lateral adjustment of the tube J and the slot *b* of the table is effected by simply unscrewing the bolt *a*, and moving the plate B to the right or left, as necessary. The distance between the guide *d* and the rear end of the rod K is so great, compared to the distance between the guide and the point of the tube, that the relation between the tube and slot in the plate is not perceptibly influenced.

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

The tube J, receiving thread and acting, in combination with the needle, substantially as described, so that each forms a series of loops, each of which loops receives one and is received by the next one of the other series, as herein set.

GEO. W. STEDMAN.

Witnesses:
A. C. HOWELL,
U. H. HOWELL.