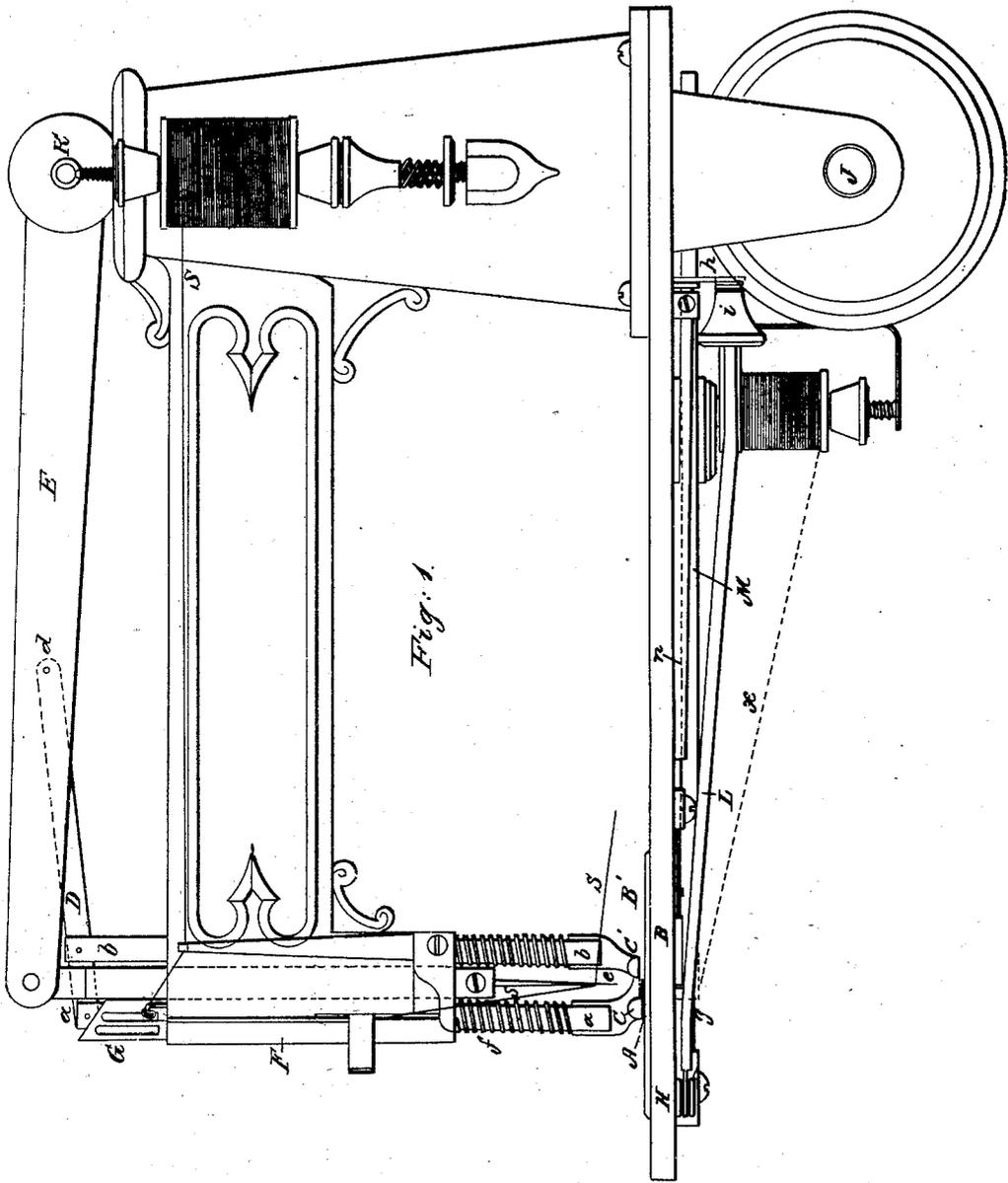


G. W. WILLIAMS.  
Sewing Machine.

No. 34,932.

Patented April 8, 1862.



Witnesses:

Euse Lincoln  
Robt L Harris.

Inventor:

C. W. Williams

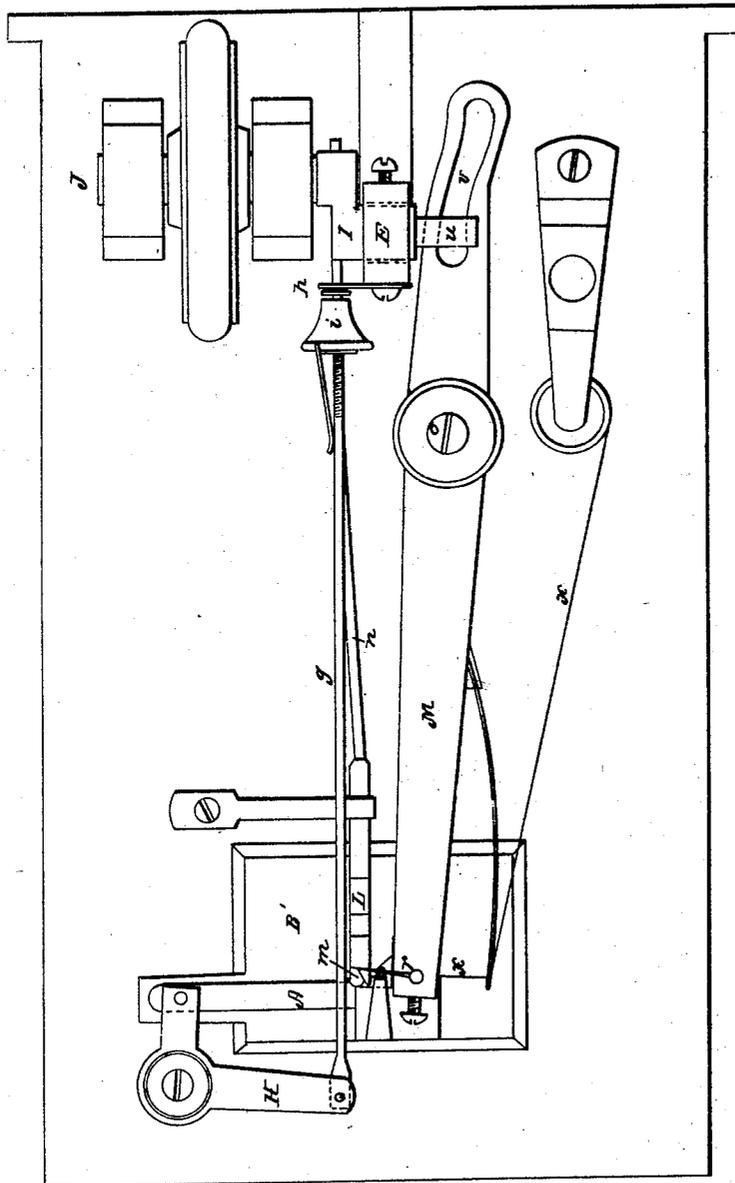
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Fig. 2.



Witnesses:

*Edw Lincoln*  
*Robt L Harris*

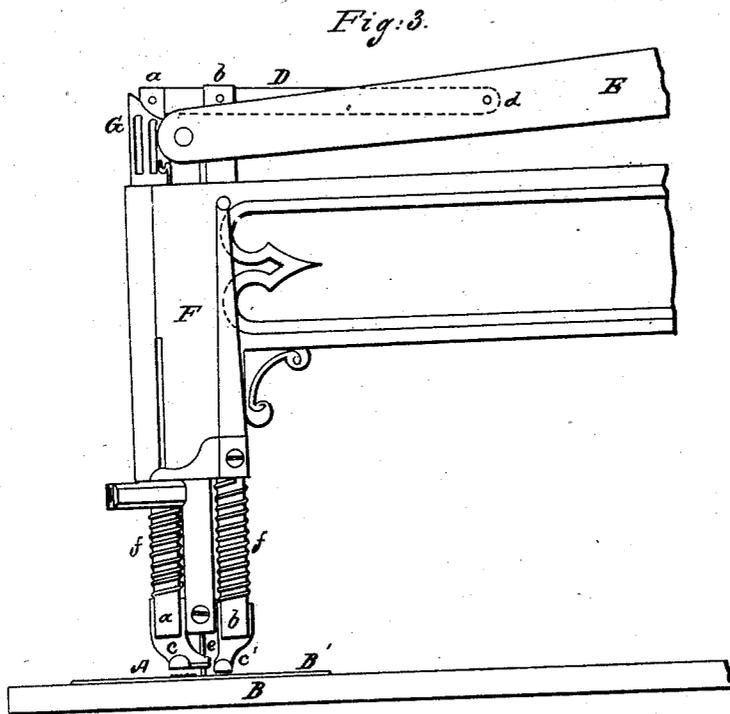
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*Witnesses:*  
*Emu Lincoln*  
*Robt. L. Harris*

*Inventor:*  
*C. W. Williams*

# UNITED STATES PATENT OFFICE.

C. W. WILLIAMS, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 31,932, dated April 8, 1862.

*To all whom it may concern:*

Be it known that I, C. W. WILLIAMS, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a side view of a sewing-machine having my improvements applied to it; Fig. 2, an inverted plan of the same; and Fig. 3, a side view of the front portion in part, illustrative of the cloth feeding and holding devices in positions the opposite of those shown for the same parts in Fig. 1.

Though my invention is here shown applied to that class or character of sewing-machines in which two needles operating two threads are used, the one part of it which relates to the hold and feed of the material being sewed is equally applicable to other machines, whether of the double-thread or single-thread order. The feed I employ is of that kind in which a reciprocating toothed surface, or device having such a surface at its top, is made to work through a slot in the table, so as to engage with the cloth from beneath. In such description of feed a foot or pressure pad is usually employed to press on the upper surface of the cloth to secure a firm engagement of the feeder below, and to keep the cloth steady and prevent its being drawn back or displaced while the feeder is making its back-stroke. To prevent the feeder dragging on the cloth when making its back-stroke it is usual to give to said feeder a peculiar action. This action is of a fourfold character, and involves, first, the movement of the feeder forward to give the necessary feed to the cloth, then the lowering of the feeder to avoid drag on the cloth during its back-stroke, afterward the back-stroke or return of the feeder free from contact with or drag on the cloth, and, lastly, the rise of the feeder to secure engagement with the cloth for and during the next forward stroke of the feeder in its further feed of the cloth, and so on successively at intervals. There are many practical objections to such combined horizontal and vertical movements of the feeder, both as regards securing to the feeder its proper action, and as regards its effect upon the cloth

in being alternately drawn from it and pressed up against it. My present feeding improvement is free from all such objections, as by it I am enabled to use a toothed surface or feeder having only a reciprocating horizontal motion, and always in contact with the cloth, and the cloth always held, or grasped on both of its sides.

To explain or illustrate, the portion marked A in the accompanying drawings represents the reciprocating feeder, having its top surface toothed and arranged to work through and above the upper surface of the table B or plate B', situated therein. The table or table-plate has an ordinary slot cut in it for the traverse of the feeder through from beneath and along the table in the direction it is designed to feed, and which is here supposed to be at right angles across the table; but said toothed feeder A has only this direct or horizontal motion reciprocating back and forth, without of necessity being made either to rise or fall, and always moving in contact with the under surface of the cloth. To secure that such feeder shall engage with the cloth, so as to feed when moving forward, and to prevent its drawing the cloth back with it on returning or moving backward, as well as to secure the cloth being constantly held or supported on both of its sides, I employ, in connection with such direct or horizontal reciprocating feeder, two pressure-feet, which may be made to assume various forms and be variously operated, but the peculiar novel character of which is illustrated by the following arrangement of parts. C C' are two spring-pressure feet arranged side by side, and worked so as to rise and fall alternately to bear or press upon the cloth upon its top. The one of these pressers, C, is situated over the toothed feeder A, and the other foot, C', is arranged to be over the smooth surface of the table or table-plate B'. Thus situated the rise and fall or pressure downward on the cloth of these two feet is so timed as that when the feeder A moves forward to effect the feed the pressure-foot C immediately over it is pressing down on the cloth, so as to secure the engagement and movement of the material by the feeder; but on and during the back movement of the feeder said foot is raised or relieved from pressure, and the adjoining foot, C', made to press down on the cloth outside the range of the feeder. By such arrangement

and alternate action of pressers the cloth is certain of its forward movement or feed, and is or may be continuously held on both its sides or surfaces, first by the one pad in connection with the feeder, and then by the other pad in connection with the table top or plate. To give the required alternate action to such an arrangement of the pressers as is here described, I prefer to connect them by their rods or shanks *a* and *b* and suitable pivots to a lever, *D*, hung by a joint or swivel-pin, *d*, at any given distance from the presser-shanks to the needle-operating beam or lever *E*. This mode of hanging the pressers not merely insures an alternate action for each presser in harmony with each other and the needle, but by it the pivot of either presser shank or rod *a* *b* is alternately made the fulcrum for the rising presser, which necessitates, as it were, continuous pressure by the presser alternately.

The presser shanks or rods may be guided by giving them socket-bearings in or through the front portion of the frame *F*, which portion may also serve as a guide for the rod which carries the up-and-down moving needle *e*.

Any suitable spring arrangement may be adopted to give to the pressers their downward pressure when not lifted alternately, as above described. Thus coiled springs *f* *f*, wound round the pad-shanks and arranged between the pads and the bottom of the socket portion of the frame, may be used.

To lift the pressers from pressure, when it is required to do so to adjust the cloth, or for any other purpose, a finger-cam, *G*, may be arranged between the top of the front end of the frame and lever *D*, so that on turning said cam in the one direction the pads are lifted from acting on the cloth, and on turning it in the other direction said pads are liberated to operate as before described.

The direct or horizontal reciprocating feeder *A* may be actuated intermittently at intervals, in accordance with the stitch, by a bell-crank, *H*, attached to the feeder below the table, and operated by a rod, *g*, moved by an arm, *h*, that projects from the lower leg of the upper needle-beam, *E*, and strikes nuts *i* on the rod *g*—one in front and one in rear of the arm *h*—which nut or nuts may be adjustable to regulate the length of the feed and stitch.

The upper needle-beam, *E*, or operating bell-crank, which has its fulcrum at *k*, may be act-

uated by the wrist of a crank, *I*, working in a slot in the lower leg of the beam, the crank itself being hung on a driving-shaft, *J*.

The upper thread, *s*, may be supplied to the vertical needle *e* from a spool in the rear, and have its tension regulated and be guided in its course in the ordinary or any other suitable manner.

The looper *L* is formed of a bar having a notch, *m*, at its forward end, so that on said bar being moved forward it catches and retains open the loop of the second thread, and in the early part of its retreat likewise holds open said loop and gradually releases it at the period required. Said looper has an intermittent reciprocating motion, which may be effected by a rod, *n*, actuated by the upper needle-beam in a manner similar to that described for the rod operating the feeder, with which it may work in unison, and both in harmony with the needle actuated by said beam.

The second needle, *r*, having only to penetrate with its thread *x* the loop of the first thread, may be carried by a beam, *M*, having no other than ordinary play on a fulcrum, *o*, to give the necessary reciprocating action to said horizontal or second needle, and the beam *M* of the latter may be reciprocated intermittently, as required, by a projection, *u*, from the lower leg of the upper needle-beam, arranged to work in a slot, *v*, of the second beam, *M*, so that both needles are necessitated to work in proper relationship to each other.

Having thus fully described my improvements in sewing-machines, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a feeding-instrument having a reciprocating movement in a horizontal plane only with two independent pressers so arranged that one shall press the cloth so as to attach it to the feeding-instrument and the other shall hold the cloth upon the table, said pressers operating alternately, substantially in the manner above described.

2. Connecting the two pressers with each other and with the needle-arm by a lever or its equivalent, arranged and operating substantially as above described.

C. W. WILLIAMS.

Witnesses:

EZRA LINCOLN,  
ROBT. L. HARRIS.