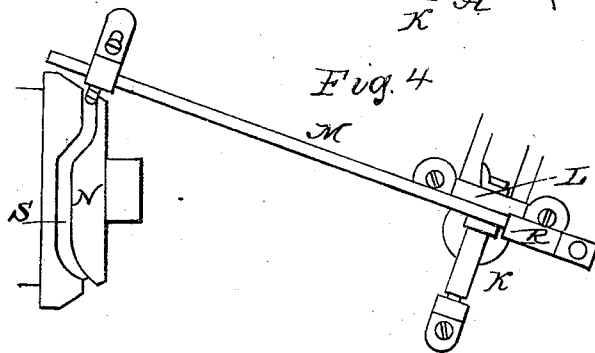
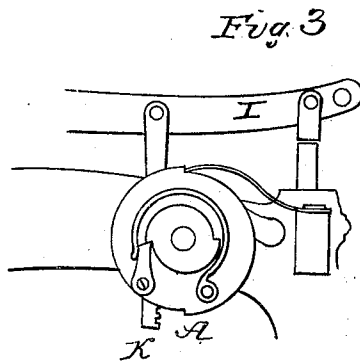
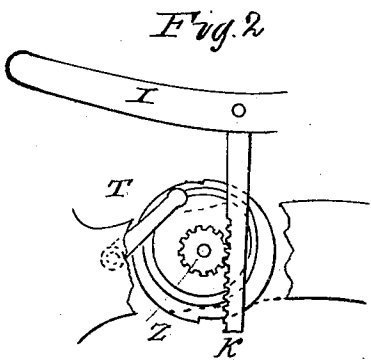
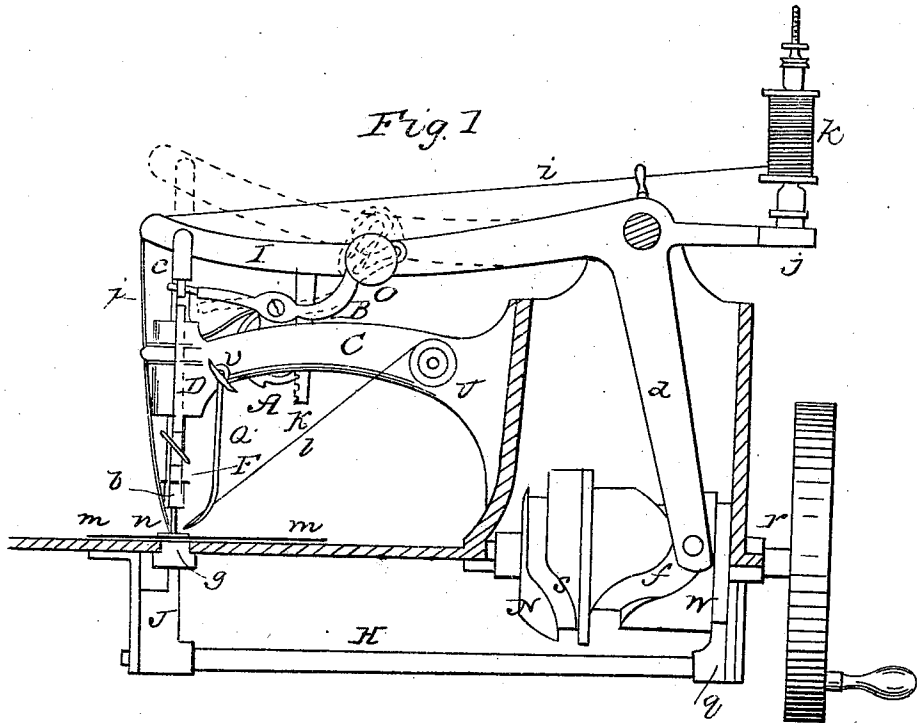


A. C. HERRON.  
Sewing Machine.

No. 20,557.

Patented June 15, 1858.



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Fig. 5

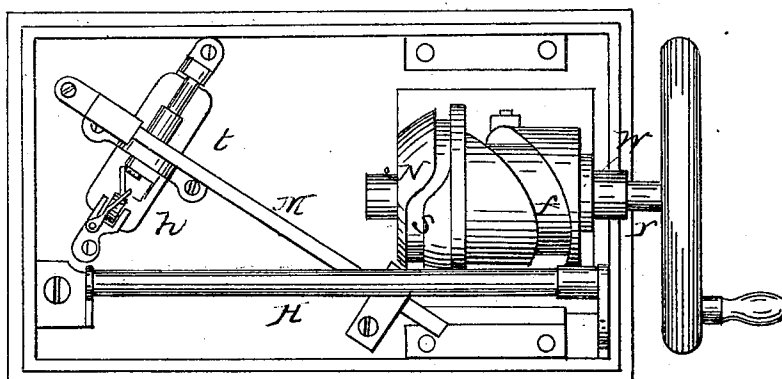


Fig. 6

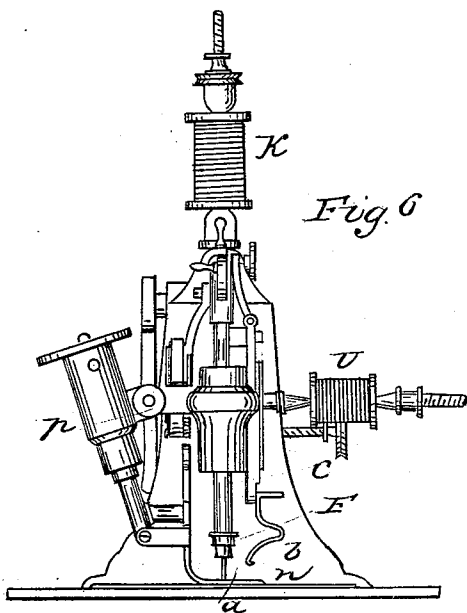
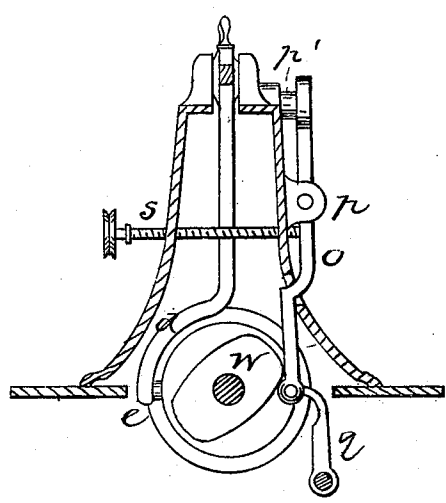


Fig. 7



# UNITED STATES PATENT OFFICE.

A. C. HERRON, OF REMSEN, NEW YORK.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 20,557, dated June 15, 1858.

### *To all whom it may concern:*

Be it known that I, ABIAL C. HERRON, of Remsen, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the same are described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my improvements, I will proceed to describe their construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

Figure 1 is a side view of the machine with part of the shell or case removed, so as to show the cams and part of the means moved by them. Fig. 2 is a representation of the eccentric and ratchet in Fig. 1. Fig. 3 is the reverse side of Fig. 2. Fig. 4 is a plan of the cam movement and slide. Fig. 5 is an under or bottom view of the cams, bar, and pinion for operating the hook, and rock-shaft for moving the under slide. Fig. 6 is a front end view of the machine, showing the needle, the spring to press upon the upper slide; and other parts. Fig. 7 is a back end view of the machine with a part of the shell or case removed so as to show the cam and the arms of the two rock-shafts which operate the upper and lower slides.

My invention consists in the arrangement of the mechanism for moving or feeding the article to be sewed as fast as necessary between two smooth surfaces, both of which have a positive, uniform, independent, and intermitting motion, by which the cloth is carried along regularly and smoothly and the sewing is rendered even and uniform. The means used to effect this are plain and simple, and the effect is the same as if the cloth were taken between the two hands of an automaton and moved along for another stitch as soon as the needle is withdrawn, and so on with perfect regularity and accuracy as every stitch is taken.

I am aware that various modes of feeding the cloth for sewing have been heretofore patented and used, all of which have been found to be imperfect and objectionable. This method obviates these objections. It is more simple, perfect, and certain in its operation. The surfaces above and below the cloth both have a positive, uniform, independent, and intermitting motion, and thus combine all the

motions necessary for the purpose intended, and both the surfaces equally and reciprocally aid in moving the cloth at the proper time and in the proper manner, and this combined motion and action has never before been effected in the manner here adopted or for the purpose to which it is now by me applied. My mode of moving the cloth requires no roughened surface by which the cloth may be affected or injured. It does not require that one of the surfaces should be pressed against the cloth so as to move it and the other surface forward with it. It moves the finest fabrics without injury or difficulty. It holds the cloth securely and moves it accurately.

I am aware of the patents of Edward Shaw of August 22, 1854, and of I. M. Singer of May 29, 1855. Mr. Shaw's machine, as patented, has no vertical intermitting motion, so essential and necessary for sewing, such as mine has, but is a clamp fed through the machine by rack and pinion. Mr. Singer's machine gives a positive motion to only one of the surfaces between which the cloth is fed, and not to both, like mine. In his the cloth is moved by a wheel upon the under side, which has a roughened surface, and which moves the cloth under such a pressure as to move forward with it the pressure-pad on the cloth; the pressure-pad having no positive independent feeding movement of its own. This is not only less certain, but is liable to various other objections, some of which I have indicated above. The combination of motion in my invention, the mechanism by which it is produced, its manner of operation, and its application to the surfaces upon both sides of the cloth at the same time are very different, and, as I claim, greatly superior to that in either of the patents named. This will be readily perceived by operating them together.

The mechanism and manner of its operation in my invention may be shortly described as follows: The upper side of the cloth is pressed by the action of the needle-arm operating a crooked lever, which presses a piston with a spring at the lower end upon the shoe or slide, which, moving at the same time with the slide underneath the cloth, carries both parts even and smoothly, the slide underneath and the shoe upon the upper slide being moved by rocker-shafts actuated by same cam.

My invention also consists in the arrange-

ment for sewing with two threads, one being interwoven by a switcher, which is moved in the proper time by an eccentric operated by the action of the needle-arm.

In the accompanying drawings, A is the eccentric, which is moved by the ratchet-wheel Z, and the ratchet-wheel Z is operated by the ratchet K, which is attached to the needle-arm I. The switcher Q, through which the thread passes the spool V, is vibrated by the arm T, which traverses the groove in the eccentric A. The piston D is operated by the lever B, being attached to the needle-arm I by the screw O. The slide L is attached to the rock-shaft H by the arm J, and is moved by cam W.

The groove S in the cam N operates the slide M, which works the hook h.

F marks the nut which, being moved upon the screw-thread on the needle-piston e, binds the needle a within the split end of the piston.

b marks the spring to press upon the upper slide, n. The arm of the lever is marked d, its pin e, and the grooves in the cam in which it traverses are marked f.

i indicates the arm of the lever I, sustaining the spool K.

l indicates the thread from spool K to the needle; l, the thread from the spool V to the switcher Q; m, the cloth; n, the upper slide; o, the arm of the upper slide rock-shaft; q, the arm of the lower slide rock-shaft; r, the cam-shaft; s, the set-screw of arm o; t, the pinion of the hooks, stem, or shaft.

My invention is so constructed that it may be used with one or two threads. When used with one thread, the thread is fed to the needle from the spool K, the needle being operated by the arm I, which, through its arm d, is actuated by the cam on the main shaft r, and the loop of the thread is held by hook h. The hook is vibrated by the bar M, being moved by its pin moved by the groove S in the cam N, the cloth being placed between the upper slide, n, and the under-slide, g, and the upper slide being forced upon the cloth by the spring-piston b D. The motions of the needle-arms and the two rock-shafts produce the necessary movements of the cloth. When two threads are used, the means already named are brought into action and perform their

functions, as stated, while the second thread is fed from the spool V through the eye of the switcher Q over the top of the cloth, the switcher being vibrated by the arm T, deriving its motion from the eccentric A, which is actuated by the bar K, arm I, and its movements controlled by the pawl and springs, as shown in Fig. 3 of the drawings. These means so move the switcher that while the needle is making its stroke the second thread is fed and vibrated over the cloth, and pressed first on the one side and then on the other of the needle, as to be bound in the cloth with each stitch. The switcher Q is secured to the arm T of the eccentric by the thumb-screw r, and whenever it is desired to operate the machine with one thread only the switcher can readily be moved one side out of action. The operation of the two rock-shafts by one cam is shown by Fig. 7 of the drawings. The cam W, pressing first upon an anti-friction roller at the end of rock-shaft p, arm O, the arm q of the rock-shaft H resting against the other surface of the roller, and thus being moved conjointly with the first-named arm.

I believe I have described and represented my improvements so as to enable any person skilled in the art to make and use them.

I claim—

1. The arrangement of the mechanism by which the feeding-surfaces upon both sides of the cloth are moved as stated, and by which the motions produced are combined and applied at the same time to the feeding-surfaces upon both sides of the cloth—viz., the arrangement of the rocker-shafts above and below the table with the connecting and intermittent pressure mechanism, or its equivalent, whereby I am enabled to feed the article to be sewed between two smooth surfaces, both having a positive, uniform, independent, and intermitting motion, substantially as above described.

2. The arrangement of the mechanism, or its equivalent, for interweaving two threads upon the upper surface of the cloth, substantially as above described.

ABIAL C. HERRON.

Witnesses:

ROB. S. SHILLINGTON,  
G. MELOY.