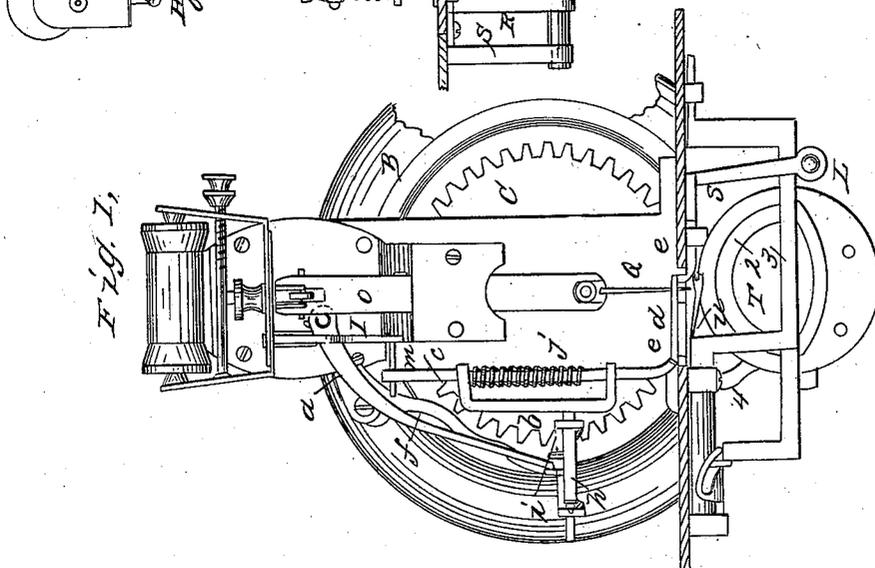
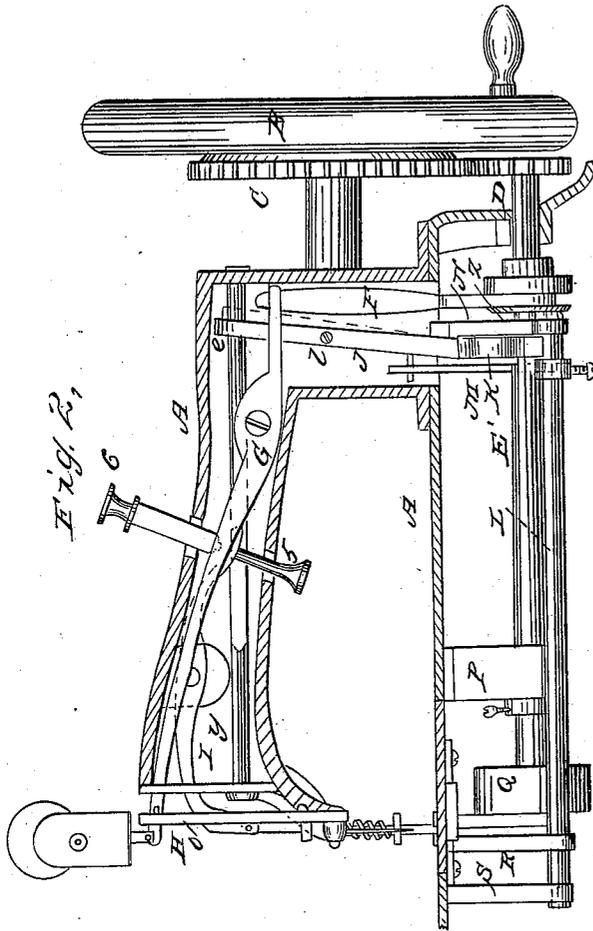


A. H. BOYD.
Sewing Machine.

No. 24,003.

Patented May 17, 1859.



Witnesses:
C. M. Alexander
A. A. Graham

Inventor:
A. H. Boyd

UNITED STATES PATENT OFFICE.

AMOS H. BOYD, OF SACO, MAINE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 24,003, dated May 17, 1859.

To all whom it may concern:

Be it known that I, AMOS H. BOYD, of Saco, Maine, 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, and to the letters of reference marked thereon.

The nature of my invention consists in combining and arranging together certain devices which will be hereinafter described.

In the annexed drawings, Figure 1 is a front view, the bed-piece being shown in section. Fig. 2 is a side view, the frame and bed-plate being seen on section.

In the figures, A represents the bed-piece of the machine, and A' represents the upper portion of the frame-work, which is in the form shown in the drawings.

B is the driving-wheel, which is secured on the same shaft with a cog-wheel, C, said cog-wheel being so situated as to work into a smaller cog-wheel or pinion, D. This pinion D is secured to and operates a shaft, E, which runs longitudinally of the frame, and is the principal driving-shaft of the machine.

G represents a lever which has its fulcrum at one end of said lever, being connected with the needle-bar *o*, the other end being connected by means of a connecting-rod, F, with the shaft E. The lower end of the rod F passes a wheel, *z*, which is set eccentrically on shaft E, and by this means motion is communicated to the lever G and to the needle-bar *o*.

L is a shaft which has its bearings in supports S and N.

K represents a cam which is secured to shaft E. This cam operates upon the lower end of lever J. This lever J connects at its upper end with a shaft, *y*, to the forward end of which shaft a bar, *a*, is secured, which serves to operate the feed-shoe and attachments in horizontal directions.

To the lever J is secured a pin, *g*, which passes through a slot in a connecting rod or lever, M, and serves to operate it. One end of this lever M is secured to shaft L.

Near the forward end of shaft L is a rod, R, which connects with and operates a small plate, *e*, which is located in a slot in the bed-plate, directly under the needle. This plate *e* moves

simultaneously with the shoe *d*, and assists in carrying forward the material to be sewed.

It will readily be seen that when the cam operates upon the lever J it operates shaft *y* and rod *a*, as well as lever M and shaft L at the same time, and by these means the plate *e* and shoe *d* are operated in the same direction at the same moment.

l is a screw which operates upon lever J for the purpose of pressing it closer, or for removing it from shaft E and cam K, for the purpose of lengthening or shortening the stitch as the case may require.

O represents the needle-bar, and Q the needle.

a is a bar, as before mentioned, which is secured to the outer or front of shaft *y*. The lower end of this bar *a* stands between two pins, *i i*, on sliding bar *h*.

h is a sliding bar, which is supported in a frame which is attached to the frame A' by means of a connecting-piece, *f*. This bar *h* has two bearings in its frame, as seen at *x x*, one end of said bar being attached to a plate, *b*, which stands in a vertical position, and is provided with two projections, one on each end, through which projections passes the shoe-shaft *c*.

k is a spring which surrounds the shaft *c*, one end of said spring being attached to said shaft, and the other acting against the upper projection or plate, *b*. The shaft *c* is allowed to slide freely through the projection *x' x'* when it is being operated upon. Shaft *c* is provided with a pin at its upper extremity, (marked *m*,) which plays in a slot in the front end of lever I.

u represents the looper-bar.

T is a wheel which is secured to the front end of shaft E, said wheel being provided with two cam-grooves, one on each of its faces. Bars 3 and 4 are provided with pins which play in these grooves in the wheel T. When the wheel T revolves, motion is communicated to bars 3 and 4, and by this means the looper-bar *u* is made partially to revolve and to have a longitudinal motion for the purpose of catching and holding the loop when required in the operation of the machine.

5 represents a small knob which is secured to the under side of lever I, and which extends through the frame for the purpose of bearing

down the lever I when it is desired to raise the shoe and place the work under.

6 is a screw which presses upon the upper side of lever I for the purpose of regulating the height for the shoe to step.

In operating this machine the cloth is placed under the shoe, which is smooth on its under side, and is caught between the shoe and smooth plate *e*. By turning wheel B motion is given to shaft E, and by it to the parts which form the feeding apparatus. The first operation of the machine, after the cloth is placed under and motion is communicated as aforesaid, is the descent of the needle, which passes through the cloth about two-thirds of its length; but when about one-third of its length in the cloth a projection on the side of lever G presses upon the rear end of lever I and bears it down. The front end of lever I is thus elevated, and as it is raised it raises the shoe-shaft and shoe. The shoe-shaft *c* being secured in firm bearings, it is made to take a direct vertical motion upward. The distance which this moves upward is regulated by the screw 6, and may vary from a quarter to half an inch, or even more, if necessary. When the needle is at its lowest depth, the shoe is raised to its greatest height, and the moment the needle begins to rise the cam K operates upon lever J, and it in turn upon the several parts which give the feed. The shoe *d* and feed-plate *e* are thus made to take a directly horizontal motion backward the length of a stitch. As the needle continues to rise the pressure is removed from the rear of lever I, and, its forward end descending, the shoe-shaft and shoe are pressed down with a force proportionate to the strength of the spring *j*. The cloth is thus pressed firmly

between the shoe and feed plate. After the needle is at its highest point and before it begins to descend, the cam K leaves the lever J, and a spring (seen in dotted line behind this lever) presses it toward shaft L, and thus simultaneously motion is given to the shoe and feed-plate, which move, together with the cloth, in a directly horizontal direction forward the length of a stitch, and there remain until the needle descends into the cloth, when the shoe again moves upward and prepares to take a backward movement for another stitch. When the needle descends for a stitch, the looper receives and holds the loop, as in any other looping-machine.

I am aware of Shaw's patent of 1854, I. M. Singer's patent of 1855, and also of the patent of A. C. Herron of 1858; hence I disclaim anything claimed by them, my invention being confined to the combination of a feed, already patented by myself, with an under feed-plate, as is described, to wit:

The employment of lever I, a shoe and shoe-shaft, spring *j*, plate *b*, and sliding bar *h*, with an under feed-plate, *e*, the shoe and the feed-plate having an intermitting direct horizontal reciprocating motion, and the shoe having an intermitting direct vertical reciprocating motion, the same being given substantially in the manner herein specified, and for the purpose set forth.

In testimony whereof I hereunto set my hand.

A. H. BOYD.

Witnesses:

C. M. ALEXANDER,
A. A. YEATMAN.