

A. SWINGLE.
SEWING MACHINE.

No. 11,507.

Patented Aug. 8, 1854.

Fig. 1.

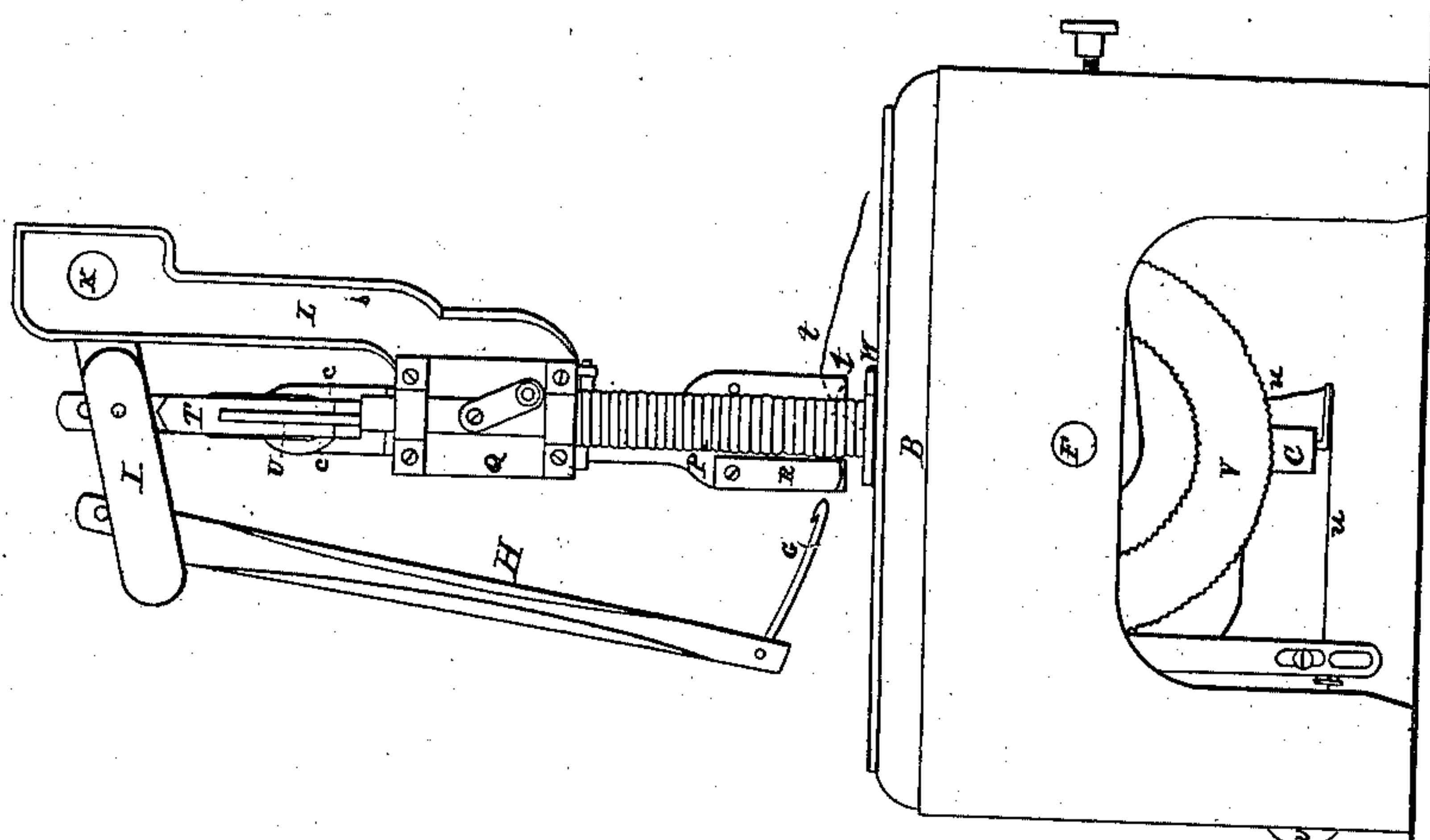
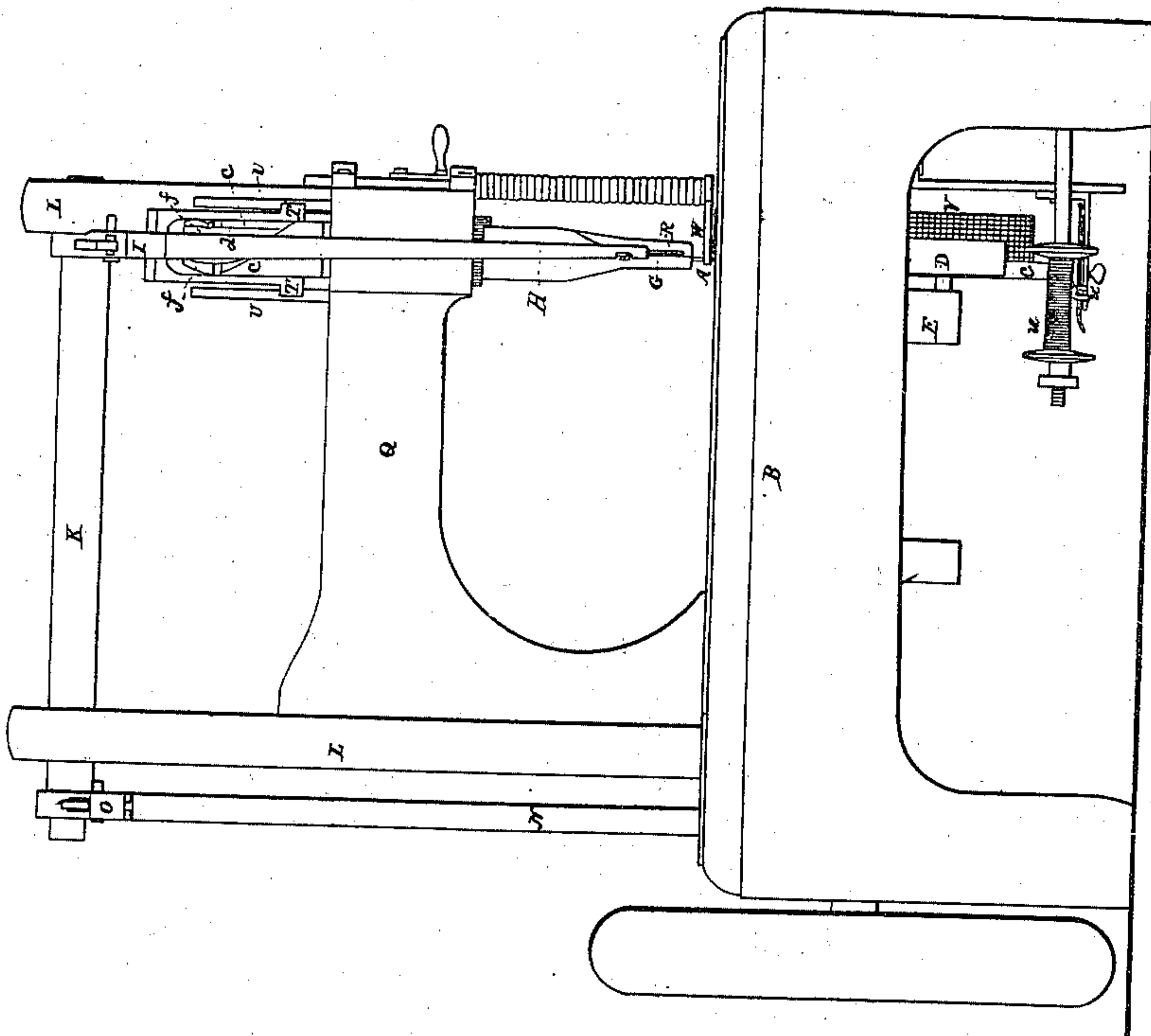


Fig. 2.

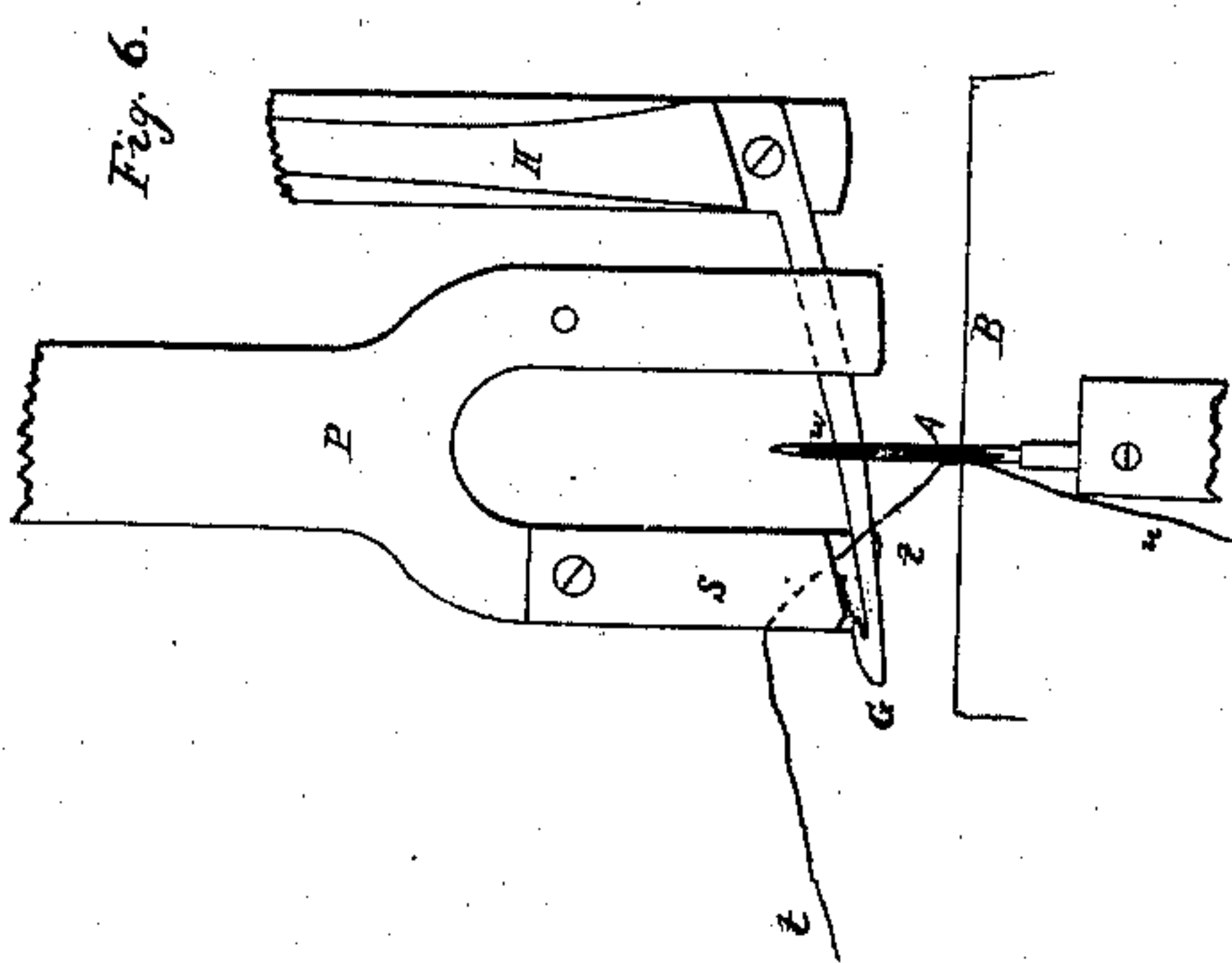
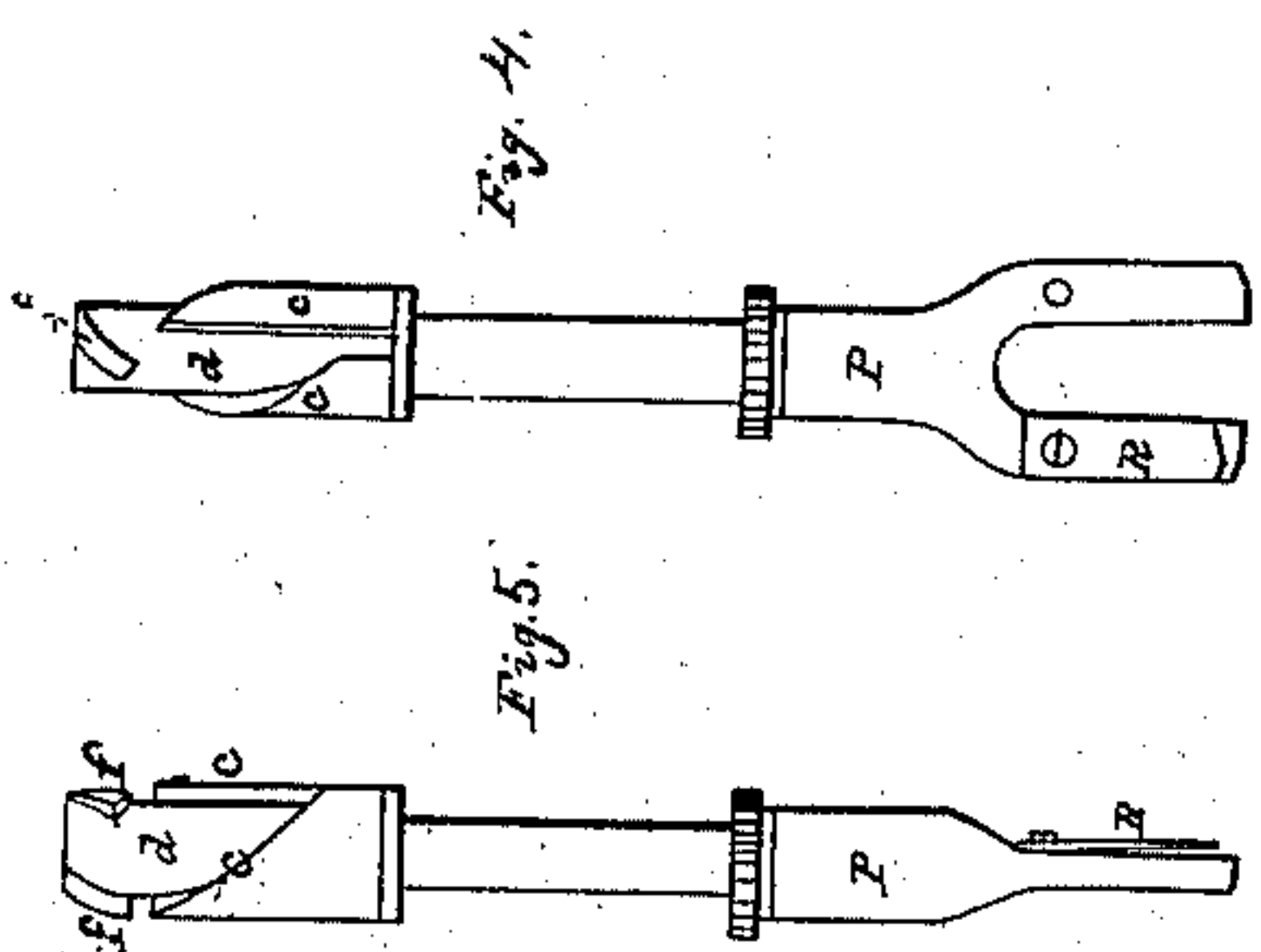
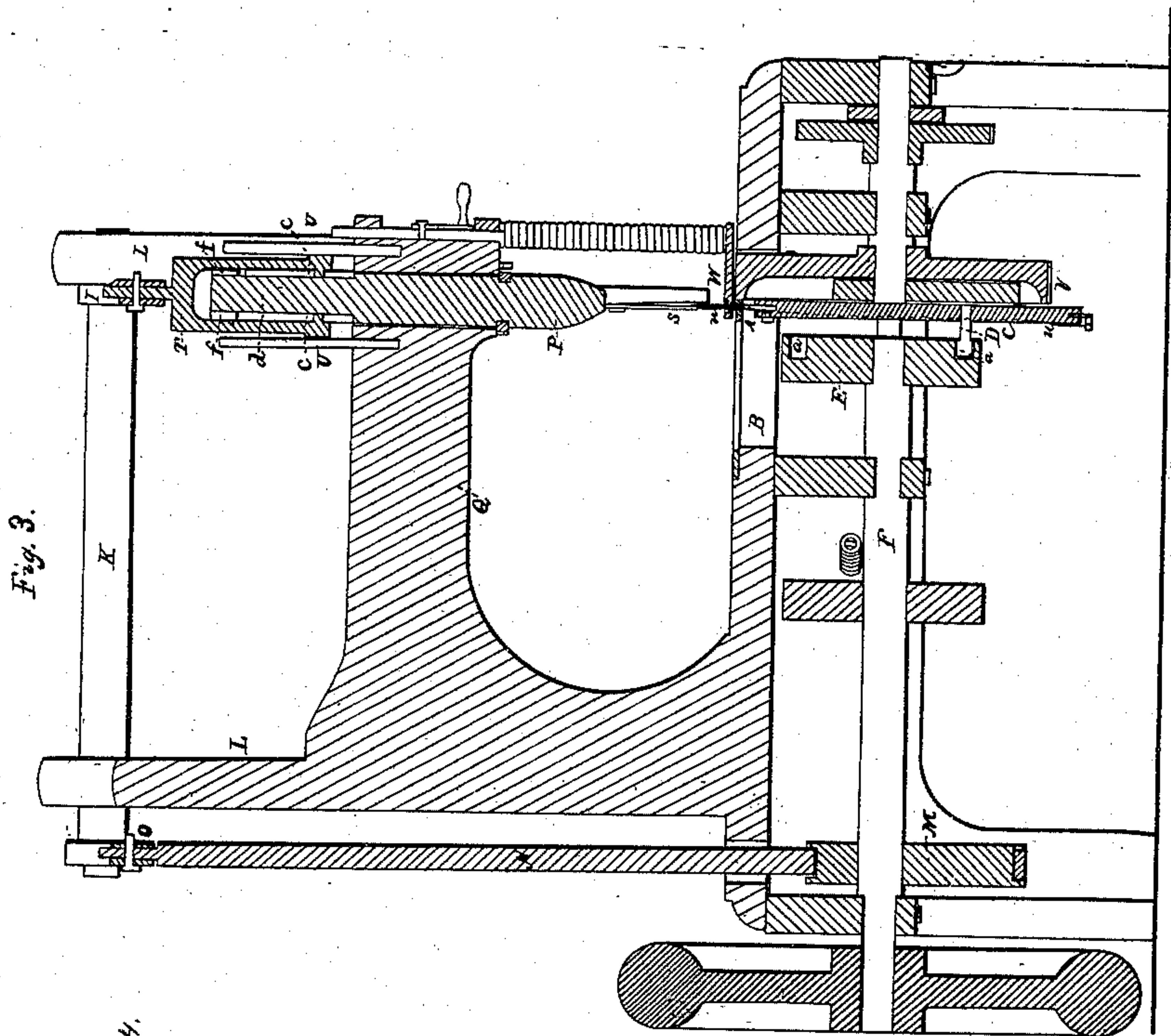


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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ALFRED SWINGLE, OF BOSTON, MASS., ASSIGNOR TO ELMER TOWNSEND.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 11,507, dated August 8, 1854.

To all whom it may concern:

Be it known that I, ALFRED SWINGLE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Sewing-Machine; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a front end elevation of my said machine. Fig. 2 is a side elevation of it; and Fig. 3 is a vertical, central, and longitudinal section of it.

My machine, in performing the operation of sewing, employs two threads; and it uses a needle made with an eye near its point, one of the threads being carried through said eye, and when forced through the cloth the thread is carried through it in the form of a loop, the needle operating, essentially, the same as it does in machines which perform the operation of sewing by means of a needle and shuttle, each carrying a thread. In connection with the needle of my machine I employ, in order to pass the other thread through the loops formed by said needle, a device or contrivance, or a combination of devices or contrivances, essentially different in its operation from that of a shuttle, for the thread, which I employ as a binding-thread to the thread carried by the needle, is used by me in a short piece, as the thread is employed in the sewing-machine invented and patented in this country by Frederic R. Robinson, (the Letters Patent for the same bearing date the 10th day of December, A. D. 1850,) whereas the shuttle of the shuttle sewing-machines carries a bobbin having a long thread.

In the drawings, A denotes the needle, which is arranged vertically and made to play up through the bench or table B, and by means of suitable machinery it is to have an intermittent, reciprocating, rectilinear motion, such as will cause it to pass up through the cloth and remain at rest during the operation of passing a thread through its loop, and is next to descend, so as to pass out of the cloth. Such needle, in my machine is affixed in the upper end of a vertical carrier or slide, C, which is supported so as to slide freely upward and downward, and has a projection, D, extending into the groove *a a* of a grooved cam, E, fixed upon the main driving-shaft F of the

machine. The cam should be so formed as to cause the needle, after it has passed entirely upward through the cloth, to move downward a little, so as to bow out the thread of it, as is done in most, if not all, the shuttle sewing-machines. The object of this is to allow a hook, G, carried upon the lower end of a vibrating arm, H, to pass through the loop, or between the thread and the needle. The said hook G is exhibited in the drawings as attached to an arm, H, extended at an obtuse angle to the outer end of an arm, I, which is projected from a horizontal rocker-shaft, K, that is arranged and supported by standards L L, as seen in the drawings. This rocker-shaft has a reciprocating motion imparted to it by means of an eccentric, M, (fixed upon the driving-shaft F,) a connecting-rod, N, and a crank, O, said crank being extended from the rocker-shaft. In connection with the hook G, I employ a rotary forked thread-carrier, P. This thread-carrier has its axis disposed vertically and directly over the needle, or in line with it, and such thread-carrier is supported by and made to rotate horizontally in a goose-neck or arm, Q. Each tine of the fork P is provided with a spring, R or S, which is applied to it, as seen in Figs. 4 and 5, which are respectively side and edge views of the rotary forked thread-carrier.

During the operation of the machine the rotary thread-carrier is to have an intermittent rotary movement—that is to say, while the hook G is moved away from and made to approach the thread-carrier the latter is revolved one hundred and eighty degrees of a circle, and it remains at rest during the time that the hook passes forward into it and backward out of it. This intermittent rotary motion is produced in part by means of two helix-cams, *c c*, arranged on opposite sides of the shank *d* of the carrier P, such cams being acted upon by a projection from the inner sides of a fork, T, that is made to embrace the upper part of the shank of the carrier, and is jointed to the arm I, as seen in the drawings. The lower part of this fork T is guided in its vertical movement and slides upon and between two vertical guides, U U. In connection with the two helix-cams *c c*, I employ two other and shorter helix-cams, *f f*, which are arranged on opposite sides of the shank *d* and above the terminations of the before-men-

tioned helix-cams, each of the said smaller helix-cams being disposed in respect to one of the larger, as seen in the drawings. During the outward movement of the hook G the fork T is elevated, and when its projections are respectively carried into contact with the under inclined surfaces of the smaller helix-cams the pressure of such projections against such surfaces creates a short rotary motion of the forked thread-carrier, sufficient to bring the said projections directly over the larger helix-cams, in order that when the fork T next descends its projections shall be carried into contact with the larger helix-cams, and thereby, or during such descent, cause a semi-rotation of the fork thread-carrier, such forked thread-carrier remaining at rest after the same and until the projections of the fork T are next brought into contact with the lesser helix-cams. When the machine is in operation, the thread, which is worked by the hook G, extends from the cloth and passes between the rearmost tine of the thread carrier and the spring of said tine, and it lies over the path of the hook G, as seen at *t* in Figs. 1 and 6—that is to say, the thread is so extended from the cloth that while the hook G is passing into the thread-carrier it shall move under and lift that part of the thread *t* which extends from the carrier down to the cloth or material undergoing the operation of being sewed. This is so that, in order when the hook is drawn back, it may seize the thread *t* and draw it back with it through the loop of the needle A, it also drawing it through the space between the front tine, and the spring thereof, of the thread-carrier, such hook having previously entered said space during its passage into the thread-carrier.

In Fig. 6 I have exhibited the relative positions of the needle A, the hook G, the rotary fork thread-carrier P, and the thread *t*, when the hook has entered to the full extent of its motion into the thread-carrier. When the thread *t* is drawn through the carrier P, it

is left supported by the tine thereof, between which and the spring of said tine the hook has drawn it. While thus supported, and during a portion of the descent of the needle, a semi-rotative movement of the thread-carrier takes place, and again presents the thread *t* in a proper position to be seized by the hook G when again drawn backward, the hook during its forward movement being made to pass through the loop of the needle A. If the length of the thread *t* is less than the distance from the cloth to the extreme point of outward or back motion of the barb of the hook G, the machine will perform the operation of sewing, and continue to draw said thread through each loop as it is formed by the needle, until the length of the thread *t* extending beyond the cloth is too short to pass from the cloth into the needle-carrier. The thread for the supply of the needle A is exhibited at *u*, and as passing from a bobbin, *v*. The feeding-wheel of the machine is seen at V, and the cloth-presser at W, they being constructed and made to operate as do similar devices in many other machines. During the performance of sewing by the machine the forked thread-carrier winds the upper thread around the lower thread, and in this respect my machine performs sewing different from many other machines.

Having thus described my invention, I would have it understood that what I claim is—

The combination of the rotary fork thread-carrier P and the hook G, as made to operate in connection with the needle A and perform sewing, substantially as hereinbefore specified.

In testimony whereof I have hereunto set my signature this 8th day of February, A. D. 1854.

ALFRED SWINGLE.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.