E. H. SMITH & D. C. CHAPMAN.

SEWING MACHINE.

No. 44,982. Patented Nov. 8, 1864.

Fig. 1.

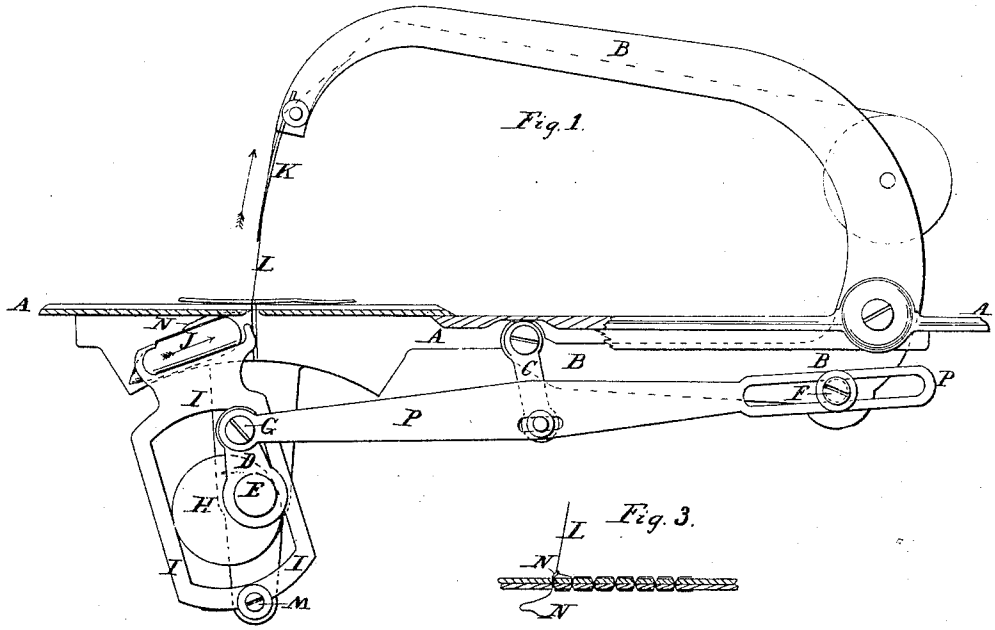


Fig. 3.

Fig. 4

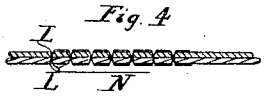
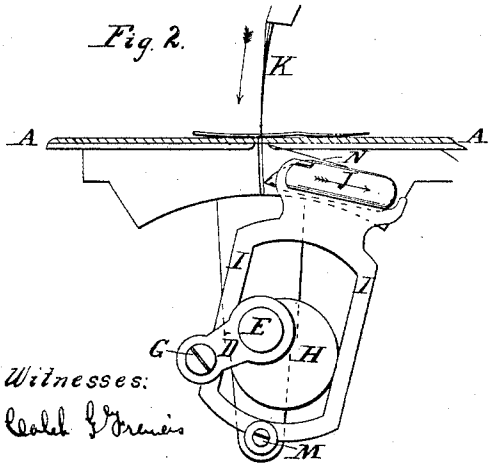


Fig. 2.



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EARLE H. SMITH, OF HUDSON, NEW JERSEY, AND DANIEL C. CHAPMAN, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **44,982**, dated November 8, 1864.

To all whom it may concern:

Be it known that we, EARLE H. SMITH, of Hudson city, New Jersey, and DANIEL C. CHAPMAN, of New York city, N. Y., have invented certain Improvements in Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification, wherein—

Figure 1 is a side elevation of the machine, with part of the bed or table shown in section. Fig. 2 is a similar view, showing the main operative parts in another position; and Figs. 3 and 4 show the operation and movement of the threads in various stages of the process of forming successive stitches in performing sewing.

In the present state of the art of sewing by machinery there are two fundamental mechanical modes of actuating the needle and shuttle in executing sewing with those instruments. In one (the earlier mode) the said sewing-instruments are moved or operated, partly or wholly, by some form of what are known in mechanics as "cams." Such are called "cam-machines," and of these a proper example are those made by Howe and by Singer. In the other and more modern mode all the required movements of the needle and shuttle are accomplished by various combinations of cranks and links. The latter are represented by the machines and improvements patented by E. H. Smith, May, 1858, and George Juengst, 1860, and are called "crank-machines."

Our invention relates therefore to the crank-machines; and it consists in the arrangement and combination of crank mechanism in such a manner as to produce certain relative movements of the needle and shuttle, whereby the threads in the process of sewing receive a peculiar manipulation, substantially as herein described, resulting in a more uniform seam, having the stitches laid in a right line, and requiring less strain in drawing in the stitch, reducing the liability of breaking threads, while the machine is simple in construction, certain in action, and cheaply made.

To enable others skilled in the art to make and use our invention, we will proceed to describe the construction and operation thereof.

In the construction of our machine we employ the usual bed or table to support the material being sewed, and provide a needle-arm, fixed arm, pressure-foot, and feeding device.

In the drawings annexed, A is the bed or platform.

B is the needle-arm, carrying the needle K. Said needle-arm extends below the table A, and then forward to about half-way from the point where the needle reciprocates, as shown in Fig. 1.

At the lower extremity of the needle-arm a short link, C, is attached, connecting the needle-arm with a pitman, P. One end of said pitman grasps a wrist-pin, G, in the crank D on the driving-shaft E, and the other end of said pitman is slotted and slides over a wrist-pin or pivot, F, in the back part of the needle-arm, as shown in Fig. 1. This is not shown in Fig. 2, as it would be simply repetition.

The shuttle is driven back and forth by a vibrating lever, I, moved by an eccentric, H, on the main shaft E, behind the crank D.

The crank and eccentric are fixed on the shaft E in the order of rotation represented, the shaft revolving to the left.

In the motions of the needle and shuttle produced by this arrangement and combination of mechanism the shuttle, after taking the loop from the needle and passing through such loop, immediately begins to return, slacking its thread, as seen in Fig. 1, while the needle, rising, completes its upward stroke during the return movement of the shuttle. The thread of the latter is now slack, and in the completion of the upward motion of the needle the needle-thread L draws a portion of the shuttle-thread above the cloth in the form of a small bight or loop, as seen in Fig. 3. The needle now begins to descend, and the shuttle, continuing its return movement, completes the same so far as to begin to draw on and straighten its thread N, as seen in Fig. 2, drawing down below the cloth the bight aforesaid before the eye of the needle, in descending, reaches the cloth. (See also Fig. 4.) Thus after every forward movement of the shuttle its thread is drawn above the cloth, and at each backward motion such thread is drawn below the cloth. This mode of alternately drawing on and tightening each thread, respectively, while the other is slack, has the important advantage of relieving the threads of all strain against each

other in tightening the stitch, as is the case in those machines wherein the needle and shuttle threads are drawn tight simultaneously. Moreover, in drawing on the threads in this manner one or more of the previous stitches are affected incidentally, and the threads more readily assume the line of the seam than in the mode of sewing last above mentioned, and the sewing is more uniform.

As a means of controlling the needle-thread above the cloth, we use any of the devices common to the art, in the operation of which the thread is held under control till the needle's eye reaches the cloth, and then released as the eye enters the cloth, as in Howe's and Singer's machines. Such other parts as are not described and shown—as the pressure-foot, feed, &c.—are the same in construction as in other similar machines.

Although we confine ourselves in producing the above results to crank mechanism, as distinguished herein from cam mechanism, we do not, however, confine ourselves to the specific mechanism described, as that may be varied and modified without altering the invention, so long as the relative movements of the needle and shuttle remain such as to manipulate the threads and produce sewing in the manner stated.

We claim as our invention and desire to secure by Letters Patent—

The described combination and arrangement of mechanism, or the equivalent thereof, as set forth, wherein the movements of the needle and shuttle are caused to take place with respect to each other, so as to manipulate the threads in the manner and for the purpose specified.

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