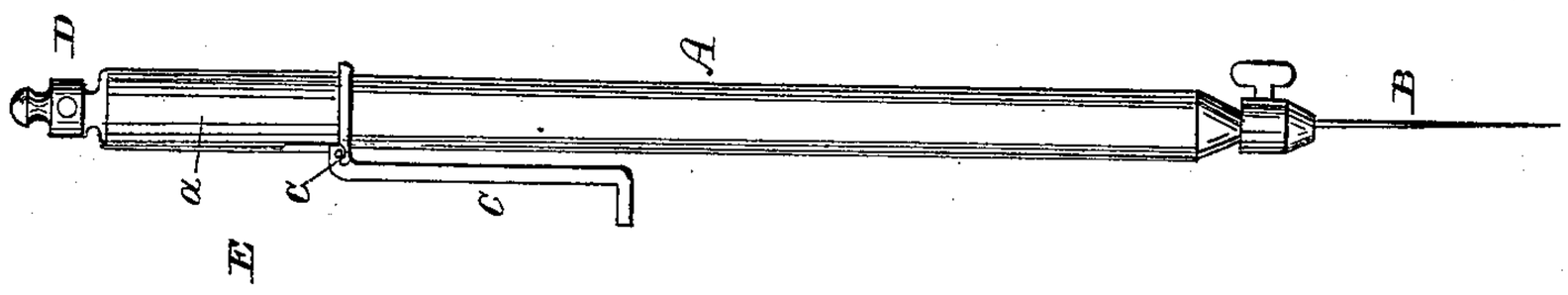
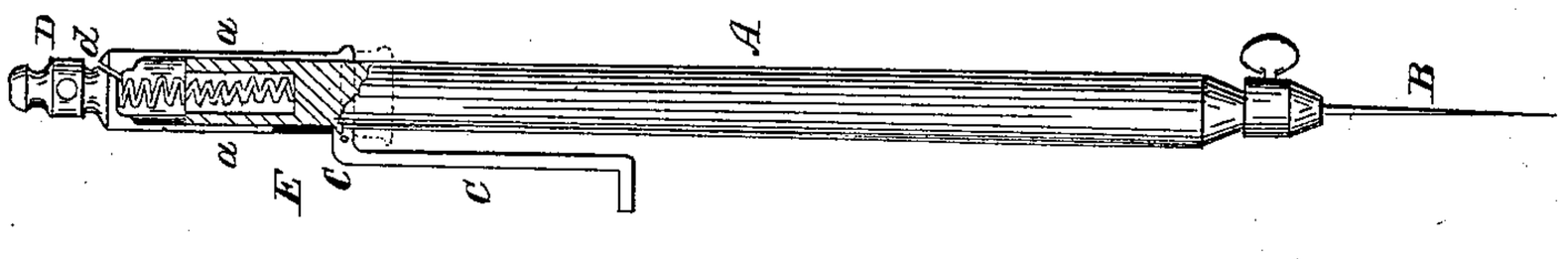
O. C. PHELPS.

Sewing Machine Attachment.

No. 18,102. Patented Sept. 1, 1857.





UNITED STATES PATENT OFFICE.

ORSON C. PHELPS, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **18,102**, dated September 1, 1857.

To all whom it may concern:

Be it known that I, ORSON C. PHELPS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon.

The nature of my invention consists in constructing the needle-bar in two or more parts, having a variable joint or connection, with an elastic material interposed between the solid parts, which causes them to yield to the tension of the thread in drawing in the stitch, whereby the smallest thread may be employed without breaking from the motion of the machine.

Figure 1 represents the needle-bar in elevation. Fig. 2 is the same view with the divided portion shown in section.

A is the solid portion of the bar to which the power which gives it motion is employed, and which carries the needle B. C is an arm which works the slack-thread wire. The upper portion consists of a solid head, D, through a hole in which the thread E passes on its way from the spool to the needle, below which is a tube or thimble, *a a*, Fig. 2, fitting nicely to the outside of the bar A and sliding upon it. The top of the bar is drilled with a hole of sufficient size to receive the coiled spring *b* and hold it in an upright position. The spring projects a half an inch, or thereabout, above the bar, and receives the tubular portion D on its top. A vertical slot is cut on one side of the tube *a*, allowing it to play up and down in the arm C, which acts as a guide to prevent its turning. A pin, *c*, through the arm arrests the action of the spring at a point where its pressure is light and delicate; but the slot allows the head to descend and accommodate itself to some extent to the pressure it receives. A small vent-hole, *d*, is made in the top of the thimble to allow the air to escape. The stitch is drawn in or tightened by the return of the needle-bar after having pierced the cloth, and the motion, being very quick, brings so sudden and severe a strain upon the thread that, if small, it is exceedingly liable to break; but in my improvement the head or upper portion of the bar yields measurably by its elasticity to the tension of the thread, drawing it gradually in and allowing it time to feed from the spool, by which the sudden jerk is entirely overcome with the most beneficial results. The fibers sustain a much greater force than when it is suddenly applied, whereby a tighter and stronger seam is formed. Such is the sensibility of the yielding bearing that an exceedingly fine thread may be used without breaking, No. 150 cotton having been successfully employed with this improvement, when No. 90 only could be used on the same machine without it. The machine may be run at a far greater speed with safety to the thread, thereby effecting an important saving of time.

This device has a still further and very important effect. As the shuttle enters the loop, it draws upon the thread to enlarge the loop sufficiently to allow it space through which to pass. The tension thus occasioned causes the spring *b* to yield and render sufficient thread for this purpose without drawing it from the spool, which would leave it slack after the shuttle had passed; but by this arrangement the spring again relaxes, keeping the thread at an easy tension until the upward motion of the needle-bar draws the stitch in, the effect of which is heretofore described.

India-rubber or other elastic material may be used in place of the spring *b;* or confined and compressed air may be employed and produce the same or nearly as good an effect; but I prefer to use a metallic spring, from its simplicity and economy and the ease with which it may be replaced. For ordinary sewing no change of the spring will be required, its variable force adapting it to very light and comparatively heavy work; but in some cases where extra heavy work is required—as in leather, harness, and sail making—a stiffer spring may readily be substituted; or a small thumb-screw may be inserted through the top of the thimble at D, passing down within the coil of the spring and entering the bar A at the foot of the spring, by turning which the parts may be drawn together, so as to secure a greater pressure of the spring when required.

The construction is simple and easily applied to any machine already in use.

I do not claim the use of a spring immediately connected with the needle or with the socket for holding the needle or any spring at-

tachment for a similar purpose not directly attached to the needle-bar, as seen in the patents of I. M. Singer and others; but

What I claim as my invention, and desire to secure by Letters Patent, is—

Constructing the needle-bar of sewing-machines with a cap or helmet, D, on its top, and a spring, *b*, or other elastic material which is equivalent in its effect—as india-rubber, air, &c.—interposed between the parts for the purpose of giving a yielding bearing to the thread, both in drawing in the stitch and when the shuttle passes the loop, whereby a very fine thread may be used without breaking, and a better seam produced in consequence of the even tension of the thread and gradual drawing in of the stitch, as described.

O. C. PHELPS.

Witnesses:
J. FRASER,
CLINTON ROGERS.