2 Sheets—Sheet 1.

BRADFORD & BARBER.

Sewing Machine.

No. 48,511. Patented July 4, 1865.

Fig. 1.

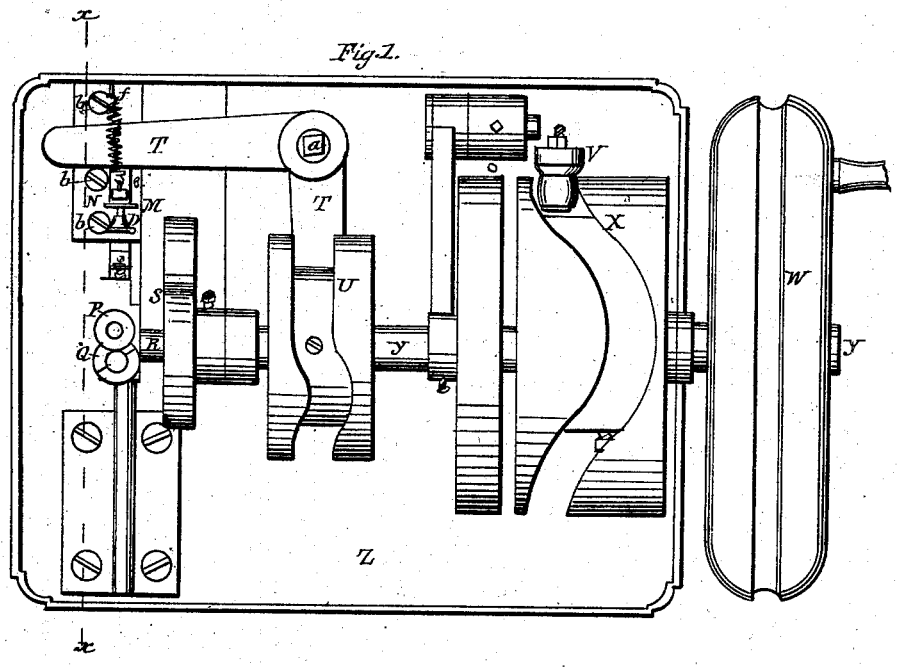
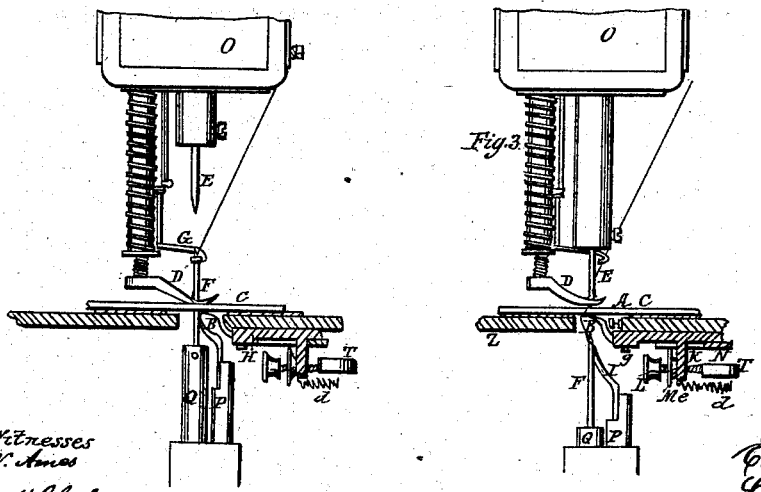


Fig. 3.



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2 Sheets—Sheet 2.

BRADFORD & BARBER.

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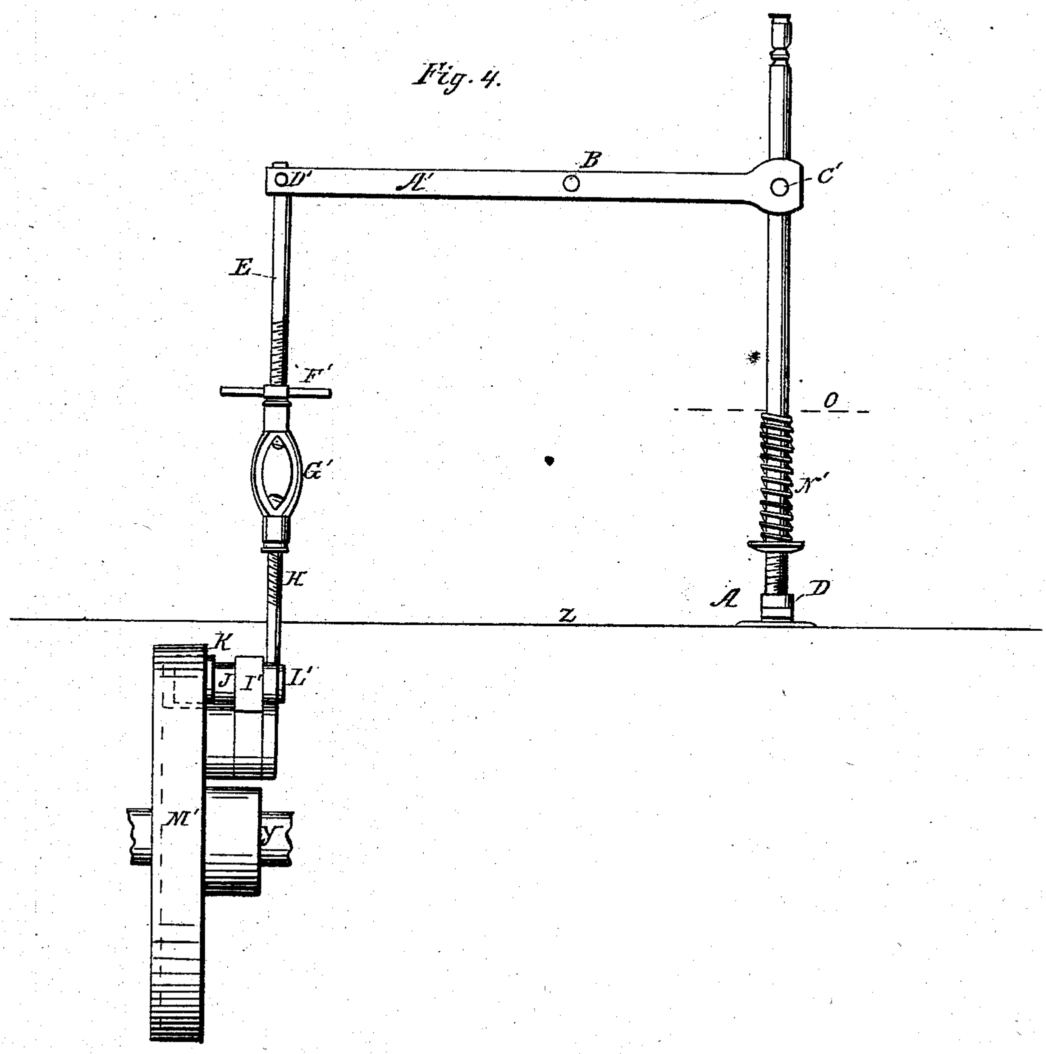
Fig. 4.



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L. L. Barber
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N. Ames

UNITED STATES PATENT OFFICE.

E. F. BRADFORD AND L. L. BARBER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **48,511**, dated July 4, 1865.

To all whom it may concern:

Be it known that we, E. F. BRADFORD and L. L. BARBER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Waxed-Thread Sewing-Machines; and we 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, forming a part of this specification, in which—

Figure 1 is a plan of the under side of the machine, and Figs. 2 and 3 are vertical sections in the line *x x* of Fig. 1, showing in elevation the working parts of our improvement. Fig. 4 is a skeleton drawing, showing the devices by means of which the presser-foot D is automatically raised when the material to be sewed is fed along.

Like parts are indicated by the same letters in all the drawings.

Our invention relates exclusively to what are known as "waxed-thread" sewing-machines, or, in other words, to sewing-machines in which are used a waxed thread and a barb or hook needle, either with or without an awl; and its nature consists, first, in producing the feed in a waxed-thread and hook-needle sewing-machine by means of the thread acted upon at the proper time by a finger or hook, or their equivalent, under the material to be sewed; second, in arranging the feed-finger B to operate upon the thread within a slot or hole in the sewing-plate, and either just below or flush with the upper surface of the same, so as to act upon the thread or loop as near to the material to be sewed as possible, and without producing any friction on the same; third, in the employment of an automatically-lifting presser-foot, in combination with a thread-feed and hook-needle sewing-machine, by means of which new combinations and arrangements we are enabled to secure a number of very important advantages.

First, we produce a simpler and consequently cheaper machine, more durable and less liable to get out of order than any other waxed-thread or hook-needle sewing-machine in general use.

Second, our machine enables us to make an even stitch, whatever the variations in the thickness of the material sewed, whereas with the waxed-thread or awl or needle-feed sewing-machines in general use the shortest stitch is made where the stock is thickest, and vice versa.

Third, our machine will sew around any desired curve without lengthening the stitch or rendering the stitch liable to be broken in the act of turning the material to be sewed.

Fourth, our machine is more sure to draw up and tighten the corner stitch in sewing round a right angle than other waxed-thread sewing-machines in general use.

Fifth, our machine is capable of sewing from one to several thicknesses of material without its being necessary to adjust either the tension or machine for that purpose.

Sixth, with our machine the material to be sewed can be adjusted on the sewing-plate or removed without the use of the operator's hand to raise the presser-foot—an advantage which we believe is not found in any other hook-needle or waxed-thread sewing-machine.

Seventh, our machine allows the needle and awl (free from all lateral strain) to follow each other up and down with less liability to get out of place than is the case with other waxed-thread sewing-machines in which the awl or needle-feed is used.

Eighth, our machine, we think, is much less liable to pucker thin stock than any other waxed-thread sewing-machine in use.

To enable others skilled in the art to make and use our improvement, we will now proceed to describe the construction and operation of the same.

The table Z, "goose-neck" O, main shaft Y, cam X, lever V, cam S, needle-bar Q and its friction-wheel R, needle F, "cast-off" I, with its carrier P, presser D, thread-guide G, and awl E, with its carrier, being all constructed, arranged, combined, and operating substantially as in other well-known machines, we will not describe.

A is the throat-piece.

B is the feed-finger, which, being forced against the thread at the proper moment, moves along the material to be sewed. This finger B consists of a piece of wire about one-eighth of an inch in diameter, and bent into the shape represented in Figs. 2 and 3, its lower end entering a horizontal hole in the end of the slide H, and its upper end, flattened on

two sides, playing freely in the throat-piece, without, however, extending quite up to the surface of the same. The flat slide H reciprocates freely in a suitable slot in the under side of the table Z, being held in place by means of the plate or cover N, which is attached to the under side of the bed-plate by the small screws *b*. The finger is confined in the slide H by means of the set-screw *g*.

K is an arm extending downward from the slide H. To the hook *e* in this arm is attached one end of the spiral spring *d*, the opposite end being attached to the stationary hook *f* in the bottom of the table Z. The purpose of this spring *d* is to draw back the finger B from the thread into the position shown in Fig. 2, said finger being driven forward against the thread at the proper time, between the awl and needle, into the position represented in Fig. 3, by means of the bent lever T, which is attached to the under side of the table Z by the pivot-screw *a*. One end of this lever is provided with a friction-roller, which plays in the grooved cam U, the latter being so shaped and timed as to actuate the said lever at the proper moment and force it against the end of the set-screw L, which passes through the arm K, whereby the finger B will be driven forward against the double thread or loop between the points of the awl and needle, and thereby produce the feed, the presser-foot D being raised to allow the material C to slide with freedom under it, as shown in Fig. 3. The presser-foot D is raised automatically by means of the devices shown in the skeleton drawing, Fig. 4, in which A′ is a lever turning on the fulcrum B′, and having its front end pivoted at C′ to the presser-foot bar, and its rear end pivoted at D′ to the rod E′, of which H′ is a continuation, the two being connected by means of a right-and-left-hand screw-nut, G′.

I′ is a vibrating bar, through the free end of which is passed the axis J′ of a friction-roller, K′, which latter runs in a cam-groove in the side of the wheel M′, fast to the driving-shaft Y. The lower end of the rod H′ is enlarged, and provided with a hole to receive the outer end of the axle J′, L′ being a broad-headed screw, by means of which the rod H′ is kept in place on the axle J′. Thus as the cam M′ (being properly timed on the driving-shaft Y) rotates the presser-foot D will be raised and allow the material to be sewed to slide freely under it. The height to which the presser-foot is raised above the sewing-plate may be regulated by turning the right-and-left-hand nut G′, so as to lengthen or shorten the distance between the points D′ and J′.

F′ is a check-nut.

The length of the stitch may be regulated by means of the set-screw L.

M is a check-nut to prevent the screw L from getting loose.

t is the common waxed thread employed for sewing leather. Other suitable thread, however, may obviously be used with our machine, if ever required. Proper tension is given to the thread in the usual manner. With our feeding device, however, much less tension on the thread is required than with any other, as the finger B, pressing on the loop, assists in drawing in the stitch.

In place of the finger B, it is obvious that a hook or other equivalent devices might be used to press or draw the thread at the proper moment under the material to be sewed, and between the awl and the needle when the latter are in the position represented in Fig. 3, and thereby accomplish the end required.

It is also obvious that our feed may be applied to a sewing-machine where only a barbed needle is used without an awl.

We do not claim, broadly, the thread-feed; but

What we do claim as new, and desire to secure by Letters Patent, is—

1. The thread-feed, in combination with a hook or barb needle, either with or without an awl, substantially as described.

2. The employment of the feed-finger B, in combination with a hook-needle or hook-needle and awl, substantially as and for the purpose described.

3. Arranging the end of the feed-finger B so as to slide and act upon the double thread or loop within a slot or hole in the sewing-plate, and with its upper surface either just below or flush with the surface of the plate, substantially as and for the purpose described.

4. The combination and arrangement of the finger B with the hook-needle F and automatically-rising presser-foot D, substantially as and for the purpose described.

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