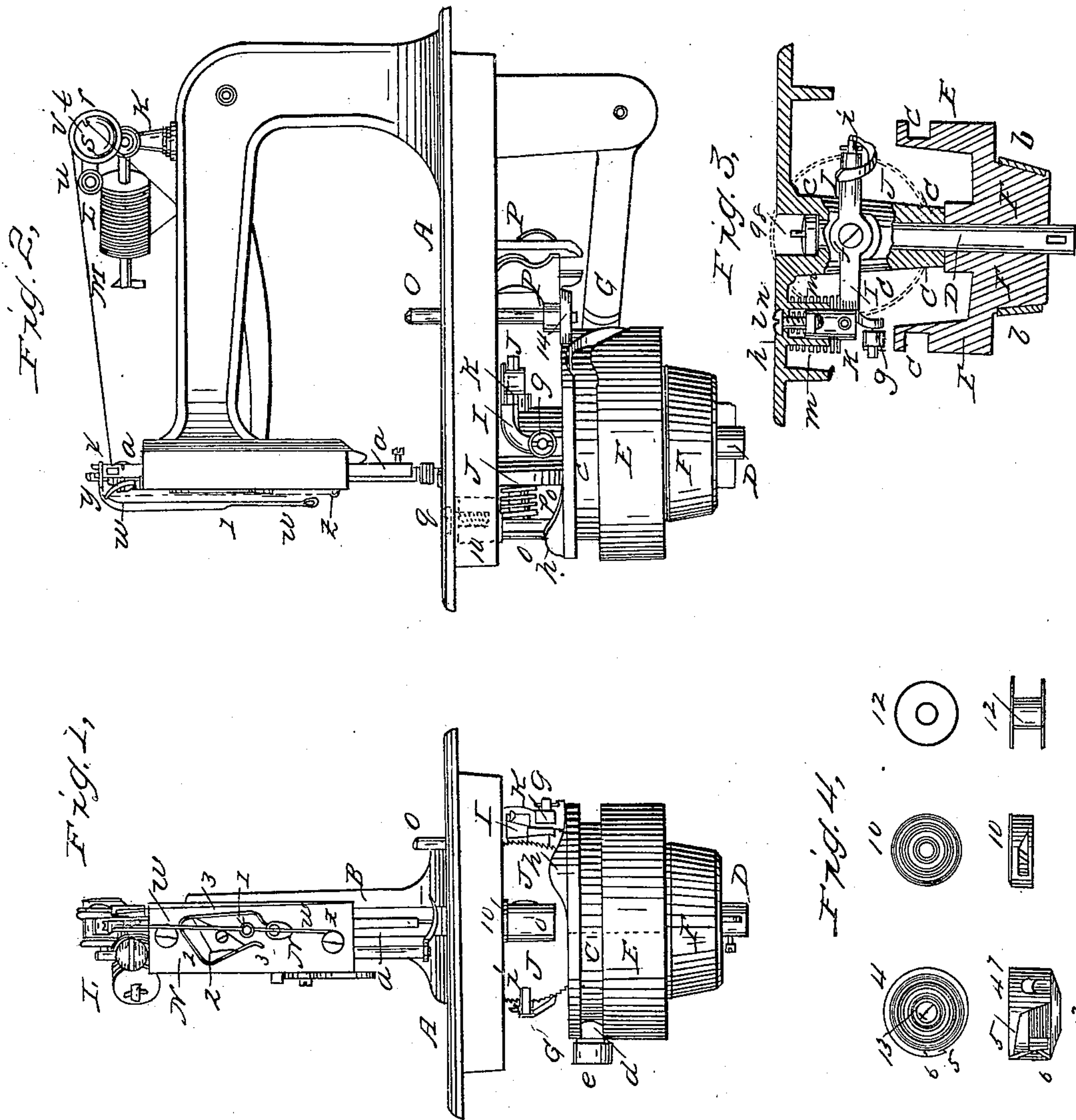


B. PICKERING.
Sewing Machine.

No. 42,687.

Patented May 10, 1864.



WITNESSES:
I. G. Wilson
Chas. D. Patton.

INVENTOR:
Barton Pickering
By atty. A. B. Stronghouse.

UNITED STATES PATENT OFFICE.

BARTON PICKERING, OF WEST MILTON, OHIO.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 42,687, dated May 10, 1864.

To all whom it may concern:

Be it known that I, BARTON PICKERING, of West Milton, in the county of Miami and State of Ohio, 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 construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a front elevation of the machine. Fig. 2 represents a side elevation thereof. Fig. 3 represents a section through the hub and cam under the bed or table of the machine, and showing a portion of the feeding mechanism in full. Fig. 4 represents the spool-carrier, spool, &c., in several positions, so as to show the entire construction of them together and separated.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in all the drawings.

My invention relates to several improvements in the construction of sewing-machines using a needle and revolving thread-carrier; also, to the unwinding take-up and tension apparatus; also, to the manner of hanging, adjusting, and operating the feeding-wheel and contrivance for operating it, as will be explained in connection with the drawings, so that any one skilled in the art may make and use the same.

A represents a bed-plate, having a spindle-hub, C, one surface of which is a plane, against which the feed-wheel J is held by the spring *p*, and on the opposite side it has also a plane surface, against which the feed-lever I is held by the screw *f* to prevent a lateral motion of said lever. It has also a hub, 11, having an orifice for the guide-piece *k*, also a hub, 10, having an orifice for the reception of the vertical part of the bracket-support O' of the feed-wheel J. The said spindle-hub C, the hub 10, also the hub 11, are cast with the bed-plate A, of which they are a permanent part.

To the upper surface of the bed-plate A is fastened the usual hollow arm, B, for supporting the lever or levers for operating the needle-bar *a*. The spindle D passes through and rotates within the spindle-hub C, the said spindle having fastened upon it the cam E and pulley F, by which the machine may be driven by the friction between it and another wheel.

There is a cam-groove cut around the cam-wheel E, in which a friction-wheel, *d*, on the end of a bent arm, *e*, that is a part of lever G, runs, and which gives motion to the needle-bar through the intervention of a second lever, H, to which the first-named lever, G, is jointed. The cam-wheel E has also a projection, *h*, on its upper surface to give motion to the feed-lever I, the several parts *c*, E, F, and *h* forming a single piece.

To the spindle-hub C is affixed a screw, *f*, Fig. 3, forming a fulcrum for the feed-lever I, which is nearly on a line with the axis of motion of the feed-wheel J. One end of the lever I has upon it a friction-roller, *g*, which is struck by the projection *h* on the cam-wheel E at every revolution of said cam-wheel, causing said lever to vibrate on its fulcrum. The other end of the lever I carries a spring-clamp, *i*, which grips the feeding-wheel J and causes it to move in the direction in which the material to be sewed is fed through or along, and is released and thrown back by a spring to prepare for the next feeding motion. An arm, *j*, on that end of the lever I that carries the friction-roller *g* passes through a slot in a supporting-piece, *k*, which supporting-piece is held within the socket of the hub 11 by the adjusting-screw *l*.

The spring *z* prevents the head of the screw *l* from being thrown up from its seat by the upward motion of the lever I. The piece *k* is adjusted by means of the screw *l*, which raises the end of the lever I, so that the motion of the lever I depends on where the projection *h* on the cam is struck by the roller *g*. The spring *m* carries the lever to the bottom of the slot in the supporting-piece *k* when the lever or friction-roller *g* is not in contact with the projection *h*. The higher the supporting-piece *k* is raised up by the screw *l* the shorter will be the stitch, and vice versa.

The feed-wheel J is hung on a bracket-support, *o'*, the horizontal portion of which forms the axle for the feed-wheel, and the vertical portion is held within the socket of the hub 10, Fig. 2, by means of a screw, *q*. The spring *p*, which surrounds a hollow cylindrical projection of the feed-wheel, presses the feed-wheel J firmly against the plane surface of the spindle-hub C, thereby preventing the feed-wheel from having a lateral motion, and also preventing the said feed-wheel from partaking

of a motion the opposite of that given by the lever I, which backward motion is produced in several ways, requiring a firm check to the feed-wheel, so that no motion is given without considerable force but that given by the lever I in the direction in which the catch *i* carries it. The spring *p* likewise presses against the vertical support, and thereby holds it more securely in the socket, so that the jar of the machine is not so liable to move the screw *q*. The position of the feed-wheel is adjusted by turning the screw *q* on the plate of the machine, thereby, by means of a screw-driver, readily adjusting the machine to different thicknesses of cloth or other material to be sewed by raising or lowering the feed-wheel.

Upon a standard, K, on top of the hollow arm B is supported the spool L upon an arm, M. The thread, as shown in red lines, is passed from the spool through an eye in the lever H, and thence to the tension-piece. The thread being held by the tension-piece, the downward movement of said lever causes a portion of thread to be unwound from the spool, and when the needle-bar ascends the thread is drawn from the tension-piece to furnish the thread for the stitch, and during this operation the thread hangs loosely between the spool and the tension-piece, so that if the thread adheres to the spool from any cause an uneven stitch is not produced, nor is the thread broken by over-tension, as the tension is given solely by the tension-piece.

The tension-piece, Fig. 2, is constructed with a standard, K, with the head *s*, (the head *s* being the end of a shaft,) on the opposite end of which is a nut, by which to regulate the tension of the thread.

v is a grooved wheel, about which the thread is wound, and *u* a grooved arm, over which the thread is passed from the slot *r* to the said grooved wheel, on either side of which there is a piece of felt. The end of the shaft next to the head *s* passes through a square slot in the standard K to prevent the shaft from turning. Around the shaft, and within the chamber of the standard K, is a spiral spring pressing against the screw of the shaft *s*, by which the movement of the nut effects a more gradual change of tension.

The grooved wheel *v* moves freely on a round part of the shaft, and by turning the thumb-screw of the shaft the grooved wheel *v* is pressed between the head *s* and a portion of the standard K, thereby regulating the tension of the thread. The tension of the thread is likewise effected by the passage of the thread between the head *s* and the felt *t*. The thread is passed from the spool through an eye in the lever H to the slot *r* in the head *s*, thence between the said head and felt *t* over the grooved arm *u*, thence once and one-half around the grooved wheel *v*, thence to the eyes *x y z*, and thence to the thread-controller *w*, which is a spring connected to the top of the needle-bar *a*. This thread-controller has a stud or pin in it at 1, which, as the controller rises with the needle-

bar, comes against an angular-shaped switch, 2, fastened to the face-plate N, and follows said switch both in rising and falling, owing to a spring, 3, nearly surrounding said switch, and which forces said stud or pin 1 to follow the outline of the switch. The object of this thread-controller and the mechanism for working it is to take up the thread to form the stitch, and to hold the thread tight to prevent the thread looping on the material being sewed when the needle makes the downward movement. From the thread-controller the thread passes through the eye of the needle. By this plan of threading the machine I have the unwinding the tension and the take-up working in perfect harmony with each other.

The thread-carrier 4 is mainly cylindrical, but having a portion of the perimeter, as at 5, cut away to make it eccentric at that part; and at that part made thus eccentric it is cut through to the interior, and has next to the eccentric portion a point, 6, to catch the loop of the needle-thread to form the stitch. There is also a slot, 7, cut in the thread-carrier, into which the pin 8 on the top of the spindle D takes to rotate it. A portion of the thread-carrier from 6 toward 5, Fig. 4, or beyond the latter point, and on top of the thread-carrier, is cut away to prevent the thread-carrier from rubbing or chafing the thread against the slide in the bed-plate covering the thread-carrier chamber, and there is a slot in the slide to aid in thus preventing the rubbing or chafing of the thread. In the center of the thread-carrier is a hub which supports the spool and tension-piece. The thread-carrier fits into and rotates in the recess 9 formed for it in the bed-plate A. The tension-piece 10 sets over the top of the thread-carrier 4 and closes said top. This tension-piece 10 has an opening, 11, in it, and a series of holes in its top for the purpose of adjusting the tension of the thread. The spool 12 is placed over a solid hub in the thread-carrier, and the thread passes from this spool over the edge of the tension-piece, the edge being on a line with the center of the spool, and as the thread is thus unwound from the center of the spool 12 the tension is more uniform, and consequently less care is needed in spooling the thread. The thread passes from the edge of the tension-piece, thence through the slot 11 in the tension-piece, and thence through one of the openings or holes in its top, as may be required. The holes are at different distances from its periphery, and as the tension of the thread is measurably given by its bearing against the edge of the spool, the farther the hole through which the thread passes is from the periphery the greater will be the tension upon it.

In the direction of the movement of the thread-carrier the chamber 9 is cut away, commencing at the needle-slot, as shown by the dotted lines in Fig. 3, for the purpose of preventing the thread being broken between the said chamber and the thread-carrier before the point of the said thread-carrier is fully within

the loop. When the spool is placed upon the hub in the thread-carrier the tension-piece 10 is then placed upon the hub over it and screw 13 run down to hold both in place.

o is a spool-winder, it having a friction-disk, 14, on its lower end, which can be set up in contact with the periphery of the cam-wheel *E* and clamped there by screw-clamp *P*, so as to drive it by friction.

I am aware there are various modes of adjusting the feed-wheel and staying it firmly in position while the feed-motion is not communicated. Among others are those of Wm. C. Hicks's patents, severally dated November 8, 1859, March 26, 1861, and April 16, 1861.

I am aware, also, that similar devices to those herein specified to give motion to the feed-wheel and to regulate the stitch by an adjusting-screw in the bed-plate of the machine have heretofore been used.

Having thus fully described the construction of my sewing-machine, what I claim therein as new, and desire to secure by Letters Patent, is—

1. For the purpose of operating the feed-wheel *J*, the lever *I*, connected to the spindle-hub *C* by the screw *f*, for its fulcrum, operating substantially as described.

2. The combination of the screw *l*, springs *m* and *z*, the hub 11, with a socket for the supporting-piece *k*, which has a slot for the reception of an arm, *j*, of the lever *I*, for the purpose of regulating the feed of the material being sewed, substantially as described.

3. The bracket-support *o'*, it being held in the socket of the hub 10 by the adjusting-screw *q* for sustaining the feed-wheel *J* in position, as desired, in combination with the plane sur-

face of the spindle-hub *C* and the spring *p*, the different parts being constructed and operating substantially as described.

4. The passing of the thread from the spool *L* through an eye in the lever *H*, thence through the slot *r*, thence between the head *s* and felt *t*, thence over the grooved arm *w*, and thence around the grooved wheel *v*, for the purpose of unwinding the thread and securing a uniform tension of the thread, substantially as described.

5. The construction of a tension-piece, 10, Fig. 4, connected to a thread-carrier (similar to that patented by Joseph Bond, Jr., May 22, 1855) by a screw, 13, which keeps the said tension-piece and spool 12 in position within the thread-carrier, the said tension-piece being constructed and operating to regulate the tension of the thread, substantially as described.

6. The construction of a tension-piece composed of several parts—namely, the standard *K*, the spool-arm *M*, shaft *s*, arm *u*, and the pieces of felt *t*—in combination with the grooved wheel *v*, to aid in the operation of unwinding the thread and to give a uniform tension to the thread, the whole operating substantially as herein set forth.

7. Casting the bed-plate *A* with the spindle-hub *C*, the hub 10, and the hub 11 in one piece, the different parts being constructed substantially as herein specified, and for the purposes set forth.

In testimony whereof I have hereunto set my signature this 18th day of July, 1863.

BARTON PICKERING.

Witnesses:

SAMUEL HAHN,
R. R. CHASE.