

T. C. THOMPSON.

Sewing Machine.

No. 9,641.

Patented March 29, 1853.

Fig. 1.

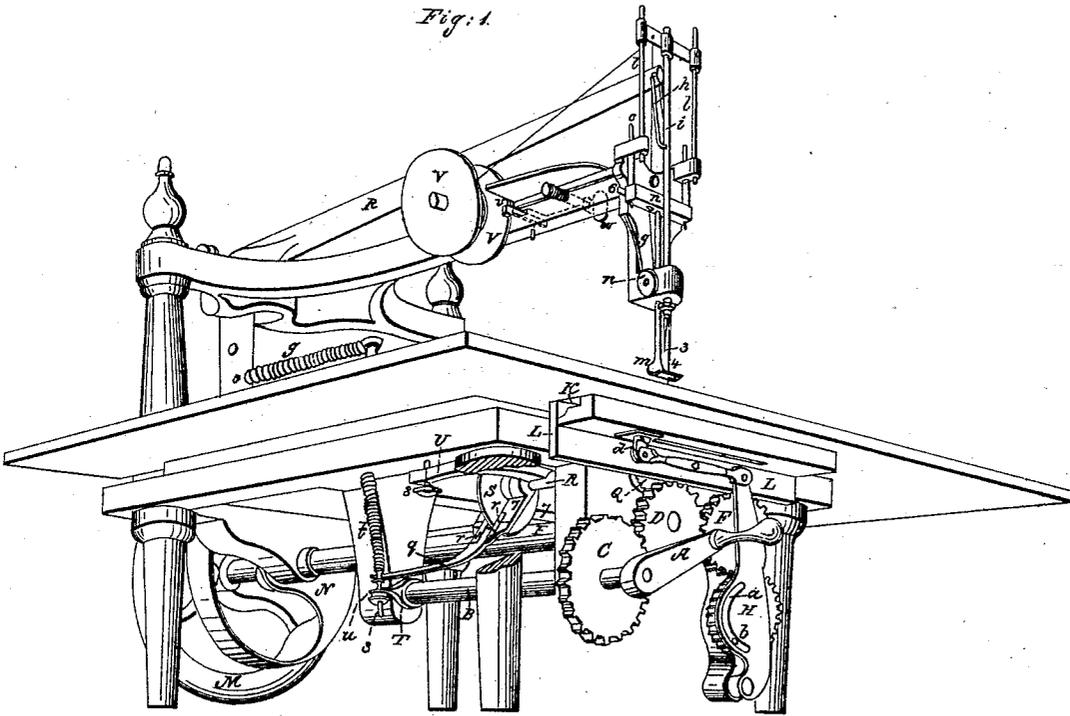
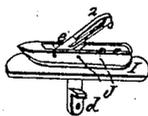


Fig. 2.



UNITED STATES PATENT OFFICE.

THOS. C. THOMPSON, OF ITHACA, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 9,641, dated March 29, 1853.

To all whom it may concern:

Be it known that I, THOMAS C. THOMPSON, of Ithaca, in the county of Tompkins and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a perspective view of the entire machine, and Fig. 2 represents the shuttle and shuttle-driver detached.

The nature of my invention consists, first, in charging the race or shuttle with magnetism, for the purpose of keeping the shuttle in perfect contact with the face of the shuttle-race without the use of springs or holders of any kind, while at the same time I insure the taking up of every stitch; also, in making the shuttle with a hinged cap for the more readily placing therein and retaining of the bobbin or cop, which is used without a spindle or spooler, the thread being drawn from the inside of the cop or bobbin, by which means a uniform strain or tension is preserved on the bobbin or cop thread.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

Motion may be communicated to various parts of the machine by means of the crank A on the shaft B; or a crank may be placed on the other end of said shaft, to which a foot-treadle may be fixed, for the same purpose. The gear-wheel C on the shaft B meshes with a spur-gear, D, on the shaft E, which in turn works into another gear-wheel, F, meshing with the cog-wheel G, by which arrangement of gearing the wheel G receives its motion.

To the lower part of the machine, near the wheel G, is hung an arm, H, and in a slot, *a*, therein a pin, *b*, on the wheel G works, which vibrates said arm H. To the top of the arm H is attached one end of a connecting-rod, *c*, the other end being attached to a projection, *d*, on the under side of the shuttle-driver I, Fig. 2, which is a plain crescent-shaped piece of brass or other metal, the two points of which span the shuttle J and drive it to and fro in the raceway K, Fig. 1, by contact merely, it having no positive mechanical connection with the shuttle, which admits of the shuttle being

readily taken out to receive its bobbin and as readily replaced.

The external form of the shuttle is substantially the same as those in common use; but instead for providing it with a spindle or a fixture of a spooler, as is the universal custom, I hinge thereto a curved cap, *e*, which is represented in Fig. 2 as being raised up to receive the bobbin *f*, and on said cap I place a spindle, 1, and spring 2, around or under which the bobbin or cop thread may be placed to prevent it from being too freely drawn out of the cop.

The bobbin or cop is first wound (in a separate machine) upon a spindle or spooler, and, for the more perfect security of keeping them in shape, may be wrapped up in thin paper, and then slipped off, the inside end of the thread being preserved, and from which inside end the thread is supplied. This method of working from the inside of the bobbin or cop and dispensing with the use of the spindle or other means of controlling the bobbin in the shuttle preserves a uniform strain or tension upon the thread, which is very essential in speedy sewing, and which has not nor cannot be procured where the bobbin is controlled, as the tension is constantly varying as the thread is playing out from the point or heel of the bobbin. Besides, it economizes space in the inside of the bobbin, which is necessarily limited in size, and dispenses with many of the delicate pieces of the apparatus which are most liable to derangement.

The face L of the raceway may be made of a plain steel or iron plate, straight in this machine, but may be curved when the shuttle runs in a curved line for any other purpose, and charged with magnetism by a common magnet or otherwise, so that when the shuttle J is dropped into the raceway (it being made also of iron or steel) it will be immediately drawn into close contact with the said face-plate L or its equivalent by the magnetic attraction of the metals, and thus work close up to it while being driven back and forth by the shuttle-driver, thus avoiding the use of springs, arms, or any other mechanical device for holding the shuttle up to its place, and simplifying the machine by dispensing with its more minute pieces, which constantly endanger its perfect success.

It is obvious that other parts of the apparatus may be charged with magnetism—as, for

instance, the shuttle-driver—and produce the same results; but the principle of this part of my invention embraces the keeping of the shuttle in its proper working position by means of magnetic attraction applied in any form or manner that will control the shuttle or its action.

On the extreme end of the shaft E, I place a fly-wheel, M, to regulate the motion of the machine, and inside of said fly-wheel, on the same shaft, I place a cam-wheel, N, (it being a simple disk with a flange turned on it, in which the cam is cut,) against which a friction-roller in the end of the arm O is held by means of the helical spring *g*. The arm O has an arm, P, on it, and at right angles, or nearly so, thereto, forming together an L-shaped piece, which is hung at the angle upon any suitable bearing upon which it may freely vibrate. The arm O, in following the cam, gives to the arm P a vibratory motion, which, by means of the link *h*, is communicated to the needle-bar *i*.

On top of the needle-bar *i* is placed a cross-head, *k*, moving on guide-rods *l l*, to keep it steady, and the lower end of the needle-bar is slotted to receive the punching and sewing needles 3 4, (one or both, as the case may be,) the punching-needle 3 being only used when sewing leather.

The needles are held in place by means of a nut, 5, run onto a thread or male screw cut on the end of the needle-bar. The sewing-needle 4 is of the usual form of machine-needles—viz., straight, with the eye in or near the point. The stitch formed is of the kind well known in machines for a similar purpose, and termed the "lock-stitch." The method of forming the loop in the needle-thread, through which the shuttle passes and carries its thread, is well known, and, having been frequently and fully described, need not here be specially set forth.

m is the cloth-holder, the lower end of which is slotted for the needles to pass through, and which holds the cloth down upon the table and feeding-wheel when the needles are being withdrawn from it; and the upper end of it is fastened in a cross-head, *n*, which can be moved up on the guide-rods *o o*, around which the springs *p p* are coiled, so as to raise up the cloth-holder when it becomes necessary to remove or replace the cloth upon the table or feeding-wheel. To move up the cloth-holder, the spring 6, which is attached to its cross-head *n*, should be pressed out of its notch, when it may be raised up, and by springing into another notch be held up until the cloth is removed, replaced, or the shuttle refilled, as the case may be. When it is to be let down, a similar operation of the spring is resorted to, and the helical springs *p p* force it down into place, where it is again held by spring 6 taking into its notch.

The feeding-wheel Q (a small portion of it only being seen) is placed on the shaft R, and the wheel projects just far enough through the table to catch the cloth on its sharp points or

teeth and feed it along under the needle. On the shaft R is placed a plain disk-wheel, S, which is embraced by the branched ends 7 7 of the lever *q*, also attached to said shaft R, and on said branched or forked ends of said lever *q* are placed the springs *r r*; so arranged as to press against the disk-wheel S on both of its sides or faces. The extreme end of the lever *q* moves upon a rod, *s*, around which is coiled a spiral spring, *t*, and on the end of said rod is a set-screw, *u*, for adjusting the lever so as to regulate by it the quantity of feed to be given to the cloth, and which adjustment of feed regulates the length of stitch to be taken. A cam, T, on the shaft B, at each revolution of said shaft, strikes the lever *q* and raises it up. In rising the springs *r r* clutch against the sides of the disk-wheel, giving to it a part of a revolution, and when the lever is released from the cam it is thrown down by the expansion of the spiral spring *t*, the springs *r r* in this case rising up and releasing the disk-wheel and slipping on the faces of the wheel without clutching or turning it backward. Thus the feed is continuous in one direction, while the parts that operate the feed-wheel reciprocate back and forth. The turning of the shaft R by this intermittent movement feeds up the cloth (by means of the feeding-wheel Q) at the proper time and allows it to rest when the stitch is being formed. U is a lever-brake pressing on the shaft R, and made adjustable by means of the set-screw 8 to prevent the shaft from turning backward when the springs *r r* slip back, and to make both the motion and rest of the feed-wheel on said shaft more reliable.

The needle-thread represented by a red line is wound on and taken from a reel, V, and in its passage to the needle 4 passes first through the cross-heads *k n*, thence around the friction pulley or roller W two or more turns, to give it the necessary tension, and then through the eye of the needle, which is near its point.

The object of the friction-pulley W is that it may take up the slack of the thread while the needle is piercing the cloth without running the twist out of the thread, as is the case where a thread-holder or pad is used, as heretofore. It is obvious that, the slack being taken up by the mere turning of the roller, the thread moving with it will accomplish this desirable result. A small friction-spring, 9, bears against the pulley or roller W, to prevent it from moving too freely, and this spring may, if found necessary, bear or rest upon the thread which is wound around it; but as a general thing, unless in very heavy sewing, two or more turns of the thread around the pulley will be found sufficient. A friction-brake, *v*, is also applied to the flange of the reel carrying the needle-thread, which may be increased or diminished by the set-screw *w* to regulate to an extent the paying off of the thread from the reel or spool, and applying the pressure on the flange instead of at the center or ends makes it susceptible of the very nicest adjustment.

I have particularly pointed out the various adjustments of the several parts of this machine, and although they may be considered as merely incidental and not patentable, yet are very essential in securing perfect work with the great rapidity with which the machines are run.

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The magnetic shuttle and race (one or both) for the purpose of keeping the shuttle in perfect contact with the face of the shuttle-race without the use of springs or any other device, and thereby insuring the securing of every stitch, substantially as described.

2. The curved and hinged cap, in combination with the shuttle, to confine the cop in the shuttle, substantially and for the purpose set forth.

3. The use of a cop without a spindle or spooler, in combination with a shuttle or its equivalent, when the thread is drawn from the inside of the cop, by which means I retain a uniform draft on the cop-thread as it is drawn or paid out from the shuttle, substantially as described.

T. C. THOMPSON.

Witnesses:

A. B. STOUGHTON,
T. C. DONN.