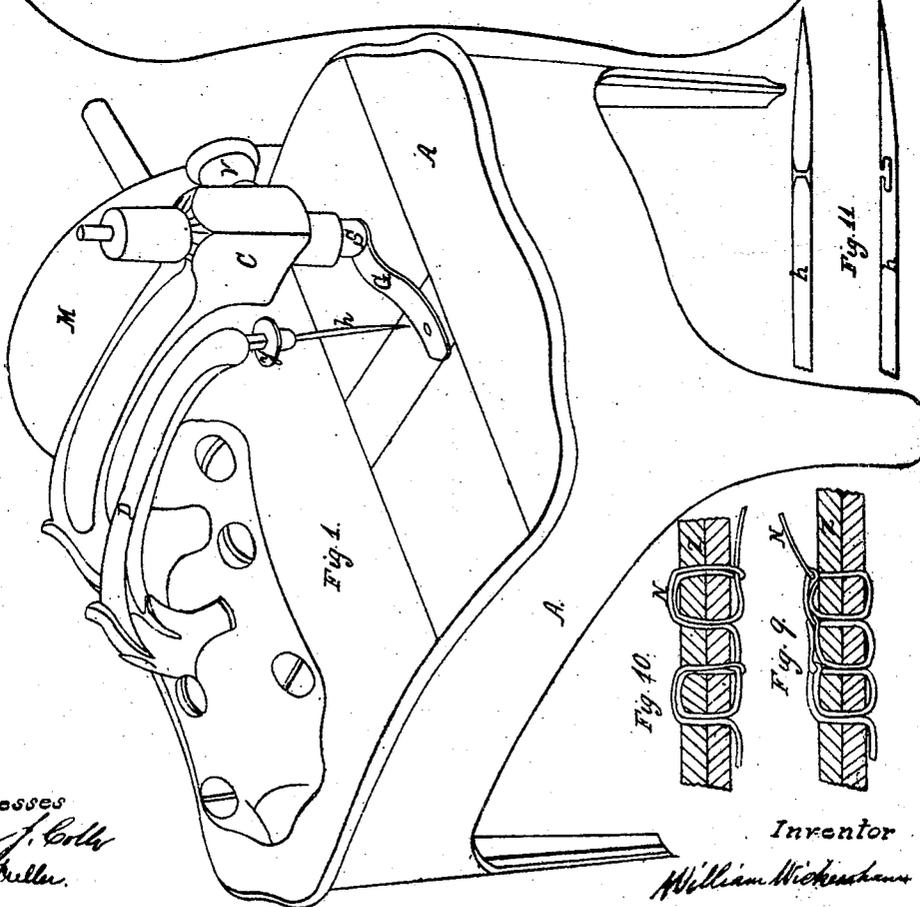
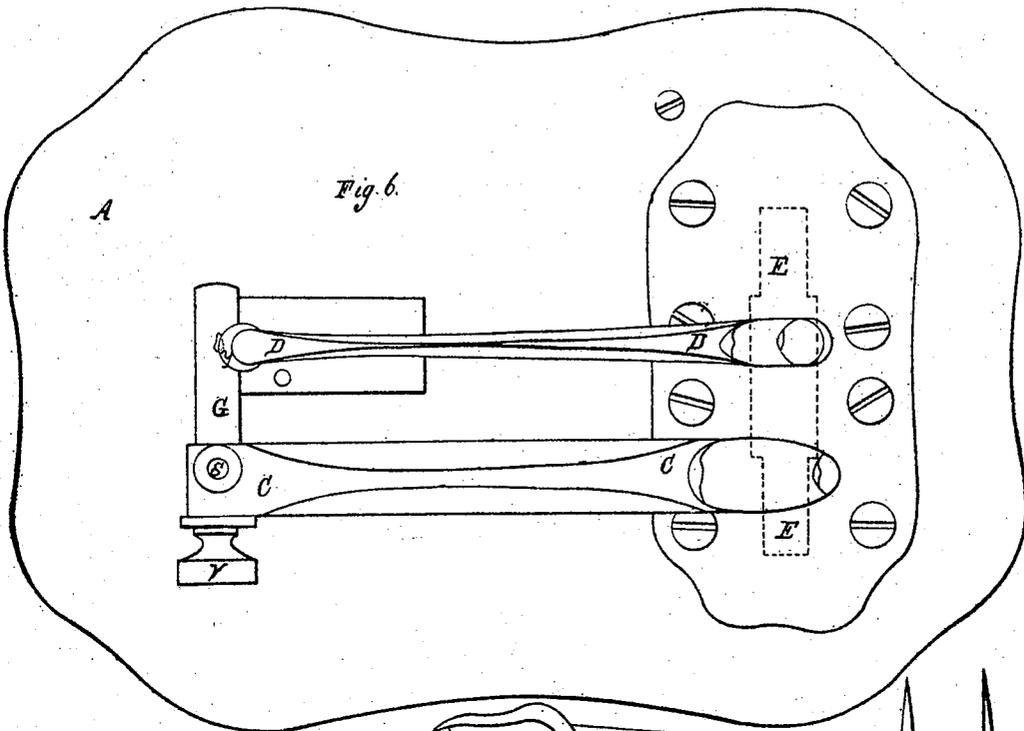


W. WICKERSHAM.
SEWING MACHINE.

4 SHEETS—SHEET 1.

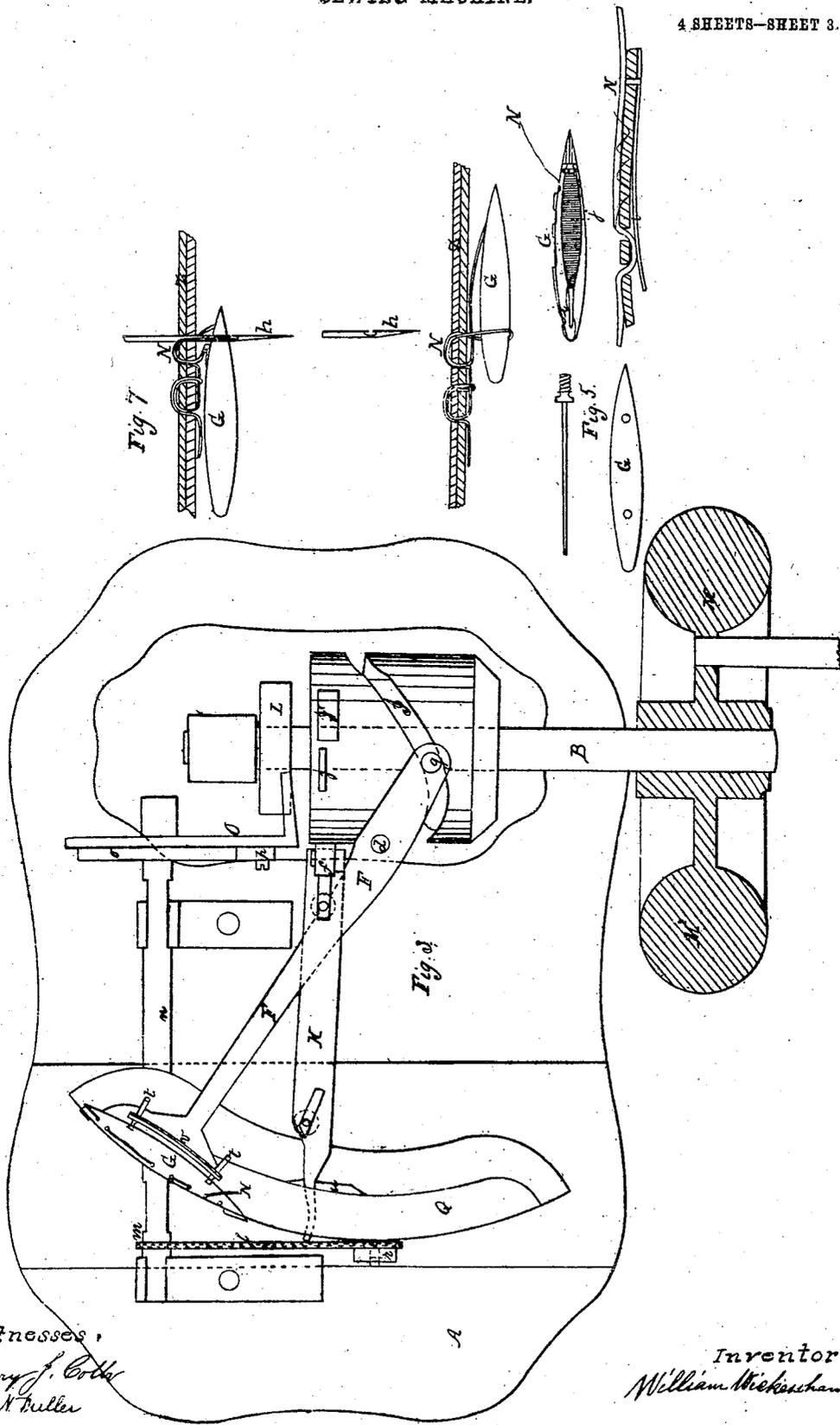


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4 SHEETS—SHEET 3.



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PATENTED AUG. 25, 1857.

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4 SHEETS—SHEET 4.

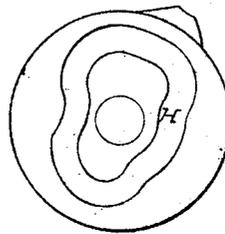
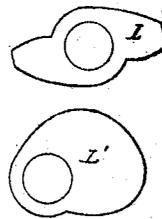
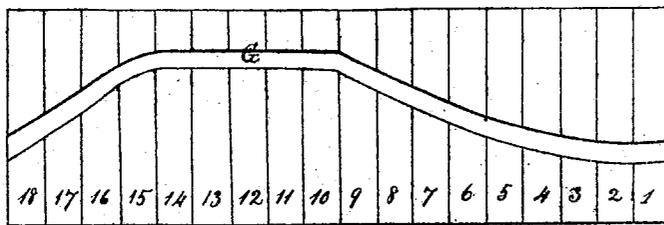


Fig. 8.



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IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 18,068, dated August 25, 1857

To all whom it may concern:

Be it known that I, WILLIAM WICKERSHAM, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full and exact description of the construction and operation of the same.

The nature of my invention consists in a sewing-machine so constructed and embracing such combination of parts as to enable it to sew in cloth or other material with one thread by so tying it into the cloth in the formation of the stitch as to render it impossible to unravel the same when sewed.

To enable others to make and use my invention, I will proceed to describe its construction and operation, and in doing so I will use the same titles to designate the same parts in the different drawings which make a part of this specification, in reference to which—

Figure 1 is a perspective view of said machine. Fig. 2 is a side sectional view, showing a portion of the machinery or parts arranged in their working position. Fig. 3 is a top view of the machine as it would appear if the upper part of the stand or table were removed. Fig. 4 is a cross-section of the front part of the machine, showing the cloth-holder Z and the apparatus for raising it and pressing it onto the cloth. It shows the needle and its attachment to the needle-bar D. It also shows the feeding apparatus. Fig. 5 illustrates the shuttle. Fig. 6 gives a top view of said machine. Fig. 7 shows the formation of the stitch in its different stages until completed; also, it shows the end of the thread-guide, which throws the thread into the eye of the needle, on a large scale. Fig. 8 is a surface view of the cams, showing their forms. Fig. 9 shows the continuous stitch, and Fig. 10 shows the intermittent stitch which my machine makes. Fig. 11 shows the needle on a large scale.

In the specification of my machine, A represents the table or stand, to which the different parts of the machine are attached. B is the main shaft. C is an arm fastened upon the table, which contains the cloth-holder and the apparatus for operating. D is the needle-arm. E is a shaft, to which the needle-arm is connected. F is a lever, which moves the shuttle. G is the shuttle. H is a cam, which gives

the needle-arm D and the needle *h* their requisite motion. I is the cam which moves the lever F and the shuttle. J is the cam which moves the thread-guide K. L is the cam which gives the feed motion when the intermittent stitch is made. (Shown at Fig. 10.) L' is the feed-cam, which is used when the continuous stitch is made. (Shown at Fig. 9.) M is the fly-wheel. N is the thread. O is the feed-lever, operated by one or other of the cams L and L'. Q is a groove or way suitably formed for the shuttle to play in. S is a bar or rod fitted movably into the end of the cam C, with a foot, Z, on the lower end to hold the cloth firm while being sewed. V is a small cam to raise the cloth-holder *z* off the cloth. W is a spring to hold said cloth-holder down while the cloth is being fed along underneath it. H is a spring to throw the feed-lever into the first position after it has been moved by the feed-cam L or L'. H' is a spring to draw the thread-guide F into its first position after it has thrown the thread into the eye of the needle. *z* is the foot on the cloth-holder. *e* is a small notch on the end of the thread-guide *k*, to hold the thread while being guided into the needle-hook. *h* is the needle. (Shown on a large scale at Fig. 11.) *r* is a small spring to give tension to the thread as it passes between said spring and the side of the shuttle. *j* is the bobbin or spindle with the thread wound onto it in such manner that it can pass freely off at one end while being sewed into the cloth. *j'* is the spindle, (shown separate from the shuttle,) which is screwed into it when ready for use. *l* is a chain for feeding the cloth, having small teeth in one edge of it. (Shown in a part just under the foot *z* of the cloth-holder. This chain is operated by a small gear, *m*, on the shaft *n*. *p* is a dog attached to the feed-lever O, to work in the teeth of the ratchet-gear *o*, and turn it when said lever is moved by the cam L. *p'* is a spring to the dog *p*, to keep it in the teeth of the ratchet-gear *o*. *r* is a roll or pulley for the feed-chain to pass over at one side. *s s* are two points fastened into the spring *v* on the shuttle-lever F, which pass into small holes in the shuttle for the purpose of moving it. On the back part of said points or pins *s s* are projections *t t*, which pass successively against the projection *u* in such manner as to cause each one of the points *s s* to move out from the shuttle, when it comes near to the

loop of the thread which the shuttle is going through, in such manner that said points will not prevent the shuttle from passing freely through the loop. At *c* and *c'*, Fig. 11, is shown a front and a side view of the eye of my needle, which consists of two hooks, one above and one below the opening for the thread to pass into either one or the other of said hooks. One of these hooks is to carry the loop of the thread up through the cloth, and the other to carry said loop down through the cloth in another place, so that the shuttle can pass through said loop. These hooks may be made by first making a long eye in the needle, and then half-way down from one end to the other of said eye making a gap or opening into it from one side of the needle, as shown in a side view at *c'*, Fig. 11. I have the point of my needle inclined toward the side which the hooks are on, for the purpose of making all the pressure of the cloth on the opposite side from the hook to prevent said hooks from catching into the cloth. *w* is a piece of metal fastened into the end of the needle-arm D, having a slot cut in the lower end suitable to hold the needle, and a tapering screw cut on the outside of the nut *y* to screw on to fasten the needle.

Having described the principal parts of my machine, I will now proceed to explain its operation.

In turning the main shaft B the needle *h* is made to move up and down by means of the cam H operating the needle-bar D through the pin *a*, turning upon the shaft E. I will suppose that the shaft B has been thus turned until the needle-bar has come to the position seen in Fig. 2. The same position of the needle is also shown in example 2, Fig. 7, where two thicknesses of the cloth G are shown, and the thread is represented stretched on the under side of the cloth below the needle, as it would be after one stitch had been sewed and the shuttle had moved forward to its farthest point, drawing up the loop close around the thread N, which the shuttle had just passed through said loop. The next stage in the formation of the stitch is shown in example 3, Fig. 7. In this example the machine has been turned far enough to cause the thread-guide F to move from its first position back a little from the needle by its roll *f'* passing into the cavity J' to receive the thread and take it out of the way of the needle-point as it descends; also for the needle to pass down and the thread-guide to move the thread forward, wrapping it partly around the needle, as seen in example 3, Fig. 7, by means of the cam J pressing against the roll *f*. The thread being held in this position, the machine continues to turn until the opening in the eye of the needle has come up even with the thread thus pressed against the needle by the thread-guide, and the thread passed into the eye, completing the example 3. Then by turning the machine farther the needle is caused to move up, carrying the thread which was just thrown into its eye to its highest position. Meantime the thread-guide has been

withdrawn to its first position, the shuttle has moved back until the hole from which the thread comes is about even with the needle, and the cloth G has been fed along far enough for a stitch by means of the cam L moving the lever O, the dog *p*, the ratchet-gear *o*, the shaft *n*, and the small chain-gear *m*, which moves the chain *l* and the cloth with it, completing the position of example 4, last referred to. Another movement of the machine causes the needle to pass down, the shuttle in the meantime receding sufficient to take up the slack thread of the loop above the cloth and in the eye of the needle as the needle passes down. When the needle reaches its lowest point and raises up a little, causing a loop to form on the side which the shuttle passes, the shuttle moves forward, so that the point of it passes through the loop while one side of said loop is close in the upper hook of the needle, bringing the shuttle and needle to the position shown in example 5. The needle then raises up and the shuttle goes forward in such manner as to take the loop out of the hook and bring the needle and shuttle to the position of example 6. By the shuttle moving forward to its farthest point it will readily be seen that the loop which it has just passed through will be drawn up to the cloth and close around the thread coming immediately from the shuttle. The cloth is then fed along far enough for a stitch, bringing the cloth, the needle, and thread into the same position as shown in example 2, with the addition of another stitch sewed. To continue the operation a seam is formed appearing intermittent on one side of the cloth—that is, appearing to have a space and stitch alternately, as shown in Fig. 10. The motion of the needle in these examples is given by the cam H through the pin *a* and the needle arm or lever P, and the motion of the shuttle is given by the cam I through the pin *g* and the lever F, turning on the stud *d* as a fulcrum.

By substituting the feed-cam L' for L, the one used in forming the stitch just described, the cloth is fed along only once every time the shuttle passes through the loop, making a continuous stitch, as shown in Fig. 9.

In this specification it will be seen that a chain-feed which moves the cloth is substituted for a rack-feed which moved the machine as previously described.

My shuttle has some peculiarities which render it very valuable. The spindle *j*, upon which the thread is wound which is to be sewed into the cloth by my machine, is fastened or screwed into one end of the shuttle, as seen in Fig. 5; and the thread comes off at one end of said spindle, as shown at *q*, Fig. 5, and passes out through a small hole in the end of the shuttle, then it passes in through another hole in the side of the shuttle, then between the opening *i* and the inside of the shuttle, and through another hole to the outside again, as shown on a large scale at Fig. 5, which gives it a slight tension, which may be

increased to any desirable amount by passing through other holes in the side of the shuttle after it has passed between said spring *i* and the inside of the shuttle, as seen in Fig. 3. In Fig. 5 is shown at G the shuttle complete, with the bobbin or thread wound upon the spindle *j*, the thread passing off of the spindle at *g*, the small tension-spring *i*, and the thread N as it receives its tension by passing under the spindle *i* through the holes in the side of the shuttle, and out of it as ready for use; at G', a section of the side of the shuttle where the thread receives its tension, the tension-spring *i*, and the thread N passing in through one hole between the tension-spring and the inside of the shuttle and to the outside again through another hole, on a large scale. At G'', Fig. 5, is seen the back part of the shuttle, with the two holes for the points *s s* to work in in moving the shuttle. At *j'*, Fig. 5, is shown the spindle, with the screw at one end to fasten it into the shuttle by. At G, Fig. 2, is shown a cross-section of said shuttle.

I have represented the bobbin and bobbin case or shuttle in the form seen in the drawings merely because that appears to be the most practical form when put into operation; but the bobbin and its case may be made in varied forms. I have made it very short, not to exceed three-eighths of an inch in length and about one inch in diameter, and when using it in this form I had the loop thrown round it by means of a hook, instead of having

the bobbin-case or shuttle pass through the loop, as above described.

Having fully described my machine, what I claim as my invention, and desire to secure by Letters Patent, is—

1. A fast stitch made by one thread, which is formed by having the loop or double of the thread pass through from one side of the cloth to the other, and back again in another place to the first side of said cloth, and around the same thread of which the loop is formed by means of a shuttle carrying said thread through said loop, substantially as herein specified, and illustrated by Figs. 7 and 10.

2. A thread-guide with a notch or opening, *e*, in one side of it to receive the thread, and formed and arranged substantially as described, so that the thread may pass into it when said thread is to be guided into the eye or hook of the needle and pass out of said notch in the thread-guide at other times.

3. The use of a double-hooked needle, as described, in taking the thread both ways through the cloth, one way or up through the cloth by means of one hook, and the other way or down through the cloth by means of the other hook of the same needle, all substantially as above described.

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EDWD. C. MOREHOUSE.