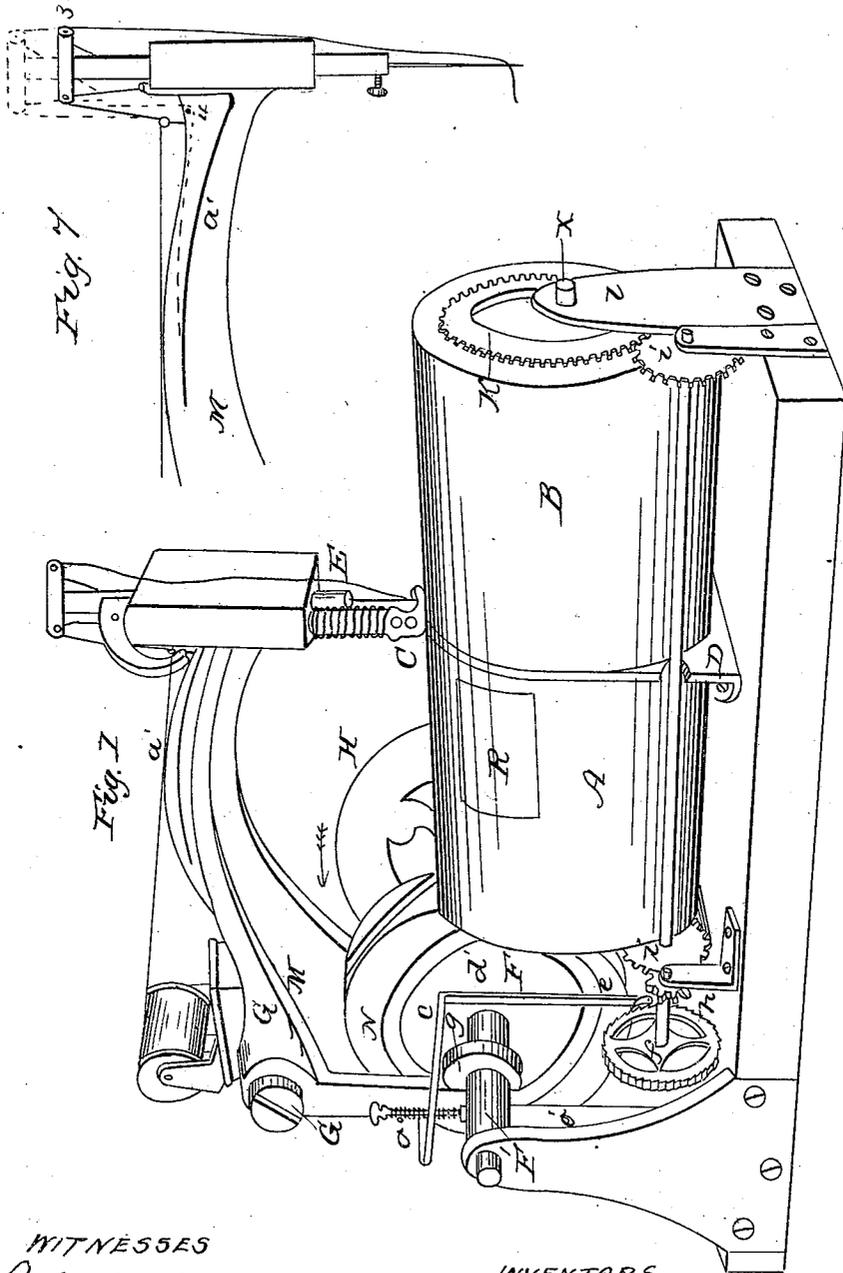


SAWYER & ALSOP.

Sewing Machine.

No. 25,918.

Patented Oct. 25, 1859.



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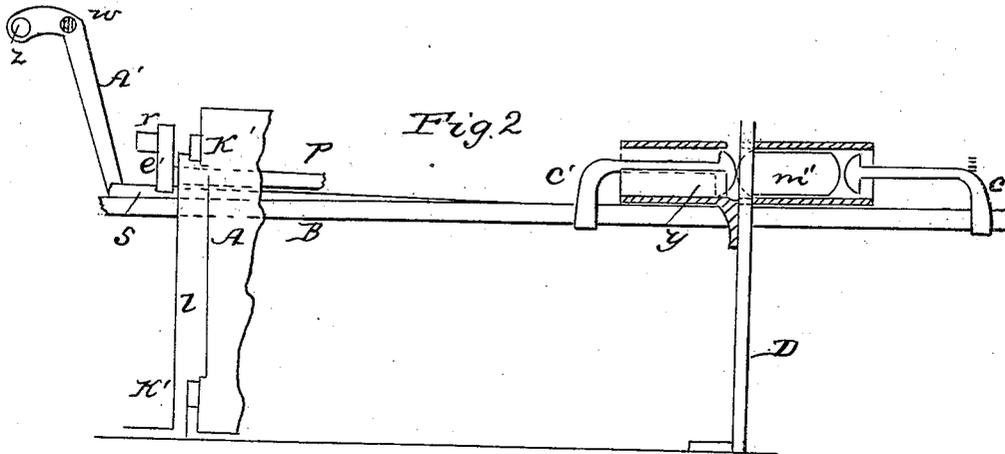


Fig. 3

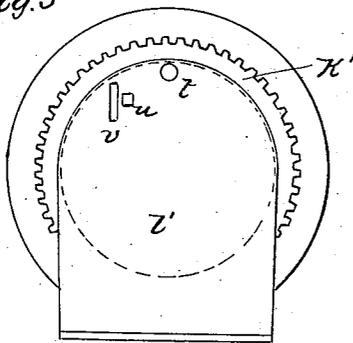


Fig. 9



Fig. 6

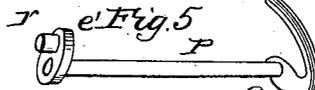
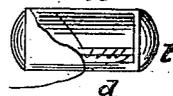
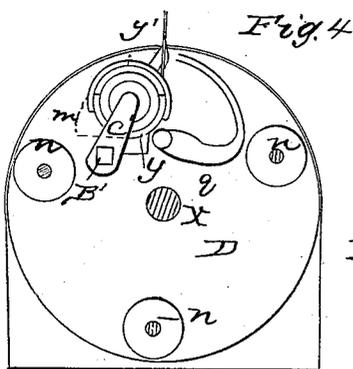
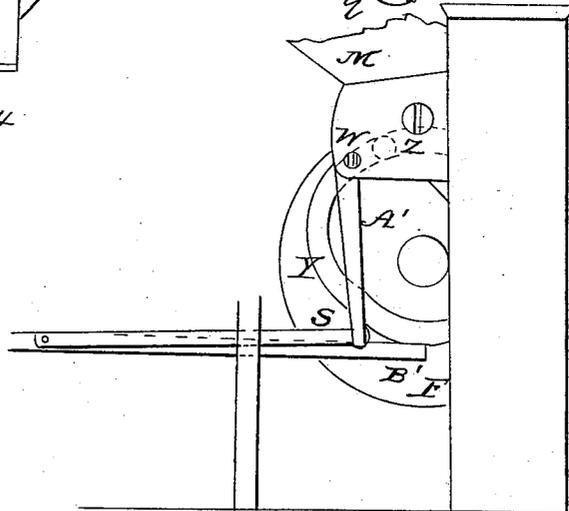


Fig. 8.



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UNITED STATES PATENT OFFICE.

IRVIN B. SAWYER AND T. ALSOP, OF SPRINGFIELD, ILLINOIS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 25,918, dated October 25, 1859.

To all whom it may concern:

Be it known that we, IRVIN B. SAWYER and THOMAS ALSOP, both of Springfield, in the county of Sangamon, in the State of Illinois, have invented a new and useful Improvement in Sewing-Machines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and numbers of reference marked thereon, in which—

Figure 1 is a perspective view, and Figs. 2, 3, 4, 5, 6, 7, and 8 are sectional views, of our improved machine.

A and B, Fig. 1, are two cylinders, of metal or other suitable material, to be used in the place of the flat surface generally used in sewing-machines, upon which the fabric to be sewed is placed. The two cylinders are separated by the plate D, which forms a bearing for one end of each cylinder. The surface of each cylinder, for a short distance from the edges which come to the plate D, is made sufficiently rough to hold and carry forward the fabric placed upon them, when held firmly upon them by the spring pressure-foot C.

F is a wheel placed back of the cylinder A, with its sides parallel to and equidistant from a vertical plane drawn through the axes of the cylinders. The wheel F has cam-grooves upon each side and upon its edge, and is fastened upon a shaft, F', upon which is also fastened the hand-wheel H, by which the machine is moved. Upon the same shaft is a cam, *g*, which in turning raises the lever *c* and the rod *d*, turning the ratchet-wheel *f* by the pawl *e*, from which the motion is communicated to the cylinders A and B by means of the cog-wheels *h e e'* and K K'. The wheel K' is not represented in Fig. 1, but is shown in Fig. 3 upon the end of the cylinder A, the wheels K K' being fast to the ends of the cylinders. The position of the cam *g* upon the shaft is such as to give the feed motion to the cylinders at the time the needle is out of the fabric being sewed, and the amount of the feed motion is regulated by the screw *o*, the end of the screw resting upon a standard, *o'*. The cylinder B revolves with an axis, *x*, which is fastened to it, having a bearing, *l*, at the outer end, the inner end having a bearing in the plate D. The cylinder A is supported at one end upon the inside at its edge by the wheels

n n n, which turn upon bearings fastened to the plate D. (Shown in Fig. 4.) The other end has a bearing, *l'*, (shown in Figs. 2 and 3,) which fits sufficiently loose to the inside edge of the cog-wheel or ring K' to allow it to turn freely, that portion of the head of the cylinder inside of the dotted line in Fig. 3 being cut out. The needle is fastened in the bar E, and is actuated by the rock-shaft G, which has a fulcrum, G'. The short arm of the rock-shaft is furnished with a roller which works in the cam-groove N.

The lever A', Figs. 2 and 8, vibrates upon a fulcrum, W, which is attached to the arm M, and is actuated by the cam-groove Y, acting upon the roller Z at the upper end of the lever. The lever A' gives motion to the shuttle *m'* by means of the pitman S, which is attached to the shuttle-carrier B', the arms C' C' of which extend into the shuttle-race *y*, leaving a little more than the length of the shuttle between them.

Fig. 4 represents that side of the plate D next to the cylinder A, showing an end view of the shuttle-race *y*, with the arm of the shuttle-carrier extended into it. The upper portion of that part of the shuttle-race in cylinder A is cut off to allow the shuttle to be taken out, and there is a sliding cover, *y'*, to close it sufficiently when the shuttle is in its place. There is also an opening and slide, R, (shown in Fig. 1,) in cylinder A for the purpose of getting at the shuttle-race, and the cylinders can be moved forward by the hand of the operator at any time to bring the opening to any desired place. The plate D is cut away from the place where the needle enters to the shuttle-race, as shown in Fig. 4, (the part cut out being marked black,) to allow the thread from the shuttle to the fabric to pass from one side of the plate to the other as the shuttle is moved.

q, Figs. 4 and 5, is a hook with a groove upon its outer edge, which is attached to one end of a shaft, P, upon the other end of which is a crank, *e'*, upon which is a roller, *r*, which runs in the groove upon the edge of the cam-wheel F, by which it is actuated, giving to the hook a reciprocating motion. The end of the shaft carrying the crank *e'* has bearing *t* in the plate *l'*, Fig. 3. The bearing for the other end is fast to the plate D at a point vertical with the point of the needle and on a level with the bottom of the shuttle-race, the hook *q* lying close to the plate D, so that its point,

when moved forward, shall pass close to the needle.

u and *v*, Fig. 3, represent the bearing for the shuttle-bar *B'* and the slot through which the pitman *s* plays, the shuttle-bar lying parallel with the shuttle-race, and having another bearing where it passes through the plate *D*.

In turning the wheel *H* in the direction indicated by the arrow the cam-groove *N*, acting upon the rock-shaft *G*, causes the needle to descend until its eye is a short distance below the point of the hook *q*, as shown in Fig. 4, there being a suitable groove cut in the plate *D* for the needle to pass along, so as to be clear of the edges of both cylinders. The form of the cam-groove *N* is such that as the wheel continues to move forward the needle rises sufficiently to throw out a small loop. At the same time the groove upon the edge of the wheel *F*, acting on the crank *e'*, causes the hook to advance, so as to catch the loop upon its point, so that as it continues to advance the thread will fall into the groove upon its edge and be carried forward, as indicated by the dotted line *m*. As soon as the point of the hook has passed the needle the needle again descends until its eye is brought as low as the bottom of the shuttle, the point of the hook arriving at the same time at its lowest point, on a level with the eye of the needle. The thread between the point of the hook and the eye of the needle is thus forced past and between the end of the shuttle and its bearer, the shuttle-race here being cut away for the passage of the hook and thread, as represented in Fig. 2. An extended loop is thus formed for the shuttle to pass through. As soon as the needle reaches its lowest point the shuttle carrying the lower thread (being until this time in that end of the race within cylinder *B*) is moved through the loop by the action of the cam-groove *Y*, Fig. 8, acting upon the lever *A'*, the needle and hook remaining stationary while the shuttle is passing through the loop. The shuttle then remains stationary while the needle and hook are moved back to their first position, and the lock-stitch, Fig. 9, is thus formed, which, when properly drawn into the cloth, presents the same appearance upon each side. The shuttle is then moved back to its first position before the hook again carries the needle-thread across the shuttle-race. In order to furnish sufficient

slack thread to form the loop described, the needle-thread is passed, as shown in Fig. 7, through the ring 1, thence over the pin 2, and down to the ring upon the end of the spring *a'*, (which is attached to the arm *M*,) and thence over the roller 3 to the eye of the needle. The thread is thus drawn to its full tension when the needle reaches its highest point, and the spring *a'* is drawn up to the pin 4, by which it is stopped. As shown by the dotted lines, sufficient thread is thus drawn from the spool to form the loop by the hook *q*, as described.

Fig. 6 represents the shuttle, one end of which can be taken off to admit the bobbin. The end is held to its place by a rod running through it and screwing into the other end, the bobbin being placed upon this rod. The thread from the bobbin is passed over the bar *a* to the round bar *b*, where it passes through a hole in the bar, or adjacent thereto, at equal distance from each end of the shuttle, and is wound around the bar *b* sufficiently to produce the requisite tension, when it is passed through another hole, near the end of the bar *b*, to a hole, *d*, in the shuttle.

We do not wish to be understood as limiting ourselves to the precise form of construction of the different parts of the machine as described, as they may be varied without changing the principle or character of our invention.

We do not claim as our invention the use of the rough surface and spring pressure-foot for carrying forward the fabric, as we are aware that these devices have been before in use; neither do we claim the use of a shuttle for interlacing the upper and lower threads, except when made in the manner described; nor do we claim the use of cams or cam-grooves for giving the motions to the needle, shuttle, and hook.

What we claim as our invention, and desire to secure by Letters Patent, is—

The use of the hook *q*, formed and moving substantially as described, combined with the shuttle and needle, substantially as described, and for the purpose specified.

IRVIN B. SAWYER.
THOMAS ALSOP.

Witnesses:

WILLIAM D. WARD,
ROBT. T. LINCOLN.