2 Sheets—Sheet 1.

R. H. St. JOHN.

Sewing-Machine.

No. 207,911. Patented Sept. 10, 1878.

Fig. 1.

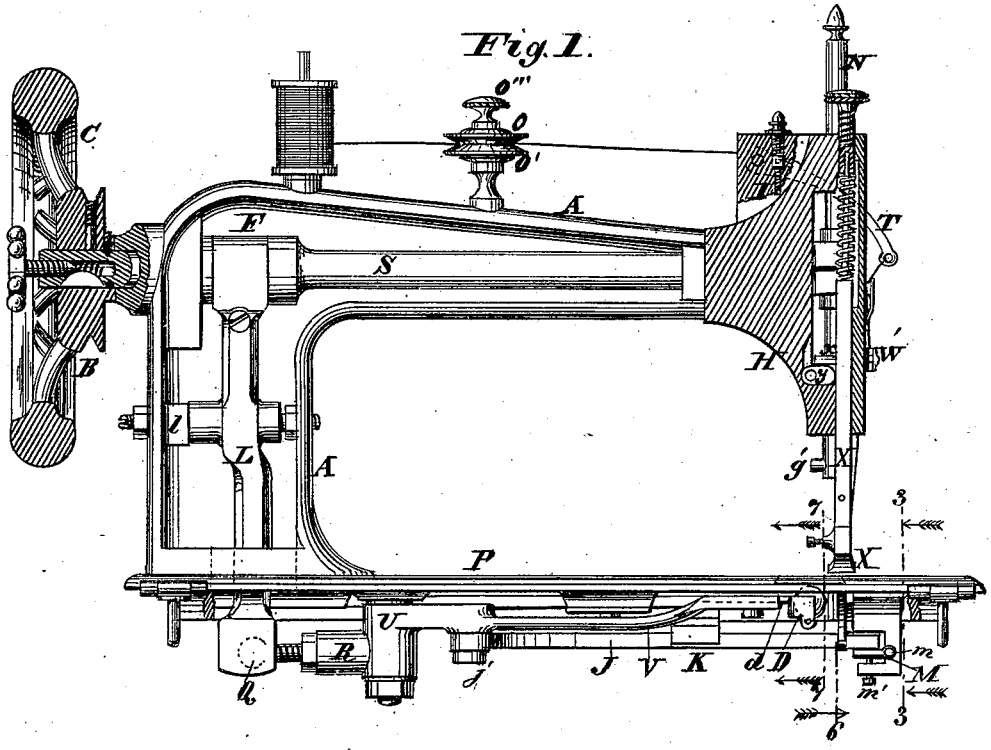
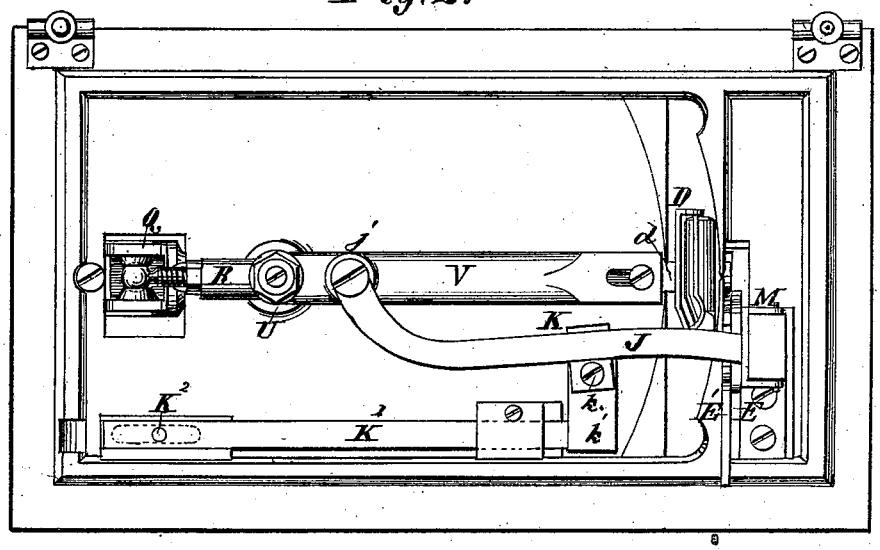


Fig. 2.



WITNESSES

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Fig. 3.

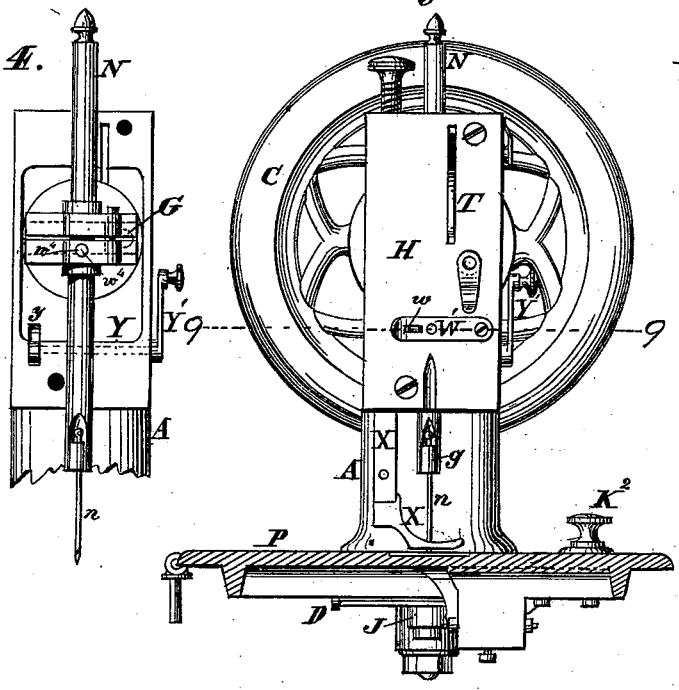


Fig. 4.

Fig. 5.

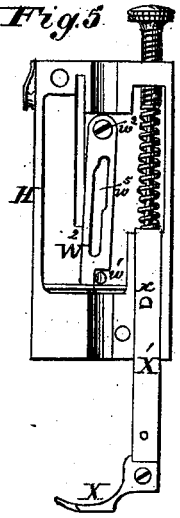


Fig. 6.

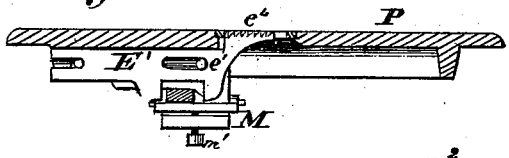


Fig. 7.

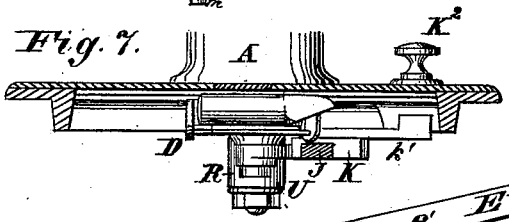


Fig. 9.

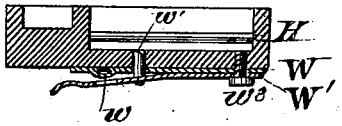
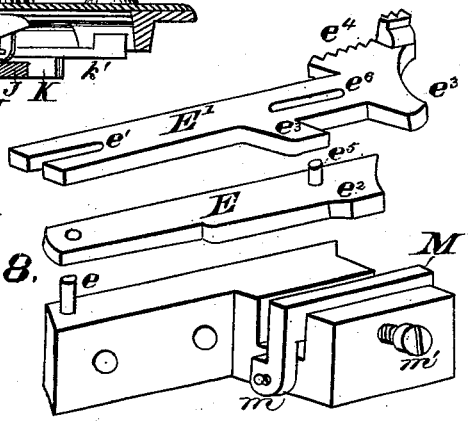


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

ROSWELL H. ST. JOHN, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **207,911**, dated September 10, 1878; application filed January 29, 1877.

To all whom it may concern:

Be it known that I, ROSWELL H. ST. JOHN, of Springfield, in the county of Clarke and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification:

My present improvements relate, chiefly, to sewing-machines of the class described in Letters Patent No. 132,332 and 155,120, granted to me on the 15th of October, 1872, and the 15th September, 1874, respectively.

Under my present improvements I employ a feed mechanism consisting of two plates, so connected as to move together vertically on a common pivot, the vertical motion being imparted by the contact of the feed-lever with an oblique shoulder on the first plate, and an independent horizontal movement being then imparted to the second plate which carries the toothed feeding-surface.

The feed is regulated by a movable fulcrum-plate, which is connected to the sliding bar which carries it by a pivot on one side of the seat or socket of the lever, so as to afford an extended bearing to the plate and an extended bearing to the screw in the thickest portion of the plate, as hereinafter described.

To prevent the formation of slack or a loop above the cloth, and to hold the thread against the pull of the needle, I employ a thread-check, placed on the face of the needle-guide or on other convenient stationary part of the machine, and opened and closed in such relation to the movement of the needle as to release the thread automatically when it is to run.

In the accompanying drawings, Figure 1 is a side elevation of the machine, partly in section. Fig. 2 is an under-side view thereof. Fig. 3 is an end view of the same, partly in section, on the line 3 3, Fig. 1. Fig. 4 is a front view of the needle-guiding head, with the front plate, presser-foot, and other attachments removed. Fig. 5 is a rear view of the said front plate and attachments. Fig. 6 is a section on the line 6, Fig. 1. Fig. 7 is a section on the line 7, Fig. 1. Fig. 8 is a perspective view of the three members of the feed mechanism separated, so as to show the construction of each. Fig. 9 is a horizontal section of the thread-check on the line 9 9, Fig. 3.

The main driving-shaft S runs within a hollow arm, A, supported rigidly on the flat cloth plate or bed P, and constructed with a head, H, within which the needle-bar N is guided and the take-up mechanism works, T being the take-up, and I the vertical rod through which motion is imparted to it by means of a cam, as described in Letters Patent heretofore granted to me. The shaft S is driven by a band-pulley, B, and fly-wheel C, which may be disconnected from the shaft, so as to run loosely thereon when desired. G is the cross head, inclosing a crank on the forward end of the shaft S, for driving the needle-bar N. *n* represents the needle, attached to the needle-bar N by means of a yoke, *g*, and a clamp-nut, *g'*. The shuttle is operated by means of a vertical lever, L, fulcrumed at *l* within the vertical portion of the arm A, and driven by a crank, F. The lower end of the lever L connects, by a ball-and-socket joint, Q, with the arm R of the shuttle-lever V, which is fulcrumed at U beneath the bed-plate. The ball-and-socket joint Q is adjustable to compensate for wear, all of which is as described in my Patent No. 155,120.

The feed mechanism consists of two plates, E E′, having vertical oscillation on a pivot, *e*, which confines the first plate, E, to a vertical movement. The second plate, E′, fits over the pivot-pin *e* by a slot, e^1, and has also a pin-and-slot connection, e^5 e^6, with the plate E, allowing the plate E′ longitudinal movement independently of the plate E, but causing it to partake of the vertical movement of the latter. The plate E is further provided with an oblique shoulder, e^2, by which the feed-lever J is caused to impart upward movement to the plates at its forward stroke. The plate E′ carries the roughened or toothed feeding-surface e^4. The horizontal feed and reverse movements are imparted by the contact of the lever J with downwardly-projecting lugs e^3 on said plate E′. The feed-lever J is pivoted by a screw, *j*, to the shuttle-lever D, and is fulcrumed in a plate, K, which is pivoted by a screw, *k*, to a plate, *k'*, on the head of the longitudinally-adjustable rod K^1, which latter is held by a clamp-screw, K^2, above the bed-plate in customary manner, and is moved in either direction to vary the position of the fulcrum in order to change the feed as required.

My mode of locating the pivot-screw *k* on one side of the seat of the feed-lever in the plate J gives an extended bearing to the fulcrum-plate, prevents lateral pressure or unequal wear on the screw, and is of great advantage in affording an extended bearing for the pivot-screw within the thick portion of the plate, so as to render the connection more steady and greatly increase its durability.

The free end of the lever J is supported by a guide-plate, M, pivoted at *m*, and adjustable in height by a set-screw, *m'*, to regulate accurately the extent to which the feed-head e^4 will be elevated by the lever J.

The tension of the thread is produced and regulated by passing it once around a grooved wheel consisting of two concavo-convex sheet-metal disks, O O'. The wheel O O' runs on a stud, and is controlled by a friction-nut, O''', and washers, in customary manner.

In order to prevent the formation of a loop or slack above the cloth, and to hold the thread against the draft of the needle during the first part of the descent thereof, I employ a pair of clamp-plates, W W^1, pivoted to the external face of the needle-guiding head H at w^3. The under plate, W, is formed with an eye or loop, *w*, which receives the thread and projects through an opening in the plate W^1. The plate W^1 has a pin, w^1, projecting backward through the under plate, W, into the interior of the guiding-head H, and formed with an oblique end to receive pressure from a flat arm, W^2, which is pivoted at w^2, and is formed with a slot, w^5, as represented in Fig. 5, to receive a stud, w^4, on the cross-head G of the needle-bar. When the needle is at the upper termination of its stroke the oscillating arm W^2 is moved away from the pin w^1, so as to allow the spring-plate W^1 to gripe the thread. The parts remain in this position until the needle has made nearly half its downward stroke, when, the stud w^4 reaching the lower shoulder of the slot in the oscillating arm W^2, the pin w^1 is pressed out by contact of the arm, so as to release the thread while the needle descends through the cloth and performs its whole return stroke. As it reaches the upper end of its stroke the stud w^4 strikes the upper shoulder, throwing the arm W^2 off the pin w^1, and causing the thread to be griped by the plate W^1, as before.

The lifter for the presser-foot X consists of a shaft, Y, actuated by a hand-lever, Y', and carrying a cam, *y*, which engages with a stud, *x*, on the stem X' of the presser-foot.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination, with a feed-lever, J, of the feed mechanism consisting of two plates, E E', having a common pivot, *e*, the plate E being constructed with a shoulder, e^2, and the plate E' having independent horizontal movement, as and for the purpose set forth.

2. The combination, with the feed-plates E E', having a common pivot, and feed-lever J, fulcrumed to the shuttle-lever, of the feed-regulator, consisting of the fulcrum-plate K, having pivot *k* on one side of the lower recess, and the adjustable bar K^1, constructed with plate *k'*, as and for the purpose set forth.

3. The thread-check, consisting of two clamp-plates, W W^1, adapted to compress the thread between them, in combination with an oscillating plate or arm, W^2, and a pin, w^1, as and for the purpose set forth.

ROSWELL H. ST. JOHN.

Witnesses:
E. W. MULLIKEN,
BRUCE MOFFAT.