J. Bennor,

Sewing Machine.

No. 99138. Patented Jan. 25. 1870.

Fig. 1.

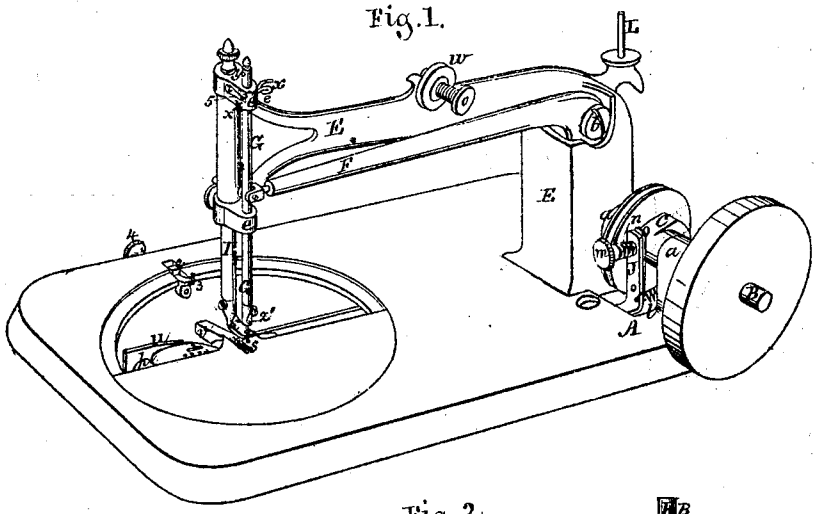


Fig. 2.

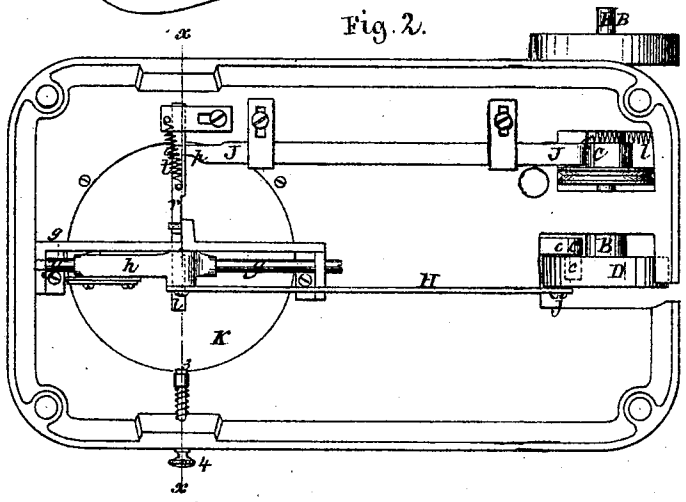
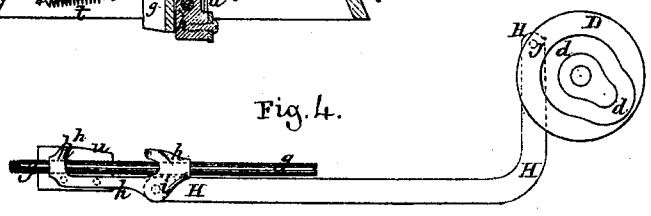


Fig. 3.

Fig. 4.



Witnesses.
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Edmund Masson.

Joseph Bennor
By Atty. A. B. Stoughton.

United States Patent Office.

JOSEPH BENNOR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND ABRAHAM REX, OF SAME PLACE.

Letters Patent No. 99,138, *dated January* 25, 1870.

IMPROVEMENT IN SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, JOSEPH BENNOR, of Philadelphia, in the State of Pennsylvania, 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 of this specification, in which—

Figure 1 represents a perspective view of the machine, with a section of the plate that covers the shuttle removed, to show the parts underneath it.

Figure 2 represents a plan of the under side of the bed or table, and the mechanism there placed.

Figure 3 represents a section through the bed, and mechanism underneath it, taken at the red line *x x* of fig. 2, and looking to the left of said line.

Figure 4 represents, detached from the machine, an elevation of a portion of the driving-mechanism not distinctly seen in the other figures.

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

My invention consists, first, in the particular construction and operation of the cam, for allowing the shuttle to pass through the loop, both on its "forward and backward" motion, that is to say, by turning the cam in either direction, together with the combination of the cam, as above stated, with the mechanism which moves the lever, by which the needle-bar is driven, and with the pitman and shuttle-driver, for moving the shuttle, and cam-plane connected to said driver.

It further consists in combining, with the shuttle-driver, an inclined plane, for the purpose of lifting the feed-bar, and the cam which operates the feed.

It further consists in combining, with the bed or table, and a loose plate that covers the shuttle and its operative parts, the catch-spring, bolt, and lifter, for controlling said plate, both in holding and removing it.

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.

In bearings *a a*, at the rear of the bed or table A, is hung the shaft B, to which motion may be given in any of the usual well-known ways of driving sewing-machines.

Upon the shaft B are arranged two cams, C D, by which regulated movements are given to the needle, shuttle, and feed-mechanism, so as to operate harmoniously in sewing a seam.

On the bed or frame A is cast, or otherwise secured, the standard and arm E, for supporting the several parts that operate above the table, and as will be explained.

The cam C is of ordinary construction, and operates the cloth-feeding mechanism.

The cam D performs two duties, viz, it vibrates the needle-bar and needle, and operates the shuttle through the shuttle-driver.

The needle-arm F is pivoted to the standard E at *b*, and its short vertical arm below the pivot, as at *c*, fig. 2, has a friction-roller upon it, which runs in or against the cam-groove *d*, in or on the cam D, and thus said needle-arm gets its motion.

The needle-bar G, supported in bearings *e e* on the front end of the stationary arm E, is vibrated up and down by the arm F, and this bar carries the needle in the usual well-known way.

Upon a round rod or shaft, *g*, arranged in the line of the traverse of the shuttle, is placed the shuttle-driver *h*, and to said shuttle-driver is pivoted, as at *i*, a bent pitman, H, the bent-up end of which is connected to a wrist-pin, *j*, in the cam D, and by this arrangement and mechanism the shuttle is driven.

The presser-foot *k*, and its bar I, are arranged so as to be raised and lowered, and made adjustable in the usual well-known way.

The feed-mechanism is operated as follows:

The bar J is pushed forward by the cam *c*, and is retracted by the recoil of the spring *l;* and a set-screw, *m*, having a coiled spring, *n*, around it, and the point of which set-screw presses against a spring, *o*, next the cam, and moves said spring *o* to or from the beat of said cam, furnishes the means of regulating the extent (within certain limits) to which said bar J can be moved, and so adjusts or regulates the feed of the material that is being sewn, past the sewing-mechanism or point.

The front end of the bar J has a bevelled plane, *p*, on it, which works against a shoulder, *q*, on the cross-bar *r*, that has the roughened feed-surface *s* upon it, and by this plane and shoulder the feed-bar, (and feed-surface) is operated in one direction, viz, that in which the cloth is fed along, whilst it is returned into position for the next feeding-motion by the recoil of the spring *t*, connected to it, and to the frame or table. Thus two of the motions of the feeding-surface are given to it, viz, its front and back motions.

The up motion of the feeding-surface is effected by a cam-plane, *u*, on the shuttle-driver, coming against the projecting end *v* of the feed-bar *r*, and raising it up; and the down motion is caused by the reaction of the spring *t*, which is so arranged as to draw said bar down, as well as backward, and thus the four feed-motions are attained.

The shuttle, though traversed by the shuttle-driver *h*, has the round rod or shaft *g* for its race-way, the shuttle moving against said rod, or held up, a little above it by its front and rear, by the shuttle-driver.

The plate or cover K, which covers the opening through which access is had to the shuttle, has a stud-catch, 1, on its under side, which a spring-bolt or keeper, 2, takes into, and thus holds said plate to the table.

The spring-bolt or keeper 2 has also upon it a projection, 3, which, when the bolt is drawn outward by the thumb-knob 4, strikes under the stud 1, and so raises up the plate, in which position it can be easily caught by the fingers, and removed, and thus the piece 2 serves as bolt, keeper, and cover-tripper, when it (the cover) is to be removed.

The motion given to the needle, through or by means of the cam-groove *d*, and the motion given to the shuttle, through the pitman H, driven from a wrist-pin in or on the wheel D, in which the cam *d* is also made, are so timed and arranged, as that, whether said wheel, cam, and wrist turn in one direction or the other, the needle and its loop will be in position to allow the shuttle to pass through said loop, whether so turned "forward or backward," as it is termed.

Of course, the feed would not, as herein arranged, take place at the proper time for both of these motions, but, turning the machine in the reverse direction, would not so bring the needle or shuttle together as to jam or break them.

This particularly-timed motion of needle and shuttle may be made available with a double-nosed shuttle and proper feed, to sew by both of the traversing movements of the shuttle, as the needle is down at both passes of the shuttle.

Having thus fully described the object and purpose of my invention,

What I claim therein as new, and desire to secure by Letters Patent, is—

In combination, the wheel D, the cam-groove *d*, for operating the needle through the needle-arm F, the crank or wrist-pin *j*, for operating the shuttle, the shuttle-driver, and its cam-plane *u*, and the pitman H, all substantially as described.

Also, in combination with the described mechanism that moves the feeding-foot forward and back, the inclined plane *u*, on the shuttle-driver, for giving said foot its rising motion, as and for the purpose described.

Also, in combination with the plate or cover K, the catch 1, the keeper 2, and projection 3, and thumb-knob 4, for holding said plate when in place, and for the ready removal of the same, substantially as described.

JOSEPH BENNOR.

Witnesses:
W. C. LESLIE,
EDWARD WILLIAMS.