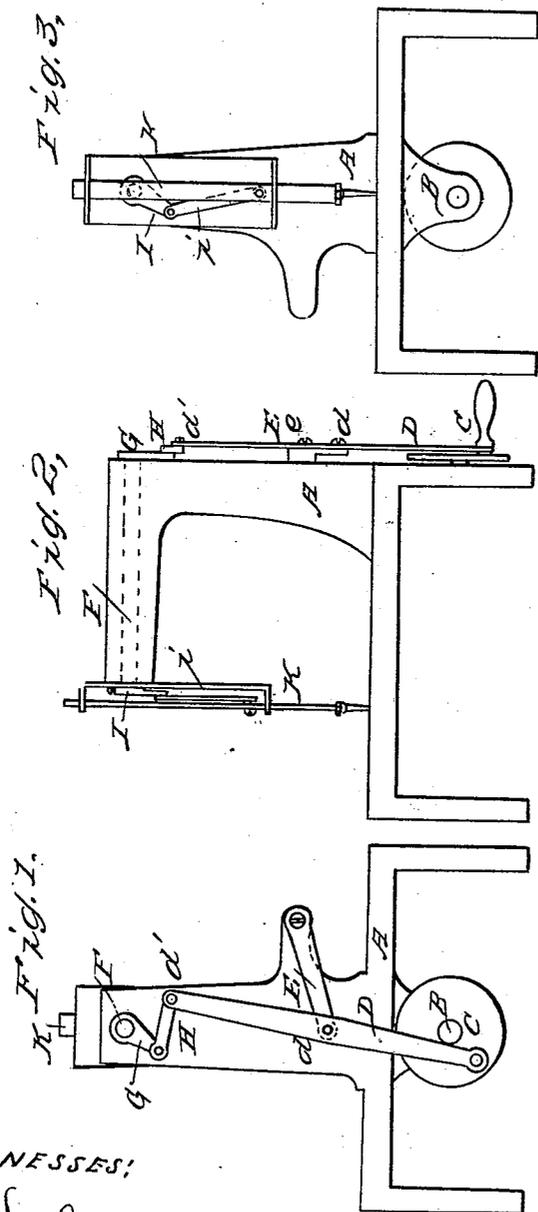


J. FIRST.
Sewing Machine.

No. 29,035.

Patented July 3, 1860.



WITNESSES:
Thos D. Latham
L. H. Babcock

INVENTOR:
John First

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Fig. 4, Fig. 5, Fig. 6, Fig. 7.

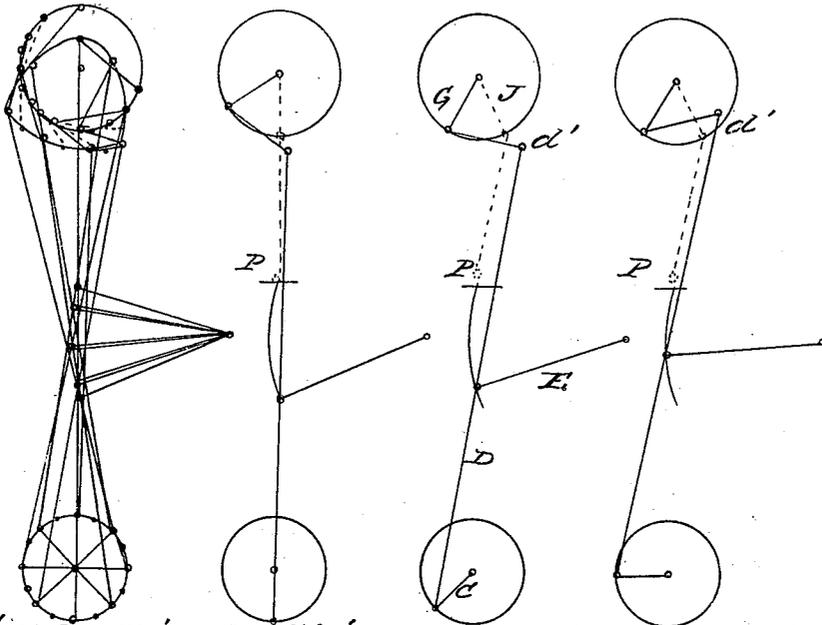
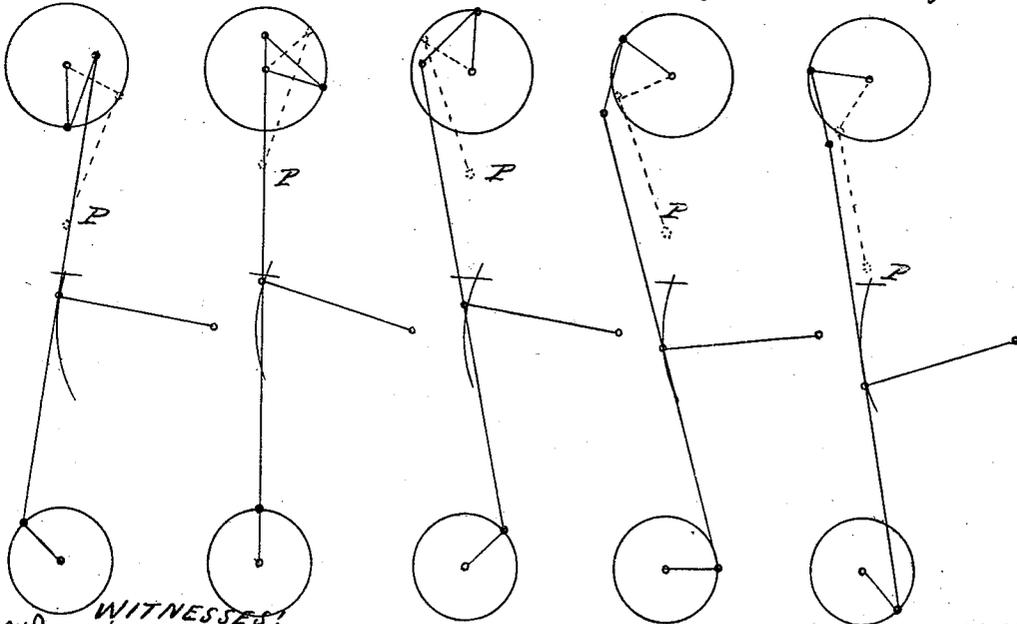


Fig. 8, Fig. 9, Fig. 10, Fig. 11, Fig. 12.



WITNESSES:
Thos D. Stetson
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INVENTOR:
John First

UNITED STATES PATENT OFFICE.

JNO. FIRST, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND JAS. FROST,
OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 29,035, dated July 3, 1860.

To all whom it may concern:

Be it known that I, JOHN FIRST, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a rear view of a portion of a sewing-machine with my improvements. Fig. 2 is a side elevation, and Fig. 3 is a front elevation, of the same. Figs. 4 to 12 are diagrams illustrating the motion of the parts.

Similar letters of reference indicate like parts in all the drawings.

My improvement lies in the means of communicating motion to the needle of a shuttle-machine.

The nature of my invention consists in a certain combination and arrangement of levers and connections, whereby the needle is moved rapidly where there is little resistance, slower when passing through the material, and caused to pause for a short period after it has risen sufficiently to slack the thread, thus adapting its motion to the resistance and giving time for the passage of the shuttle through the loop of the thread.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation by the aid of the drawings.

A is the frame of an ordinary sewing-machine, and B the main shaft. C is a crank-pin on B, from which I derive the motion of the needle-bar by means of the following mechanism: To the crank C, I connect the lever D, which is hinged at a point, *d*, near its center, to a radius-bar, E, attached to a point, *e*, upon the frame. This connection is such that the lever D is free to move at the point *d* only in the curve described by the radius-bar E, while the lower end is moved in a circle by the crank C. The effect of this compound motion is to give the upper end, *d'*, of D a motion in an irregular curve approximating the form of a spherical triangle. This is shown in Fig. 4, which represents the positions of the parts at every sixteenth of the revolution of C. Through the upper part of

the frame A, I pass a shaft, F, having on its rear end a crank or lever, G, which is connected to *d'* by a short link, H. At the other end of F is another crank, I, placed at an angle to G, as shown in dotted lines in Figs. 5 to 12, inclusive. This crank I is connected to the needle-bar K by a link, *i*, as shown in Fig. 3. The crank G and link H are arranged relatively to the curved triangular path described by *d'* in such a manner that at the point shown in Figs. 1, 6, and 7 the curve described by *d'* exactly coincides with the arc of a circle described with the end of G for a center and with H for a radius, from which it follows that during that portion of the movement of D the shaft F, and consequently the needle-bar, is at rest, while at all other points it has a motion more or less rapid in proportion as the path of *d'* is nearer to or farther from the center of F. The point of rest of G may be made to correspond with any desired position of the needle-bar K by adjusting the relative position of the crank I; but in the position shown in the drawings it occurs just after the needle has commenced to rise, or when the thread is slackened sufficiently for the passage of the shuttle through the loop. In this position the fastest motion of K is when it is passing through the last part of its upward movement, when a quick motion is required for the purpose of releasing the thread from the shuttle before the return movement of the latter; while the slowest motion is during the passage of the needle through the cloth. The position of the needle-bar relatively to that of the crank C at each eighth of the revolution is shown by P in Figs. 5 to 12, inclusive.

By varying the proportions and positions of the several parts different motions may be given to the needle-bar, causing the needle to pause longer, or even to return somewhat on its course, instead of standing absolutely stationary during the passage of the shuttle. By making the crank G of a greater length than represented and placing it in a higher position, with a relative proportion in the other parts of the combination, the shaft F may be caused to vibrate instead of revolving; but it will in such case give the same motion to the needle-bar I have herein described, and I consider it only an equivalent therefor.

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

The combination and arrangement of the crank C, lever D, radius-bar E, crank or lever G, and connection H, for the purpose of giving the proper periods of rest and motion to the needle of a sewing-machine, substantially as herein described.

In testimony whereof I have hereunto set my name in the presence of two subscribing witnesses.

JOHN FIRST.

Witnesses:

THOMAS D. STETSON,
G. H. BABCOCK.