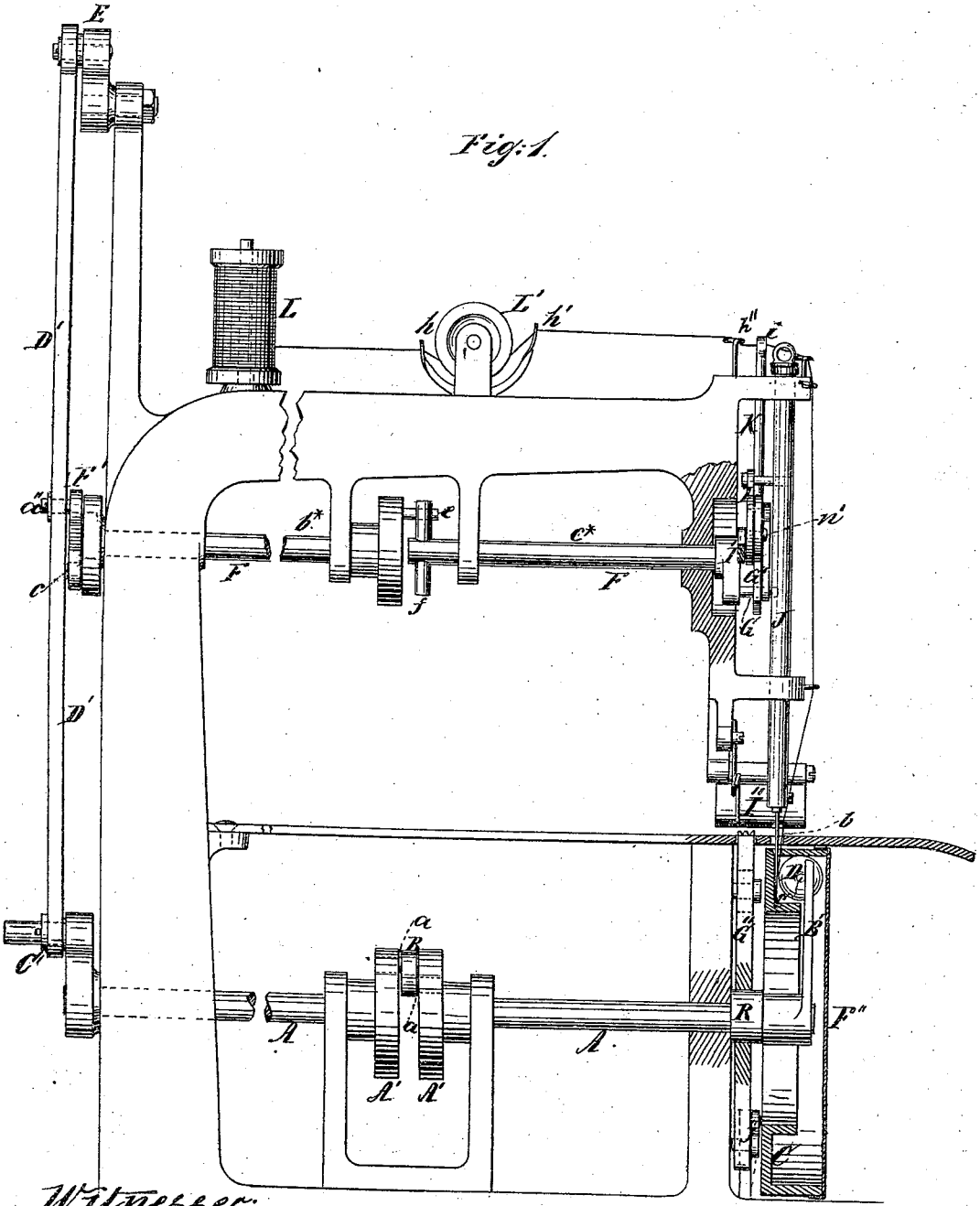
4 Sheets—Sheet 1.

J. McCLOSKEY.

SEWING-MACHINE

No. 184,644. Patented Nov. 21, 1876.

Fig. 1.



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4 Sheets—Sheet 2.

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SEWING-MACHINE.

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Fig: 2.

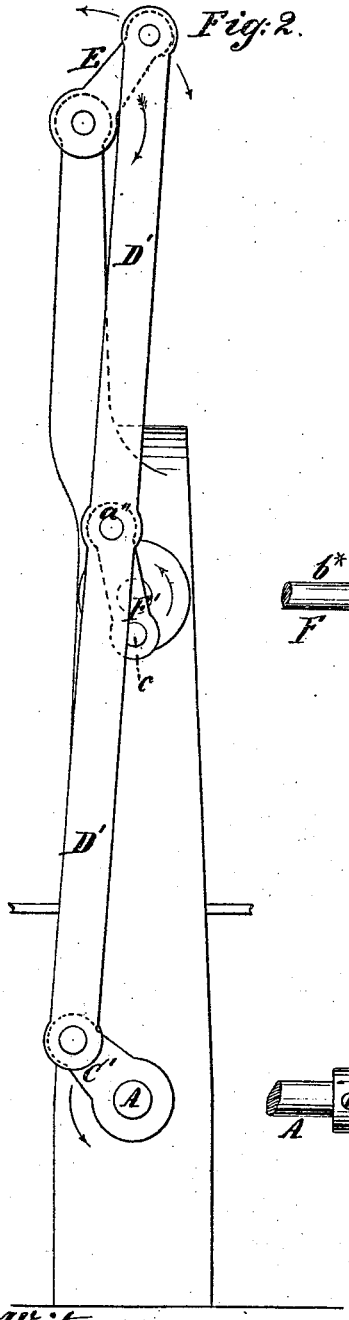


Fig: 3.

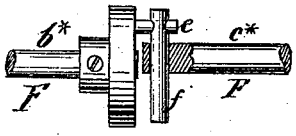


Fig: 5.

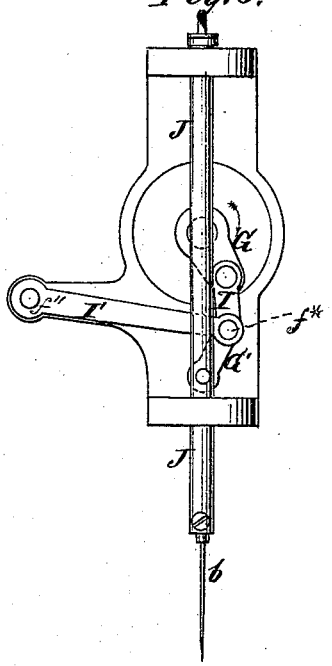
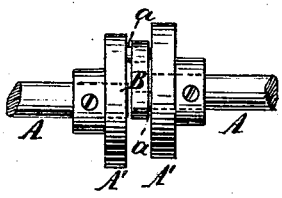


Fig: 4.



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4 Sheets—Sheet 3.

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SEWING-MACHINE.

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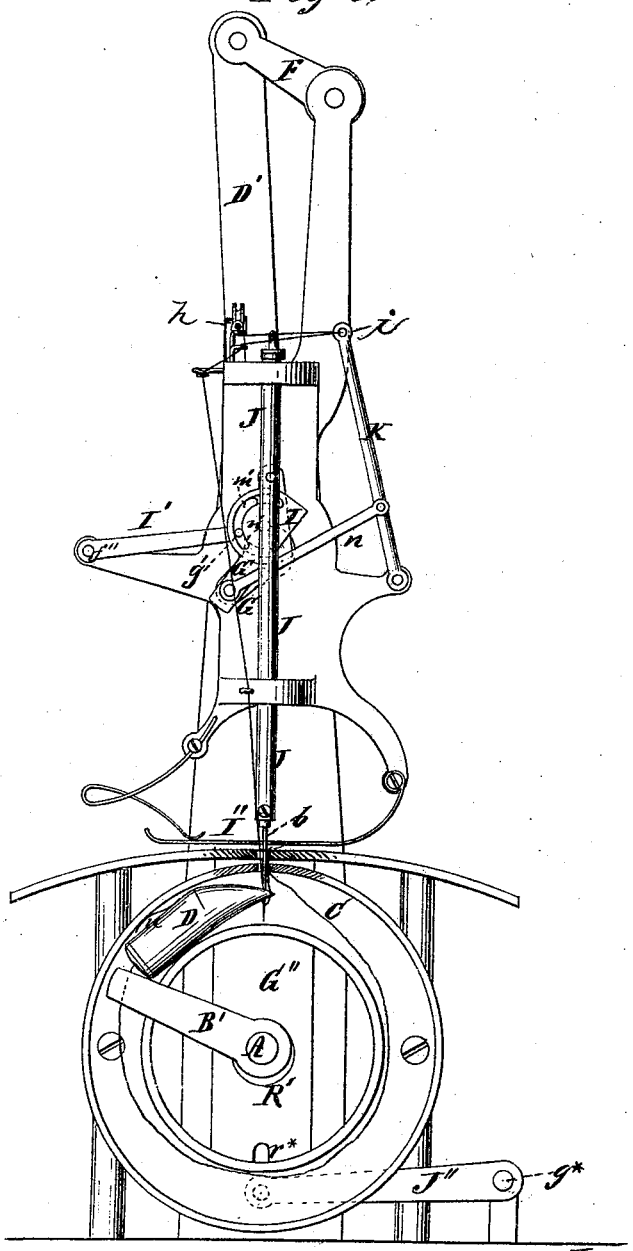
Fig 6.



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4 Sheets—Sheet 4.

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SEWING-MACHINE.

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Fig. 7.

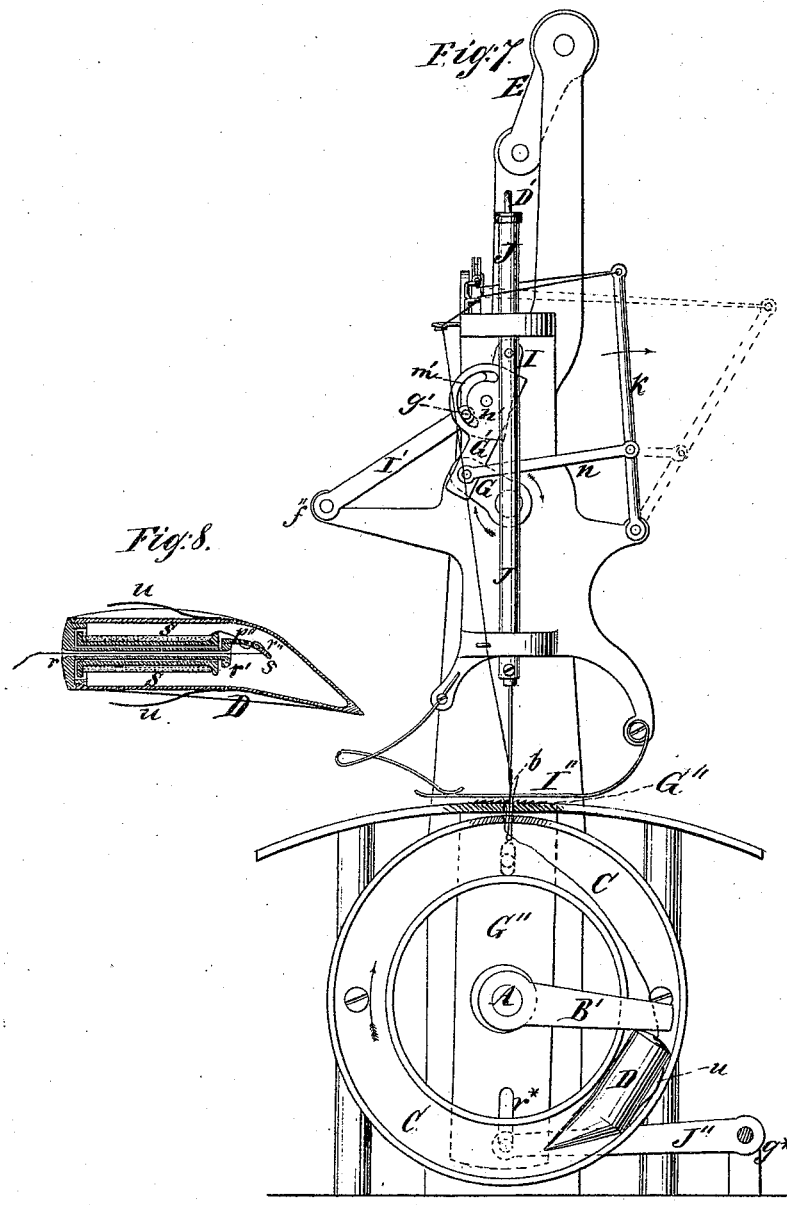

Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN McCLOSKEY, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **184,644**, dated November 21, 1876; application filed December 13, 1875.

To all whom it may concern:

Be it known that I, JOHN MCCLOSKEY, of the city, county, and State of New York, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

This invention comprises a novel combination of parts whereby, in a sewing-machine, is secured a pause or cessation in the motion of the needle at the end of its downward stroke, in order to insure full time for the passage of the shuttle through the needle-loop.

The invention further comprises a novel combination of a circular raceway, a rotary shuttle arranged to travel therein, and provided with steadying-springs, and a radial arm on the operating-shaft, whereby a steady movement of the shuttle in accord with the movement of the needle is secured.

The invention further comprises a novel combination of leaf-springs, curved or bowed in their longitudinal direction, with the shuttle and the aforesaid raceway, whereby the smooth and frictionless operation of the springs in steadying the shuttle during its motion is provided for.

The invention further comprises a novel construction of the said shuttle and its inclosed bobbin, whereby easy access to the bobbin is provided for, and whereby a proper tension to the shuttle-thread and its facile delivery are secured.

Figure 1 is a side view and partial section of a sewing-machine embracing my improvements. Figs. 2, 3, 4, and 5 are detail views of portions of the same. Figs. 6 and 7 are front views and partial sections of the same; and Fig. 8 shows a central longitudinal section of the shuttle forming part of my said invention.

A A are the two parts or sections of the primary shaft of the machine, each being supported in suitable bearings; but these two parts, instead of being in line, are placed eccentric with each other—that is to say, with axes in parallel lines, but not longitudinally coincident. Upon the inner end of each is a disk, A′, provided with a crank-pin, *a*. One of these crank-pins *a* takes into one end of a link, B, placed between the disks A, while the other of said crank-pins takes into the opposite end of said link. By this means the rotary motion of the one part or section of the shaft A may be transmitted to the other, but the driven part will move with a speed varying at different parts of its revolution, according to the degree of eccentricity at which the two parts of the shaft are set.

C is a guide or race way, which may be of circular, oval, or other suitable form, and provided at the front of the machine, and in appropriate relation to the needle *b*. In this raceway is placed the traveling shuttle D. Upon the front end of the compound primary shaft A, just hereinbefore described, is a radial arm, B′, which projects to and behind the shuttle D, in such manner that in the rotation of the shaft A the arm B′ will drive the shuttle around in the raceway C with a positive motion. The shaft A being driven from its rear end, its forward portion will have, at different portions of its revolution, a varying speed, which will, of course, be transmitted to the shuttle driven thereby, this varying speed of the shuttle at different portions of its revolution adapting it to work in perfect unison with the needle in the proper formation of the stitch.

The power is applied to the shaft A by any usual or suitable means. Upon the rear extremity of said shaft is a crank, C′, from which extends a rod, D′, the upper end of which is pivoted to a rocking arm, E, arranged at any desired height above the needle-actuating shaft F, hereinafter described. Upon the rear end of this needle-shaft is a crank, *c*. A link, F′, has one end pivoted on this crank *c*, and its other end pivoted to the adjacent central portion of the rod D′, as indicated at *a″*.

The rotation of the crank C′ gives a compound lateral and vertical movement to the rod D′, and this latter, acting through the link F′, gives a rotary motion to the crank *c*, and consequently to the needle-shaft F; but inasmuch as the movement of the rod D′ (at a certain point in the revolution of the crank *c*) brings the link F′ into a position nearly or quite vertical, and causes the same to turn upon the crank *c* as upon a dead-point, as shown approximately in Fig. 2, it follows that a temporary cessation of motion of the crank

c, and consequently of the needle-shaft F, is afforded. This cessation is designed to occur at that point in the revolution of the needle-shaft at which the needle is depressed, to permit the passage of the shuttle through the needle-loop, and thereby greatly facilitate this portion of the operation of forming the stitch.

The needle-actuating shaft F is made in two parts or sections, b^* c^*, which are placed eccentric to each other in the same manner as the two parts of the primary shaft. Upon the part b^* is provided a crank-pin, e, which works in a socket or bearing provided in the end of a slide, f, that passes through a transverse slot in the adjacent end of the part c^*. As the part c^* rotates eccentric to the axis of the crank-pin e of the part b^* the slide moves in and out through the slot in the part c^*, the part b^* rotating the part c^*, with a speed varying at different parts of the revolution of the latter as the crank-pin e approaches or recedes from the axis of the part c^*, this variation in the speed of the part c^* of the needle-shaft being designed to afford a means of giving the crank G, on the front end of said shaft, the movement most advantageous in the operation of the needle-bar J. The crank G carries a link, G′, the upper end of which is pivoted by a pivot, n', to the lower end of a second link, I, the upper extremity of which is pivoted to the needle-bar J, which latter is arranged to move vertically in the usual guides. I′ is a rod, which is pivoted at its outer end f'' to a fixed support, and which has at its inner end a pin, g', which plays in a semicircular slot, m', in the enlarged upper portion of the link I. The inner end of the rod I′ may, when preferred, be connected direct to the joint of the links I G′, as represented in Fig. 5 at f^*. This rod I′ serves to keep the pivot of the links G′ and I in such position as to insure the proper action of said links in giving motion to the needle-bar. The rotation of the crank G causes the link G′ to act as a pitman to give the vertical rectilinear movement to the needle-bar. The latter is lifted to its utmost when the link is in such position that in moving upon the pivot n' the said link turns upon a dead-point, so that, for some little distance, its swing together with the further rotation of the crank G, does not appreciably move the needle-bar. The crank G is also provided with a rod, n, the outer end of which is pivoted to an upright lever, K. The thread passes from the usual spool L through eyes h h' h'' around a reel, L′; thence through a fixed eye, h', to and through an orifice or eye, i, in the upper extremity of the lever K, and then down to the needle in the ordinary manner. In lieu of the reel L′ and eyes h h' any other suitable thread-conducting device may be used.

The shuttle D is shown in section in Fig. 8. It is made hollow with its rear end closed by a screw-plug, r, upon the inner side of which is a tubular stem, r', which forms the axle of the bobbin S within the shuttle. Upon the inner extremity of the stem r' is a spur, s, in which are eyes or holes r''. The shuttle-thread is passed from the bobbin to and fro through these eyes r'' to insure the requisite drag upon the thread, and thence through the tubular stem r' out at the rear of the shuttle.

In order to prevent the shuttle from jarring or slamming while revolving in the circular raceway, it is provided with longitudinal springs u, which, curving outward from its sides, bear against the adjacent surface of the raceway, and give stability and steadiness to the shuttle in its motion aforesaid. It will, of course, be understood that the shuttle is retained in the raceway by an appropriate plate or front attached to the latter, as shown at F″ in Fig. 1.

G″ is the feed, comprising an upright feed-bar, the upper extremity of which, underneath the presser-foot I″, is serrated to present the usual roughened surface in contact with the fabric in the use and operation of the machine. This feed G″ is connected at its lower end to the extremity of a horizontal link, J″, the outer end of which is pivoted to a fixed support, g^*. The inner end of the link J″, by means of a suitable pin, is capable of vertical adjustment in a slot, r^*, in the aforesaid lower extremity of the feed, so that it may be adjusted higher or lower in the said slot to regulate the throw of the feed, as occasion may require. The feed G″ has a circular orifice or seat formed at or near the center, and in this is fitted an eccentric, R′, provided upon the shaft A, as represented in Fig. 6. The rotation of said shaft causes the eccentric R′ to give a compound vertical and horizontal swinging motion to the feed, that, acting upon the under surface of the fabric passing beneath the presser-foot I″, feeds the fabric to the needle in appropriate accord with the movements of the stitch-forming devices.

It will be understood that the two parts of the shaft F may be connected by two cranks and a link, as is done with the shaft A, instead of by the slide f and single crank e, as hereinbefore described. In like manner the crank e and slide f may, when preferred, be substituted for the two cranks a and link B in connecting the two parts or sections of the shaft A.

I would further say that, except in the combinations with portions of a sewing-machine, as herein set forth, I do not, in this application, claim either of the two just mentioned devices for connecting the two eccentrically-arranged sections of a differentiating-shaft, as I propose to claim the same new means of transmitting motion in separate and distinct applications for Letters Patent.

What I claim as my invention is—

1. The rod D′, pivoted at its upper end to the extremity of the rocking arm E, the link F′, connecting the rod D′ at or near its center to the crank c of the needle shaft F, and the primary shaft A, connected by its crank C′ with the lower end of the rod D′, all combined

for operation substantially as and for the purpose set forth.

2. In a rotary-shuttle machine, the raceway C, the shuttle D, constructed with springs *u*, adapted to bear against the sides of the raceway, and the revolving arm B′, provided to give the rotary movement to the shuttle within the raceway and in unison with the needle *b*, the various parts being combined and arranged for united action, substantially as shown and specified.

3. The curved leaf-springs *u*, in combination with the traveling shuttle D and raceway C, substantially as and for the purpose set forth.

4. The shuttle D, constructed with the tubular stem *r′* and bobbin *s*, the whole constructed and combined to permit the delivery of the thread at the rear end of the shuttle, substantially as and for the purpose set forth.

JOHN McCLOSKEY.

Witnesses:
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