(No Model.) 3 Sheets—Sheet 1.

J. T. JONES.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 420,073. Patented Jan. 28, 1890.

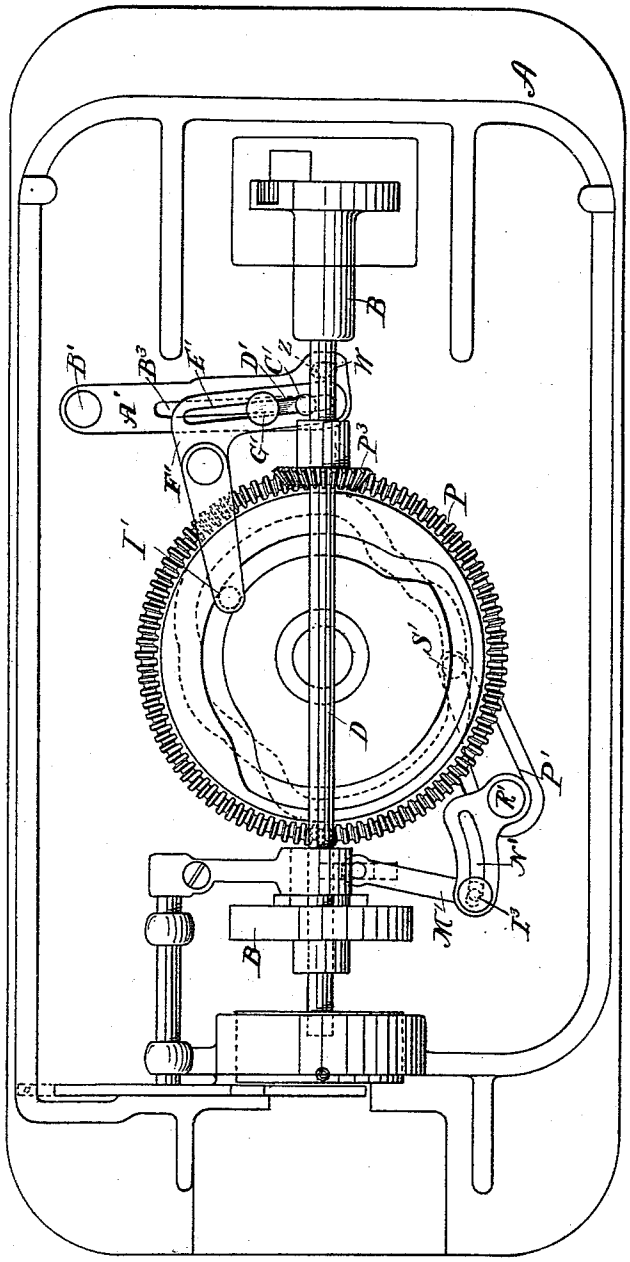


Fig. 1.

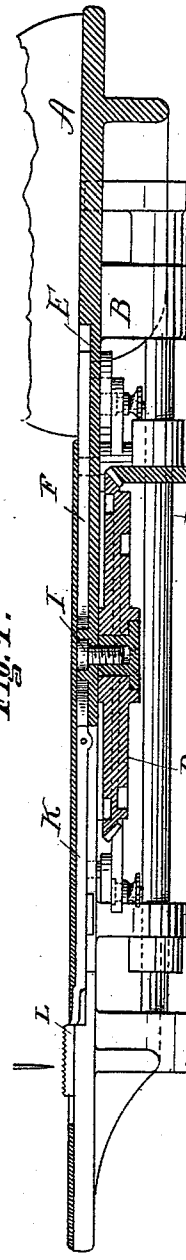


Fig. 2.

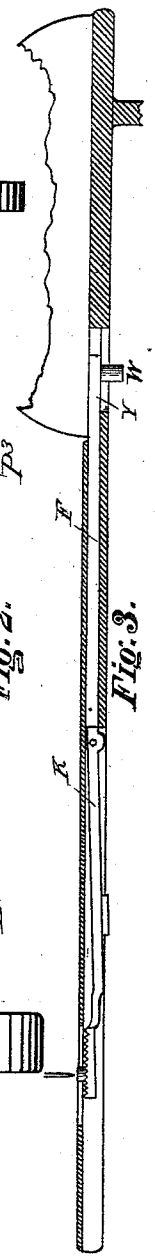


Fig. 3.

WITNESSES.
Rich. George
Hugh White.

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N. PETERS. Photo-Lithographer, Washington, D. C.

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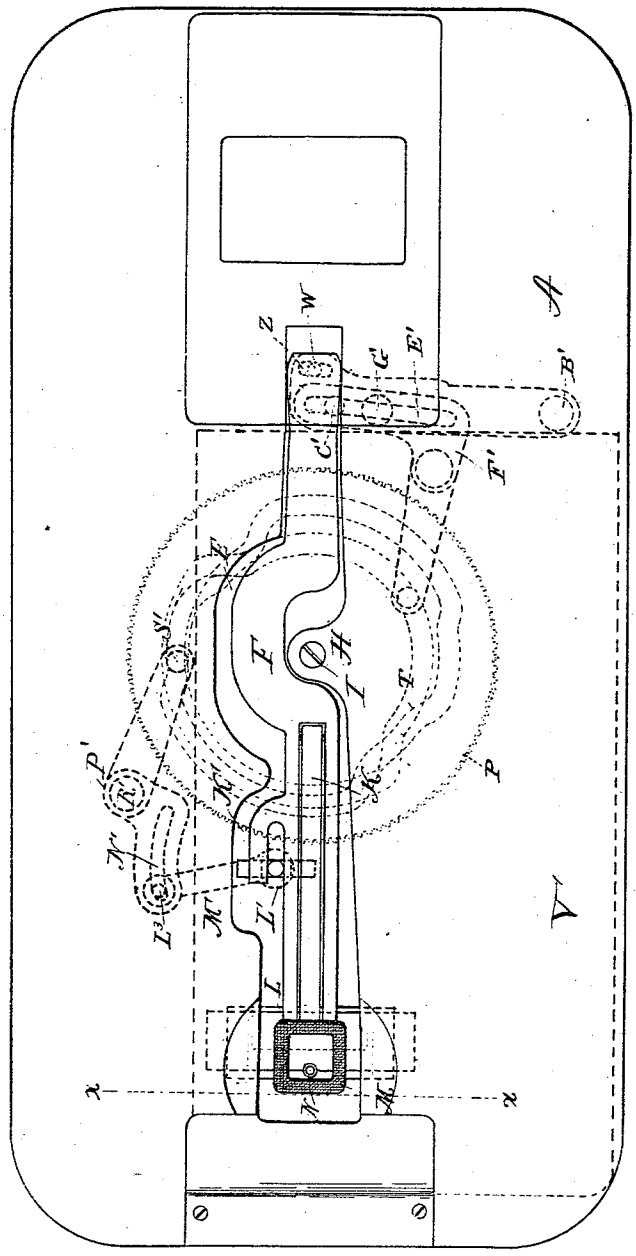


Fig: 4.

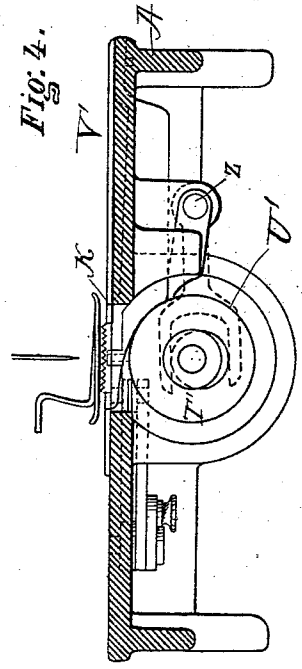


Fig: 5.

WITNESSES.
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J. T. JONES.

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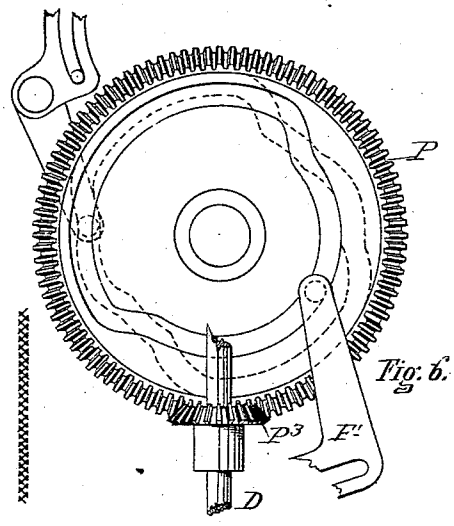
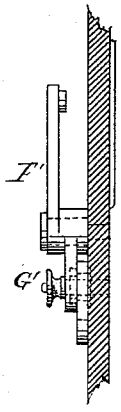


Fig. 6.



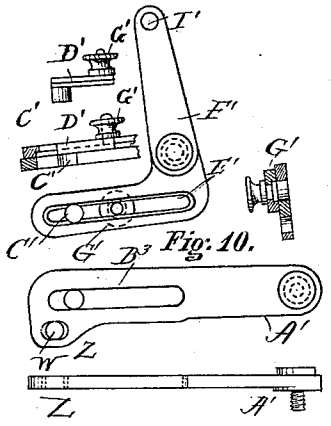


Fig. 10.

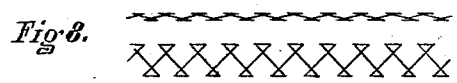


Fig. 8.

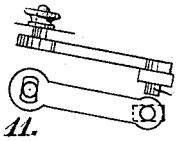


Fig. 11.

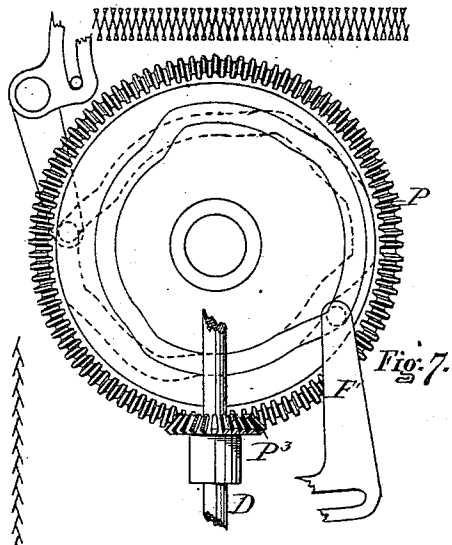
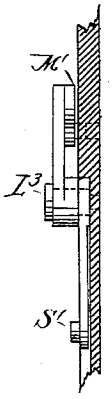
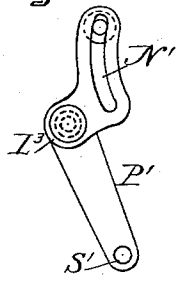


Fig. 7.





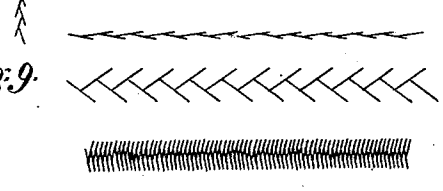


Fig. 9.

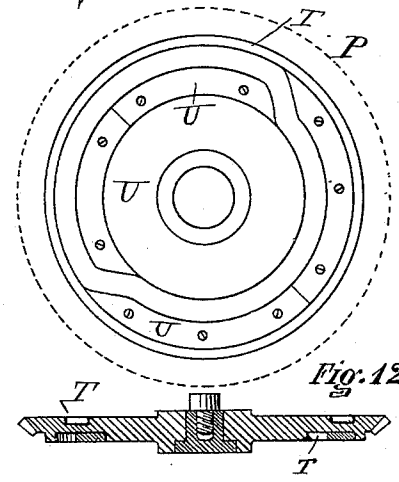


Fig. 12.

WITNESSES.
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Hugh White.

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John Thos. Jones.

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UNITED STATES PATENT OFFICE.

JOHN THOMAS JONES, OF UTICA, NEW YORK.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 420,073, dated January 28, 1890.

Application filed February 2, 1889. Serial No. 298,462. (No model.)

To all whom it may concern:

Be it known that I, JOHN THOMAS JONES, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Feed-Motions for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in that class of sewing-machines by means of which an embroidering, overseaming, or ornamental stitch is produced by a variable movement given to the feed mechanism of the machine; and the invention has for its object to provide certain improved mechanisms whereby the fabric may be moved laterally as well as progressively, and by the combined lateral and progressive movements carried under the needle, so as to produce a stitch of the desired character; and the invention has further for its object to provide in connection with the feed mechanism certain devices whereby the movement of said mechanism may be varied at will to change the character of the stitch, as more fully hereinafter specified.

My invention is designed to be applied to any sewing-machine wherein a revolving shaft is employed to operate the under feed mechanism and the devices for forming that part of the stitch on the lower side of the fabric.

The above objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 represents an inverted plan view of the bed of the machine; Fig. 2, a longitudinal vertical sectional view taken centrally through the bed of the machine and the mechanism below the same; Fig. 3, a longitudinal central section of the machine-bed, showing a portion of the variable-feed mechanism. Fig. 4 is a plan view of the machine, the upper or covering plate thereof removed, showing the feed-bar in unbroken lines and a portion of the feed-operating mechanism in dotted lines. Fig. 5 is a transverse vertical sectional view of the bed of the machine and the presser-foot and lower operating mechanism, taken on the line $x\ x$ of Fig. 4. Fig. 6 is a plan view of a feed cam-wheel detached, showing the cam-grooves and a portion of the feed mechanism operated thereby. Fig. 7 is a similar view showing a modification of the cam-wheel and a portion of the feed mechanism which it operates. Figs. 8 and 9 represent diagrams of some of the stitches which may be produced by the variable-feed movement. Figs. 10 and 11 represent detached views showing the levers by means of which motion is transmitted from the grooved cam-wheel to the feed-bar and dog; and Fig. 12 represents a face view and a diametrical section of the cam-wheel having removable sections to vary the contour of the cam-groove, as more fully hereinafter explained.

Referring to the drawings, the letter A indicates the bed of the machine, which is provided on its lower side with hangers B, having bearings for the journals of the longitudinal shaft D. The upper face of the bed of the machine is provided with a depressed recess E, in which is located the movable feed-bar F, which is capable of a reciprocating and oscillating movement therein. The bed is provided with a boss H, which extends laterally into the recess to form a support for the attachment of the journal-pin I of a cam-wheel below, as more fully hereinafter described. The recess E is enlarged or curved around said boss, and the bar F has a bend following the contour of said curved portion of the recess, so as to clear the boss while working in said recess. The forward end of the feed-bar is slotted longitudinally, and in the rear end of said slot is pivoted a vertically-oscillating feed-bar K, the forward end of which carries a rectangular feed-dog L, which is open at its center, and which is caused to work around the needle-throat M of the machine, which is attached to the flat upper part of the ring in which the shuttle rotates.

P indicates a wheel secured to the under side of the machine-bed by a journal-pin I, above mentioned, as indicated in Figs. 1 and 2 of the drawings. The said wheel is provided with a row of beveled cog-teeth on its lower face, which intergear with a beveled

cog-pinion P^3 on the longitudinal shaft D of the machine. The upper and lower faces of the wheel P are provided with annular recesses T, Fig. 12 of the drawings, in which may be secured by means of screws or otherwise the curved blocks or plates U, which are so constructed that when in place they will form cam-grooves in the faces of the wheel, the character of which may be varied at will by interchanging said plates in order to vary the relative movements of the feed devices, so as to change the character of the stitch at pleasure.

The rear end of the feed-bar is provided with a downwardly-projecting pin or extension W, which passes through a slot V in the bed-plate of the machine and enters an aperture Z in the lateral extension of arm A′, fulcrumed at B′ to the lower face of the bed-plate of the machine. The said arm is slotted longitudinally, as indicated by the letter B^3, and into said slot extends a projection or pin C′ on a clamping-block D′, which is movably located in a slot E′ on one arm of an angle-lever F′, fulcrumed to the lower face of the bed-plate of the machine. The block D′ is provided with a clamping-screw G′, by means of which it may be adjustably secured in the slot E′ of the angle-lever F′, above mentioned. One arm of the angle-lever F′ passes below the lower face of the wheel P, and is provided with a projecting pin and friction-roller I′, which enters the cam-groove on the lower face of the said wheel, so that the angle-lever and the feed mechanism connected therewith may be operated.

The bar F at one side is provided with a lateral extension K′, which is slotted, as shown in Fig. 4, and through said slot passes a movable block L′, arranged to slide in a transverse slot in the machine-bed, which is connected with a link M′, by means of which said link may be adjustably secured to the bar. The other end of the link is provided with a clamping-bolt L^3, which passes through a slot N′ in a segmental arm of an angle-lever P′, which is fulcrumed to the under side of the bed-plate of the machine at R′. The other arm of said angle-lever extends above the upper face of the wheel P, and is provided with a pin and friction-roller S′, which enter the cam-grooves on the upper face of the wheel P and serve to give an oscillating motion to the feed-bar F.

The forward end of the shaft D carries the shuttle-operating devices, which may be of the usual description, and the ordinary eccentrics T′, which operate the yoke-lever U′ to give the upward throw to the feed-dog in its progressive movement, as is usual in the class of machines to which my invention relates. The movable feed-bar is held in the recess in the upper face of the bed-plate of the machine by means of a detachable plate V′, secured in any convenient manner.

The operation of my improved machine will be readily understood from the above description, and is as follows: The wheel P derives its motion from the pinion P^3 on the shaft D. The rotation of the said wheel imparts motion to the respective angle-levers, and the said levers, through the medium of the link M′ and the arm A′, impart a simultaneous reciprocating and oscillating movement to the feed-bar F and K necessary to give the proper movement to the fabric to form the proper stitch. Starting with the form of cam shown in Figs. 1, 6, and 12, and adjusting the connections L^3 and C′ and the link M′ and the arm A′ with the respective angle-levers, the stitches may be lengthened or broadened, and will take the shapes and sizes shown in Fig. 8 of the drawings, or an intermediate size, and by interchanging the cam blocks or plates in the annular recesses in the faces of the wheel P the character of the stitch may be varied, so as to take the shapes shown in Fig. 9—that is to say, the general shape or relative direction of the stitches is regulated by the cams, and the length of the successive stitches is regulated by the adjustments between the angle-levers and their connections.

Having thus described my invention, what I claim is—

1. In a sewing-machine, the combination, with the rising and falling feed-dog, of the movable feed-bar in which said dog is mounted, the angle-levers connected with said bar and fulcrumed to the bed of the machine, the gear-wheel having cam-grooves on its opposite faces, and the driving-pinion meshing with said gear-wheel, substantially as described.

2. The combination, with the stitch-forming mechanism of a sewing-machine, of a feed-bar reciprocating in the direction of the length of the machine and oscillating on a bearing at one end of the bar in a direction athwart the machine, a rising and falling feed-dog flexibly connected directly to said bar, and mechanism, substantially as described, for operating said feed bar and dog.

3. The combination, with the oscillating and reciprocating feed-bar, the rising and falling feed-dog mounted thereon, and means for operating the same, of the angle-levers adjustably connected with the said feed-bar and the gear-wheel having cam-grooves on opposite faces, whereby the relative movements of the feed-bar are effected to lengthen and broaden the stitch, substantially as described.

4. The combination, with the rising and falling feed-dog, the reciprocating and oscillating feed-bar and the angle-levers connected therewith, of the cam-wheel having annular recesses and adjustable blocks for changing the character of the cam-grooves, whereby the character of the stitch may be modified, substantially as described.

5. The combination, with the oscillating feed-bar, the rising and falling feed-dog mounted therein, and means for operating

said feed-dog, of the angle-lever F′, adjustably connected with said feed-bar, and the cam-wheel having a cam-groove on its lower face, whereby a reciprocating motion of different lengths may be given to the feed-dog, substantially as described.

6. The combination of the reciprocating feed-bar, the feed-dog jointed to said bar, means for imparting a rising and falling motion to the feed-dog, angle-lever P′, link connecting the feed-bar directly with the angle-lever, and the cam in cam-wheel, whereby an oscillating movement is given to the feed bar and dog, substantially as described.

In witness whereof I affix my signature in the presence of two witnesses.

JOHN THOMAS JONES.

Witnesses:

HUGH WHITE,

HENRY A. DAVIS.