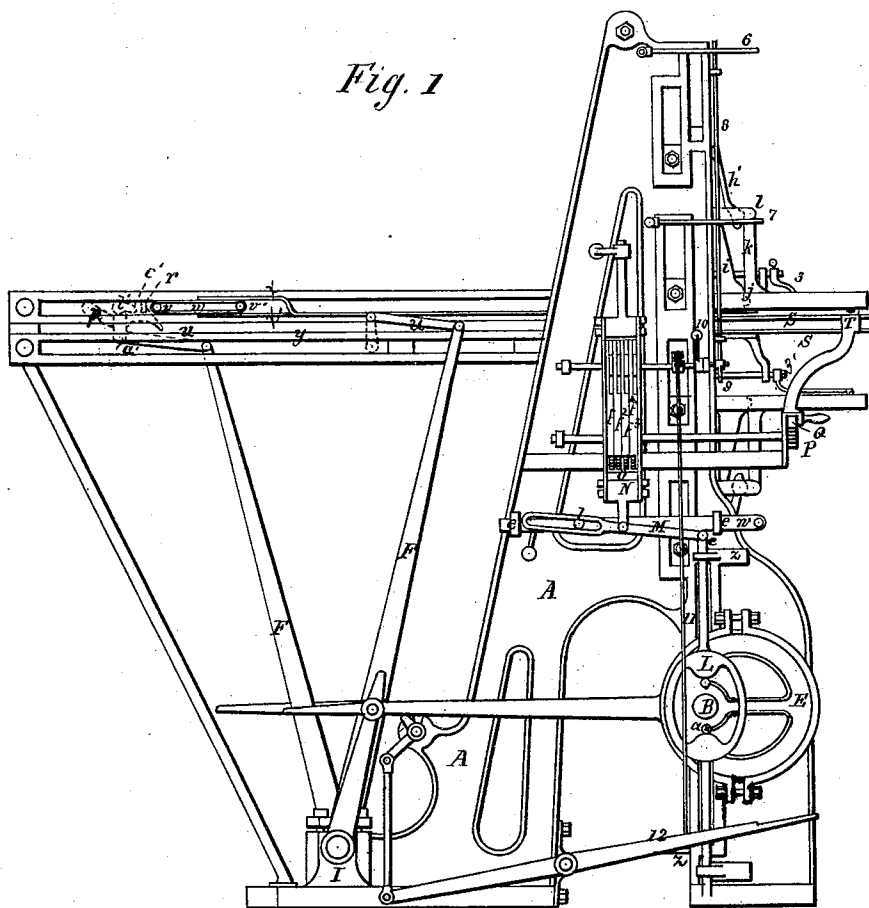


J. P. MOLLIERE.
SEWING MACHINE.

7 Sheets—Sheet 1.

No. 13,178.

Patented July 3, 1855.



Witnesses

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W. Cousul

Inventor

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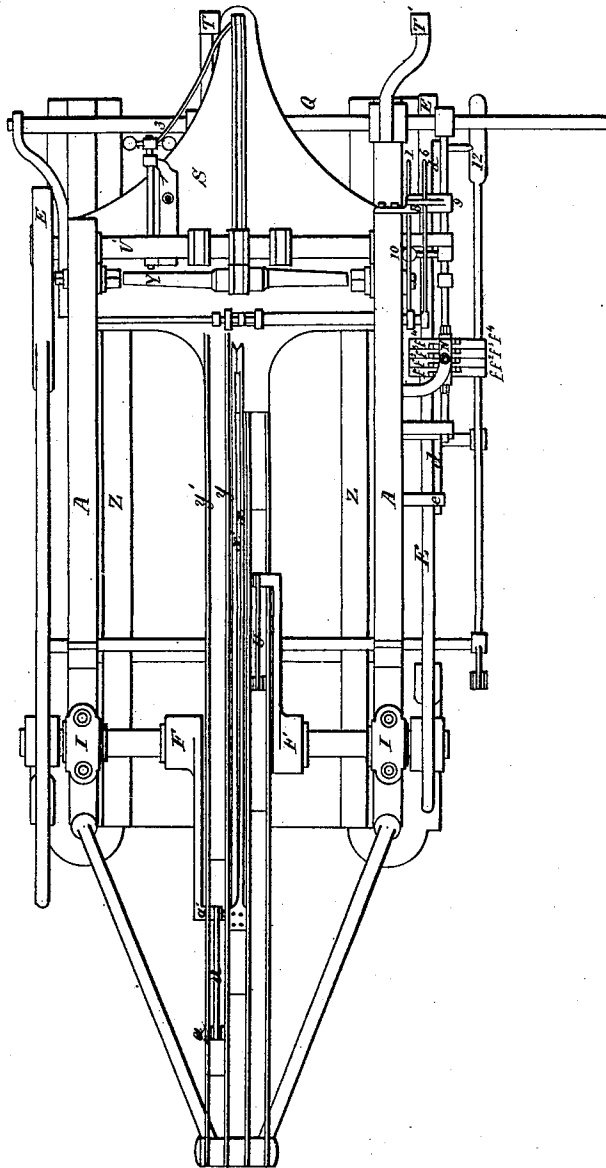
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SEWING MACHINE.

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Fig. 2



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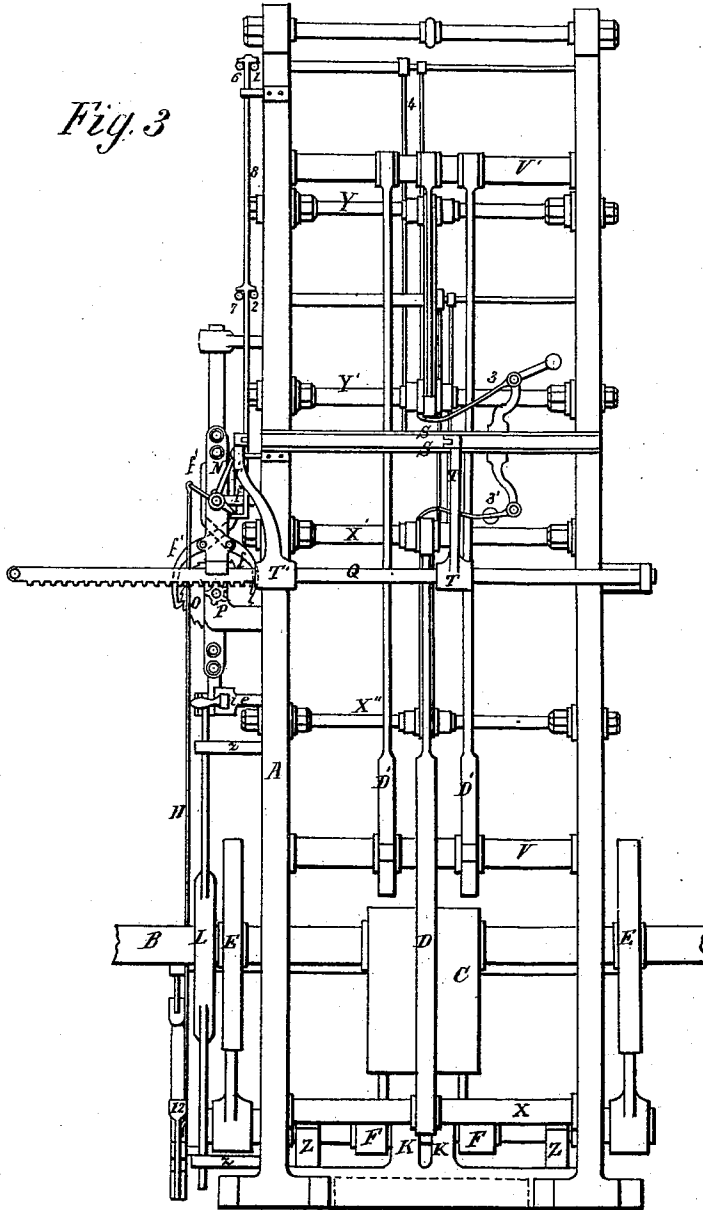
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SEWING MACHINE.

No. 13,178.

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Fig. 3



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SEWING MACHINE.

No. 13,178.

Patented July 3, 1855

Fig. 4

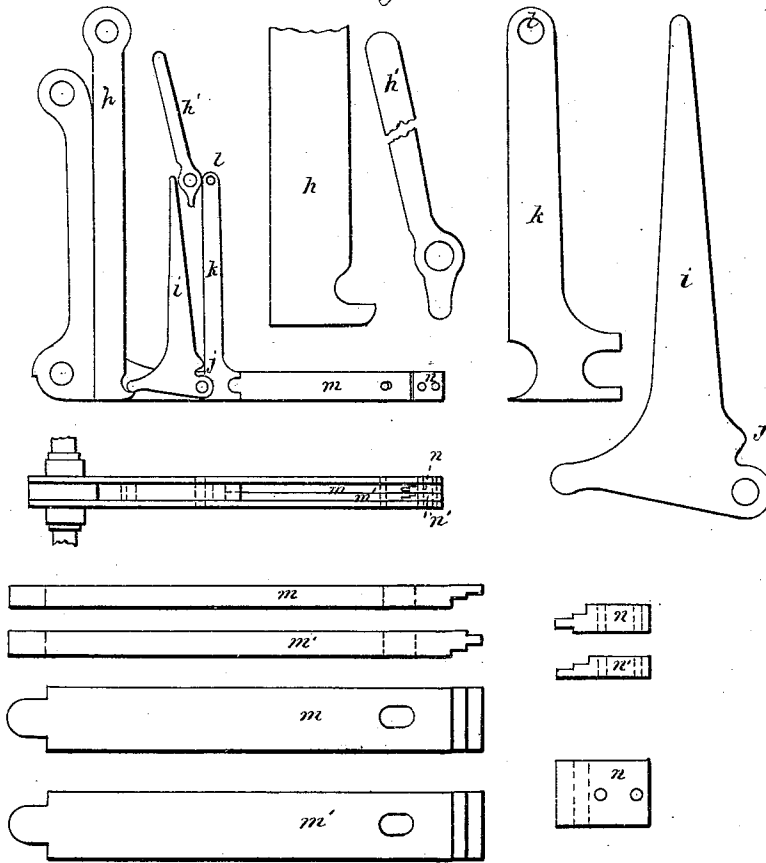
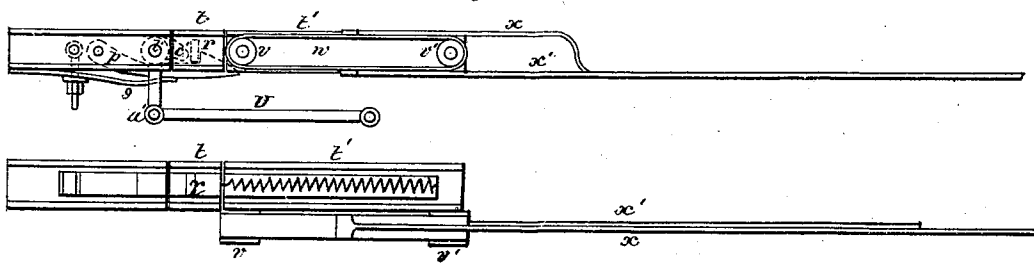


Fig. 5.



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SEWING MACHINE.

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Patented July 3, 1855.

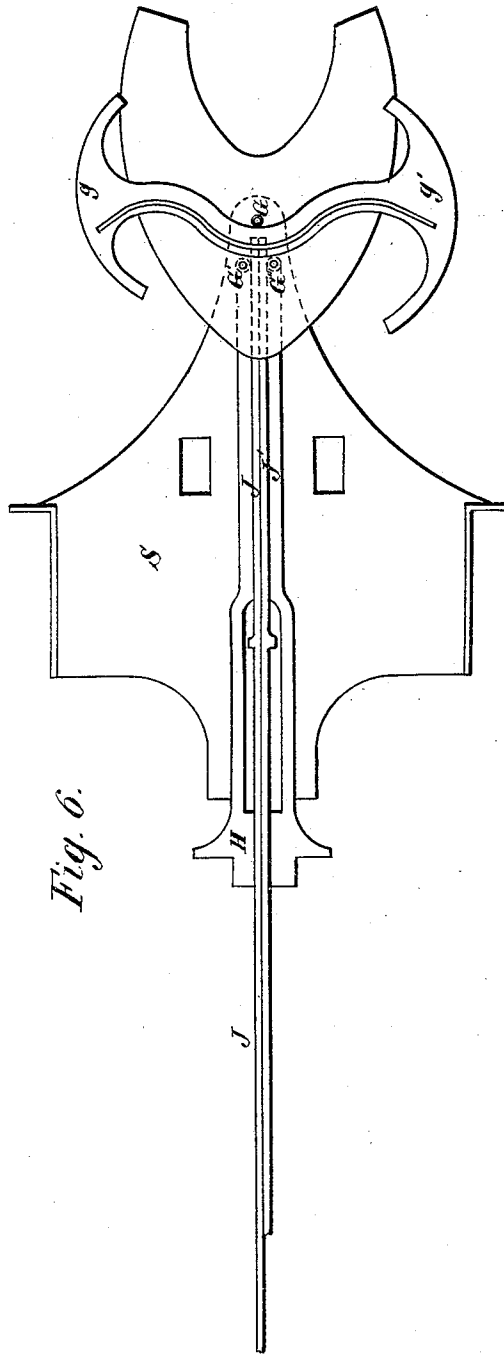


Fig. 6.

Witnesses

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SEWING MACHINE.

No. 13,178.

Patented July 3, 1855.

Fig. 1st

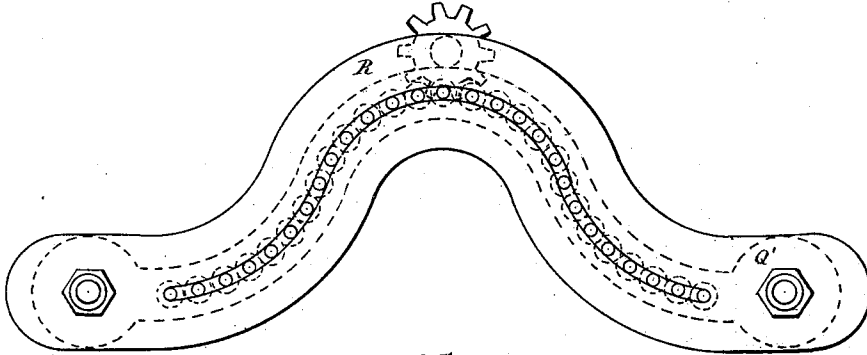
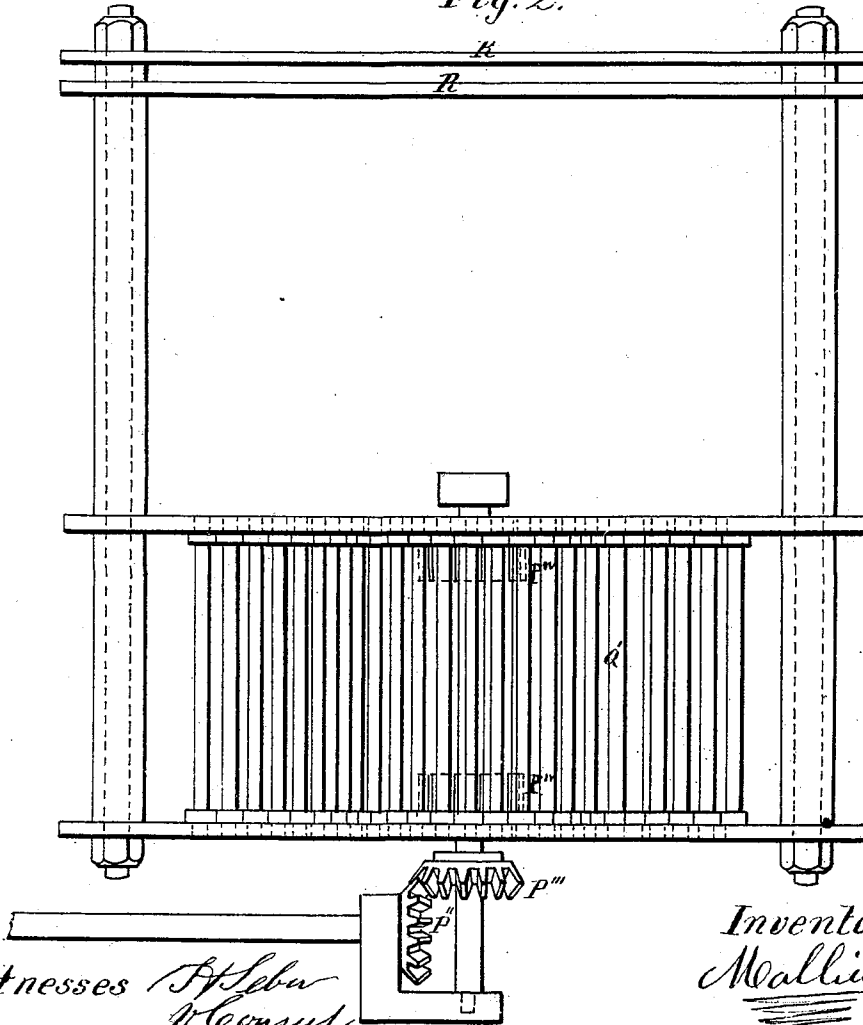


Fig. 2.



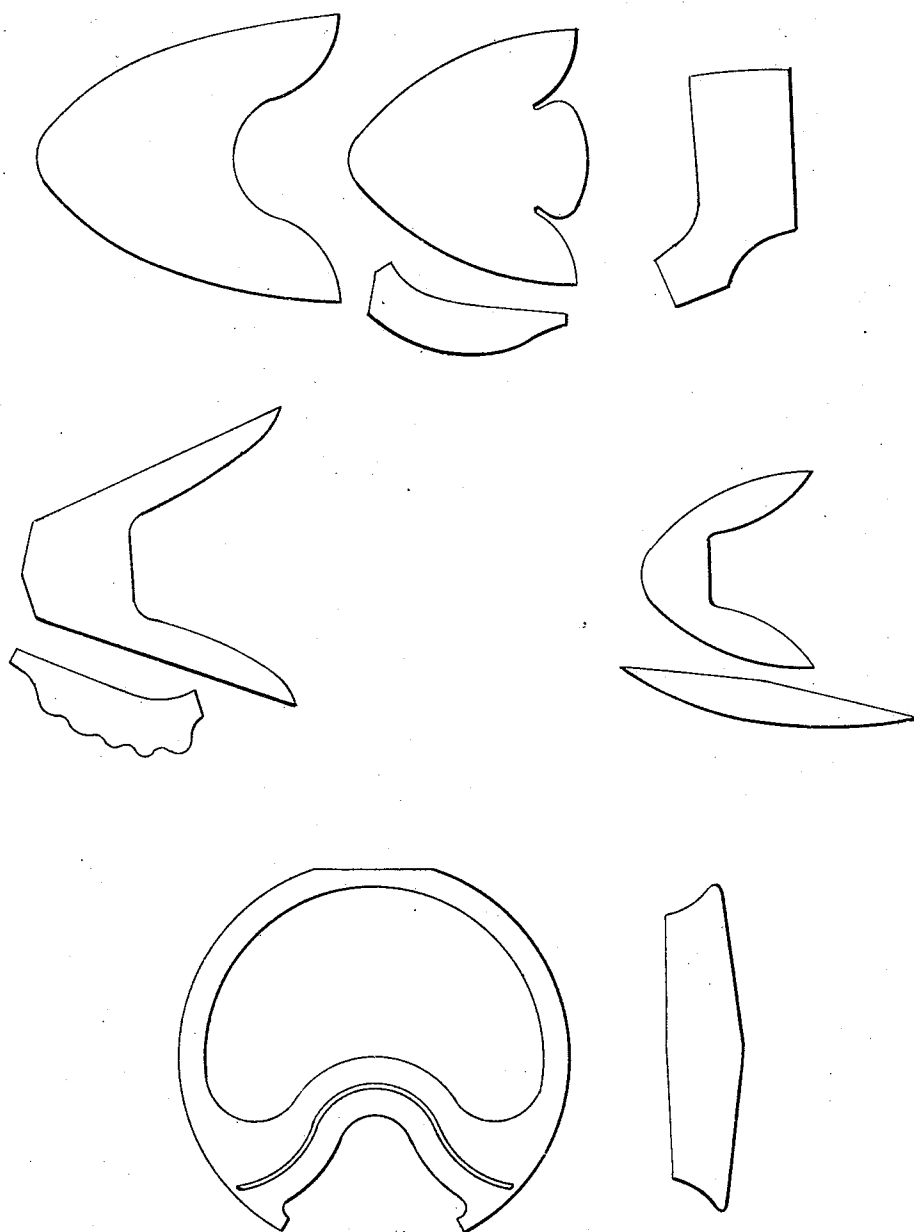
Witnesses *J. L. S. L. S.*
D. Consul

Inventor
Molliere

J. P. MOLLIERE.
SEWING MACHINE.

No. 13,178.

Patented July 3, 1855.



Witnesses
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—————
5

UNITED STATES PATENT OFFICE.

JEAN PIERRE MOLLIERE, OF LYONS, FRANCE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 13,178, dated July 3, 1855.

To all whom it may concern:

Be it known that I, JEAN PIERRE MOLLIERE, of Lyons, in France, have invented a new and useful machine for stitching and sewing all kinds of leather and stuff used in the making of boots and shoes; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figures 1, 2, and 3 of Plate 1 are sections and views of the machine, and Figs. 4, 5, and 6 of the same plate and Figs. 1 and 2 of Plate 2 are sections of part thereof, while the other figures of Plate 2 show some of the kinds of seams that can be sewed by this machine, and in which the letters referring to the separate parts of this machine are sufficiently explained in the following description of the construction and operation thereof to need no repetition here.

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

This machine (see Plates 1 and 2) is made up of a double cast-iron frame A A and of a driving-shaft, B, which is armed in its middle with a triangular cam, C, intended to transmit an alternate movement to the pieces D D'. On the right and left of these frames, upon the same shaft, B, are placed two eccentrics, E E, which communicate an alternate movement to the levers F F. These levers are supported by two bearers, I I, making a part of the frames A A, and upon two other bearers, K K, (see Fig. 3, Plate 1,) making a part of a plate attached to the ground-sills of the frames.

On the left of the machine there is attached to the driving-shaft a stirrup, L, making a double cam movement in the guides *zz*. This stirrup receives the motion of a tumbler or roller, *a*, fixed upon the eccentric E. When the roller or tumbler *a* forces the stirrup up or down, the latter acts upon the lever M, which in its turn lifts up or pulls down the piece N. The lever M is secured by the bolt *b* of the graduated piece *d*, which slides within its guides *ee*, so as to allow the lengthening or shortening of the arm of the lever *bc*. It carries on its left end a counter-weight to the pieces L N, in order to prevent the latter from

falling by their own weight before being controlled by the movement of the tumbler or roller *a*. When the stirrup L, and consequently the piece N, are lifted, up the latter carries with it eight catches, *f f' f''*, &c. Four of these catches (those on the left) pull up the racks O, and the four others push them down. The racks, and consequently the pinion P, attached to the same shaft, have by this means a continuous circular movement, which gives to the tooth-rack Q a continuous horizontal motion from left to right. The racks O have the same sized teeth, and are all in one piece. The catches are of different lengths, varying the fourth part of the rack-tooth, so that when one is quite up to the base of a tooth the second is only a fourth of the way up, the third half-way up, and the fourth three-fourths of the way up. This arrangement, by lengthening or shortening the arm of the lever *bc*, is capable of producing upon the shaft of the racks O, or of the pinion P, a motion which can be varied at pleasure. We then slide the graduated piece *d* till we get the stitch which we wish to make.

The pieces to be sewed are placed between two plates or piece-carriers, R R, Plate 2, which are of the shape of the thing to be sewed. In their middle is arranged a groove for the passage of the needles. They are connected together by gudgeons, fastened in one of the plates and having a lodgment in the other, in such manner that the grooves shall correspond exactly, while the plates are adjusted by screws, according to the thickness of the material to be sewed. These piece-carriers, so prepared, are placed between the plates S S. They are kept in place on one side by the guide-pieces T T', fixed upon the tooth-rack, one of which is keyed thereon, and the other secured by a thumb-screw. The guide-piece T, keyed upon the tooth-rack, carries a common roller inside. (Not necessary to be shown in the drawings.) The guide-piece T' carries a common spring, (not necessary to be shown in the drawings,) which constantly presses the ends of the piece-carriers against the roller in T. Upon the lower plate is fastened a roller, G, which prevents the piece-carriers from being thrown out of the line in which the sewing is done. Two other rollers, G' G'', are fixed upon the piece H, constantly forced outward by two springs placed upon a traverse

attached to the frame, and which acts upon its left ends. The seam-line passes, in this manner, through a fixed point, over the axis of the machine, which passes through the roller G. It is at this point that the needles act. It is necessary that the piece should go forward by a uniform movement, in order to insure a regular succession of stitches. This movement is given to it by the bevel-wheels $P'' P'''$. The shaft upon which the pinion P''' is fixed carries above it two other upright wheels, that gear into the tooth-rack Q, which is firmly secured by cross-ties to the piece-carriers. The teeth of the tooth-rack Q need only be of one particular form for all kinds of sewing. This tooth-rack is made up of two plates, exactly as the piece-carrier is, only the groove reserved in the middle of it must be large enough to take in the bearing-necks of the teeth, which are spindle-shaped, touching each other at their shoulders. They can be removed and replaced at pleasure.

The triangular cam C, (see Figs. 3 and 6, Plate 1,) in turning produces an alternate movement upon the rods D D', guided by the guide-pieces at the ends of the shafts V X, the play of which is regulated by the grooves made in the frames. The rods D D' transmit their motion, the one to the shaft X' and thence to the shaft X'', connected the one with the other by the lower needle-carrier. The others, D', transmit their motion to the shaft V', and thence to the shafts Y Y', connected with each other by the upper needle-carrier, by means of the hook h, Fig. 4.

When the shaft V', pushed up by the cam C, by means of the rods D', is raised, the hook h rises with it, and at the same time lifts the lever i, secured by its axis to the needle-bearer, and also to the shafts Y Y'. The lever i, being raised at one end by the hook, turns about upon its axis, and exerts through the point j a power upon the rod k, which makes it turn about upon its axis l, and pushes forward the piece m. The latter presses against the piece n the needles caught between the shoulders of the pieces m and n at the moment when the lower needle-bearer has forced them to traverse the piece to be sewed. The different movements we have just described occur at the moment when the shaft V' is going to be lifted. It continues its upward motion, carrying with it the needles. The pieces m n are arranged so as to receive three needles, two of which only carry the thread, each having an eye in the center. The first is intended to prick the material to be sewed, so that the two others may not meet with any resistance, which might occasion the breaking of the thread. The upper needle-carrier tends, by its weight, to fall; but it can only do this when the cam C permits it. This is not the case with the lower needle-carrier, which tends also to fall. In order to subject it to the movement of the cam, we fix upon the plate which carries the bearers K K (see Fig. 3, Plate 1) two spring-rods, Z Z, which press the needle-carrier continu-

ally against the cam. While the lower needle-carrier has pushed up the needles, and the upper needle-carrier has come to take hold of them in order to lift them above the plates S S, the lever F has received from the eccentric E a movement which brings it back toward the right of the machine, Fig. 1. This lever carries with it an apparatus, Fig. 5. This apparatus consists of a hook, p, upon which acts the spring q. When the apparatus returns toward the right, guided by the strips y y, (see Fig. 1, Plate 1,) the hook, which had slipped off the traverse r, catches hold of it anew and continues its movement. (The apparatus and the lever have only one and the same movement.) The piece t, to which is attached the traverse r, carries at its other extremity a spiral spring secured by the opposite end to another piece, u. Upon the side of this piece u are fastened two rollers, v v', upon which is twisted an endless leather strap. Above and below the rollers and upon the leather strap are fixed two hooks, x x', which, in this movement, go beyond the point of sewing, hook up their thread in returning, pull it after them, and close up the seam. If the thread is not long enough to allow the lever F to carry forward the apparatus, Fig. 5, to the end of its journey, the spiral spring stretches until its power, not so great as that of the thread, overcomes that of the spring q. This apparatus should then be considered at a standstill. The lever F gives an oscillation to the crank-arm U, which forces the lever a' b' c' to turn about upon the fixed point b'. The point c' presses upon the hook q and lets it slip from the traverse r. This operation is accomplished at the moment when the needle is kept above the plates S S during the passage of the arc of the cam. When the needle is lifted up, it is received by a piece, 3, intended to hold it fast while the closing up of the seam by the thread takes place. The endless strap placed upon the rollers allows the hooks to stretch the thread in a more uniform manner. The lever F continues its progress. Arrived almost at the end of its journey, it encounters a new guide-piece attached to the piece J, Fig. 6. By means of an iron wire it imparts to this piece a movement which finishes the closing up of the seam by the thread. This piece J, in which passes the thread, is intended to produce still another result. It is constantly pressed toward the right by the lever 4, (see Fig. 7, Plate 1,) upon which acts the spring 5, fixed to the plate S. If, during the operation, the thread breaks, the piece J yields to the force exerted by the spring 5, and when the needle-carrier arrives at the end of its journey the shoulder s (see Fig. 7, Plate 1) of the lever 4 catches in the hook h, (see Fig. 7, Plate 1,) provided upon the under and rear side of the needle-bearer, which is thereby stopped. Another lever, 4', by its shoulder s' coming in contact with the hook h, stops the other needle-carrier when it also arrives at the end of its course. These levers trans-

mit their slight movement, occasioned by the stoppage of the needle-carriers, to the handles 6 and 7 by means of the shafts upon which are fixed the levers and handles. The latter act upon the bolt 8, which, in lifting them up, gives, by means of the crank 9, a movement sufficient to push the center of gravity of the ball 10 out of the perpendicular, passing through the shaft to which it is affixed. The weight of this ball continues the rotating movement of the shaft, and un gears the catches by the piece K H, (see Fig. 8, Plate 1,) which is attached to it. The machine is then stopped, or at least though the principal parts of it may continue in motion from the driving-shaft B they produce no effect upon the work, and the workman in attendance is warned that one of the threads is broken. The workman, to throw in gear again after he has replaced the thread, must lower the handles 6 and 7, which detach the levers 4 and 4' from the hooks *h* and *h'* of the needle-bearers, and lifts up again the ball 10, which allows the catches to play free. This done, the operation recommences. The machine being ready to be started, he proceeds to put in the needles and the piece to be sewed. In order to do that you throw back the roller-carrier H, and introduce between the rollers G G' G'' the clamps or piece-carriers, between which is secured the material to be sewed. You then fix the three needles in their places. To do this, the workman in charge of the machine lowers by the hand the handle of the lever *h*, and brings it to a horizontal position. By this movement, the arm *h'* of this lever bears against the vertical arm of the lever *i*, which, together with the shoulder *j* of the same piece, flies back and draws with it the pieces *m m'*, which, for the time being, are separated from the fixed pieces *n n'*, and leave open the places intended to receive the needles, which are now put in their places, and threaded from beneath. The needles being in place, the workman lifts up again the handle of the lever *h*. The arm of the lever *i* as well as the shoulder *j* resume their first position. The pieces *m m'* are brought to bear upon the needles to keep them in place. The work is then ready to begin. In order to do this, the workman un hooks the needle-bearers by bearing down the handles 1, 2, 6, and 7. The shoulder-levers 4 and 4', attached to the shafts by their handles, fly back and leave the needle-bearers free, the one to fall and the other to rise and receive the movement of the cam C'. The ball 10 must then be raised, which, by means of the rod 11, lifts the foot-piece 12, (see Fig. 12, Plate 1,) and as a necessary consequence throws the eccentric bars into gear. The catches *f f' f''*, &c., can then work freely into the ratches, whose offices have been described above, and the eccentrics transmit their movement to the lever F. When the

piece is finished, you must, by means of the pedal 12, un gear the eccentrics. The rod 11 throws the catches out of gear. It remains only to lift the handles 1, 2, 6, and 7 to stop the course of the needle-bearers.

This machine is susceptible of sewing every kind of seam, straight and crooked, such as is shown by the forms upon Plate 3.

What I claim as my invention, and desire to secure by Letters Patent of even date with the French patent for the same invention, is—

1. The movable fulcrum *b* of the graduated sliding piece *d*, for lengthening or shortening the arm of the lever *b c*, in connection with the catches *f f' f''*, of different lengths, whereby the movement of the rock-shaft O or of the pinion P can be varied at pleasure, so as to produce any length of stitch that may be desired, the whole arranged and operated substantially in the manner herein described.

2. The guides T T' of the tooth-rack Q and the rollers G G' G'', for keeping in place the adjustable piece-carriers R R and the tooth-rack Q', which steadily pushes forward the piece to be sewed, so as to secure a regular succession of stitches, the whole arranged and operated substantially in the manner herein described.

3. The action of the hook or lever *h*, when the upper needle-carrier is ascending upon the lever *i*, whereby the point *j*, bearing upon the rod *k*, makes it press the piece *m* against the piece *n*, so as to seize and hold fast the needles between the shoulders of the pieces *m* and *n* at the moment when the lower needle-carrier has driven them through the piece to be sewed, the whole arranged and operated substantially in the manner herein described.

4. The lever F and its two hooks *x x'*, for passing beyond the line of sewing and taking hold of the thread at the moment when the needles are held above the plates S S, and pulling it after them and closing up the seam, together with the apparatus, Fig. 5, Plate 1, for overcoming the obstacle arising from short threads, the whole arranged and operated substantially in the manner herein described.

5. The stopping-levers 4 and 4', Fig. 7, Plate 1, for arresting the two needle-carriers in their course when the thread breaks, which, by throwing the ball 10 out of perpendicular, un gear the catches *f f' f''* by the piece K H, and so bring the machine to a stop, the whole arranged and operated substantially in the manner herein described.

6. The sewing of every kind of seam, whether straight or crooked, by what is known as the "shoe-maker's" stitch, in the manner substantially as herein described.

J. P. MOLLIERE.

Witnesses:

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