(No Model.) 3 Sheets—Sheet 1.

T. J. LE COUNT.

SEWING MACHINE.

No. 264,887. Patented Sept. 26, 1882.

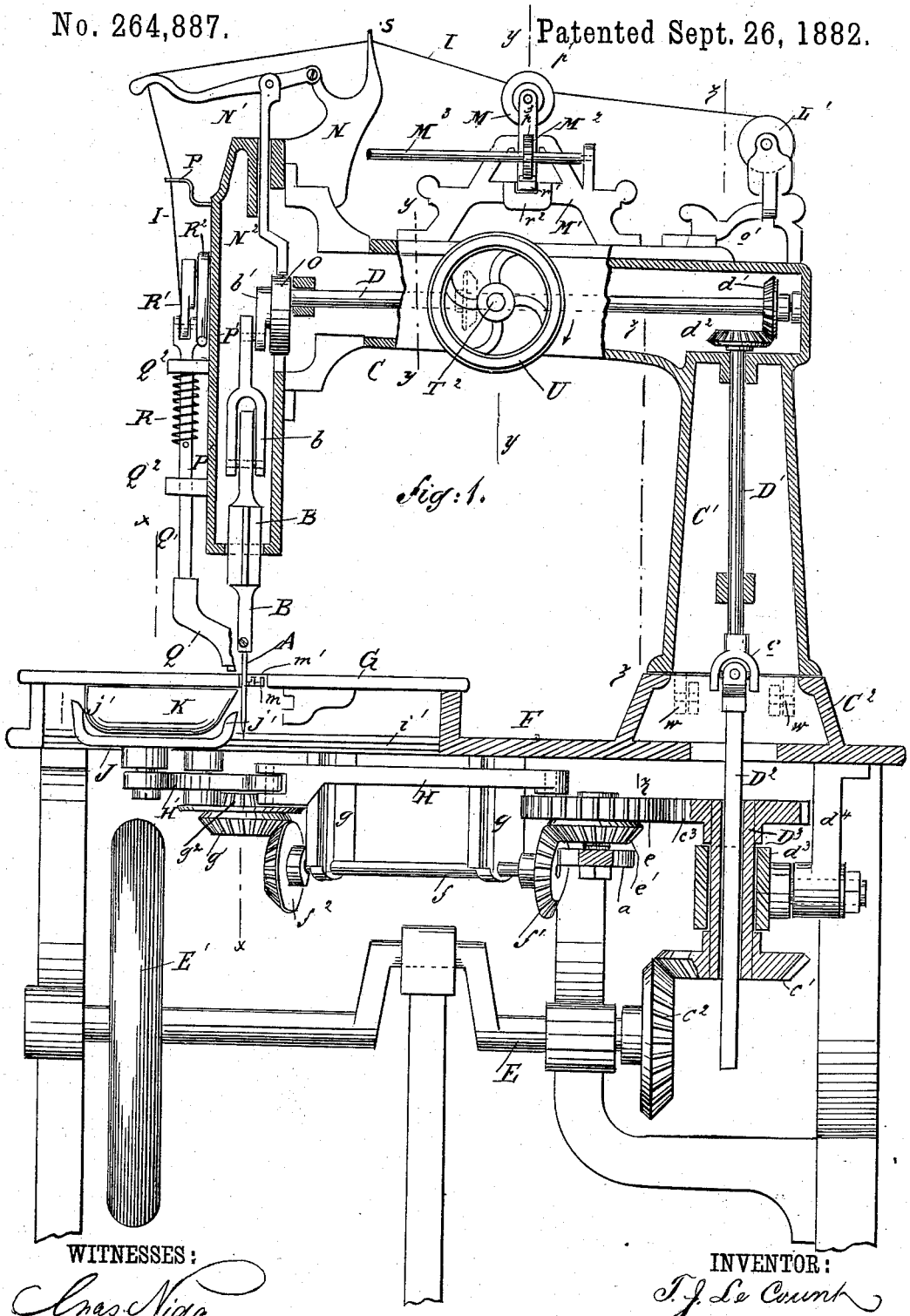

Fig: 1.

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INVENTOR:

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BY Munn & Co

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

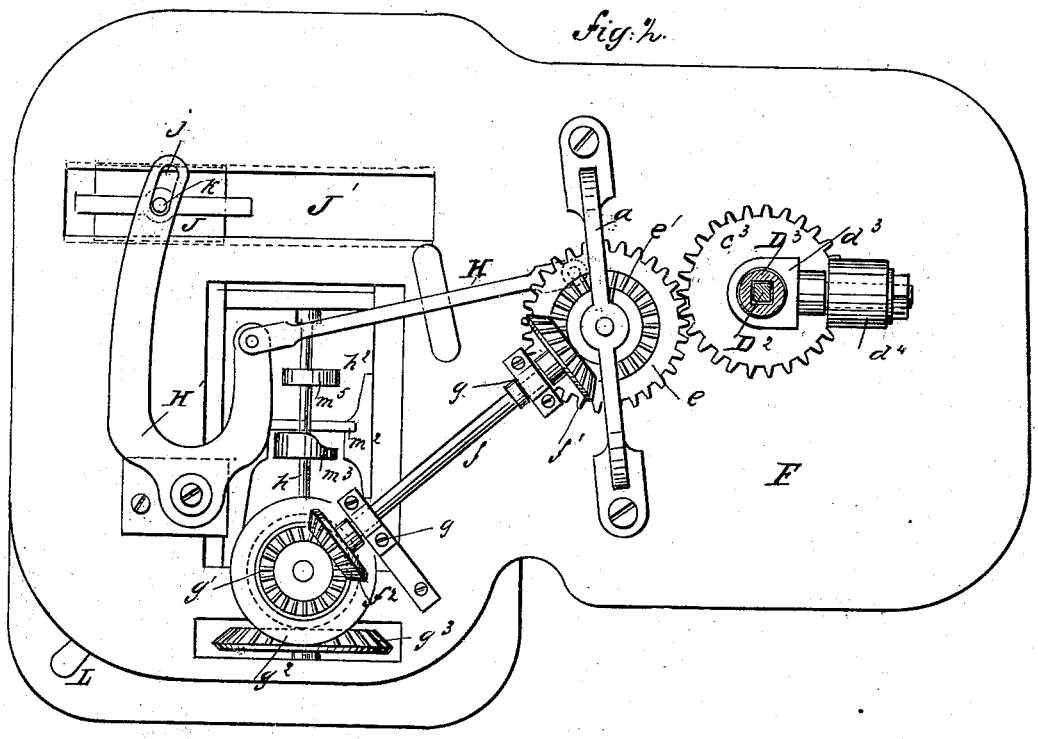
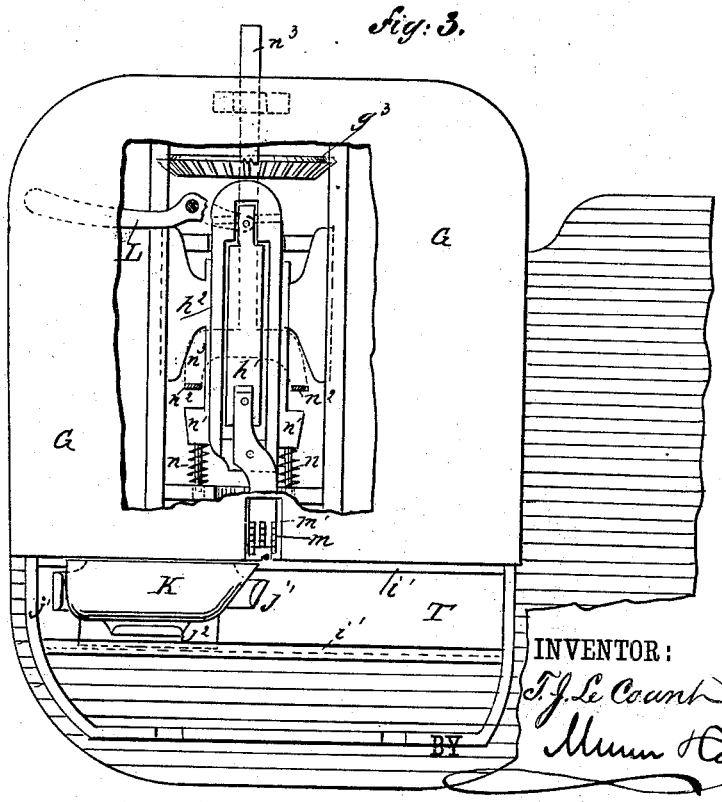


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

T. J. LE COUNT.

SEWING MACHINE.

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Fig: 5.

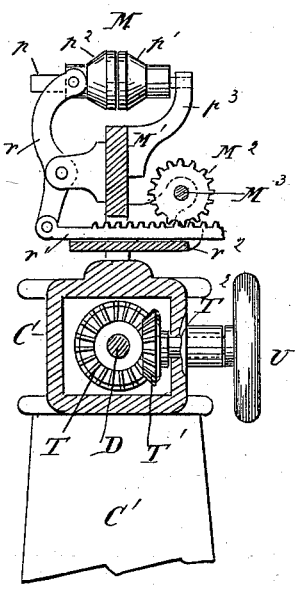
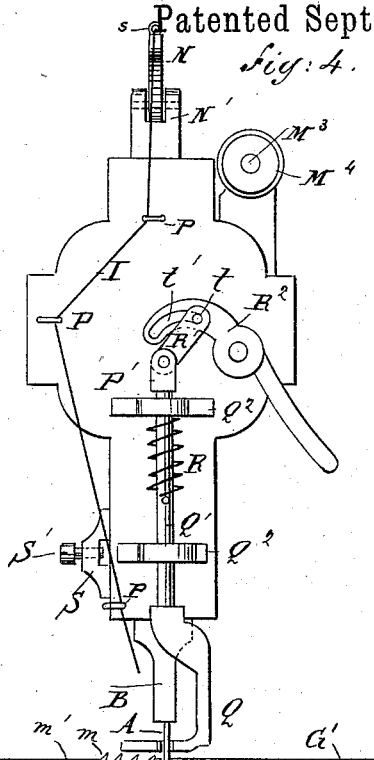


Fig: 4.



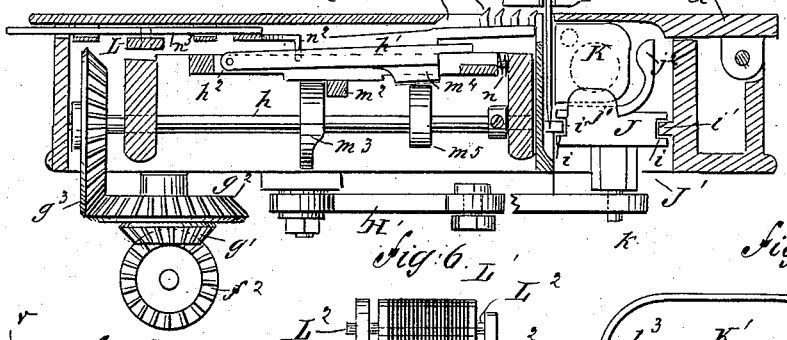


Fig: 6.

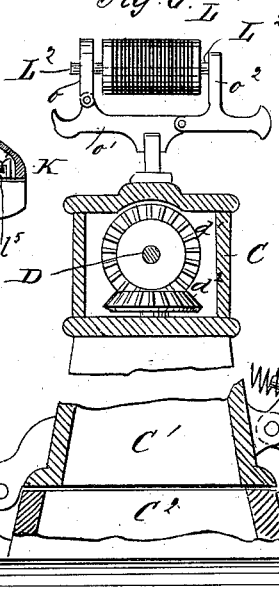


Fig: 7.

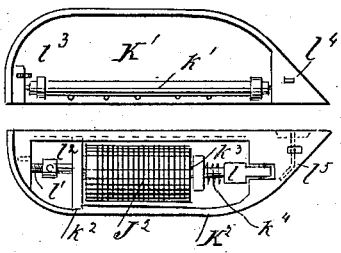


Fig: 8.

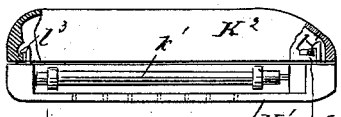
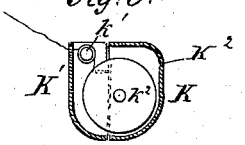


Fig: 9.



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UNITED STATES PATENT OFFICE.

THOMAS J. LE COUNT, OF NEW YORK, ASSIGNOR OF SIX-EIGHTHS TO JOSEPH A. KINGSBURY AND JOHN G. P. HOLDEN, OF YONKERS, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,887, dated September 26, 1882.

Application filed December 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. LE COUNT, of the city, county, and State of New York, have invented a new and Improved Sewing-Machine, of which the following is a full, clear, and exact description.

The invention consists in a sewing-machine in which the power is transmitted from the treadle-shaft to the needle-bar, shuttle-lever, and feed directly by means of shafts and gearing, thereby avoiding the use of belts and pulleys, which rods and gearing are partly contained in an arm hinged on the top plate, which arm can be tilted to facilitate fastening the needle and other sewing attachments. In order to permit tilting this arm, the vertical drive-rod is provided with a universal joint, and the part below the joint is squared and slides in a sleeve with a squared aperture.

The invention further consists in a novel thread-spool holder, in devices for adjusting the tension of the thread, and in the combination and arrangement of parts in the machine, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal elevation of my improved sewing-machine, parts being shown broken out and in section. Fig. 2 is a plan view of the under side of the bed-plate with parts in section. Fig. 3 is a plan view of the sewing-plate having parts broken out to show the feeding mechanism. Fig. 4 is a cross-sectional elevation of my improved sewing-machine on the line *x x*, Fig. 1. Fig. 5 is a cross-sectional elevation of the same on the line *y y* *y y*, Fig. 1. Fig. 6 is a cross-sectional elevation of the same on the line *z z z*, Fig. 1. Fig. 7 shows longitudinal elevations of the parts forming the shuttle, showing these parts disconnected. Fig. 8 is a plan view of the shuttle, showing the parts united. Fig. 9 is a cross-sectional elevation of the same on the line *v v*, Fig. 8.

The needle A is secured in the lower end of the needle-bar B, guided by an aperture in the lower end of the head P′ at the end of the hollow arm C, and this needle-bar is pivoted to a fork, *b*, pivoted to a crank, *b′*, on the end of a horizontal shaft, D, journaled in the horizontal part of the arm C, and provided at its opposite end with a bevel-gear wheel, *d′*, engaging with a bevel-gear wheel, d^2, on the upper end of a vertical shaft, D′, guided in the vertical part C′ of the arm C, and connected by a universal joint, *c*, with a squared rod, D^2, passing through the squared aperture of a sleeve, D^3, held loosely in a bearing, d^3, projecting from the arm d^4, which sleeve D^3 is provided at its lower end with a bevel-gear wheel, *c′*, engaging with a bevel-gear wheel, c^2, on the end of the horizontal crank-shaft E, provided with a fly-wheel, E′, and operated by means of a treadle or a motor of any desired or suitable construction. The rod D^2 passes loosely through the aperture of the sleeve D^3, and can be raised and lowered on the sleeve, but will always turn with this sleeve.

The sleeve D^3 is provided at its upper end with a gear-wheel, c^3, engaging with a gear-wheel, *e*, journal in a frame, *a*, and made integral with a bevel-gear wheel, *e′*, engaging with a bevel-gear wheel, *f′*, on a shaft, *f*, journaled in lugs *g*, projecting from the bottom of the bed-plate F. The other end of the shaft *f* is provided with a bevel-gear wheel, f^2, engaging with a bevel-gear wheel, *g′*, made integral with a larger bevel-gear wheel, g^2, engaging with a bevel-gear wheel, g^3, on the end of the shaft *h*, journaled horizontally below the sewing-plate G of the machine and operating the feeding mechanism, which will be described later.

A connecting-rod, H, is pivoted to the top of the wheel *e*, and is also pivoted to the short end of a U-shaped lever, H′, pivoted to the bottom of the plate F at the bend of this U-shaped lever. The longer arm of the lever H′ is provided with a slot, *j*, through which a pin or stud, *k*, passes, projecting from the bottom of the shuttle-carrier J, which slides in a slot, J′, of the plate F. This shuttle-carrier J is provided in the longitudinal edges with grooves *i*, into which the horizontal guide-tracks *i′* pass. The shuttle-carrier J is provided with the end arms, *j′*, and the outer side arm or lug, j^2, between which the shuttle K is placed.

The movement of this shuttle-carrier J is at right angles to the movement of the feeding devices.

The shuttle K is formed of two sections, K′ and K², which, when united, form the shuttle. The section K′ is very flat, and only contains an anti-friction roller, k', over which the shuttle-thread passes. The section K² is deeper and is adapted to contain an ordinary spool, J², of thread, silk, &c., which is held between an adjustable studded plate, k^2, and a plate having stud k^3, surrounded by a spiral spring, k^4, and fitting into a socket-piece, l, pivoted in the front end of the section, K², this spring k^4 pressing the stud k^3 into the end of the spool J².

The plate k^2 can be adjusted a greater or less distance from the end of the section K² by means of a screw, l', and corresponding nut, l^2, according to the size of the spool J². To remove the spool, the plate of the stud k^3 is pushed back, whereby the spring k^4 is compressed so as to permit drawing the stud k^3 out of the end of the spool, upon which the socket-piece l is swung upward, and the spool is removed. The spool is placed in the section K² by performing the above movements in the inverse order. The shuttle-thread passes through suitable openings in the sides of the section K′, as shown in Fig. 9.

The sections K′ K² of the shuttle are held together by an L-shaped hook, l^3, at the rear end of the section K′, and catching under the edge of the section K², and by a hook, l^4, at the front end of the section K′, and catching on a spring catch or latch, l^5, in the front end of the section K². That part G′ of the sewing-plate G covering the shuttle-race is hinged so that it can be swung outward, as shown in Fig. 4. The shuttle race or groove J′ is so arranged in relation to the needle A that the shuttle will run so close to the needle that the shuttle can pass through the thread-loop formed by the needle.

I use the four-motion feed generally used in sewing-machines. It consists of a dog or lever, h', pivoted in a sliding frame, h^2, and provided at its outer end with teeth m, which pass through a slot, m', in the sewing-plate G. This frame h^2 is provided on its under side with a projection, m^2, resting against a beveled cam, m^3, mounted on the shaft h, and the dog h' is provided with a projection, m^4, resting on an eccentric cam, m^5, mounted on the shaft h. Springs n press the frame h^2 from the needle A, and the cam m^3 presses it toward the needle, and the cam m^5 raises it, all these parts operating in such a manner that the teeth m, upon which the cloth rests, will be raised and moved toward the needle, then lowered and withdrawn, and so on.

The sliding frame h^2 is provided with two shoulders, n' n', which strike against the ends n^2 of a sliding fork, n^3, on the under side of the sewing-plate G at the return movement of the frame h^2. Accordingly as this frame strikes against the ends of the fork n^3 sooner or later, the stitch will be shorter or longer—that is, the stitch is regulated by the position of this fork n^3. (Shown in dotted lines in Fig. 3.) This fork n^3 can be adjusted by means of a pivoted lever, L, which can be operated by the person operating the machine.

The thread-spool L′ is held by a pintle, L², which is passed longitudinally through the opening of the spool, and is attached to a pivoted arm, o, pivoted to one end of a transverse bar or frame, o', resting on the arm C, and provided at the opposite end with a pivoted latch, o^2, for holding the end of the pintle L² after the same has passed through the spool. From the spool L′ the thread passes through the tension device M, consisting of a fixed disk, p', and a loose disk, p^2, mounted on a shaft, p, projecting from an arm, p^3, of a standard, M′, on the arm C. The collar or neck of the loose disk p^2 is pivoted to a fork, r, which is pivoted to the standard M′, and has its lower end pivoted to a rack, r', extending transversely across the standard M′—that is, in a position parallel with the shaft p—and sliding in a grooved track, r^2. A cog-wheel, M², engages with the rack r', and is mounted on a shaft, m^3, journaled parallel with the arm C in projections or standards on the same, as shown in Fig. 1, and extending to the end of this arm. The end of this shaft M³ is provided with a hand-wheel, M⁴. The adjoining surfaces of the disks p' p^2 are preferably coated with a layer of felt, rubber, &c., to increase friction. By turning the hand-wheel M⁴ the rack r' will be moved longitudinally and the disks p' p^2 will be pressed together or separated—that is, the friction on the thread is increased or decreased correspondingly. From the tension device M the thread I passes through the loop s at the upper end of a standard, n, on the arm C, and from this loop to the end of the take-up consisting of a lever, n', pivoted to the standard n and actuated by a connecting-rod, n^2, pivoted to the lever n' and resting on a cam, O, mounted on the shaft D, adjoining the crank b'. From the take-up lever the thread passes through the loops or eyelets P P on the head P′, and from there through the eye of the needle. The presser-foot Q is attached to a vertical rod, Q′, guided in projections Q² of the head and surrounded and pressed downward by a spring, R.

To the upper end of the rod Q an arm, R′, is pivoted, provided with a pin, t, passing into the curved slot t' of a hand-lever, R², pivoted to the head P′, and serving to raise the presser-foot.

The bridge S and screw S′ are to be used for attaching quilters, corders, &c., to the head. A bevel-gear wheel, T, is mounted on the shaft D about midway between the cam O and cog-wheel d', and engages with a cog-wheel, T′, mounted on a shaft, T², at right angles to the shaft D and projecting from the arm C toward the operator. This shaft T² has a hand-wheel, U, on its outer end. This hand-wheel revolves, as indicated by the arrow, when the machine is operated. The movement of the

machine can be reversed in case the needle is to be raised, &c., by turning the hand-wheel U in the inverse direction of its arrow. The vertical part C′ of the arm C is hinged by hinges *w* to a base, C^2, on the plate F in such a manner that the arm C can be turned or swung from the operator. A spring-latch, V, is pivoted to the part C′ of the arm C, and catches on a stud, V′, on the base C^2, for the purpose of holding the arm C in its upright or normal position. When this arm is turned over or swung outward the rod D^2 slides upward in the sleeve D^3.

I have constructed the arm C so that it can be tilted for the purpose of facilitating fastening needles into the needle-bar or hemmers, quilters, or other attachments to the head P′. Furthermore, a very low box will be required to cover the tilted arm, whereas a large box would be required if the arm remained erect.

The operation is as follows: If the shaft E is rotated by a treadle or any suitable motor, the bevel-gear wheel c^2 will rotate the bevel-gear wheel c' and the sleeve D^3, which in turn rotates the rods D′ and D^2. The bevel-gear wheel d^2, on the upper end of the rod D′, rotates the bevel gear wheel d' on the end of the shaft D, whereby the crank b' will be operated and the needle A will be reciprocated vertically. The rod N^2, resting on the cam O, vibrates the take-up lever N. The gear-wheel c^3, at the upper end of the sleeve D^3, rotates the gear-wheel *e*, and the bevel-gear wheel *e′* rotates the bevel-gear wheel *f′* on the shaft *f*. The bevel-gear wheel f^2 rotates the bevel-gear wheel *g′*, and the bevel-gear wheel g^2 rotates the bevel-gear wheel g^3, which is mounted on the shaft *h*, causing a rotation of the same. Thereby the dog *h′*, provided with the teeth *m*, will be raised, pushed forward, lowered, and withdrawn by the action of the cams m^3 and m^5 on the projections m^2 and m^4. By means of the connecting-rod H the U-shaped pivoted lever H′ is vibrated and the shuttle-carrier J is moved to and fro in its slot J′, whereby the shuttle will be thrown through the loop formed by the needle. The cloth is moved toward the operator. The motion is transmitted directly by means of shafts and gear-wheels in all cases, and belts and pulleys are dispensed with.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A sewing-machine constructed, substantially as herein shown and described, with the arm hinged to the top plate, whereby the arm can be tilted to facilitate inserting the needle and fastening sewing attachments to the head, as set forth.

2. In a sewing-machine, the combination, with the top plate, F, of the hinged arm C, the spring-latch V, and the stud or catch V′, substantially as herein shown and described, and for the purpose set forth.

3. In a sewing-machine, the combination, with the hinged arm C, of the driving-rod D′ D^2, provided with a universal joint, *c*, substantially as herein shown and described, and for the purpose set forth.

4. In a sewing machine, the combination, with the hinged arm C, of the driving-rod D′ D^2, provided with a universal joint, *c*, and having the lower part, D^2, squared, and of the rotating sleeve D^3, provided with a squared longitudinal aperture to receive the squared part D^3, which is adapted to slide in this aperture, substantially as herein shown and described, and for the purpose set forth.

5. In a sewing-machine, the combination, with the hinged arm C, of the driving-rod D′ D^2, provided with a universal joint, *c*, and a squared part, D^2, of the sleeve D^3, provided with a bevel-gear wheel, *c′*, and of the bevel-gear wheel c^2 on the crank-shaft E, substantially as herein shown and described, and for the purpose set forth.

6. In a sewing-machine, the combination, with the hinged arm C, of the needle-bar B, the pivoted fork *b*, the crank *b′*, the shaft D, the bevel-gear wheels d' d^2, the driving-rod D′ D^2, provided with a universal joint, *c*, and a squared part, D^2, of the sleeve D^3, provided with a bevel-gear wheel, *c′*, and of the bevel-gear wheel c^2, on the crank-shaft E, substantially as herein shown and described, and for the purpose set forth.

7. In a sewing-machine, the combination, with the crank-shaft E, provided with a bevel-gear wheel, c^2, of the rotating sleeve D^3, provided with a bevel-gear wheel, *c′*, and with a gear-wheel, c^3, the gear-wheel *e*, connected with a beveled-gear wheel, *e′*, the bevel-gear wheel *f′*, the shaft *f*, the bevel-gear wheel f^2, the bevel-gear wheels *g′*, g^2, and g^3, and the feeding mechanism of the machine, substantially as herein shown and described, and for the purpose set forth.

8. In a sewing-machine, the combination, with the crank-shaft E, provided with a bevel-gear wheel, c^2, of the sleeve D^3, provided with a bevel-gear, *c′*, and a gear-wheel, c^3, of the gear-wheel *e*, the pivoted connecting-rod H, and the pivoted U-shaped lever H′, and the shuttle-carrier of the machine, substantially as herein shown and described, and for the purpose set forth.

9. The combination, with the wheel *e* and the connecting-rod H, pivoted to the top of said wheel, and the shuttle-carrier J, of the U-shaped lever H′, connected at the slotted end of its long arm with said carrier and at the end of its short arm with said rod, whereby the shuttle-carrier is made to move on a line at right angles to that of the feed devices, as described.

10. In a sewing-machine, the combination, with the reciprocating feeding-device frame h^2, of an adjustable fork, n^3, substantially as herein shown and described, and for the purpose set forth.

11. In a sewing-machine, the combination, with the reciprocating feeding-device frame h^2, provided with shoulders or offsets *n′*, of the

adjustable fork n^3, having bends or flanges n^2 at the ends of the shanks, substantially as herein shown and described, and for the purpose set forth.

12. In a sewing-machine, the combination, with the reciprocating feeding-device frame k^2, of the fork n^3 and the pivoted lever L for adjusting this fork, substantially as herein shown and described.

13. In a sewing-machine shuttle, the combination, with the sections K′ and K², of the hooks l^3 and l^4 and the spring-catch l^5, substantially as herein shown and described, and for the purpose of holding the sections K′ K² together, as set forth.

14. In a sewing-machine shuttle, the combination, with the section K², of the plate k^2, provided with a stud, the stud k^3, the spring k^4, and the hinged socket-piece l, substantially as herein shown and described, and for the purpose set forth.

15. In a sewing-machine shuttle, the combination, with the section K², of the plate k^2, provided with a stud for holding one end of the spool, the screw l', the nut l^2, for adjusting the position of the plate k^2 according to the size of the spool, and of a hinged spring-stud for holding the other end of the spool, substantially as herein shown and described, and for the purpose set forth.

16. In a sewing-machine, the combination, with the frame o', of the pivoted arm o, provided with a pintle, L², and of the pivoted latch o^2, substantially as herein shown and described, and for the purpose of holding the thread-spool L′, as set forth.

17. In a sewing-machine, the combination, with the shaft p, of the fixed disk p' and the movable disk p^2, pivoted to a fork, r, pivoted to devices for adjusting it, substantially as herein shown and described, and for the purpose of adjusting the tension of the thread, as set forth.

18. In a sewing-machine, the combination, with the shaft p, of the fixed disk p', the movable disk p^2, pivoted to the fork r, pivoted to the frame M′, and to a sliding rack, r', engaging with a pinion, M², for operating it, substantially as herein shown and described, and for the purpose of adjusting the tension of the thread, as set forth.

19. In a sewing-machine, the combination, with the shaft p, of the fixed disk p', the sliding disk p^2, the pivoted fork r, the sliding rack r', the pinion M², the shaft M³, and the hand-wheel M⁴, substantially as herein shown and described, and for the purpose of adjusting the tension of the thread, as set forth.

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