(No Model.) 2 Sheets—Sheet 1.

E. T. THOMAS.

SEWING MACHINE.

No. 266,554. Patented Oct. 24, 1882.

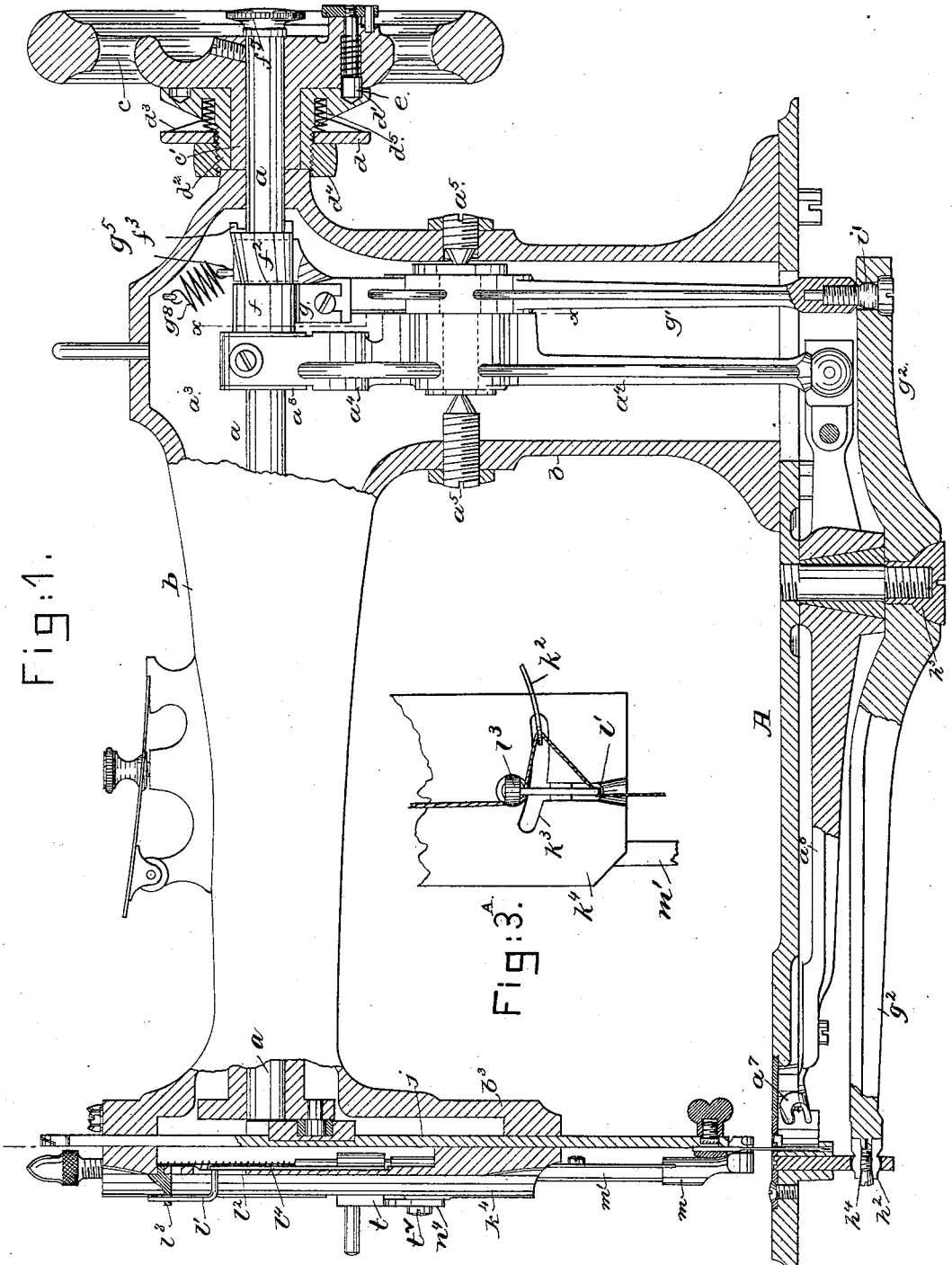

Fig. 1.

Fig. 3.

Witnesses.
L. F. Connor
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by Crosby Gregory Attys

(No Model.)

2 Sheets—Sheet 2.

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Fig: 8.

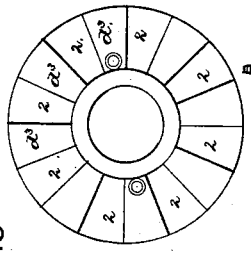


Fig: 6

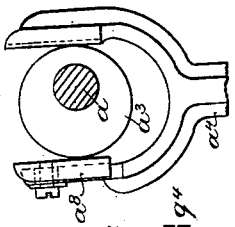


Fig: 7

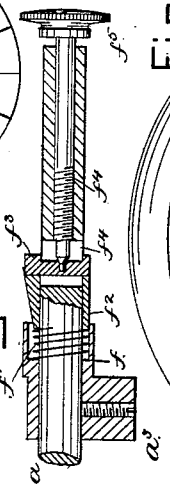


Fig: 9.

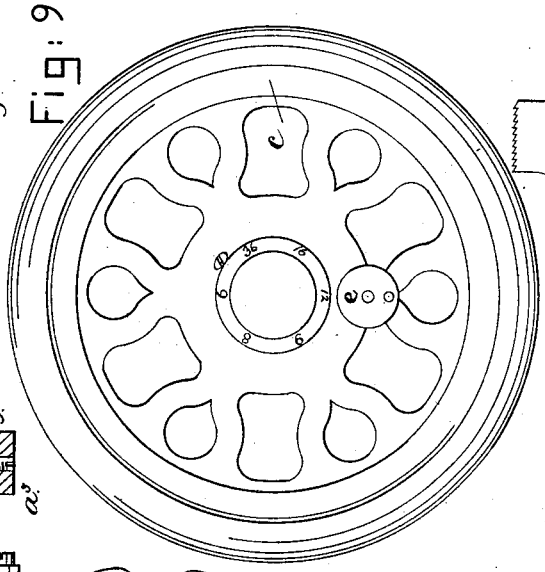


Fig: 10.

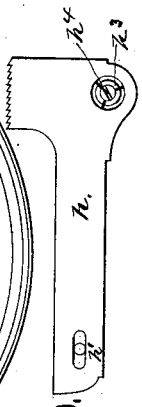


Fig: 4.

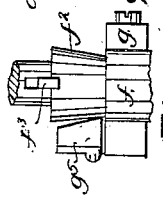


Fig: 5.

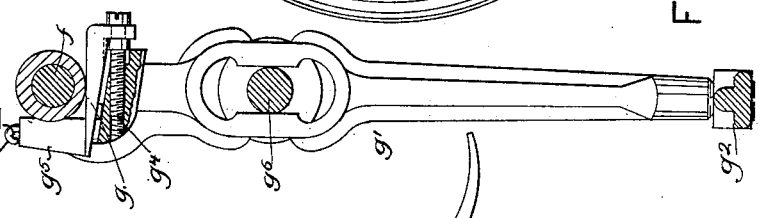


Fig: 3.

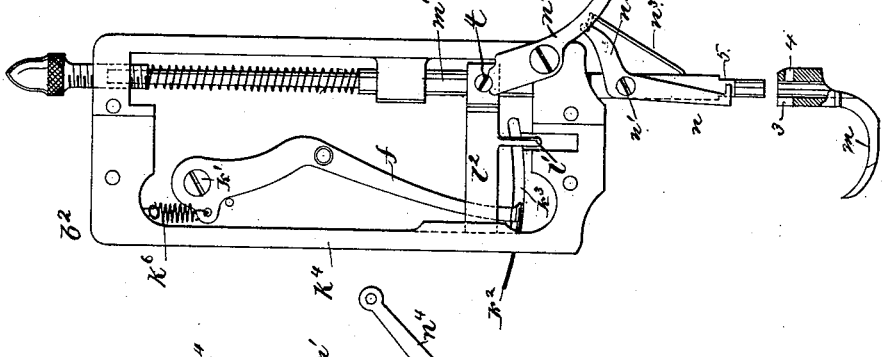
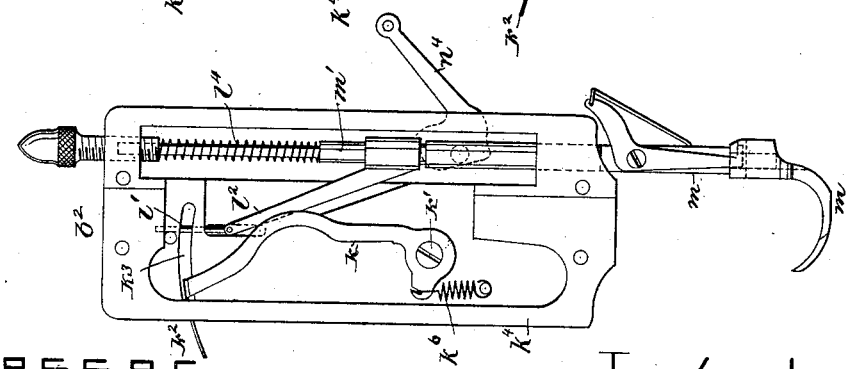


Fig: 2.



Witnesses.

L. F. Connor,

John F. C. Printhart

Inventor.

Eddy T. Thomas,

by Crosby Gregory Attys

UNITED STATES PATENT OFFICE.

EDDY T. THOMAS, OF NEW YORK, N. Y., ASSIGNOR TO THE C. W. WILLIAMS MANUFACTURING COMPANY, OF MONTREAL, CANADA.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 266,554, dated October 24, 1882.

Application filed January 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, EDDY T. THOMAS, of New York, county of New York, State of New York, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention in sewing-machines relates to improvements in the mechanism for actuating the feeding device, to a variable or expansible belt-pulley to take up the slack in the driving-belt of the machine, to improvements in the take-up, to means for holding the presser-foot upon the presser-foot bar, and to means for varying the amount of thread drawn up by the take-up to correspond with variations in the thickness of the material under the presser-foot.

Figure 1 represents in partial side elevation and vertical section a sewing-machine containing my improvements. Fig. 2 shows an inner side view of the cap, which, at the head of the machine, holds the presser-foot bar and take-up; Fig. 3, a like view of a modified form of take-up, to be referred to; Fig. 3^{A}, a partial front view of Fig. 3, showing the take-up as engaging the thread; Fig. 4, a detail of the cams which act upon the upper end of the vertical lever forming part of the feed-moving mechanism; Fig. 5, a section on the dotted line x, Fig. 1, looking toward the right; Fig. 6, a detail looking toward the left of the said dotted line $x\ x$, to show the upper end of the vertical lever which actuates the shuttle-carrying lever; Fig. 7, a detail showing in section the eccentric which controls the shuttle movement, the two cams which control the feed movement, and the screw for adjusting that one of the cams which controls the extent of feed movement; Fig. 8, an inner or face view of one-half of the variable or expansible belt-pulley; Fig. 9, an outside view of the fly-wheel; and Fig. 10 is a detail of the feed-bar, showing in it the split end of the lever which moves it.

The main shaft a of the machine, supported in bearings of the usual frame-work, b, has fixed upon it the fly-wheel c, having an elongated hub, c', upon which is placed loosely the variable or expansible pulley, composed of two partial cones, $d\ d'$, the faces of which are cut away radially to form spaces 2 and projections d^3, (see Fig. 8,) so that when the two cones are placed opposite each other, as in Fig. 1, the projections of one of the said parts enter the spaces of the other part. The part d is free to slide longitudinally on the hub d^2 of the part d'.

The band-groove is formed between the notched faces of the cones $d\ d'$, and by adjusting the said cones laterally with relation to each other the part about the shaft a to receive the usual driving belt or band may be made of proper diameter to keep the said band taut. The part d is made movable toward the part d' by means of a nut, d^4, which engages the screw-threaded shank of the part d', as in Fig. 1. Spiral springs d^5 act in opposition to the nut d^4 and keep the part d against the nut d^4.

When winding bobbins it is desirable to leave the main shaft a at rest. This may be done by withdrawing the sliding pin e of the fly-wheel from a notch in its hub d', and thereafter the pulley $d\ d'$ (the usual belt being on it) may be run freely on the hub of the fly-wheel without actuating it or the stitching parts of the machine.

The main shaft a has secured to it a suitable eccentric, a^3, which, entering between the forks at the upper end of the vertical lever a^4, (see Figs. 1 and 6,) vibrates the said lever about its centers a^5, causing it by its ball-shaped lower end to vibrate the horizontal lever a^6, with the forked rear end of which the ball end is engaged, as in Fig. 1. The lever a^6 at its forward end is provided with the usual shuttle-carrier, a^7.

One of the pronged parts of the lever a^4 has upon it an adjustable shoe, a^8, against which the eccentric a^3 strikes, adjustment of the said shoe compensating for wear and insuring a uniform throw of the shuttle-lever a^6. The shaft a also carries a cam, f, which is herein shown as an extension of the hub of the eccentric a^3, the said cam being chambered, as in Fig. 7, to receive the spring f' and the end of the conical cam f^2, the latter having connected with it a gib, f^3, which is extended through a slot, f^4, in the shaft a. This gib f^3 receives a screw, f^4, which is extended through the shaft a longitudinally, and has upon it the milled nut f^5.

The feed-bar h, slotted at its rear end and

supported by the pin h', has near its forward end a round hole, which receives the ball-like end h^2 of the lever g^2, pivoted at h^5. The ball-like end h^2 is split in two or more places, as shown in black at h^3, Fig. 10, and receives an adjusting-screw, h^4, by which the said ball may be expanded to maintain a proper fit between it and the feed-bar h.

The lever g^2 at its rear end receives the adjustable ball-like screw i', attached to the lower end of the vertical lever g'. The lever g' is slotted centrally, as shown in Fig. 5, to fit over the short shaft or axle g^6, which serves as the fulcrum for the lever a^4, which axle is held by the pointed screws a^5. The upper end of lever g' has connected with it the shoe g, made adjustable by the screw g^4. This shoe g has a lateral extension provided with an upright face, g^5, and a spring, g^8, connected with the lever g', keeps the shoe elevated in contact with the cams $f f^2$. The cam f, by its action on the horizontal part of the shoe g, controls the extent of longitudinal or downward movement of the said lever, and consequently the amount of upward movement of the feed device h. The cam f^2 strikes the portion g^5 of the shoe, determines the extent of vibration of the lever g', and consequently the effective length of feed stroke of the feeding device h. The cam f^2, by its adjustment longitudinally on the shaft a, vibrates the lever g' more or less, and thus determines the exact length of feed. This cam f^2 is substantially as in a patent already issued to me.

The adjustment of shoe g, besides compensating for wear, also enables the feed device h to be raised more or less above the cloth-supporting surface A.

The feeding device h is moved positively in all its directions by the lever g^2, and the levers for moving it are so connected as to be practically noiseless, and their wear may be readily compensated for.

At its front end the shaft a has a crank-pin, which enters a heart-shaped slot in a block attached to the needle-bar j to reciprocate it, all in the usual manner.

The take-up, made as a lever, k, pivoted near one end, at k', to the covering-plate of the head b^3, is provided at its other end with a hook, k^2, which is extended through a slot, k^3, where it engages the needle-thread l and draws it in loop form through an eye or staple having a part, l', which is free to be moved toward the other or fixed part, l^3 of the staple, through changes in the presser-foot m as it passes over material of different thicknesses.

The presser-bar in Figs. 1 and 2 has on it a sleeve, having the arm l^2 attached, which holds the movable part l', over and against which the loop of needle-thread is drawn by the lever k, acted upon by the spring k^6. This take-up lever will be moved positively in opposition to the spring k^6 in any usual way to give up slack thread for the formation of the loop in the needle-thread and the passage of the shuttle through it.

I have not deemed it necessary to show the device connected with the needle-bar, which in practice acts upon the usual pin or stud of the take-up lever, as commonly practiced in the Home shuttle-machine. As this movable part l' is lowered or raised by the varying thickness of the material under the presser, the lever k is made to take up more or less of the slack in the needle-thread above the fabric, thus keeping the stitch uniform and regular.

In the modification, Fig. 3, the take-up lever is shown as pivoted near the top of the face-plate, and the slot k^3 as made near its lower end. In this modification the arm l^2, carried by the presser-bar m', is extended across the face-plate horizontally, and the lower or movable part, l', (shown best in Fig. 3^A,) upon which rests the needle-thread between the hook k^2 of the take-up lever and the eye of the needle, is made to reciprocate through the part l^3 as the presser-foot is raised and lowered.

In Fig. 3 it will be noticed that the presser-foot is lifted by the presser-foot-lifting lever n^4, whereas in Fig. 3^A the presser-foot is supposed to be resting upon the material, as when sewing. The presser-foot m is slotted at 3, and has a hole, 4, to receive the hook 5 at the lower end of the presser-foot-locking lever n, pivoted at n' on the presser-bar. The upper end, n^2, of this lever, acted upon by a spring, n^3, is so shaped and placed that when the presser-foot is lifted by and rests in the second notch of the presser-foot-lifting lever n^4, it acting on a projection, t, of the presser-bar, the lever n will be moved to cause its pin 5 to be withdrawn from the notch 4 of the presser-foot, as shown in Fig. 3, when the latter may be readily removed from the presser-bar.

In Figs. 1 and 2, the lifting-lever is pivoted at t^2 at the outer side of face k^4, and its short end is shaped as described and shown of the lever in Fig. 3.

The face of the fly-wheel c is provided with a series of numbers (see Fig. 9) to co-operate with a mark or point on the nut f^5 to designate the length of stitch to be made.

I do not broadly claim a take-up made variable with the presser-foot to take up more or less thread, according to the thickness of the material.

I claim—

1. The feeding device h, and horizontally-vibrating lever g^2, and shaft a, and cams $f f^2$ carried by it to actuate the feeding device, combined with the lever g' and its adjustable shoe g, to operate substantially as described.

2. The main shaft a and fly-wheel, combined with an expansible belt-pulley composed of two notched cones or parts adjustable horizontally with relation to each other, and springs d^5, all substantially as described.

3. The fly-wheel and its extended hub, the part d' of the belt-pulley placed thereon, the opposed part d of the belt-pulley, the springs d^5, and the nut to adjust the parts d d' of the said belt-pulley, substantially as described.

4. The shaft a and fly-wheel c, fast upon it,

and the pin *e*, carried by the fly-wheel, combined with the expansible belt-pulley *d d'*, loose with relation to the fly-wheel, except when held by the pin *e*, the nut d^4, and springs d^5, substantially as described.

5. The presser-foot and its bar and the take-up, combined with the thread-support rigidly connected with and carried by the said presser-bar, and made to rise and fall with the presser, to support the needle-thread at a higher or lower level with relation to the cloth-plate of the machine as the presser-foot rides over material of greater or less thickness, substantially as described, and for the purpose set forth.

6. The presser-foot and its bar, combined with the presser-foot-locking device pivoted upon the presser-bar, and adapted to operate substantially as described.

7. The take-up pivoted upon the face-plate, and the presser-bar, combined with the rest *l'* for the needle-thread between the take-up and eye of the needle, the said rest being connected rigidly with the presser-bar, and moving vertically with it to lower and raise the needle-thread with relation to the path of reciprocation of the take-up lever, to enable it to take up more or less thread, according to variation in the thickness of the material under the presser-foot, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDDY T. THOMAS.

Witnesses:
BERNARD J. KELLY,
JNO. A. MORROW.