

(No Model.)

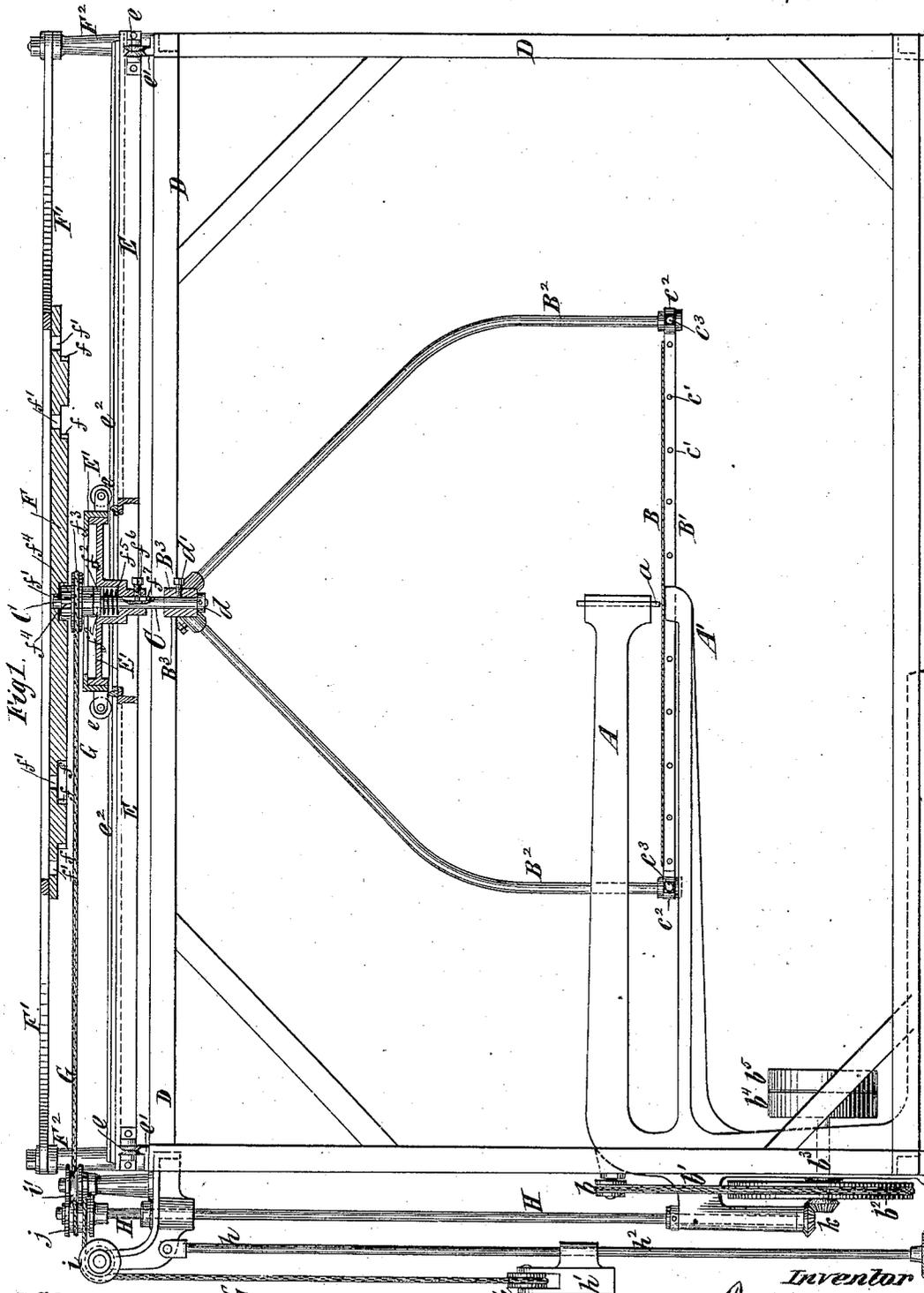
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F. L. PALMER.

MACHINE FOR SEWING OR QUILTING FABRICS.

No. 308,981.

Patented Dec. 9, 1884.



Witnesses  
Ed. L. Moran  
Chaudler Hall

Inventor  
Frank L. Palmer  
by his Attorneys  
Brown & Hall



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Fig. A.

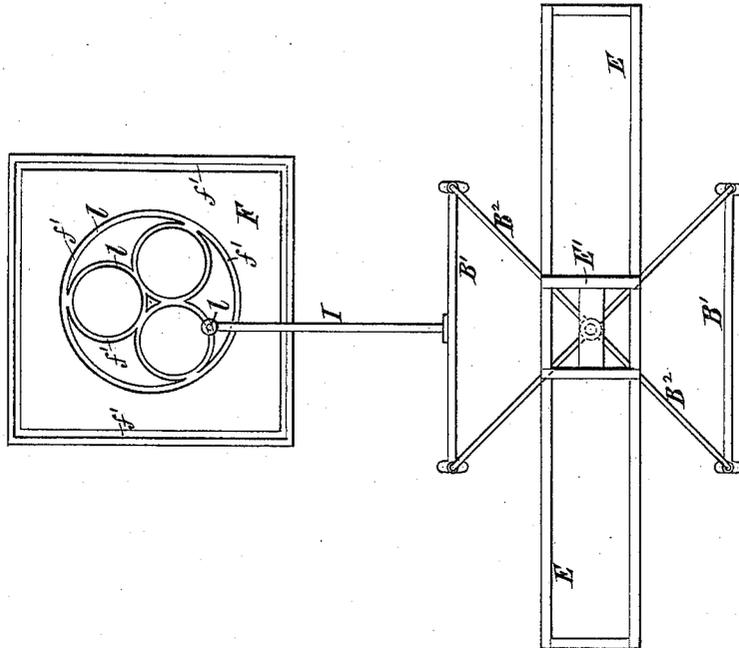
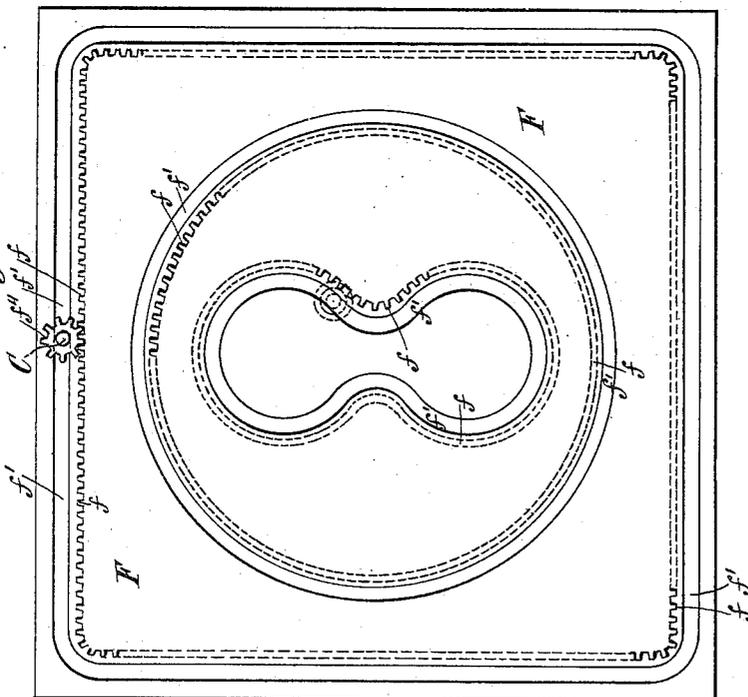


Fig. 3.



Witnesses

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(No Model.)

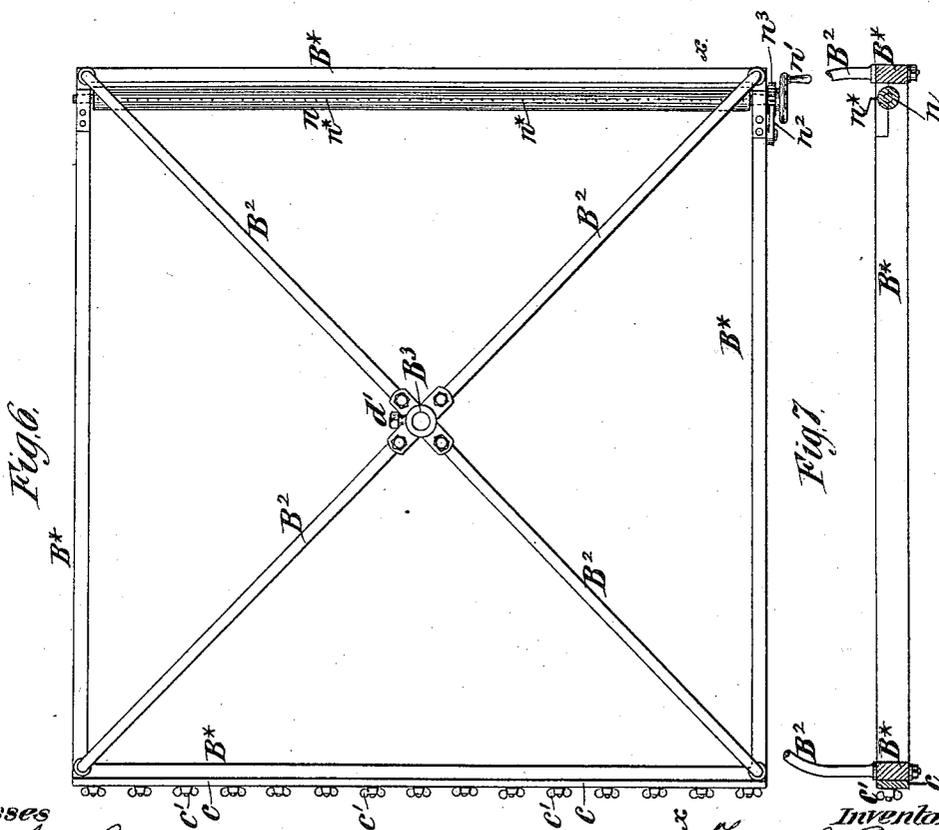
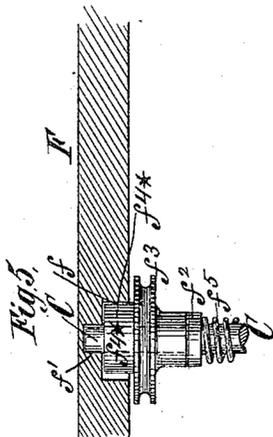
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F. L. PALMER.

MACHINE FOR SEWING OR QUILTING FABRICS.

No. 308,981.

Patented Dec. 9, 1884.



Witnesses  
 Matthew Pollock  
 Geo. H. Sawyer

Inventor  
 Frank L. Palmer  
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(No Model.)

5 Sheets—Sheet 5.

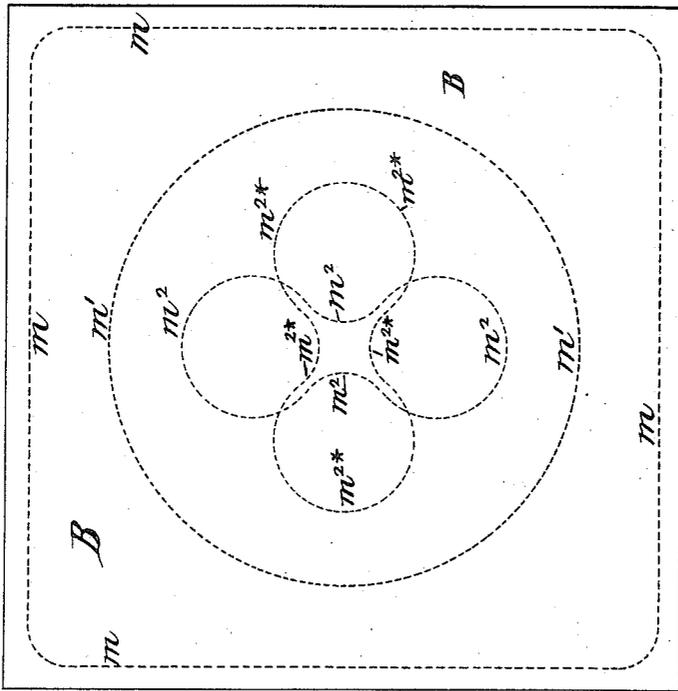
F. L. PALMER.

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*Figs.*



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# UNITED STATES PATENT OFFICE.

FRANK L. PALMER, OF NEW LONDON, CONNECTICUT.

## MACHINE FOR SEWING OR QUILTING FABRICS.

SPECIFICATION forming part of Letters Patent No. 308,981, dated December 9, 1884.

Application filed November 23, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK L. PALMER, of New London, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Machines for Sewing or Quilting Fabrics, of which the following is a specification.

My invention relates more particularly to machines for quilting bed-comfortables and other articles composed of several thicknesses of material; but such machines may be employed for sewing upon various fabrics in one or several thicknesses.

The principal objects of my invention are to enable fabrics of comparatively large size—such as quilts and bed-comfortables—to be quilted by a sewing-machine while held in an extended or stretched condition upon suitable supports, and to produce such changes in the relative position of the fabric and sewing-machine needle by a universal movement in any and all directions, under control of a pattern, that quilting in large and elaborate patterns of artistic design may be quickly and automatically produced.

The invention consists in various novel combinations, which are hereinafter described, and referred to in the claims.

In order that the invention may be more readily understood, I will first give a brief description of the principal parts of the machine which I have chosen to illustrate the invention. The fabric to be sewed or quilted is extended on a frame, which constitutes a holder or supporting-carrier for the fabric, and the sewing-machine has a long arm to enable its needle to operate on all parts of the fabric which it is desired to quilt. Two carriages are employed, which are movable in directions transverse to each other, and one of which is supported upon the other. The lower carriage, which has only a simple movement, I term the "first carriage," and the other or upper carriage, which moves with as well as upon the first carriage, I term the "second carriage." The second carriage therefore has a compound movement and controls the relative position of the fabric and sewing-machine needle. The fabric-frame or fabric-holder is supported by or suspended from this second carriage. Neither of the two carriages has a determined and invariable movement, but the

speed and direction of movement of either carriage may be varied or changed relatively to the speed and direction of the other to any degree and at any point within the whole range of movement of the carriages. The speed of each carriage is increased or diminished inversely as the speed of the other is increased or diminished, and hence the change in relative position of the fabric and needle is always made at uniform speed in any direction. The fabric frame or holder is supported or suspended, preferably, by converging arms or hangers of rigid material, and these arms or hangers are connected with a single central support, which consists of an upright shaft or bar having a bearing in the second carriage. The movements of the carriages and fabric frame or holder are controlled by a pattern consisting of a guide or guiding-slot arranged in pattern form, with which the aforesaid upright shaft or bar engages and along which it is moved, and the movement of the fabric under the sewing-machine needle conforms to the movement of the aforesaid shaft or bar along the pattern. The fabric frame or holder is moved in any and all directions along the pattern or former, and the carriages serve simply as supports for the fabric-frame and permit such movement. The pattern or former preferably consists, in addition to the guide or slot before mentioned, of a rack or track also arranged in pattern form and adjacent to the guide or slot, and the fabric-frame and its central supporting shaft or bar are made to follow the rack or track by a pinion or wheel loosely mounted on the shaft or bar and gearing with the rack or track. The pinion or wheel is or may be rotated by an endless band or chain, and by its rotation it travels along the pattern rack or track, and carries with it the fabric-frame, its supporting shaft or bar, and the two carriages. Of course as the pinion or wheel moves along the pattern rack or track more or less of the driving band or chain is taken up, and I employ means for taking up the slack in the said band or chain and idler-pulleys around which it passes. The end of the shaft or bar on which the said pinion or wheel is arranged enters the above-mentioned guide or slot, which is in pattern form, and thereby holds the pinion or wheel in engagement with the pattern rack or track.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of the machine chosen to illustrate the invention. Fig. 2 is a plan thereof with the pattern or former removed, and the arm only of the sewing-machine being shown. Fig. 3 is an inverted plan of the pattern or former and the pinion engaging with its rack. Fig. 4 is a diagram illustrating in plan view a machine modified in form but also embodying my invention. Fig. 5 is a detail sectional view illustrating a portion of a pattern and a smooth-surfaced wheel having a frictional engagement with a smooth-surfaced track in pattern form, which is substituted for the toothed rack in pattern form. Fig. 6 is a plan of a fabric-frame or fabric-holder in which one edge of the fabric is to be attached to a roller and the fabric extended by slightly turning the roller. Fig. 7 is a sectional view of the frame or holder shown in Fig. 6 on the plane of the dotted line *xx*, Fig. 6; and Fig. 8 represents a fabric, showing the lines of sewing which may be produced by the use of the pattern shown in Fig. 3.

Similar letters of reference designate corresponding parts in the several figures.

A designates the long arm of the sewing-machine, which carries the needle-bar *a*. The shaft which operates the needle-bar has upon it a pulley, *b*, and receives rotary motion by a belt, *b'*, from a large wheel or pulley, *b<sup>2</sup>*.

Upon the shaft *b<sup>2</sup>* are fast and loose pulleys *b<sup>4</sup>* *b<sup>5</sup>* for the reception of a driving-belt.

A' designates the bed of the sewing-machine, between which and the arm A the fabric B, to be operated on, is passed.

The support for the fabric B, as here shown, consists of a fabric-frame or fabric-holder composed of two bars or side pieces, B', to which opposite edges of the fabric may be clamped by means of clamping strips or pieces *c* and screws and thumb-nuts *c'*.

B<sup>2</sup> designate arms or hangers which converge upward from the outer edges of the frame, and are composed of rigid material.

The bars B' are connected with the arms or hangers B<sup>2</sup> by yokes *c<sup>2</sup>* and set-screws *c<sup>3</sup>* *c<sup>4</sup>*, as best shown in Fig. 2. By slackening the set-screws *c<sup>3</sup>* and tightening the set-screws *c<sup>4</sup>* the bars B' may be spread or moved apart to extend or stretch a quilt or fabric, and by slackening the set-screws *c<sup>4</sup>* and tightening the set-screws *c<sup>3</sup>* a reverse movement of the bars B' will be secured.

As here shown, the fabric-frame is suspended from above, and the arms or hangers B<sup>2</sup> converge upward, and are rigidly connected with a hub or sleeve, B<sup>3</sup>, which is fitted upon an upright shaft or bar, C.

At the lower end of the shaft or bar C is a collar, *d*, on which the hub or sleeve B<sup>3</sup> may rest, and the hub or sleeve may be adjusted vertically on the shaft or bar to bring the fabric B to the level of the bed A', and may then be secured in place by a set-screw, *d'*. When this set-screw is loose, the hub or sleeve B<sup>3</sup> may

turn on the shaft C, for a purpose hereinafter described.

D designates the frame-work of the machine, to which the overhead portions of the machine are secured, and on which they are supported.

E E' designate two carriages, which may each consist of a rectangular frame provided with wheels *e*. The first or lower carriage, E, is movable upon tracks or ways *e'*, supported by the frame D, and has only a simple movement or a movement in a straight line. The second or upper carriage, E', is movable in directions transverse to the line of movement of the first carriage, E, and its wheels *e* run upon tracks *e<sup>2</sup>* on the said first carriage. As here shown, the tracks *e<sup>2</sup>* are directly at right angles to the tracks *e'*. Consequently, it will be understood that the second carriage, E', has not only a movement with the first carriage, E, but a movement independent of and upon said first carriage.

F designates the pattern-board, which is shown as attached to a frame, F', supported by columns F<sup>2</sup> above the carriages. It is fixed in position and has secured upon or formed in it a rack or track in pattern form, and an adjacent groove, slot, or guide also in pattern form. The pattern-board with its rack or track and slot or guide are best shown in the inverted plan, Fig. 3. It has formed in or secured to it a rack, *f*, and a slot or groove, *f'*, which extends adjacent to the rack throughout its extent, both being arranged in pattern form and continuous. The form and direction of the rack and the guide govern the pattern to be produced on the fabric, as will hereinafter appear, and therefore the rack and guide may be arranged in any suitable pattern form to produce on the fabric a desired pattern.

The pattern here shown consists of a border portion, a central circular figure, and a figure of irregular form within the circular figure. The end of the upright shaft or bar C enters the groove *f'*, as shown in Fig. 1, and upon said shaft or bar, and above a collar, *f<sup>2</sup>*, thereon, are loosely arranged a pulley, *f<sup>3</sup>*, and a pinion, *f<sup>4</sup>*. The said pulley and pinion are rigidly secured together and rotate as one. The pinion *f<sup>4</sup>* gears into the rack *f*, and is held in even gear therewith by the shaft C entering and working in the groove *f'*. The groove therefore forms a guide.

From the above description it will be clear that as the pinion *f<sup>4</sup>* is rotated it moves along the rack *f* and carries the shaft C and fabric-frame B' with it.

The character of the work performed by the mechanism above described can be best understood by reference to Fig. 8, which represents a fabric, B, produced by the use of the pattern shown in Fig. 3.

The change in relative position of the fabric and needle necessary to form the rectangular border-line *m* is effected or produced by the rack and guide *f f'*, which constitute the border portion of the pattern; the circular line or

figure  $m'$  is produced by the rack and guide  $f, f'$ , which constitute the central circular portion of the pattern, and the irregular figure or line  $m^2$  is produced by the rack and guide  $f, f'$ , which constitute that irregular portion of the pattern within the circle.

The purpose of having the hub or sleeve B<sup>3</sup> adjustably secured on the bar or shaft C by the set-screw  $d'$  will now be clearly apparent, for by loosening said screw I secure a rotary adjustment of the fabric relatively to the pattern, whereby I am enabled, after forming the line  $m^2$ , Fig. 8, to turn the fabric-frame one-fourth of a turn and to produce by the same irregular central portion of the pattern the same figure or line  $m^{2*}$  on the fabric in a position at right angles to the figure  $m^2$ . By thus changing the relative position of the fabric and pattern by a rotary adjustment the designs which may be produced on a fabric by the use of a single pattern may be greatly varied and enhanced in appearance.

All the figures of the pattern are arranged about a common center, and are reproduced about the center of the stretched or extended fabric without changing its position relatively to the fabric-frame.

The change in the relative position of the fabric and needle resulting from movement of the fabric under the needle conforms to the movement of the shaft or bar C along the pattern  $f$ , and the carriages E E' serve simply as traveling or movable supports, to permit of the universal movement of the fabric-frame. The carriages have no invariable and regular movements, but they are both free to be controlled by the pattern, and neither of them has any movement save that which results from the movement of the shaft or bar C along the pattern  $f$ . Therefore, during the production of a pattern by sewing, the pattern or former  $f$  is constantly varying the speeds of movement of the two carriages relatively to each other, and also frequently changes their direction of movement, and these changes may take place at any point within the whole range of movement of the carriages. The movement of one carriage will frequently stop entirely, and the movement of the other carriage continued, as when forming the rectangular border-line  $m$ , and inasmuch as the speed of movement of the shaft C and wheel  $f^1$  along the rack or track  $f$  is always uniform, it will be seen that the movement of either carriage will be increased or diminished inversely as the speed of the other is increased or diminished.

The freedom of movement which is afforded the two carriages, and the transmission of power to the second or upper carriage in the manner described, admits of the fabric being moved under the needle of the sewing-machine along lines which are transverse to each other, and of being moved in either direction from any line at any point in its length. It will be observed also that the mechanism whereby the change in relative position between the fabric

and needle is effected is entirely independent of any feed mechanism engaging with the fabric at the point of sewing, and is external to the sewing-machine.

As shown, the needle of the sewing-machine and the center of the pattern are approximately in line vertically, and as the supporting shaft or bar C is approximately in the center of the fabric-frame, it follows that a central figure of the pattern or former will be produced at the center of the fabric B, while other figures of the pattern or former will be produced in corresponding portions of the fabric.

When the fabric comprises several figures which are isolated from each other, as shown in Fig. 3, it becomes necessary to remove the pinion  $f^1$  and shaft C from engagement with the rack  $f$  and groove  $f'$  of one figure, and to engage them with the rack and groove of another figure. Such change in the position of the pinion is not necessary when the fabric is to be turned, as before described.

To accomplish this, the shaft or bar C may be supported on a spring,  $f^3$ , arranged below the collar  $f^2$ , and when one figure is completed the shaft C and fabric-frame are pulled down sufficiently to disengage the pinion  $f^1$  and shaft C from the rack  $f$  and groove  $f'$ . The carriages are then moved by hand to bring them to the desired point. The shaft C is then released and the spring  $f^3$  raises the shaft C into engagement with the groove or guide  $f'$ , and the pinion  $f^1$  into engagement with the rack  $f$ . The shaft C is held against turning in the carriage E' by a set screw,  $f^6$ , entering a groove,  $f^7$ , in the shaft.

In lieu of the spur-toothed rack, a rack or track of any other suitable form may be employed, and a friction-wheel or other wheel adapted to have frictional or other engagement with the rack or track may be substituted for the pinion  $f^1$ . Such modification of my invention is shown in Fig. 5, to which I now refer. The shaft C carries a loose pulley,  $f^3$ , as before described, but for the spur-pinion is substituted a friction-wheel,  $f^{1*}$ , which is held in strong frictional engagement with a smooth or toothless track,  $f$ , in pattern form. The wheel  $f^{1*}$  is so held in engagement with the friction-track  $f$  by the end of the shaft C entering the guiding groove or slot  $f'$ , and said wheel may be covered with india-rubber or other material to increase friction. The shaft C has a collar,  $f^2$ , and is supported by a spring,  $f^3$ , as before described.

A rib or guide of any other form may be substituted for the guide formed by the groove  $f'$ .

G designates the endless band, which passes around and imparts rotary motion to the pulley  $f^3$ , and through the pulley to the pinion  $f^1$ . In order that the band may impart rotary motion to the said pulley when it is at all parts of the pattern, a long band must be used and means must be provided for taking up the slack in the band and maintaining a proper tension thereon. The means here shown for

this purpose consists of a tension-pulley, *h*, which is hung in a depending portion of the band G, as shown in Fig. 1, and to which a weight, *h'*, is attached. This weight is adapted to travel along a guide-rod, *h<sup>2</sup>*, as the band is taken up or slackened.

To change the band from a vertical to a horizontal direction, it is passed over idler-pulleys *i i*, (shown in Figs. 1 and 2,) and the band is operated by a pulley, *j*, on an upright shaft, H, one or more turns of the band being taken around said pulley *j*, in order that the pulley may operate the band properly. The upright shaft H is connected by bevel-wheels *k* with the shaft *b<sup>3</sup>*, which operates the sewing-machine, and hence it will be seen that the speed of the sewing-machine and the speed of movement of the fabric-frame will be kept in proper relation to each other.

In order to properly guide the band G when the fabric-frame is moved, a guide or idler pulley, *i'*, may be arranged as shown in Fig. 2, over which the band may be deflected.

Obviously, a chain of suitable construction might be substituted for the band G, if desirable.

Instead of arranging the pattern or former-board F so that its center will be in line vertically with the sewing-machine needle, I may arrange it as shown in the diagram Fig. 4. The first and second carriages, E E', would be arranged as before described, and the fabric-frame B' would be supported by the second carriage, E'. The pattern or former-board F is arranged at the side of the fabric-frame, and the pattern would be formed by a groove or track, *f'*. In this example of the invention the fabric-frame B' has an arm, I, rigidly connected with it and projecting from it, and this arm is provided with a pin, *l*, or other device for engaging with the pattern groove or track *f'*. The arm I could in this case be moved by hand over the pattern, and the pin or device *l*, by engaging with the groove or track *f'*, will cause the fabric-frame B' to move universally, so as to follow the pattern. In this example of the invention the movements of both carriages will be controlled by the pattern; but the fabric-frame will be moved by hand instead of automatically, as in the machine first described.

In lieu of making the opposite sides B' of the fabric-frame adjustable toward and from each other to put tension on the fabric and hold it extended, one or each of the bars B' might be provided with a roller to which the edge of the fabric is attached in any well-known manner. Tension would then be produced on the fabric by turning one or both of said rollers.

In Figs. 6 and 7 I have represented a fabric frame or holder in which one edge of the fabric is to be clamped and the other edge secured on a roller, which may be slightly turned to put tension on the fabric. This frame is rigid and is not itself capable of expansion. It consists, as shown, of four bars, B\*, rigidly

connected to form a rectangular frame, from the corners of which the hangers or arms B<sup>2</sup> converge upward to a sleeve or hub, B<sup>3</sup>. One bar, B\*, is furnished with a clamping piece or strip, *c*, adjustable by screws and nuts *c'*, and near the opposite bar B\* is journaled a roller, *n*, which may be turned by a crank, *n'*, and which is held against turning backward by a pawl, *n<sup>2</sup>*, engaging a ratchet-wheel, *n<sup>3</sup>*, on the roller-journal. The roller *n* is provided with tenter-pins *n\**, on which the edge of the quilt or fabric is impaled, and by slightly turning the roller the fabric will be extended or stretched.

I do not claim, broadly, herein the combination, with a rack or track in pattern form and a positively-operating engaging device acting upon the rack or track, and capable of bodily movement relatively thereto, of movable supports for the engaging device, whereby provision is afforded for the movement of said device along the rack or track by its engagement therewith, such a combination of parts being included in my application for Letters Patent filed June 21, 1884, Serial No. 135,601.

In connection with the needle-bar of the sewing-machine I employ any suitable shuttle, looper, or other stitch-forming device in the work-plate or bed A'. Such a device is used in all sewing-machines, and, as it forms no part of my invention, I have not here shown it.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, consisting of two carriages, one mounted upon the other, and movable in directions transverse to each other, the first carriage being capable of free movement in order to permit a universal movement of the second carriage, a guide in pattern form, and a device, as shaft C, connected with the second carriage, whereby the movements of said carriages are controlled, substantially as herein described.

2. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for said fabric-holder, consisting of two carriages, one mounted upon the other, and movable in directions transverse to each other, the first carriage being capable of free movement in order to permit a universal movement of the second carriage, a guide in pattern form, and a device, as shaft C, connected with the second carriage, whereby the movements of said carriages are controlled, substantially as described.

3. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports from which said fabric-holder is suspended, a guide in pattern form, and a device, as shaft C, engaging with said guide, and connected with said supports, whereby the movements of the suspended fabric-holder and its supports are controlled, substantially as herein described.

4. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, consisting of two carriages, one mounted upon the other, and movable in directions transverse to each other, the first carriage being capable of free movement to permit a universal movement of the second carriage, a pattern arranged in a plane approximately parallel with the fabric-holder, and comprising a guide in pattern form, and a device, as shaft C, engaging with said guide, and connected with the second carriage, whereby the movements of said carriages are controlled, substantially as herein described.

5. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and pattern-mechanism connected with said supports for controlling their movements, and consisting of a pattern comprising a guide in pattern form, and a device, as shaft C, engaging with said guide, the said fabric-holder and the pattern being capable of being turned and secured in different positions relatively to each other, whereby provision is afforded for producing the design of the pattern in different positions on the fabric, substantially as herein described.

6. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and a pattern mechanism connected with said supports for controlling their movements, and consisting of a pattern comprising a guide in pattern form, and a device, as shaft C, engaging with said guide, the said fabric-holder being capable of being turned and secured in different positions relatively to the pattern, whereby provision is afforded for producing the design of the pattern in different positions on the fabric, substantially as herein described.

7. The combination, with a fabric-holder provided with means for holding a fabric extended, of converging arms or hangers B<sup>2</sup>, extending from the outer portions of the fabric-holder and composed of rigid material, a hub or sleeve, B<sup>3</sup>, with which the upper ends of said arms or hangers are connected, an upright shaft, C, on which said hub may be turned, and a sewing-machine for operating on said fabric, whereby the entire portion of the fabric within the holder is exposed to the operation of the needle, and whereby provision is afforded for turning the fabric, substantially as herein described.

8. The combination, with a fabric-holder provided with means for holding a fabric extended, of converging arms or hangers B<sup>2</sup>, carrying said holder, a hub or sleeve, B<sup>3</sup>, with which the upper ends of said arms or hangers are connected, and an upright shaft, C, on which said hub or sleeve may be raised and lowered, means for holding said hub or sleeve in different positions vertically on said shaft, and a sewing-machine for operating on a fabric held in said holder, substantially as herein described.

9. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and pattern mechanism connected with said supports for controlling their movements, and consisting of a pattern comprising a series of guides in pattern form, successively inclosing or surrounding each other, and a device, as shaft C, for engaging with said guides, substantially as herein described.

10. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and pattern mechanism connected with said supports for controlling their movements, and consisting of a pattern comprising a series of guides in pattern form arranged about a common center, and a device, as shaft C, for engaging with said guides, substantially as herein described.

11. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for the fabric-holder, a pattern mechanism for controlling the movements of said supports and fabric-holder, consisting of a pattern comprising a guide in pattern form arranged in a plane parallel with the fabric-holder, and having its center approximately in line with the needle of the sewing-machine, and a device, as shaft C, connected with the movable supports and engaging with said guide, substantially as herein described.

12. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, a pattern comprising a guide in pattern form arranged above the sewing-machine, and a device, as shaft C, connected with said supports and engaging with the pattern-guide for controlling the movements of said supports, substantially as herein described.

13. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, a pattern comprising a guide in pattern form arranged above the sewing-machine and said movable supports, and a device, as shaft C, connected with said supports, and engaging with the pattern-guide for controlling the movements of said supports, substantially as herein described.

14. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports providing for change in the relative position of said parts, and pattern mechanism connected with said supports for controlling their movements, and consisting of a track in pattern form and a positively-operating device, as wheel f<sup>1</sup>, engaging with the pattern-track, whereby the change in relative position between the pattern-track and the engaging device will be produced by the operation of the engaging device on the track, substantially as herein described.

15. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of

movable supports for one of said parts, consisting of two carriages, one mounted upon the other, and movable in directions transverse to each other, the first carriage being capable of free movement, in order to permit a universal movement of the second carriage, and pattern mechanism connected with the second carriage for controlling the movements of said carriages, and consisting of a track in pattern form and a positively-operating device, as wheel  $f^4$ , engaging with the pattern-track, whereby the change in relative position between the pattern-track and engaging device will be produced by the operation of the engaging device on the track, substantially as herein described.

16. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for the fabric-holder, and pattern mechanism connected with said supports for controlling the movements of the fabric-holder, and consisting of a track in pattern form and a positively-operating device, as wheel  $f^4$ , engaging therewith, whereby the changes in relative position between the pattern-track and engaging device will be produced by the operation of the engaging device on the track, substantially as herein described.

17. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and a pattern mechanism for controlling the movements of said supports, consisting of a track in pattern form, and a positively-operating device, as wheel  $f^4$ , connected with said supports, and engaging with said track, the movement of the engaging device along the pattern-track being produced by its positive operation upon said track, substantially as herein described.

18. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, and a pattern mechanism connected with said supports for controlling their movements, and consisting of a toothed rack in pattern form, and a pinion engaging therewith, and having a positive rotary motion, substantially as herein described.

19. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for said fabric-holder, and pattern mechanism connected with said supports for controlling the movement of said fabric-holder and supports, and consisting of a toothed rack in pattern form, and a pinion engaging therewith, and having a positive rotary motion, substantially as herein described.

20. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts, a pattern comprising a track in pattern form, a wheel connected with said movable supports, and gearing with the pattern-track, and an endless belt for rotating said wheel, whereby the movements of said wheel and supports are produced by the engagement of said wheel

with the pattern-track, substantially as herein described.

21. In a quilting-machine, the combination, with two carriages, one mounted on the other, and movable in directions transverse to each other, the first being capable of free movement to permit the universal movement of the second carriage, of a fabric-holder supported by the second carriage, a sewing-machine for operating on a fabric secured in said holder, pattern mechanism consisting of a track in pattern form, and a device, as shaft C, connected with the said second carriage, and provided with a positively-rotating wheel gearing with said pattern-track, substantially as herein described.

22. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts and a pattern mechanism connected with said supports for controlling their movements, and consisting of a track in pattern form, a guide adjacent thereto, a device, as shaft C, engaging with said guide, and a positively-rotated wheel connected with said device and gearing with said track, substantially as herein described.

23. In a quilting-machine, the combination, with a fabric-holder and a sewing-machine, of movable supports for one of said parts and a pattern mechanism for controlling the movements of said supports, consisting of a track in pattern form, a guide adjacent thereto, a device, as shaft C, connected with said movable supports and engaging with the pattern-guide, and a positively-operating device, as wheel  $f^4$ , carried by said shaft, and serving to move said shaft and said movable supports by its engagement with the pattern-track, substantially as herein described.

24. In a quilting-machine, the combination, with a fabric-holder having at its outer portions arms composed of rigid material, and a sewing-machine for operating on a fabric held in said holder, of movable supports for the fabric-holder, whereby the entire portion of the fabric within the holder is left exposed for the operation of the needle as the fabric-holder is moved, substantially as herein described.

25. In a quilting-machine, the combination, with a fabric-holder having at its outward portions upwardly-converging arms or hangers composed of rigid material, and a sewing-machine for operating on the fabric held in said holder, of movable supports for one of said parts, whereby the entire portion of the fabric within the holder is left exposed for the operation of the needle, substantially as herein described.

26. The combination, with a sewing-machine, of a fabric-holder, B', the carriages EE', and tracks or ways for the said carriage E, the shaft C, whereby said fabric-holder is supported, and which is movable vertically in said carriage E', the pattern consisting of the rack  $f$  and guide  $f'$ , the wheel  $f^4$  and pulley

*f*<sup>3</sup>, loose upon said shaft, the endless belt or chain G, and the spring *f*<sup>5</sup>, supporting said shaft and adapted to yield to permit the disengagement of said shaft from said guide *f*<sup>1</sup>,  
5 substantially as herein described.

27. The combination, with a sewing-machine, of the carriages E E', the shafts C, the fabric-holder B', supported by said shaft, the pattern consisting of the rack *f* and guide *f*<sup>1</sup>,  
10 the pulley *f*<sup>3</sup>, and wheel *f*<sup>4</sup>, the endless band or chain G, the weighted pulley *h*, hung in said band or chain, the upright shaft H, and the pulley *j* and the guide-pulleys *i* *i*<sup>1</sup>, all substantially as herein described.

28. The combination of the carriage E E', 15 the shaft C, the fabric-holder B', supported by said shaft, the pattern consisting of a rack, *f*, and the guide *f*<sup>1</sup>, the pulley and wheel *f*<sup>3</sup> *f*<sup>4</sup>, the endless chain or band G, the upright shaft H, and its driving-pulley *j*, and the sewing- 20 machine geared with said upright shaft H, substantially as herein described.

FRANK L. PALMER.

Witnesses:

CHANDLER HALL,  
FREDK. HAYNES.