

L. SCHULTZ.
QUILTING MACHINE.

No. 507,757.

Patented Oct. 31, 1893.

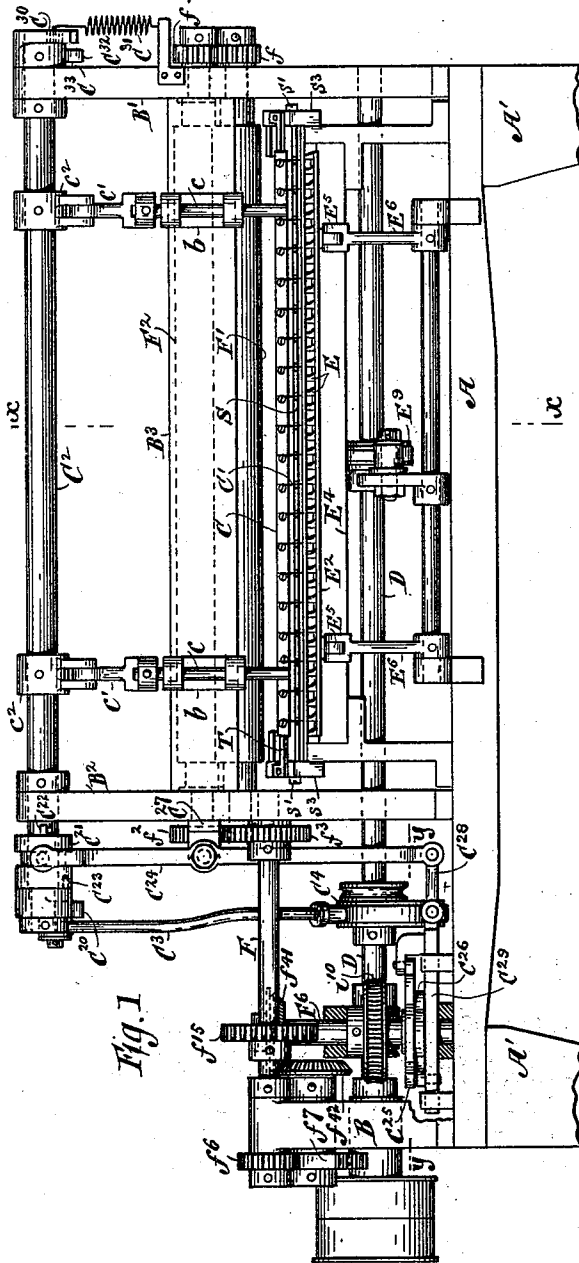


Fig. 1

Fig. 2

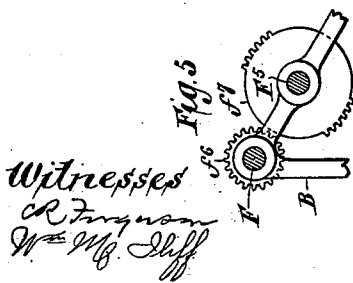
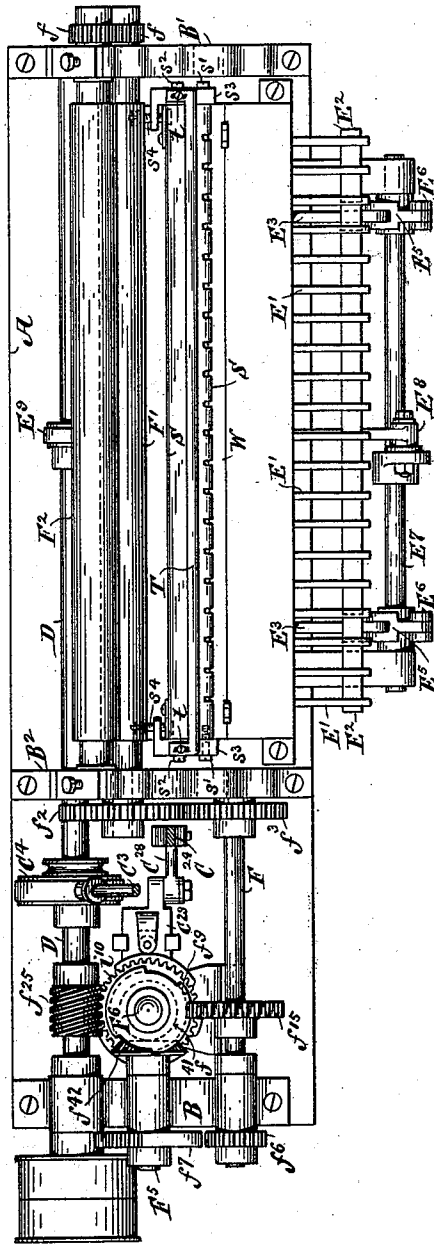
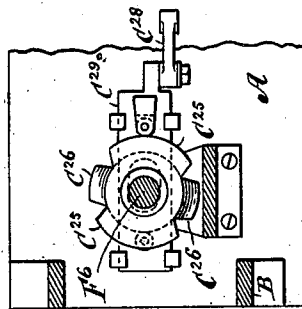


Fig. 3



Inventor
Louis Schultz.
By his attorney
Edwin H. Brown

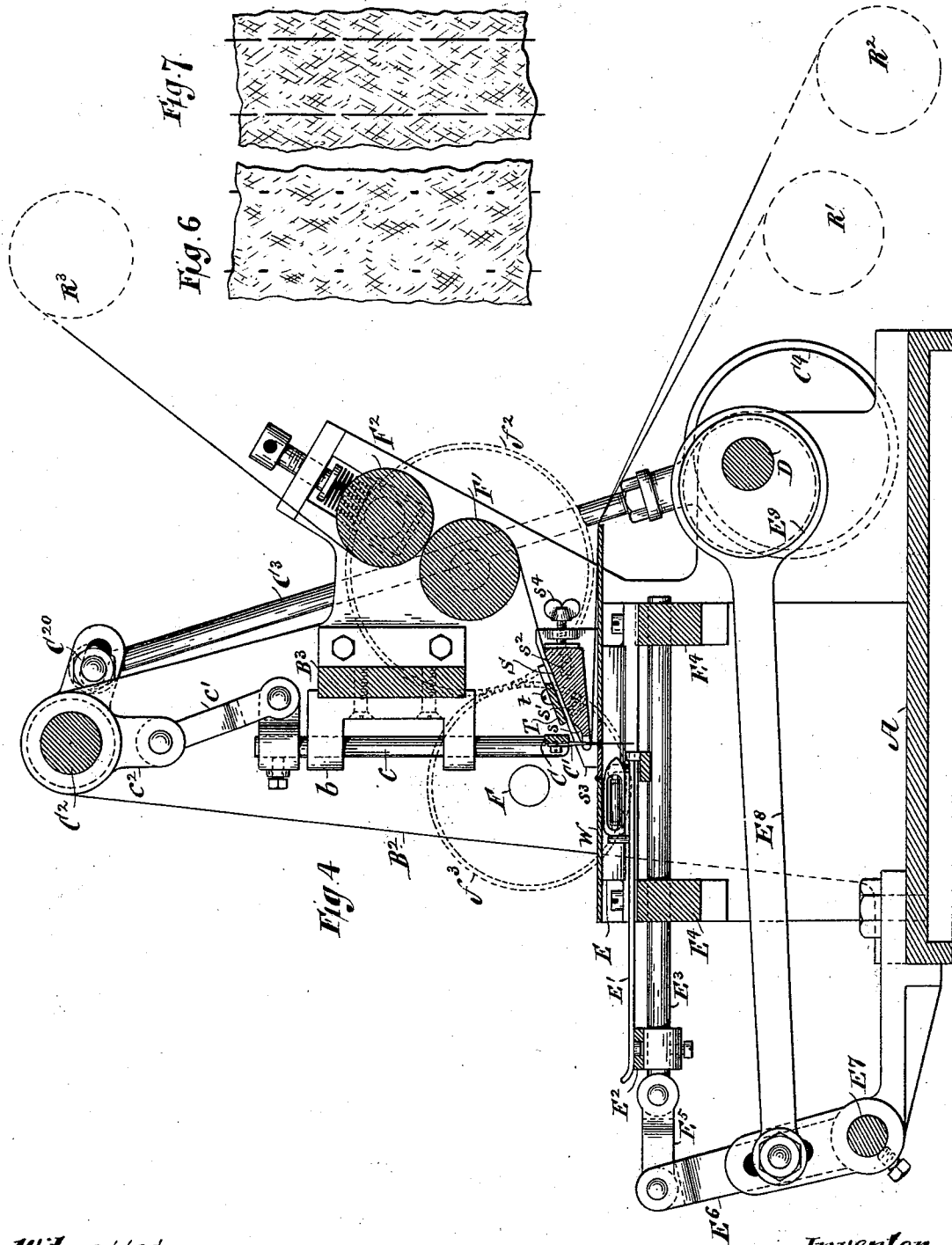
(No Model.)

2 Sheets—Sheet 2.

L. SCHULTZ.
QUILTING MACHINE.

No. 507,757.

Patented Oct. 31, 1893.



Witnesses
C. R. Ferguson
Wm. M. Jeff

Inventor
L. Schultz
By his attorney
Edwin H. Brown

UNITED STATES PATENT OFFICE.

LOUIS SCHULTZ, OF NEW YORK, N. Y.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,757, dated October 31, 1893.

Application filed April 9, 1891. Serial No. 388,230. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHULTZ, of New York, in the county and State of New York, have invented a new and useful Improvement in Sewing-Machines, of which the following is a specification.

I will describe a machine embodying my improvement and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a quilting machine embodying my improvement, certain parts being shown in section. Fig. 2 is a plan or top view of the machine, the needle bar and other parts above the same being omitted. Fig. 3 is a horizontal section taken at the plane of the dotted line *yy*, Fig. 1. Fig. 4 is a vertical, transverse section taken at the plane of the dotted line *xx* Fig. 1 and made on a larger scale. Fig. 5 is a view of certain parts at the left hand end of the machine. Fig. 6 is a face view on a large scale of a piece of fabric stitched in the machine. Fig. 7 is a back view of the fabric shown in Fig. 6.

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

A designates the bed of the machine. As here shown, it is supported on legs A'.

B' B² designate two side frames secured in the present instance to the bed A by bolts or otherwise to occupy parallel positions.

C designates the needle bar. This has secured to it a series of needles C' which, in the present instance, are arranged in a single row.

Secured to the needle bar are a number of upright rods *c*, which work vertically within brackets *b* attached to the front of a bar B³ which is fastened to the side frames B' B². At the upper end the rods *c* are connected by links *c'* with arms *c*² affixed to a rock shaft C². The rock shaft is oscillated by means of a rod C³ deriving motion from an eccentric C⁴ arranged upon a shaft D. The rod C³ connects with a crank C²⁰ mounted on the shaft C². The shaft D derives motion from any suitable source of power as, for instance, a belt applied to a pulley fixed upon said shaft.

It will be readily understood that the rock shaft C² imparts a vertically reciprocating motion to the needle bar and needles. The only motion which the needles have in this ma-

chine is an up and down movement. The machine includes shuttle mechanism as represented.

E designates the race bars, E' the shuttle carriers working along the race bars, E² a rail to which said shuttle carriers are detachably fastened and E³ rods carrying the rail E² and working backward and forward in rails E⁴, constituting part of the frame of the machine. The rods E³ are connected by links E⁵ with arms E⁶ affixed to a shaft E⁷ that is journaled in brackets supported by the bed A. With one of the arms E⁶ is connected a rod E⁸, which is connected with an eccentric E⁹ affixed to the shaft D. The rocking motion imparted by the eccentric to the rock shaft E⁷ will produce a reciprocating movement of the shuttle carriers E' lengthwise of the race bars E.

The crank C²⁰, whereby motion is transmitted from the rod C³ to the rock shaft C² is loosely mounted upon the shaft C² and is capable of being periodically interlocked therewith by means of a clutch. The clutch which I have shown consists of a collar C²¹ surrounding the shaft C² and movable lengthwise thereof, but it is engaged with the shaft by a spline or feather C²² so as to be incapable of independent rotary movement. When the collar C²¹ is moved up to the hub of the crank C²⁰, a pin C²³, preferably having a taper end, extending from the hub of this crank, engages with a corresponding recess in the clutch collar C²¹ and thereupon the clutch collar and crank become so engaged that the motion of the crank C²⁰ will be imparted through the clutch C²¹ to the rock shaft C². By the movement of the clutch collar lengthwise of the shaft the crank C²⁰ may obviously be periodically disengaged from the crank so as to cause a suspension of movement in the shaft C², and, consequently, an intermission in the movement of the needles. I have shown the clutch collar as operated by a mechanism consisting essentially of a lever C²⁴ and cams C²⁵ C²⁶. The lever C²⁴ is fulcrumed between its ends to a bracket C²⁷ which is secured to the side piece B² of the main frame of the machine. At the upper end this lever is forked and provided with pins which enter a circumferential groove formed in the clutch collar C²¹. The lower end of the lever

is connected by a link C^{28} with a sliding plate C^{29} that is operated by the cams C^{25} C^{26} . The construction of these cams may best be understood by reference to Fig. 3. It will be seen that the sliding plate C^{29} has two anti-friction rollers projecting upwardly from it to co-act with the cams. The cam C^{25} consists of two long segments and is of considerably reduced diameter intermediate of these segments. The other cam, C^{26} , has two short segments and between these segments is reduced to the same diameter as the reduced portions of the cam C^{25} . The relation of the cams should be such that the segments of the cam C^{26} will be opposite the reduced portions of the cam C^{25} , or, in other words, opposite the spaces between the segments of the cam C^{25} . These cams C^{25} C^{26} are secured to a shaft F^6 which is supported in a bracket erected upon the bed A of the machine.

The shaft D has affixed to it a worm f^{25} . This engages with a worm wheel i^{10} affixed to the upright shaft F^6 .

Obviously, the needles should occupy an elevated position whenever their operation is suspended. To insure this, I preferably employ a mechanism which is fully illustrated and described in an application for Letters Patent filed by me on the 24th day of July, 1890, and numbered 359,781. It comprises an arm C^{30} , which is affixed to the rock shaft C^2 (see particularly Fig. 1). To this arm is connected a spring C^{31} which is also connected to an appurtenance of the side frame B' . The action of this spring upon the arm C^{30} is such that it tends to effect the rotation of the rock shaft C^2 in a direction to elevate the needles. When the spring acts, it pulls the arm C^{30} down into a position approximately in line with that point at which the spring is secured to the side frame B' , but it will not assume a position exactly in line because the weight of the needles, the needle bar and other parts will counteract the tendency of the spring to bring the arm C into the described position. Affixed to the shaft C^2 is another arm C^{32} , which may be formed integral with the arm C^{30} . When the spring C^{31} actuates the rock shaft C^2 , the arm C^{32} contacts with a stop C^{33} which is fastened to the side frame B' . In this way the motion of the rock shaft C^2 under the influence of the spring C^{31} will be arrested. It is not intended, however, that the arm C^{32} shall remain in contact with the stop C^{33} . The weight of the needle bar, the needles and the appurtenances of these parts will cause the arm C^{32} to recoil or move away from the stop C^{33} after contacting with it. Preferably the stop C^{33} will be faced with resilient material on that side which is opposed to the arm C^{32} .

In the machine which I have selected for an illustration of my improvement, the fabric to be quilted is intended to have no motion excepting one in the direction of its length. It is moved longitudinally beneath the needles by means of rollers F' F^2 journaled in

the side pieces B' B^2 of the machine frame. The journals of the roller F^2 are supported by bearings fitted to housings formed in the side pieces B' B^2 . Springs press these bearings in such direction as to move the roller F^2 toward the roller F' , and the tension of such springs may be regulated by screws.

The fabric to be quilted usually consists of a sheet of wadding and a sheet of silk or some other like fabric. As here shown, the wadding is delivered from a roll R' and the silk or other fabric from a roll R^2 . They pass thence over a work plate W, which is erected above the the race bars E and perforated to permit of the passage of the needles through it. In passing over this work plate they pass beneath a bar S, and, after turning around the front edge and traversing the top surface of the latter, they pass around the feed roller F' and between the latter and the feed roller F^2 . Leaving the feed roller F^2 , they pass to a roll R^3 , upon which they are wound. The wadding and fabric are stitched together as they pass around the front edge of the bar S, the latter being notched at its edge to permit of the passage of the needle, through the material and fabric. The material and fabric are therefore united by stitching so as to form a quilted fabric before passing to the feed rollers.

Before describing in detail the bar S and its functions, I will finish my description of the feed rollers. They are geared together at one end by gear wheels f affixed to adjacent journals. To the roller F' is affixed a gear wheel f^2 which derives motion from a gear wheel f^3 affixed to a shaft F that is supported at one end in the side frame B^2 of the carriage and at the other end in a bracket B erected upon the bed A. The shaft F has mounted on it a gear wheel f^6 and the latter, and through it the shaft F, derives motion periodically from a toothed segment f^7 affixed to a shaft F^5 . This shaft F^5 is supported in the bracket B, and derives motion from the upright shaft F^6 , previously mentioned, through the agency of bevel gear wheels f^{41} f^{42} with which this shaft F^6 and the shaft F^5 are provided. It must be understood that only when the segment f^7 engages with the gear wheel f^6 the feed rollers have any rotary motion. On the shaft F a toothed lock wheel f^{15} is affixed. Its teeth co-act with a stop flange or disk f^9 affixed to the shaft F^6 . The stop flange or disk f^9 is circular in form but has two notches or openings at diametrically opposite points in its periphery. Except when one of these notches comes opposite the lock wheel f^{15} , the stop flange or disk engages with the lock wheel f^{15} and holds the latter against rotation. While the shaft F carrying this lock wheel is thus held against rotation, the feed rollers are precluded from rotating. One end of each notch or opening in the stop flange or disk comes opposite the lock wheel f^{15} just before one end of the toothed segment f^7 enters into engagement with the gear

wheel f^6 on the shaft F, and such notch or opening will not be carried beyond the lock wheel until after said toothed segment has gone out of engagement with the wheel f^6 .

5 It follows, therefore, that the stop flange or disk locks the shaft F and the feed rollers at all times except when the toothed segment f^7 engages with the wheel f^6 to rotate the shaft F and the feed rollers.

10 It will be seen that the bar S is of triangular form, tapering from the rear to the front, and that its front edge where the notches are made for the passage of the needles is quite thin. It is supported by means of screws s'

15 s^3 passing through cheek pieces s^3 , which are supported from a stationary part of the machine; in the present instance by two up-rights or brackets which sustain the rails E^4 whereby the shuttle bars E are supported.

20 The cheek pieces s^3 are slotted horizontally; hence the screws can move forwardly or backwardly through the slots to permit of a corresponding movement of the bar S. The bar S may be adjusted by means of screws s^4 , en-

25 gaging with tapped holes in lugs extending from the cheek pieces and having a swiveling connection with the rear of the bar S. The fabric is stitched by the needles while double over the front edge of the bar S; hence

30 the length of the stitch may be varied by moving the bar S forward or rearward, so as to cause the needles to stitch closer to or farther from the front edge of said bar. Preferably there will be a cavity or recess s formed

35 in the upper surface of the bar S near its front edge to accommodate unevenness in the fabrics.

Over the bar S a bar T is arranged and serves to prevent an upward movement of the fabric with the needles. As shown, it has rearwardly turned ends which are longitudinally slotted. Screws t passing through

40 these slots and entering tapped holes in the tops of the cheek pieces, serve to fasten this bar T in position in such manner that it may be adjusted forward or rearward to produce the best results.

45 The feed rollers only move periodically because they derive motion from the segment f^7 . The operation of the sewing mechanism is also intermittent. Owing to this, there will

only be occasional stitches and the threads will be carried over the fabrics for the intervals between the stitches. The wadding is 55 outermost as the fabrics pass around the front edge of the bar S, or in other words farther than the silk or other fabric from said bar S, and, as the stitches caused by the descent of the needles will be made through both portions of the fabric at some distance rearward 60 of the point where the fabrics are doubled, the thread of the stitch will show at the front of the face fabric of silk or like material. The stitches will be made under such tension that they will not interfere with straighten- 65 ing the fabrics out.

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

1. In a sewing machine, the combination of sewing mechanism comprising reciprocating 70 needles, a bar laterally adjustable toward and from the needles and having a notched edge around which the fabrics to be sewed are fed and feed rollers for feeding the fabrics to be sewed over said bar, substantially as specified. 75

2. In a sewing machine, the combination of sewing mechanism, comprising reciprocating needles, a bar adjustable laterally to and from the needles and having a notched edge around which the fabrics to be sewed are fed and a 80 bar arranged above the bar first mentioned for holding the fabrics down upon the first mentioned bar, substantially as specified.

3. In a sewing machine, the combination of sewing mechanism comprising reciprocating 85 needles, a bar adjustable laterally to and from the needles and having a notched edge around which wadding and a face fabric are fed and passed with the wadding outermost, rollers arranged below the plane of the 90 notched bar from which said wadding and face fabric are passed and feed rollers arranged above the plane of said notched bar by which said wadding and face fabric are moved along, substantially as specified. 95

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

LOUIS SCHULTZ.

Witnesses:

EDWIN H. BROWN,
MONTAGUE D. COHEN.