

No. 875,619.

PATENTED DEC. 31, 1907.

W. N. PARKES.
ORNAMENTAL STITCH MACHINE.

APPLICATION FILED NOV. 2, 1903.

3 SHEETS—SHEET 1.

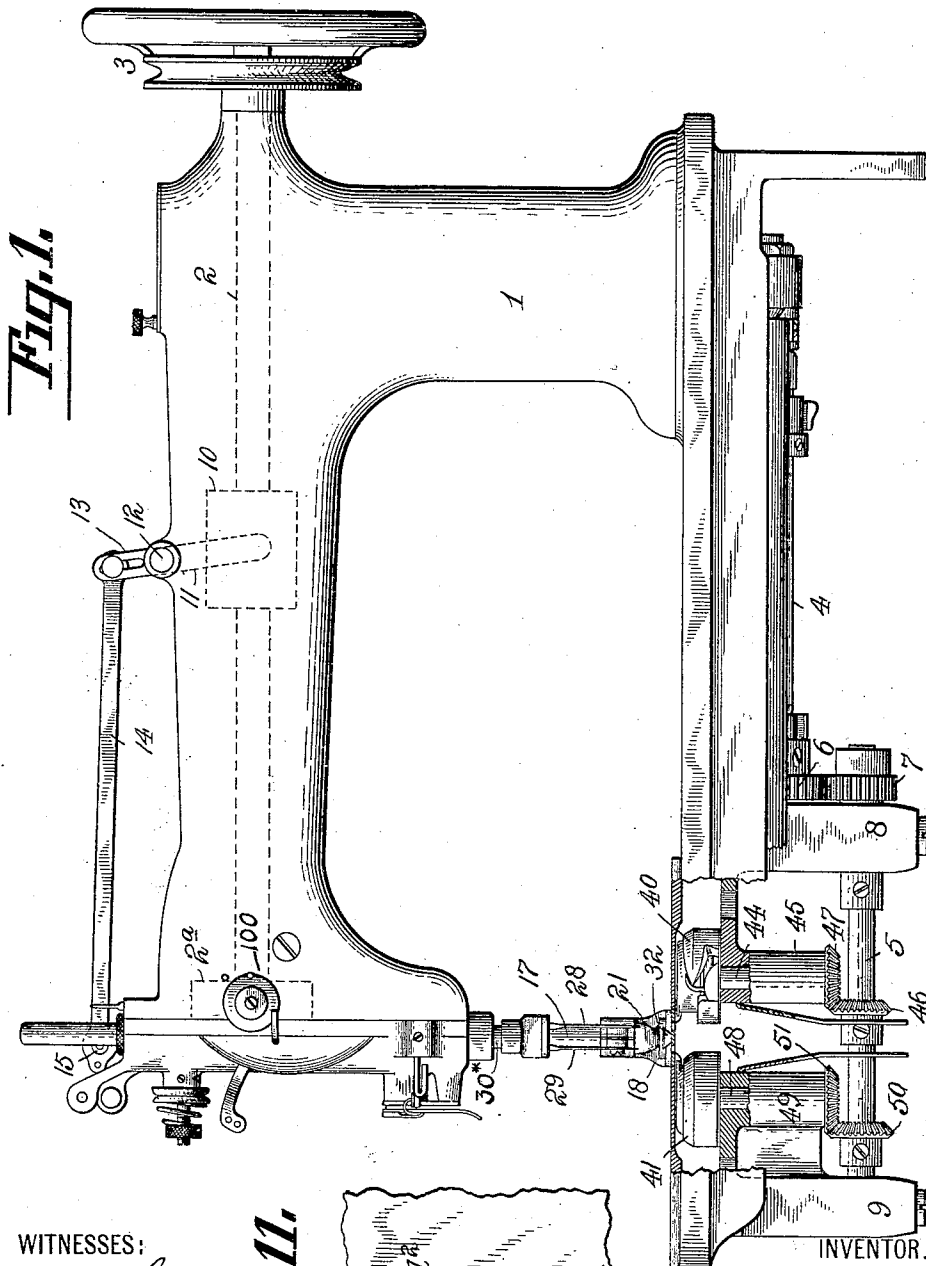


Fig. 1.

Fig. 11.

WITNESSES:

J. M. Givv.
M. Herskovitz

INVENTOR.

William N. Parkes.
BY
Cha. W. C. Chapman.
ATTORNEY

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3 SHEETS—SHEET 2.

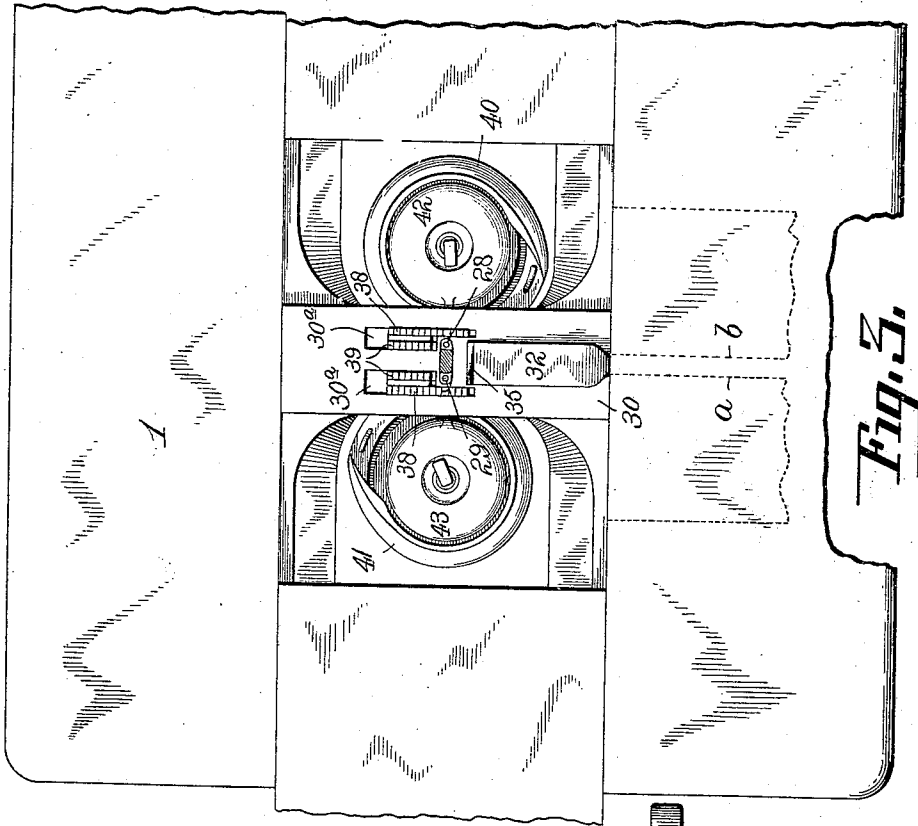


Fig. 3.

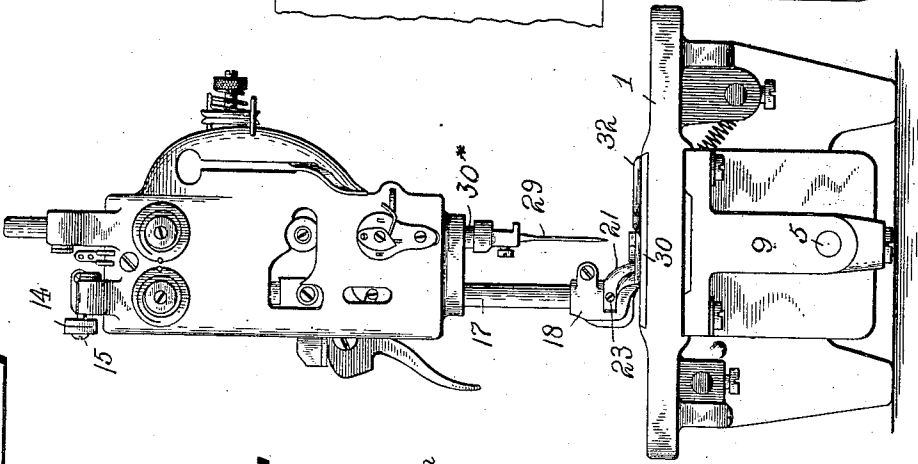
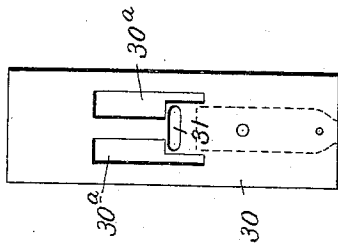


Fig. 6.

WITNESSES:

J. B. Mc Ginn.
Chas. Herskovitz.

Fig. 8.



INVENTOR.

William N. Parkes.
BY
Chas. M. C. Chapman.
ATTORNEY

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3 SHEETS—SHEET 3.

Fig. 4.

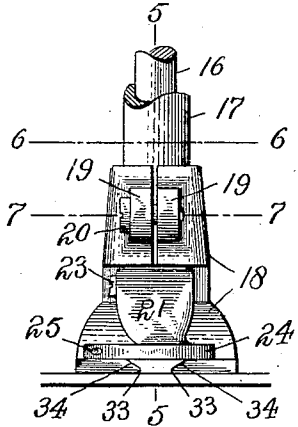


Fig. 5.

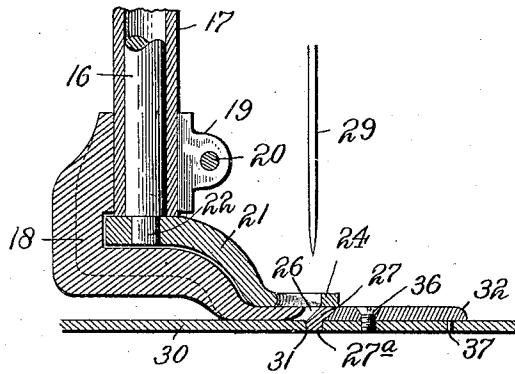


Fig. 6.

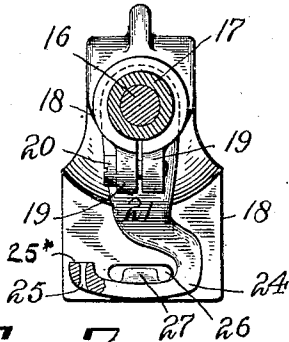


Fig. 9.

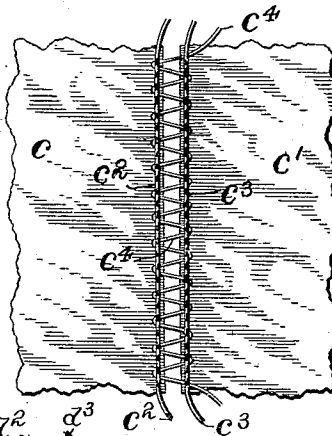


Fig. 7.

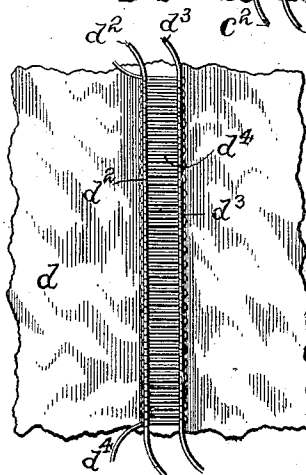
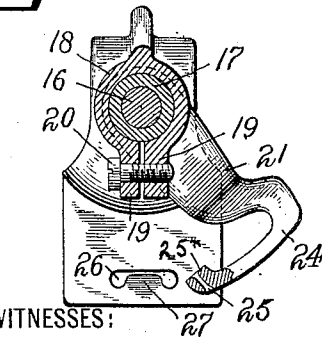


Fig. 10.

WITNESSES:

J. B. McGinn.
M. Herskovitz.

INVENTOR.

William N. Parkes.

BY

Chas. M. C. Chapman.
ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM N. PARKES, OF BROOKLYN, NEW YORK.

ORNAMENTAL-STITCH MACHINE.

No. 875,619.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed November 2, 1903. Serial No. 179,469.

To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Ornamental-Stitch Machines, of which the following is a description.

This invention relates to ornamental stitch sewing machines in which an auxiliary thread or cord-carrying device is used.

One of the main objects of the invention is to provide improved means for handling an auxiliary thread in such machines. And it is also an object to adapt said means for use in combination with a plurality of needles disposed in line at right angles to the direction of the movement of the work.

With the above objects in view my invention consists in the parts, features and combinations hereinafter described and claimed.

In the drawings forming part of this description: Figure 1 is a side elevation, partially in section, showing so much of a sewing machine as is deemed sufficient to illustrate my invention; Fig. 2 is a front end elevation of Fig. 1; Fig. 3 is a top plan view of a portion of the bed-plate showing the shuttle-race slides withdrawn to illustrate the loopers, and also showing the structure of the feed-dogs, the relation of the work-guide to said feed-dogs, and the relation of the needles and said guide; Fig. 4 is a front elevation of the presser-foot and auxiliary thread carrier carried thereby, showing also the portion of the feed-bar and auxiliary thread carrier shaft; Fig. 5 is a vertical longitudinal section on the line 5—5 of Fig. 4; Fig. 6 is a transverse horizontal section on the line 6—6 of Fig. 4; Fig. 7 is a transverse horizontal section on the line 7—7 of Fig. 4, the auxiliary thread carrier, however, being shown in a different position; Fig. 8 is a top plan view of the throat-plate; Fig. 9 is a plan view of two pieces of work, the adjacent edges of which have been joined in accordance with my invention; Fig. 10 is a plan view of a piece of work, the surface of which is ornamented in accordance with my invention; and Fig. 11 is a view showing the bottom of the work illustrated in Fig. 10.

The frame of the machine is indicated by 1, the main-shaft by 2, the hand-wheel and driving-pulley by 3, the lower driving-shaft by 4, which is operated by any suitable intermediate means from the main-shaft 2; the looper driving-shaft by 5, the latter being

actuated from the shaft 4, by the pinions 6 and 7, and said looper-shaft being suitably supported and journaled in brackets or hangers 8 and 9, carried by the bed-plate.

This mechanism so far described is of a usual form, and the pinion 6 (only partially shown) is twice the diameter of the pinion 7, as is usual in this two needle type of machine. It will therefore be understood that the looper shaft 5, revolves twice to each revolution of the driving shaft of the machine. And it will also be understood that the loopers that are revolved by this shaft make two complete revolutions to each reciprocation of the needles. These loopers will be specified further on in this description.

The main shaft 2, carries a usual switch cam 10 adapted to vibrate the rocking-lever 11, journaled in the frame at 12, and having its upper arm 13, adjustably and pivotally connected to one end of a pitman 14, the other end of which is pivotally connected by means of the ball-pin 15, to the upper end of the auxiliary thread carrier-shaft 16, located within and extending through the hollow presser-bar 17. The ball pin 15 is in substance a ball formed on the end of a pin or arm that extends transversely from the upper end of the shaft or rod 16, as partially shown in Fig. 2. The presser-bar 17, is supported and actuated in any usual manner in the head of the machine, and has secured to its lower end the special form of presser-foot by means of the ears 19, and clamping-screw 20.

The lower end of the auxiliary thread carrier-shaft 16, has fixed thereto the auxiliary thread carrier 21, the shank of which is connected to the reduced portion 22, of the shaft 16, by means of a set-screw 23, see Figs. 2 and 5. The auxiliary thread carrier is given substantially the form shown in Fig. 5, so as to conform and operate closely to the presser-foot. The said auxiliary thread carrier is formed with the curved finger 24, provided with the thread-eye 25, said finger extending transversely of the presser-foot and located at the forward end of the latter, in front of the needle aperture 26, therein.

The presser-foot is provided with the depending tongue 27, extending into and located centrally of the needle aperture 26, thus providing an opening at each side of the tongue through which the respective needles 28 and 29 operate during the reciprocation of the needle-bar 30*, carrying the same.

The form of the tongue 27, which is carried by the presser-foot is clearly shown in Fig. 5, wherein it will be seen that the lower portion 27^a, of said tongue, depends at substantially an obtuse-angle to the main portion 27 and extends into the throat-plate 30, at the needle-slot 31, formed therein.

As will be seen upon viewing Fig. 3, the needles 28 and 29 descend on opposite sides of the depending portion 27^a of the tongue 27, which latter is located centrally of the line of the feed and which tongue, during the operation of the machine, and notwithstanding the vertical movement imparted to the presser-foot from the feed-dog, is sufficiently long to remain in the slot 31, of the throat-plate 30, during the operation of the machine, although when the presser-foot is lifted by the ordinary means, for the removal and insertion of the work, said depending portion 27^a will be, preferably, elevated from the slot 31.

The throat-plate 30 is provided, in advance of the needle-slot, with a work-guiding and separating plate 32, the bottom of which is provided with the vertical walls 33, on opposite sides, and with the inclined walls 34, which extend at substantially an obtuse-angle, to the vertical walls 33. These inclined portions of said separating plate serves as a means for causing the edges of the work to move downwardly into contact with the needle-plate previous to passing under the presser-foot. The separator-guide 32, extends approximately to the plane of operation of tongue 27, on the presser-foot, and the forward end of said guide is beveled at 35, to conform to the inclination of the bottom of the tongue 27. Hence, when the presser-foot is depressed the bottom of the tongue 27, and the beveled end of the guide 32, coincide and form a continuous guide extending to the rear wall of the needle-slot 31. The guide 32, may be formed integral with the throat-plate 30, see Fig. 4; or it may be formed separate from the throat-plate and secured thereto by means of the set-screw 36, and centered by means of the dowel-pin 37, extending from the bottom of the guide into an aperture in the throat-plate, see Fig. 5.

Of the feeding mechanism, only the feed-dog has been shown, this being the only portion of such mechanism which is important to my invention. In Fig. 3 the feed-dog consists of the serrated outside long portions 38, which extend in slots 30^a, to approximately the beveled end of the guide 32, and the inside short portions 39, which extend approximately to the needle-slot in the throat-plate. The long portions 38, are adapted to feed the edges *a, b*, of the material up to the stitching point, and these long portions combined with the short portions, the latter being located directly behind the

respective needles, feed the work away from the needles. This particular form of feed-dog is preferable in the connection shown, but I wish it distinctly understood that any means which will properly convey the work to and from the stitching position is within the contemplation of my invention. Hence, in the claims, I do not purpose being limited to the special form of feed-dog or device shown unless specific reference is made thereto.

The throat-plate, preferably, is so constructed that solid portions thereof support the material in advance of the stitching position and solid portions support the material and the cross stitches in rear of the stitching position. The portions 39, of the feed-dog, operate upon the adjacent portions of the work in the line of stitching, but do not engage with the cross threads as will be obvious upon inspection of Fig. 3. Hence, the work is properly fed to and from the stitching position and the cross threads of such work, as shown in Fig. 9, are not caught nor dragged by the feed-dog, nor by projecting portions of the throat-plate.

The mechanism complementary to the two needles, for forming the lock-stitches, consists preferably of two loopers 40 and 41, each carrying respectively a bobbin or cop of thread, 42 and 43. The looper 40, is carried by the shaft 44, journaled in the bracket 45, and driven from the shaft 5, by means of the bevel-gears 46 and 47. The looper 41 is carried by the shaft 48, journaled in the bracket 49, and driven from the shaft 5, by means of bevel-gears 50 and 51. The looper driving shaft 5, having two rotations to each rotation of the driving shaft 2 of the machine, as before explained, the loopers 40 and 41, of course revolve twice to each reciprocation of the needles.

The needle-bar 30* is reciprocated in a usual manner from the movement of the driving shaft of the machine, and it reciprocates once to each rotation of said driving shaft, and therefore once to two rotations of the looper.

While I have shown my invention adapted for use in connection with two loopers, it is obvious that it may be used in connection with a single looper, but in connection with a single looper the extent that the needles could be set apart from each other would be limited.

Any looper device may be used to engage the needle threads and cause the same to be locked in the material.

In the operation of the machine, if it is desired to connect two pieces of fabric by cross bars of the auxiliary thread, as indicated in Fig. 9, the work is guided to the needles as indicated by dotted lines in Fig. 3. The usual switch cam 10 on the driving shaft of the machine, moves the lever 11

laterally once to each rotation of said driving shaft, and consequently once to each reciprocation of the needle. And this movement of said lever is transmitted to the shaft 16 journaled in the presser-bar, and through it to the auxiliary thread carrying device. Through the action of the said cam the said auxiliary thread carrier is in the position shown in Fig. 6, during one reciprocation of said needles, and in the position shown in Fig. 7 during the next reciprocating movement of said needles, and thus alternately the said cam moves said auxiliary thread carrier back and forth, and the thread or cord carried by the same is stitched to the material as indicated in Figs. 9 and 10.

It is to be observed that mounting the oscillating shaft 16 which carries the auxiliary thread carrier, in the presser-bar is very advantageous, and serves as a very simple means for transmitting movement from the cam to the said carrier. And it is also to be observed that the link connection 14 for transmitting movement from the oscillating lever 11 to the oscillating shaft that is mounted in the presser-bar, serves as a very simple means for transmitting said movement, and at the same time permits the presser-bar to be lifted without disturbing any of the mechanism. And this disposition of the auxiliary mechanism is especially advantageous in machines in which the looper is operated in a horizontal plane. It is also to be noted that in the preferred form of my invention as herein disclosed, I have adjusted it for use in combination with loopers which operated in a horizontal plane. In such machines the bobbin is removed from the top of the cloth plate, and as will be observed my auxiliary thread carrying device being carried by the presser bar, it is moved away from the top of the needle and cloth plate by simply raising the presser-bar as in an ordinary machine. And thus it is seen that when the presser-foot is lifted from the work, the auxiliary mechanism is simultaneously therewith removed from above the loopers so that ready access may be had to the same. And it is to be noted that the separator plate and the tongue in the presser foot act to keep the edges of the material separated to and just beyond the stitching position, and the said tongue also serves as a means for taking the lateral strain off of the auxiliary thread or cord. By permitting the tongue to enter the needle plate so as to extend below its surface the crowding of the edges of the material under the tongue is prevented, and the continued and absolute separation of the edges of the material is assured no matter how thin the same may be.

In the construction of the presser-foot it is to be noted that a way is formed in it transverse of the presser-bar in which the shank or base of the auxiliary thread carrier

is located and free to oscillate therein as best shown in Fig. 5, and the said shank is secured in any usual manner to the reduced portion 22 of the oscillating shaft 16. It will be noticed in said figure that the said shank just abuts the lower end of the presser-bar, and the base of the arm 15, in any usual manner may abut the upper end of the presser-bar. The ball at the end of said arm 15, permits the arm to oscillate freely in a horizontal plane about the axis of the shaft 16, and also permits the presser-bar to be freely raised without disconnecting or disturbing any of the parts.

The special construction of the auxiliary thread carrier is to be noticed as disclosed in Figs. 6 and 7. The base of said carrier, and the arm 24 of the same extend in a horizontal plane to such a position that the thread delivery part of said carrier operates back and forth in front of the needles. Thus it is seen that the axis about which said carrier oscillates is in the rear of the needles while the thread delivery part of the same moves back and forth in an arc of a circle in a horizontal plane in front of the needles, and the construction is such, as is clearly shown in Fig. 5, that the delivery eye 25 operates close to the presser-foot.

It is to be understood from the foregoing that the work moves in a direction away from the delivery eye 25 of the auxiliary thread carrier.

The face of the extending portion 25* of the auxiliary thread carrier, just passes by the front of the needles, but the said carrier is given a movement of sufficient extent to insure the auxiliary thread being carried sufficiently back of the needles for the links of the needle thread to cross the same as the needles descend and thereby secure said auxiliary thread to the material. The movement of the work in a direction away from said auxiliary thread carrier of course tends to carry the strand of the same back of the needles. But this would not be sufficient under a very short movement of the work, such for example as that shown in Fig. 10, therefore it is to be understood that the curved movement of the delivery eye 25 in a direction back of the needles assist in performing the function of passing the auxiliary thread back of the needles. Any suitable means may be used for producing a tension on the auxiliary thread for example an ordinary tension device indicated generally by the reference character 100 may be used for this purpose.

In Fig. 9, two pieces of work, *c* and *c'*, are shown as having been joined by the two parallel lines of stitching, *c*² and *c*³, and the intermediate connecting bars of the auxiliary thread *c*⁴, this effect having been accomplished in the manner substantially indicated in Fig. 3, the two adjacent edges *a*, *b*, of the

work being conducted to the feeding mechanism and by the latter to the stitching point and kept separated by the guide 32, and the tongue 27.

5 In Fig. 10, a single piece of work d , is shown, the surface of which has been ornamented in accordance with my invention, the effect there illustrated being produced by very much reducing the extent of the feed, 10 which results in laying the cross-bars or strands of the auxiliary-thread quite close together and in parallelism. The lines of stitching in Fig. 10, are indicated by d^2 and d^3 and the auxiliary-thread by d^1 . By inspection of Fig. 11, it will be seen that the lines 15 of stitching d^2 and d^3 only appear on the bottom of the work and that such lines are parallel. This particular ornamental stitch or effect is produced by removing the guide 32, and substituting a foot for the one 18, without the depending tongue 27.

Obviously, the stitch or effect, shown in Fig. 9, can be produced also in the body of the work, on the edge thereof, or over a seam 25 first made by either superposing or overlapping the pieces of work; and the stitch or effect of Fig. 10 can also be disposed as just suggested regarding that of Fig. 9 and also as shown in the latter figure. Hence, in addition 30 to being a seam for joining fabrics as in Fig. 9, and an ornamental stitch as in Fig. 10, the described manipulation of the threads and cord may produce an artificial selvage on the edge of work, or constitute an effective and ornamental seam coverer and stay. 35

While I have shown the tongue 27, secured to and depending from the presser-foot, it will be clear that the same may be secured to and projected from the throat-plate. This is an alternative form of the 40 means I have shown in Fig. 5 and need not be illustrated. In such modification, how-

ever, it will be understood that the tongue would be sufficiently extensive to prevent it, while the presser-foot is depressed and the 45 machine is in operative condition, from leaving the aperture in the presser-foot provided therefore, hence constituting a guide quite as effective as the tongue 27.

Having thus described my invention, what 50 I claim and desire to secure by Letters Patent is:

1. A sewing machine comprising stitch-forming mechanism for producing independent lines of stitching, a throat-plate having 55 an elongated needle-slot, a separator-guide located and terminating in advance of said slot, and an additional guide depending in said needle-slot.

2. A sewing machine comprising stitch- 60 forming mechanism for producing independent lines of stitching, a presser-foot having a needle-slot, and a throat-plate having a needle-slot, and one of said latter parts being provided with a tongue which extends into 65 the slot of the other part; and a fixed guide arranged in advance of said tongue and cooperating therewith to guide the work.

3. A sewing machine comprising a stitch-forming mechanism, a throat-plate and a 70 presser-foot, one of said parts having a projecting tongue the under-side of which is inclined; and a fixed guide the forward end of which is inclined to coincide with the under-side of the tongue, said tongue and guide 75 operating to guide the work.

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

WILLIAM N. PARKES.

Witnesses:

CHAS. MCC. CHAPMAN,
M. HERSKOVITZ.