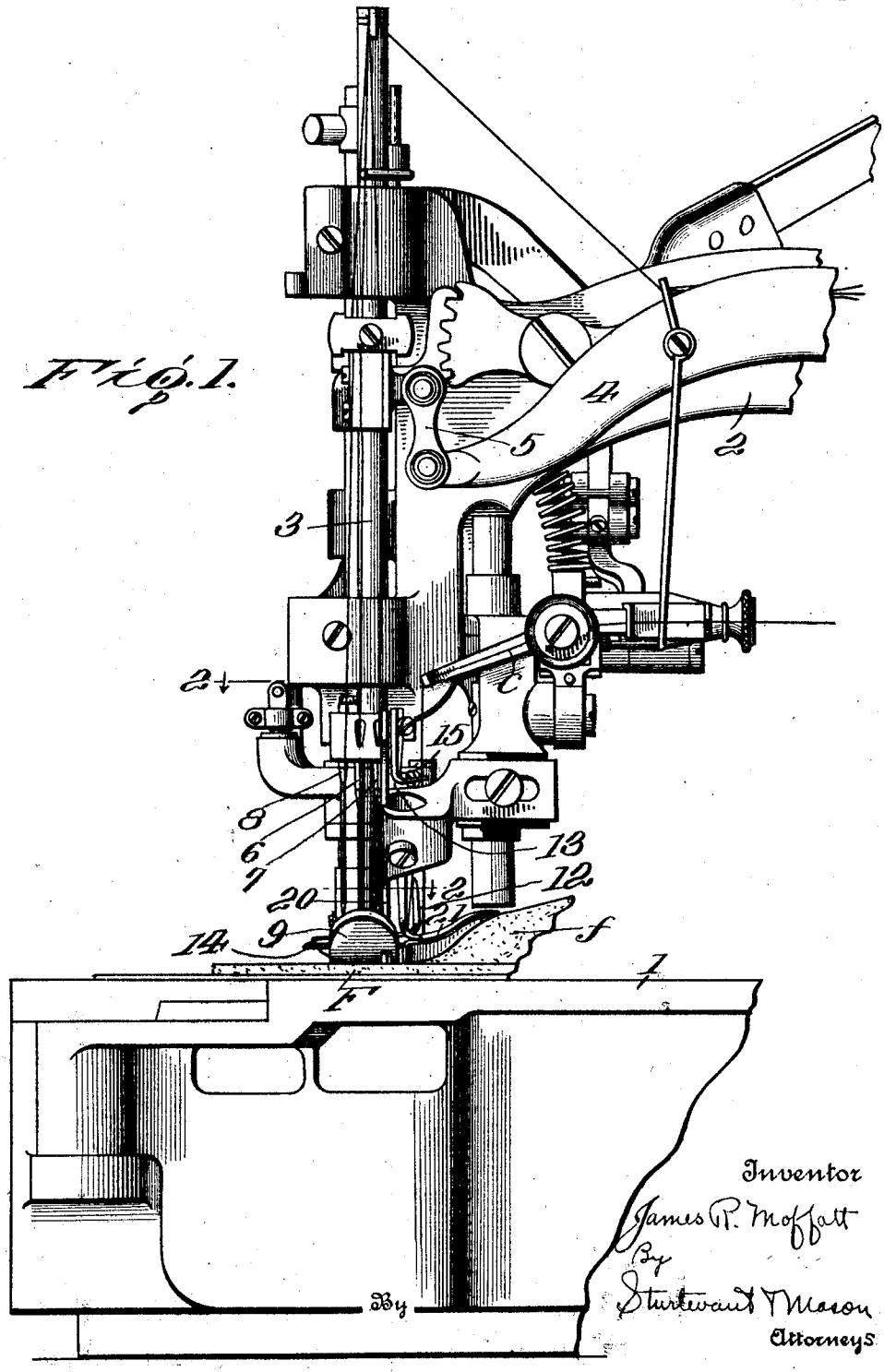
Mar. 3, 1925. 1,528,499

J. R. MOFFATT

POCKET STITCHING MACHINE

Filed Nov. 4, 1920 4 Sheets-Sheet 1

Fig. 1.



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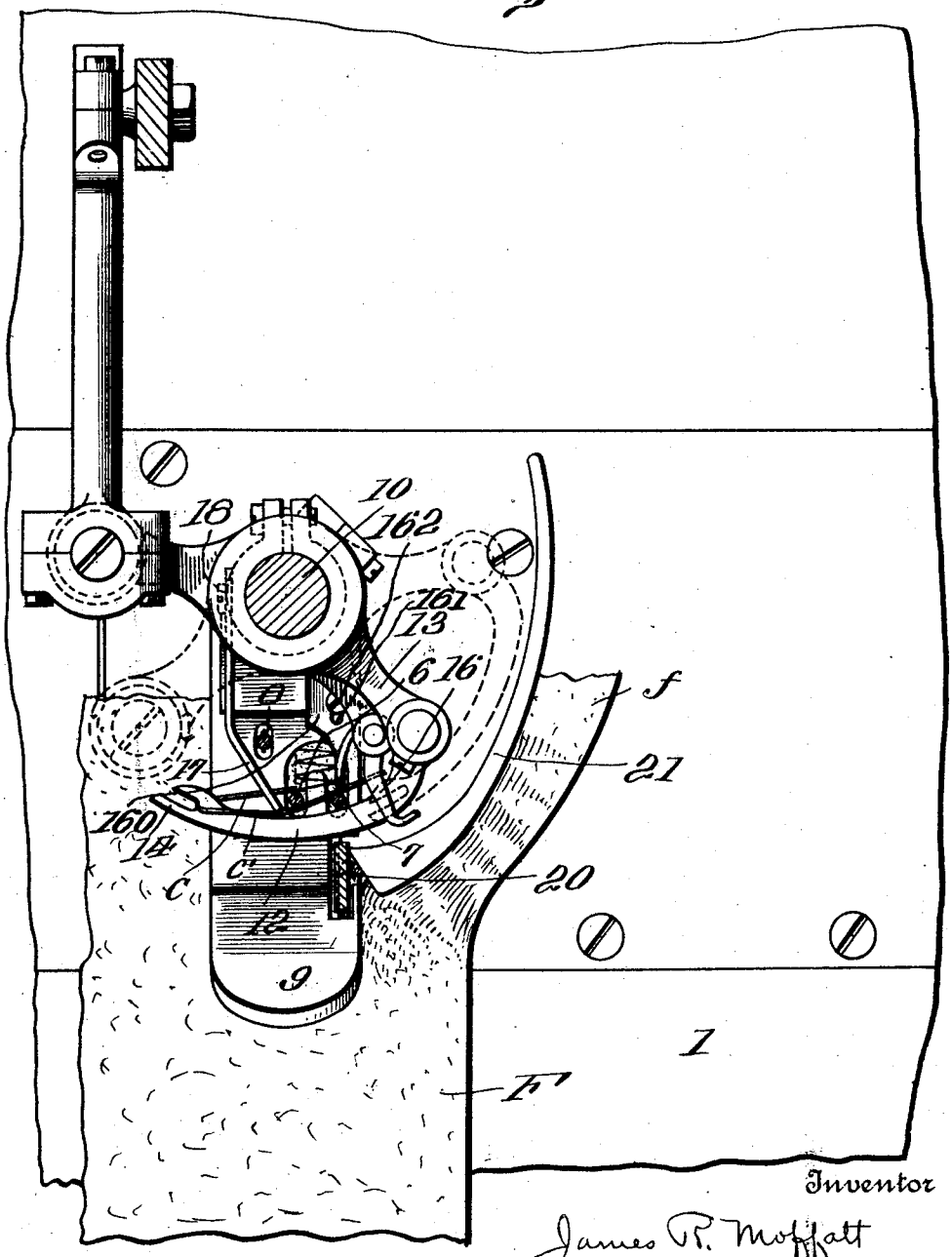
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Fig. 2.



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FIG. 3.

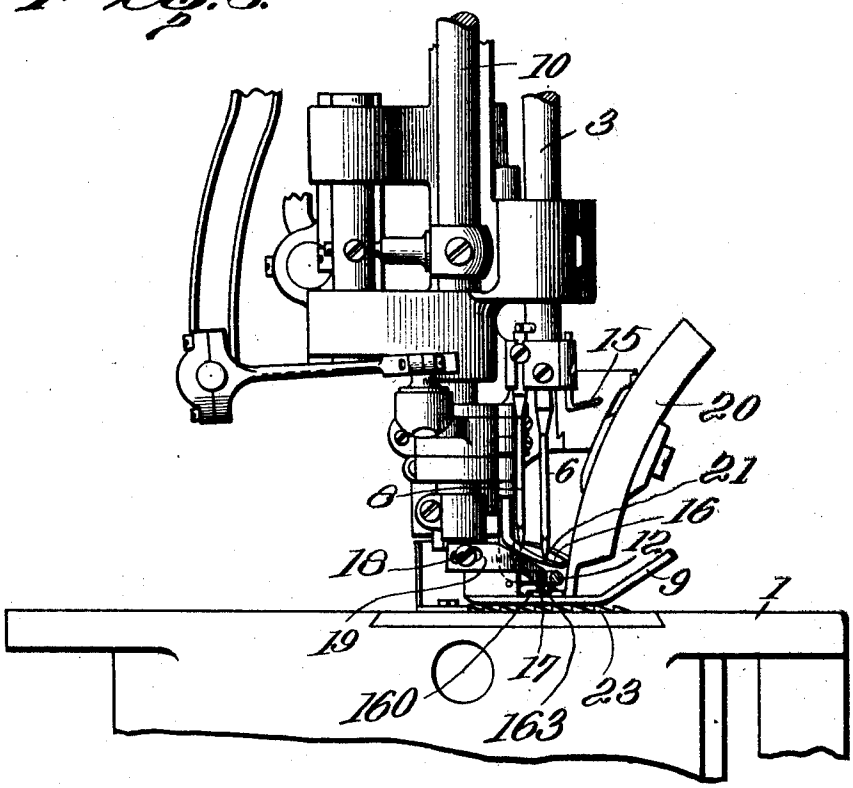


FIG. 5.

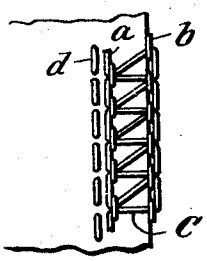
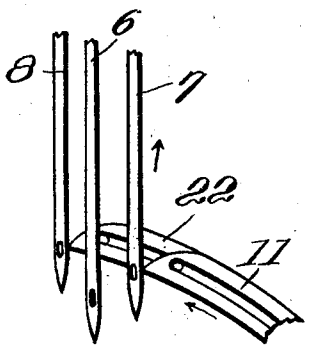


FIG. 4.



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FIG. 6.

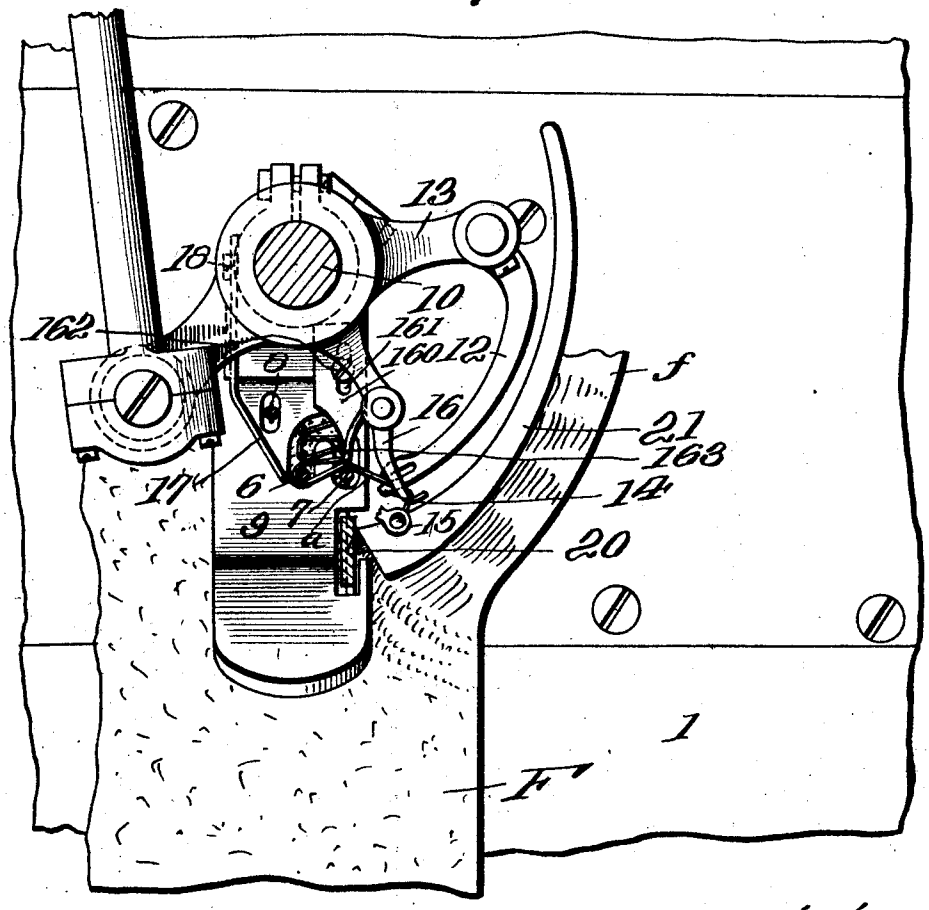
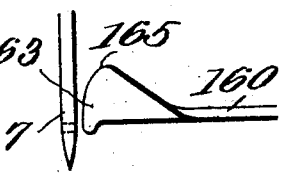


FIG. 8.



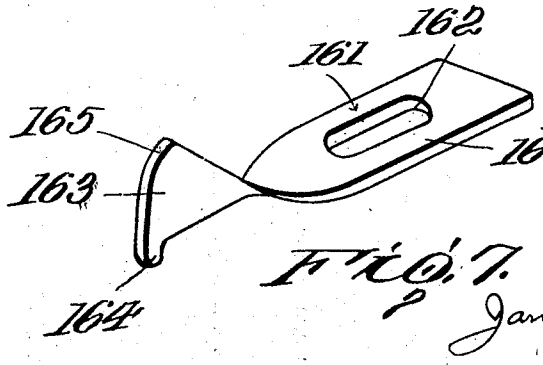


FIG. 7.

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UNITED STATES PATENT OFFICE.

JAMES R. MOFFATT, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

POCKET-STITCHING MACHINE.

Application filed November 4, 1920. Serial No. 421,722.

To all whom it may concern:

Be it known that I, JAMES R. MOFFATT, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Pocket-Stitching Machines, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to new and useful improvements in sewing machines, and more particularly to a sewing machine having a trimming mechanism and stitching devices so disposed as to trim and firmly unite the edges of fabric sections forming a pocket or the like for a garment.

An objection of the invention is to provide a sewing machine of the above character wherein the trimming devices are so related to each other that the edges of the fabric sections may be trimmed, covered, and firmly secured together and at the same time, the fabric directed so as to turn corners or the like.

A further object of the invention is to provide a stitching mechanism for over-seaming including spaced needles and a cross thread laying mechanism, wherein means is provided for positively insuring the position of the strand of the loop that passes between the needles.

A further object of the invention is to provide a stitching mechanism including spaced needles and a thread hook with devices for positively placing the cross thread for engagement by said hook.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention—

Figure 1 is a front view of a portion of a sewing machine having my improvements embodied therein;

Fig. 2 is a view partly in plan and partly in section showing the relation of the stitching devices to the trimmer, and taken on line 2—2 of Fig 1.

Fig. 3 is an end view of a portion of the head of the machine;

Fig. 4 is a view showing more or less diagrammatically the needles and the loopers associated with the needles;

Fig. 5 is a view showing in plan and on a much enlarged scale, a portion of the stitched article;

Fig. 6 is a view similar to Fig. 2, but with the hook at its extreme right hand position;

Fig. 7 is a perspective view of the finger which cooperates with the arm in positioning the cross thread for engagement by the hook, and

Fig. 8 is a detail showing a portion of the right hand needle and the location of the positioning finger for the cross thread relative thereto.

The invention broadly is directed to a sewing machine having over-edge stitch forming mechanism which preferably includes two needles, a looper cooperating with the two needles beneath the fabric, a cross thread laying hook cooperating with the two needles above the fabric, a thread guiding arm associated with said hook, a thread positioning member for positively placing the strand of the loop which passes between the two needles when the hook is at the forward end of its stroke, thus permitting the thread hook which lays the cross thread to move in a circle with the center of the presser bar as an axis, and very close to the needles, and an adjustable finger which cooperates with the thread guiding arm to position the cross thread for engagement by the hook. This permits the placing of the trimming mechanism very close in front of the needles forming the stitching mechanism, so that the trimmed edge is covered by the over-seaming stitches, and at the same time, the fabric may be turned so as to stitch about corners or the like. Also associated with the stitching mechanism above referred to for covering the edge of the fabric, is a stitching mechanism which produces a straight line of stitches parallel with and at one side of the over-seaming stitches, which greatly strengthens the pocket seam made with the machine. The needle of this stitching mechanism is also comparatively close in rear of the two needles forming the over-seaming stitches, so as not to interfere with the turning of the fabric in stitching around corners or the like.

Referring more in detail to the drawings, the invention is shown as applied to a sewing machine having a work support 1, an overhanging arm 2 in which the needle bar

3 reciprocates. The needle bar is reciprocated by the usual needle lever 4 connected to the needle bar by means of a link 5. This needle bar carries two needles 6 and 7, which form a part of an over-seaming mechanism, and a third needle 8 which forms a part of the straight line stitching mechanism.

The material is held on the work support by a presser foot 9 carried by the presser bar 10 which is mounted to reciprocate in suitable bearings carried by the overhanging arm 2. Beneath the work support, there is a looper 11 which cooperates with the needles 6 and 7. This looper is of the usual construction and is mounted in the usual way, and it is not thought necessary to indicate the mechanism which supports and operates the looper. The looper cooperating with the two needles, not only locks the needle loops, but forms a thread connection between these locked needle loops, which is of the usual character.

Cooperating with the needles 6 and 7 above the work support is a thread hook 12. This thread hook 12 is carried by an arm 13 which is pivoted to swing about the center of the presser bar 10 as an axis. Said thread hook is forked with a forked forward end 14. Associated with the thread hook is a thread guide 15 (see Fig. 3) through which the cross thread is led, and when the hook is at the rear end of its stroke, the thread running from the thread guide 15 to the fabric lies in the path of the forked end 14 so that the forward movement of the hook 12 will engage the cross thread and form a loop therein. In the drawings, the cross thread is indicated at c and in Fig. 2 the hook is shown in full lines in its forward position, having formed a loop in its cross thread, and in Fig. 6, said hook is shown as in its rear position ready to move forward to engage the cross thread. The cross thread c is drawn against the thread arm 16 which has a cam face, and the strain on the thread causes this thread to slip rearwardly on this cam face so that the forward portion of the strand c' is properly positioned relative to the two needles 6 and 7. This cross thread and cooperating cam positioning arm form no part of the present invention, but are shown, described and claimed in my copending application, Serial Number 181,208, filed July 18, 1907.

There is another feature of importance in connection with my machine, and that is the positioning finger 160 for insuring that the cross thread will be properly positioned for engagement by the hook 12 regardless of the length of the feed stroke of the machine. This cross thread extends from the fabric where it is attached by the needle threads to the forked end 14 of the hook 12, and unless it is positioned with considerable certainty, the hook 12 will skip it. The positioning finger for the cross thread consists of a shank 161 having a slot 162 through which a suitable screw passes into the presser foot. This slot is elongated so as to provide for the adjustment of the positioning finger in a direction parallel with the line of feed. Said positioning finger is provided with a blade 163 lying in a vertical plane with its extreme forward edge substantially vertical throughout the greater portion thereof as indicated at 165 and with the upper portion inclined rearwardly, said blade has a downward projection 164 so that the extreme forward edge extends well down toward the lower surface of the presser foot and the upper face of the fabric and only clears the fabric sufficiently to allow the threads to pass underneath this projection 164 which is rounded for this purpose.

Assuming the parts to be in the position shown in Fig. 6, the hook 12 moves toward the left and engages that portion of the cross thread indicated at a and carries the strand toward the left, forming a loop. As the hook 12 moves toward the left, the needles rise and the feed takes place, and consequently this strand a is extended from the point of the hook rearwardly between the needles to the last needle loop formed in the fabric and the strand is taut at this time. The needles then begin to descend, and the hook begins to move rearwardly. As the needles descend, a portion of the right hand needle thread extending from the last named loop in the fabric to the needle eye, is freed from strain. This strand a also begins to lose its tautness, and immediately after the points of the needles have passed below this strand a, said strand becomes more or less flexible or loose. Consequently this strand a is liable to move rearwardly as far as the last named needle loop. The portion of the needle thread extending rearwardly and downwardly from the eye of the right hand needle is liable to retain this rearwardly bowed cross thread a and retain it at a point in rear of the right hand needle so far back that the hook 12 on its forward movement is liable to skip entirely this strand. In other words, the angle of inclination of the section a of the cross thread is changed, and to such extent that the hook is liable to pass it without engaging it. It will therefore be seen that the longer the stitch, the farther in rear of the right hand needle the rear or left hand end of the strand a is liable to be positioned. The positioning finger above described is located in rear of the right hand needle. The forward edge 163 as above noted is vertically inclined, adjacent its top portion as at 165, so that as the needles move downwardly, the right hand needle thread will

force the strand *a* downwardly between the finger 163 and the right hand needle, which determines the placing of the extreme rear portion of the strand *a* where it is attached to the fabric at a definite position regardless of the length of feed and thus said strand *a* is disposed at the proper angle of inclination so that the hook 12 will with certainty engage the same. This positioning finger, together with the arm 16 serves as a positive means for positioning the cross thread so that the hook 12 will engage the same with certainty regardless of the length of the feed.

Also associated with the cross thread laying hook 12 is a strand positioning member 17. Said strand positioning member 17 is secured by a screw 18 to the presser foot. Said screw passes through a slot 19 which is elongated, so that this thread positioning device may be adjusted in an endwise direction. Said thread positioning device lies in the path of the strand *c'*, extending from the thread arm 16 to the forked end of the thread hook 12. As the hook moves to its forward position as clearly shown in Fig. 2, this strand *c'* is carried against this thread positioning device 17 and insures that the section of the strand *c'* between this positioning device and the thread arm 16 will lie between the path of the needles 6 and 7 and this causes the needle 6 to enter the loop formed in the cross thread by the thread hook, while the needle 7 passes outside of the loop. By adjusting the thread positioning member 17, the placing of the thread *c'* may be varied, and it will be noted that the placing of the thread between the needles is brought about by this positioning device 17 and not by the thread hook. The thread hook therefor may swing about the center of the presser bar and very close to the path of the needles. It would be practically impossible to so position the thread hook without this positioning device for the thread strand *c'*. This cross thread not only connects the needle threads on the upper face of the fabric, but covers the edge of the material.

Associated with this overseaming mechanism, and located in advance thereof, are trimming devices, one of which is indicated at 20 in the drawings. This trimming device 20 reciprocates vertically and operates to sever the fabric sections in advance of the stitching. The trimming device 20 is located in front of the stitching mechanism and in line with the needle 7 so that the trimmed edges advance between the needles and close to the needle 7. It is also located directly in front of the hook 12. The trimmed off strip is deflected away from the stitching mechanism by the deflector 21. In the drawings, the fabric is indicated at F and the trimmed strip is indicated at *f*.

Cooperating with the needle 8 beneath the work support is a looper 22. This looper is carried by the same rocker on which the looper 11 is mounted, and operates in the usual manner, to form with the needle 8 a single line of double chain stitches. It will be noted that both the loopers 11 and 22 move in a direction at right angles to the line of feed. The fabric is fed underneath the presser foot 9 by means of the feed dog 23. This needle 8 is slightly in rear of the needles 6 and 7 and also slightly at one side thereof. The seam produced with my machine is indicated in Fig. 5 in the drawings, wherein the threads of the needles 6 and 7 are indicated at *a* and *b*, respectively, and the thread of the needle 8 is indicated at *d*. The cross thread is indicated at *c*. It will be noted that the edges of the fabric sections are trimmed and covered by the overseaming stitches formed by the needles 6 and 7 and their cooperating devices. This forms a very durable and efficient covering for the trimmed edges. It will also be noted that there is a straight line of stitches formed by the needle 8 which makes a very strong, non-ravelling stitch connection for the fabric sections. This seam forms no part of the present invention, but is shown, described and claimed in my copending application, Serial Number 318,702, filed August 20, 1919.

By means of the associated elements pointed out above, wherein the trimmer may be placed close to the needles of the overseaming mechanism, and the needle of the straight line stitching mechanism is in rear and close to the overseaming needles, I am able to stitch curves and around corners, and this is brought about particularly by the placing of the needle of the straight line stitching in rear of the needles of the overseaming mechanism, and the construction of the thread laying devices so that the trimming devices may be placed very close in front of the needles. To form a proper seam, the trimmed edge must pass between the needles and close to the outer needle, and in stitching around curves or corners, this can only be accomplished where the trimming mechanism is very close to the front of the needles of the overseaming stitching mechanism.

It is obvious that minor changes in details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters-Patent, is:—

1. The combination of an overseaming stitching mechanism including a pair of needles, a thread hook cooperating with said needles above the material, a threaded looper cooperating with the needles beneath the ma-

terial, trimming devices located in front of the thread hook and close thereto, a needle located at one side of the needles of the overseaming mechanism and in rear thereof, and a looper cooperating with said last named needle, said loopers being located side by side and movable in a direction parallel with the line containing the pair of needles.

2. The combination of a plurality of needles, a presser foot, a presser bar carrying said presser foot, a thread hook for forming a loop in the cross thread and positioning said loop for the entrance of one of said needles, and a thread strand positioning device located between the needle which is to enter said loop and the end of the hook, when said hook is holding the loop for the needle to enter and adapted to engage one strand of the loop carried by the hook for holding said loop open so that the needle will enter the same.

3. The combination of a plurality of needles, a presser foot, a presser bar carrying said presser foot, a thread hook for forming a loop in the cross thread and positioning said loop for the entrance of one of said needles, a thread strand positioning device located between the needle which is to enter said loop and the end of the hook, when said hook is holding the loop for the needle to enter and adapted to engage one strand of the loop carried by the hook for holding said loop open so that the needle will enter the same, and means for supporting said strand positioning device on the presser foot whereby said device may be adjusted endwise toward and from the path of movement of the hook.

4. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook movable in front of said needles for forming a loop in a cross thread, a thread positioning device located outside of said needles and cooperating with said hook to open the loop carried thereby for one of the needles to enter, said thread positioning device being so positioned that the strand of the cross thread loop engaged thereby is positioned between the needles so that only one needle enters the cross thread loop, and means for supporting said thread positioning device on the presser foot whereby said device may be adjusted endwise toward and from the path of movement of the hook.

5. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook having a forked end mounted to swing about the center of the presser bar as an axis, a thread arm having a cam face associated with said thread hook, and a strand positioning device for engaging the strand between the arm and the forked end of the hook for placing said strand between the needles.

6. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook having a forked end mounted to swing about the center of the presser bar as an axis, a thread arm having a cam face associated with said thread hook, a strand positioning device for engaging the strand between the arm and the forked end of the hook for placing said strand between the needles, and a trimming device arranged in front of the thread hook and close thereto.

7. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook having a forked end mounted to swing about the center of the presser bar as an axis, a thread arm having a cam face associated with said thread hook, a strand positioning device for engaging the strand between the arm and the forked end of the hook for placing said strand between the needles, a trimming device arranged in front of the thread hook and close thereto, a needle located at one side of and in rear of the first named needles, and a looper beneath the work support cooperating with the last named needle.

8. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook having a forked end mounted to swing about the center of the presser bar as an axis, a thread arm having a cam face associated with said thread hook, a strand positioning device for engaging the strand between the arm and the forked end of the hook for placing said strand between the needles, a looper cooperating with said needles, beneath the work support, said thread hook being disposed so as to move very close to said needles, a trimming device located directly in front of one of said needles whereby the trimmed edge passes between said needles, and means for deflecting the trimmed off strip away from the stitching device.

9. The combination of a pair of needles, a presser foot, a presser bar carrying said presser foot, a thread hook having a forked end mounted to swing about the center of the presser bar as an axis, a thread arm having a cam face associated with said thread hook, a strand positioning device for engaging the strand between the arm and the forked end of the hook for placing said strand between the needles, a looper cooperating with said needles beneath the work support, said thread hook being disposed so as to move very close to said needles, a trimming device located directly in front of one of said needles whereby the trimmed edge passes between said needles, means for deflecting the trimmed off strip away from the stitching device, a needle in rear of and at one side of the first mentioned needles, a looper cooperating with said last

named needle, said loopers being disposed so as to move in planes at right angles to the line of feed.

10. The combination of a pair of needles, a presser foot, a cross thread hook movable in a path in front of the needles and having a forked end adapted to engage a cross thread and form a loop therein, a thread arm against which the cross thread is drawn, a vertically movable thread guide above said arm for said cross thread, a finger carried by the presser foot and engaging the cross thread between the arm and the material for placing the cross thread in a predetermined position on said arm regardless of the length of feed of the material being stitched.

In testimony whereof, I affix my signature.

JAMES R. MOFFATT.