

(No Model.)

5 Sheets—Sheet 1.

W. F. BEARDSLEE.
SEAM FOR FABRICS.

No. 530,218.

Patented Dec. 4, 1894.

Fig. 1.

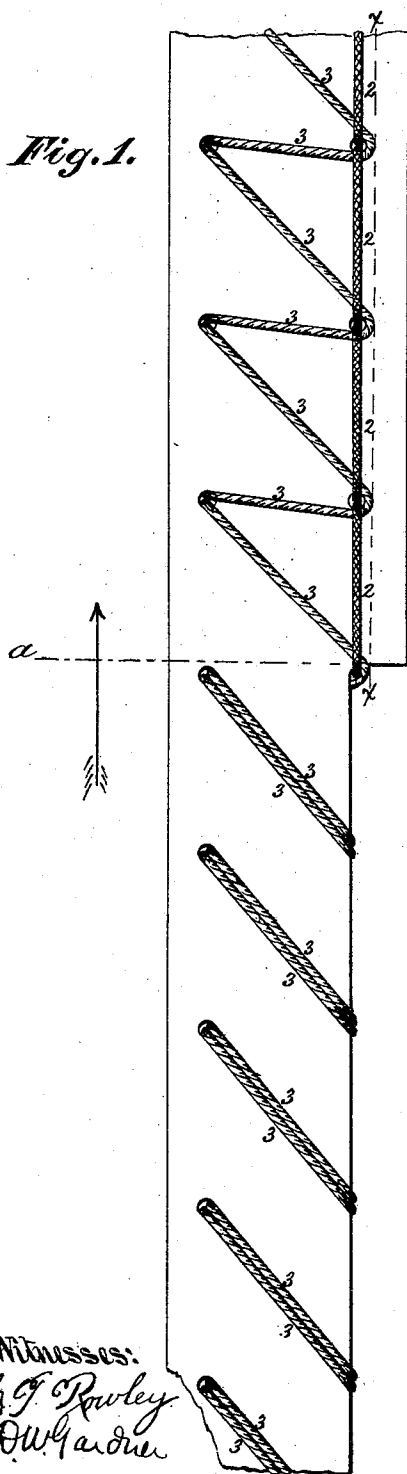
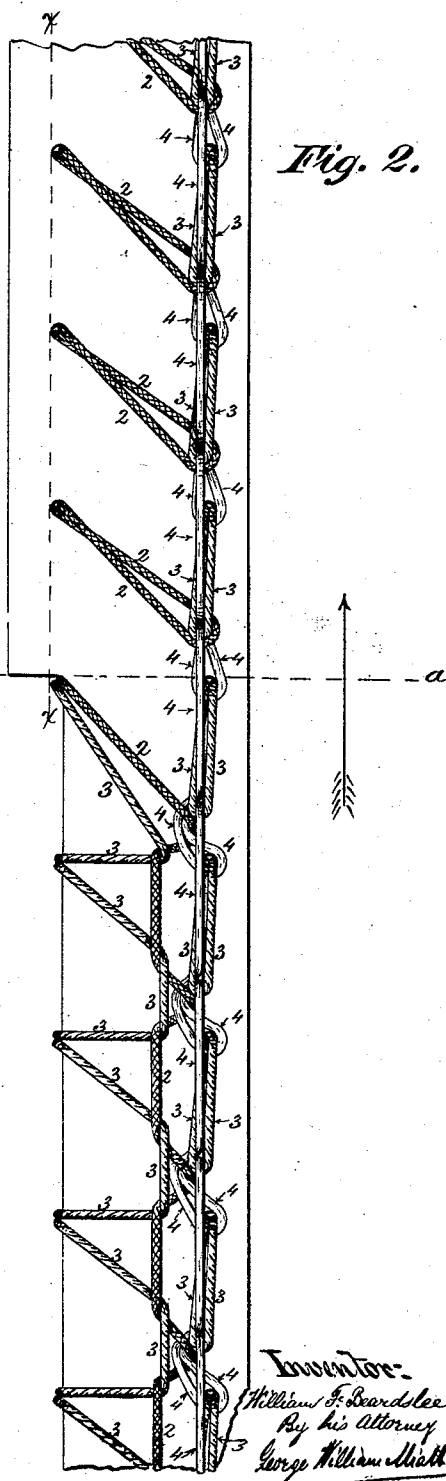


Fig. 2.



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By his Attorney
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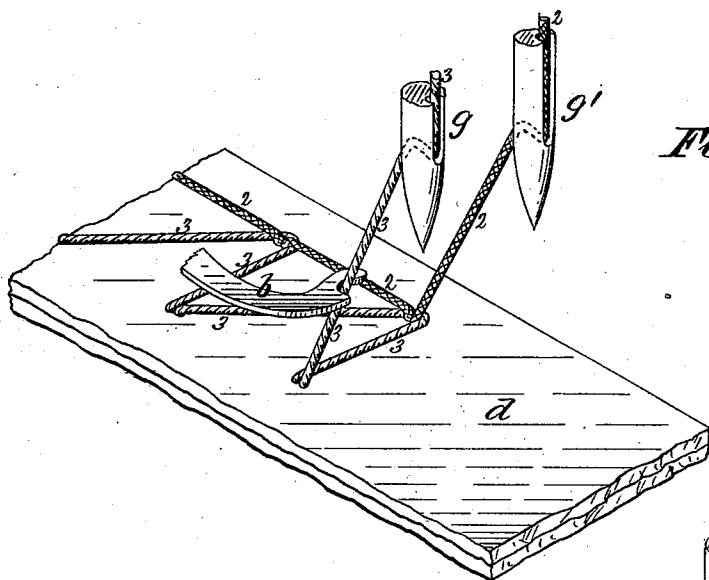


Fig. 3.

Fig. 4.

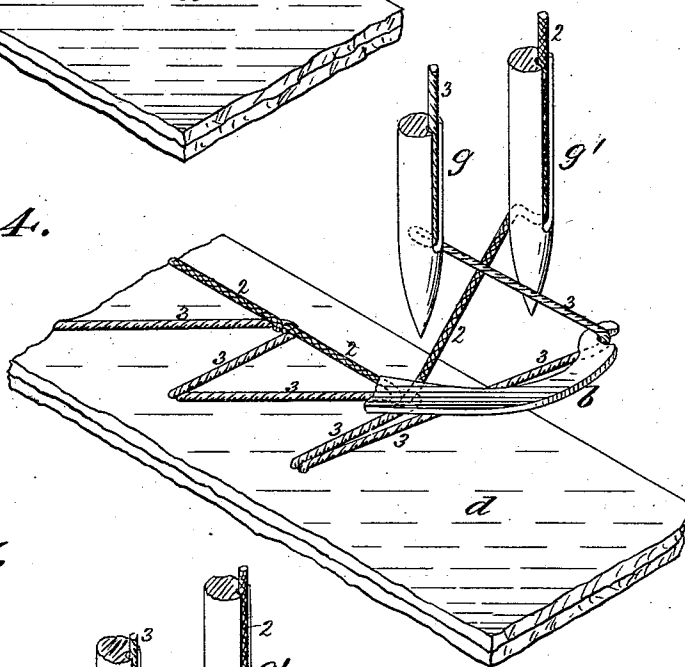
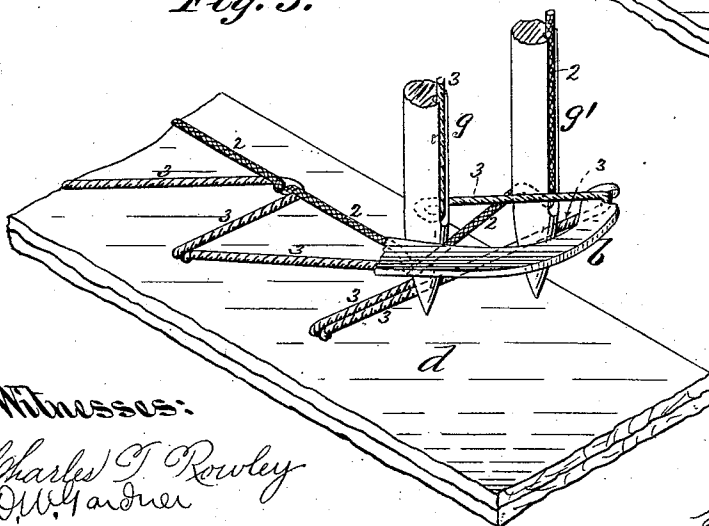


Fig. 5.



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Fig. 6.

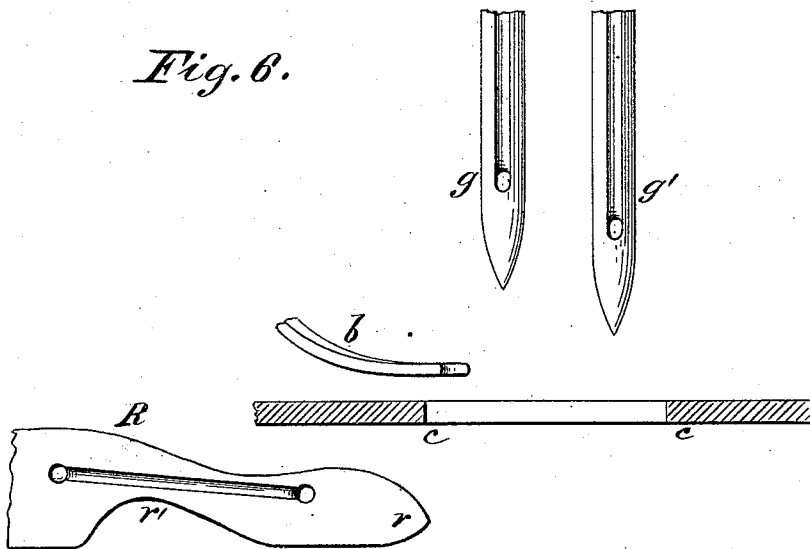
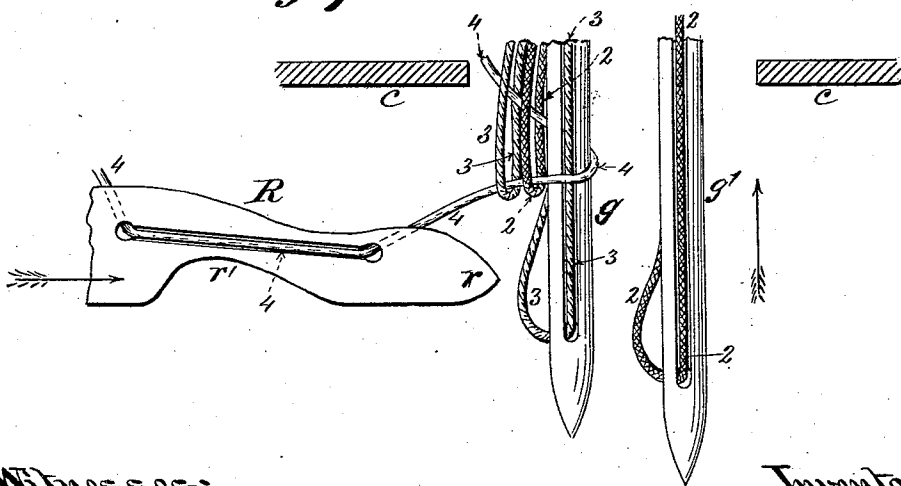


Fig. 7.



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Fig. 8.

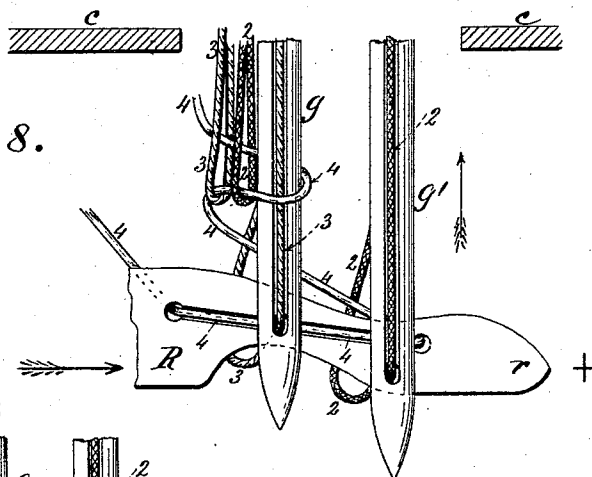


Fig. 9.

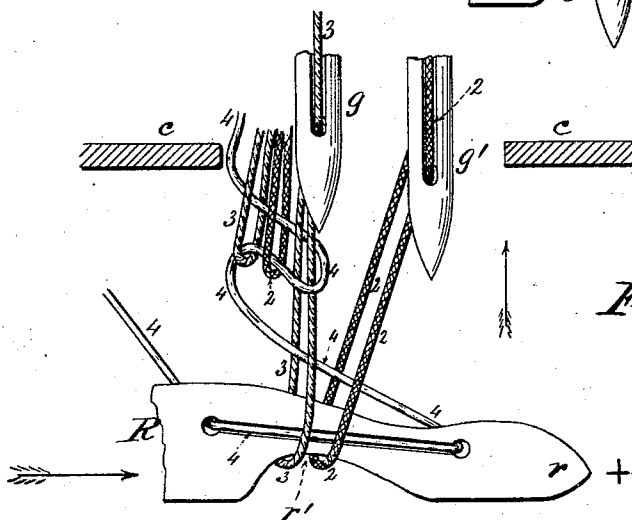
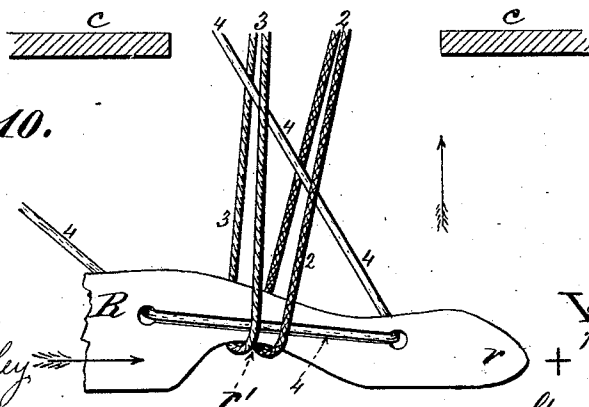


Fig. 10.



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(No Model.)

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Fig. 11.

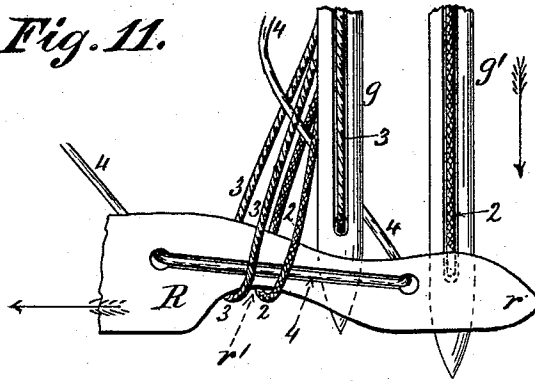
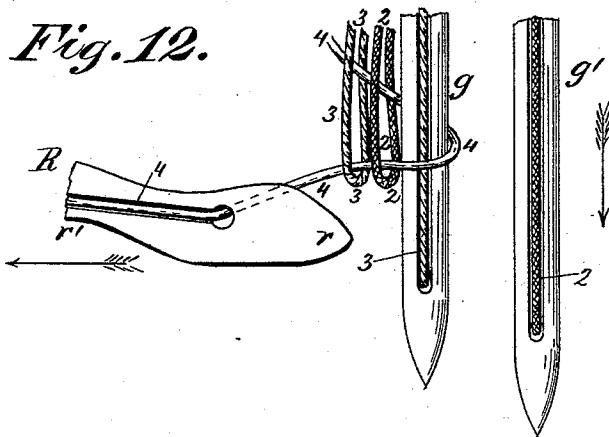


Fig. 12.



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UNITED STATES PATENT OFFICE.

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SEAM FOR FABRICS.

SPECIFICATION forming part of Letters Patent No. 530,218, dated December 4, 1894.

Application filed August 8, 1893. Serial No. 482,644. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. BEARDSLEE, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Seams for Fabrics, of which the following is a specification sufficient to enable others skilled in the art to which the invention relates to make and use the same.

My invention relates to seams composed of three threads, two of which are carried by two eye-pointed needles situated side by side and moving together, and the third of which is carried by a looper situated below the cloth plate.

My improved seam is of the class known as a "straight-ahead" seam, that is, at each descent of the needles stitches counting one in the line of feed are formed, and the present seam is thus contra-distinguished from an over-stitch seam requiring two descents of the needle to make one complete stitch in the line of the feed; and the threads of my new seam are concatenated both above and below the material. I am aware however, that double seams concatenated on both sides of the material are not new in the abstract. In my Patent No. 438,795, I set forth a seam formed of two parallel rows of stitching concatenated above and below the material, but theseam thus formed is unsuitable for knitted goods, hat sweats and other articles of manufacture requiring a stitch that will not rip or unravel. Similar seams have also been formed from three threads, producing a purl on the edge of the material, which have however been unsuitable for over stitching hat leathers and binding other articles requiring a complete over stitch.

The object of my invention is the production of a seam of exceptional strength that will not rip or unravel especially adapted for use on knitted goods, and similar material, and that may also be effectually employed in "over stitching" hat leathers, binding edges of material, &c.

The invention consists essentially of a seam comprising two parallel rows of stitches and which, when applied to the edges of the material, has a bight of the thread connected to

the material at one row of stitches lying across over the top of the material and projecting toward the edge thereof and into the line of the second parallel row of stitches which latter is at or near the edge of the material, inclosing the thread from this second row of stitches within said loop of the first thread, both of the said upper threads being passed through the material, or one thread through the material and one thread outside of the edge of the material, loops in both the said first and second upper threads projecting below the material, a bight of a lower third thread lying within both of said loops and then around outside the inner one, only, thereof.

The manipulation of the two upper threads above the material is substantially the same as in my Letters Patent No. 438,795 hereinbefore referred to, the loops of the needle threads in the present case however being concatenated below the cloth plate by means of a lower third thread manipulated by any suitable thread carrying looping mechanism,—this lower looper taking the loops from the thread carrying needles, while by preference only the needle farthest from the edge of the material takes the loop from the said thread carrying looper on the downward stroke of the needles, by which method the double chain thus formed is laid under the line of stitches farthest from the edge.

In my improved seam the concatenations above the material are around the outer or right hand upper thread (when sewing as shown in the drawings) and the concatenations below the material are such that the lower thread, while being looped through the loops of both upper threads, is looped around the inner or left hand one, only, of said upper threads, thus enabling the enchaind loops below the material to be drawn back from the edge or edges thereof, the lower or third thread uniting and locking the two upper threads below the material on the line of stitches formed by the inner one of the two upper threads. In other words, the interlooped threads above the material are at one parallel row of stitches, while the interlooped threads below the material are at the other

parallel row of stitches, when both needles pass through the material, as shown at the tops of Figs. 1 and 2.

In the accompanying drawings I illustrate symbolically certain instrumentalities used in carrying out my invention although I do not wish to confine myself to the use of any particular form or construction of parts, since it is obvious that the means employed for manipulating the thread according to my improved method are of secondary importance, and may be varied without departing from the spirit and intent of my invention.

Figure 1, is a top view of a portion of a strip of material, enlarged sufficiently to permit of a diagrammatic representation of the relative positions of the threads. Fig. 2, is a view of the under side of the same. Figs. 3, 4, and 5, are isometrical perspectives, representing arbitrarily the positions of the upper threads with relation to the needles and upper looper in effecting the concatenation of the upper threads. Fig. 6, is a symbolical representation of the instrumentalities essential in forming my improved stitch. Figs. 7, 8, 9, 10, 11, and 12, are diagrams representing upon an enlarged scale, the successive features or steps in the formation of my improved stitch.

The two eye pointed needles g, g' , are set a short distance apart and transverse to the line of feed, one (g') being slightly lower than the other. One needle g , carries the thread marked 3, and the other the thread marked 2. The upper looper b , for carrying the thread 3 from the left hand needle g , over into the path of its companion needle g' , to effect the concatenation of the threads above the material may be formed and operated substantially as set forth in my Letters Patent No. 438,794, or any other mechanism for effecting the result may be employed, the manipulation of the threads and the form and appearance of the stitch above the material not being original in the present application but forming only a step in my improved method. The form of the lower looper R , for effecting the concatenation of the threads below the material is also of secondary importance provided it is adapted to manipulate the threads below the cloth as herein described by me. For purposes of illustration I have indicated in the drawings a looper R , formed and operating substantially as set forth in Letters Patent No. 365,665. This lower looper R , carries the under or third thread 4, and is formed with the point r , and relief or inclined surface r' , the latter for the purpose of causing the bight of the loop of the thread 2 to slip over to that of the loop of thread 3 under the tension created when the needles rise, as indicated in Figs. 9 and 10.

The cloth plate is represented in section at c, c , in approximate position with relation to the operative parts in Fig. 6, but without regard to relative position in Figs. 7, 8, 9, and 10, in which the cloth plate and lower looper R , are separated sufficiently to permit the po-

sitions of the threads to be shown diagrammatically.

The lower looper R , common to sewing machines using a single needle, carries a continuous under thread (4), making what is known as the Grover and Baker stitch. It has an intermittent reciprocating movement in a horizontal plane, having also a lateral motion with relation to the position of the needles. By this means it is enabled to take the loops from the thread-carrying needles g, g' , on one side of the needles and then pass to the other side of the needles to form and present a loop of its own thread (4) in such position that upon the next descent of the needles one of the latter passes a loop of one of the upper threads through it, thereby locking the stitch as a whole.

In Figs. 3, 4, and 5, several stitches are represented as already formed in the material d . Both needles g, g' , are shown as elevated in Figs. 3 and 4, their threads 2, 3, extending from their eyes to the material d , at the points where the needles receded from the material at the completion of the last stitch, the material having been fed the length of a stitch preparatory to the descent of the needles to make two more parallel stitches. In this position the upper looper b , engages the thread 3 (as indicated in Fig. 3) and carries it across over the upper side of the material forming a loop or bight in the thread 3 which extends slightly beyond the vertical axis of the needle g' , as indicated in Fig. 4, so that upon the descent of the needles the said needle g' , will carry its thread 2 through the loop formed by the looper b , in the thread 3, thereby securing the thread 3, above the material and producing the cross concatenation shown. The looper b , is retracted into its former position at or about the completion of the descent of the needles.

The descent of the needles carries both threads 2, 3, through the material, and as they start to rise again loops are formed in both threads 2, 3, as indicated in Fig. 7, which are entered by the point r , of the lower looper R , as shown in Fig. 8. The mark $+$ adjoining the point r , of the looper R , Figs. 8, 9, and 10, indicates that the looper is at rest after completing its stroke in the direction of the horizontal arrow. As the needles g, g' , continue to ascend the tension upon the loops 3 and 2 causes them to seek the highest part of the incline or relief r' , formed on the under side of the looper, thereby bringing the lower part of the loop formed in the outer or edge thread 2, into proximity (Figs. 9 and 10) to the corresponding part of the loop formed in the inner thread 3 under the line of stitching made by the latter, and a little beyond the path of movement of the needle g , when the looper starts to recede. While the looper R , thus starts to recede during the elevation of the needles it also moves laterally to the front or opposite side of the path of the needles, so that as the needles again descend the needle g , will pass to the right of both the loops formed in threads

2 and 3 and will enter the loop formed in the
 5 looper thread 4 by its retractile movement, as
 illustrated in Fig. 11. The continued retraction
 of the lower looper R, during the descent
 10 of the needles draws the lower thread around
 the needle *g*, which latter carries its thread 3
 below the under thread sufficiently to admit
 of the formation of a loop which the point *r*,
 of the looper R, may enter when it again ad-
 15 vances, this position of the parts bringing us
 again to the conditions shown in Fig. 7, at the
 commencement of the description, it being
 seen that Figs. 7 and 12 represent the same
 relative arrangement of parts, the needles hav-
 20 ing first completed their downward stroke,
 and the looper R its retractile movement in
 Fig. 12, while in Fig. 7, the looper is about to
 advance and the needles to rise.

In the foregoing description the needles are
 25 described as both passing through the mate-
 rial, the seam produced being that repre-
 sented in Figs. 1 and 2, above the dotted line
a, a.

Where the material is fed to the machine
 30 with the edge between the needles the same
 manipulation of the threads by the operative
 parts occurs, but the result is somewhat dif-
 ferent in appearance as will be seen by refer-
 ence to the portions of Figs. 1 and 2, be-
 35 low the dotted line *a, a*. Under these con-
 ditions the left hand needle thread 3 is the
 only one that appears above the goods when
 stitched, the portion of the right hand needle
 thread 2, which forms the parallel edge stitch
 40 when both needles penetrate the material be-
 ing drawn over by the tension to the under
 side of the material, carrying with it and
 spreading out a portion of the left hand nee-
 dle thread 3, and leaving the strands 3 above
 45 close together and parallel to each other.
 The result of this simple change in the man-
 ner of feeding the material to the needles is
 the production in effect, of a superior and
 safe "overstitch" for binding, stitching hat
 50 sweats, &c.

The seam formed by passing both needles
 through the material, consisting essentially
 of two parallel rows of stitches may be
 55 trimmed as indicated by the dotted lines *x*,
x, Figs. 1 and 2, the trimming being done
 close to but not cutting the threads 2 and 3,
 and thereafter the two pieces of material may
 be opened out, leaving the loops of the
 threads 2 and 3, extending from one to the
 60 other seam, the thread 2 crossing from one to
 the other line of stitching at one side of the
 opened out material while the thread 3, is ex-
 tended across on the other side of the mate-
 rial, the said threads each concatenated in
 the line of stitching made by the other thread
 and each with the third thread 4, serving to
 bind and hold in place smoothly the mate-
 rial between the parallel lines of stitching

and making a safe, non-ripping flat seam.
 By superposing the material and sewing with 65
 the right hand needle *g'*, over the edge sub-
 stantially the same result can be attained
 when the material is opened out.

It is to be understood that the order of con-
 70 catenations both above and below the mate-
 rial may be reversed without changing the
 stitch,—that is to say that the upper right
 hand thread may be concatenated around the
 left hand upper thread above the material in-
 75 stead of concatenating the left hand upper
 thread around the right hand upper thread
 as shown in the drawings, while the concat-
 enation below the material may be effected
 upon the line of the right hand upper thread
 80 instead of upon the line of the left hand up-
 per thread as shown in the drawings,—the
 distinguishing feature of the stitch being in
 either case that the concatenations above the
 material are around one upper thread while
 85 the concatenations below the material are
 upon the line of the other upper thread.
 Thus I do not limit myself to the stitch as
 shown as applied at or near the right hand
 edge or edges of the material to be sewed,
 since under certain conditions it is desirable 90
 to form the stitch at or near the left hand edge
 or edges of material to be sewed, and since
 this change may be effected by simply revers-
 ing the order of concatenation from right to
 left above the material and left to right below 95
 the material without altering the form or
 structure of the seam in any particular.

I do not seek to cover herein the special
 form of stitch set forth in my concurrent ap-
 100 plication, Serial No. 488,081, filed October 13,
 1893.

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

The herein described seam consisting of the
 material or fabrics to be overseamed or joined 105
 and a series of stitches composed of two up-
 per threads, 2 and 3, and a lower thread 4,
 the upper thread 3 having loops which pass
 through the material and laterally extended
 loops through which loops of the other upper 110
 thread 2 pass, while beneath or on the oppo-
 site side of the material the loops of both of
 said upper threads are concatenated by the
 lower thread 4 which is looped within the
 loops of both of the said threads 2 and 3 and 115
 then around outside of each loop of the upper
 thread 3 which passes through the material;
 whereby the enchainment loops on the lower
 side of the material are located at one row of
 stitches and the interlooped threads above 120
 the material at the other or opposite row of
 stitches, substantially as set forth.

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Witnesses:

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