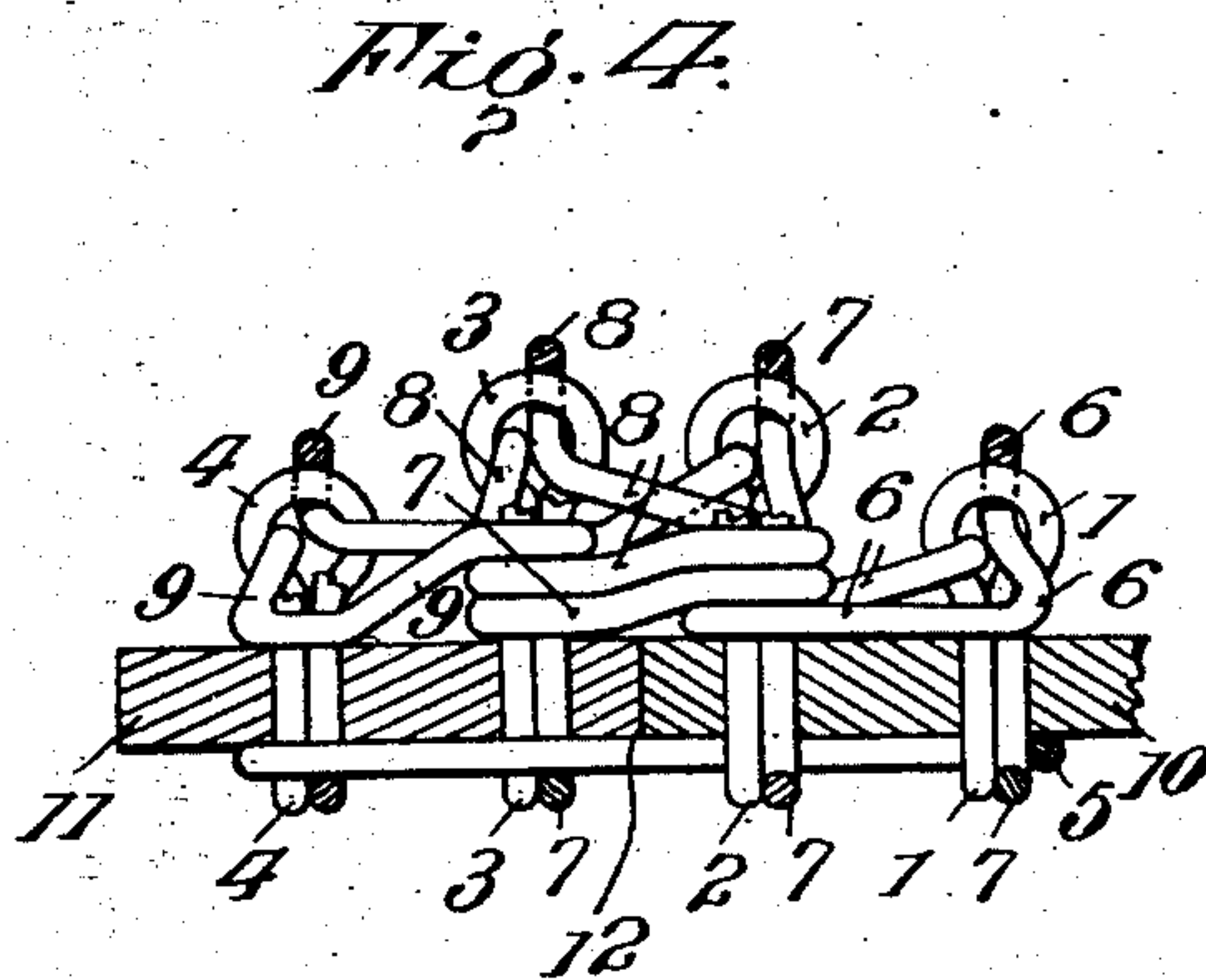
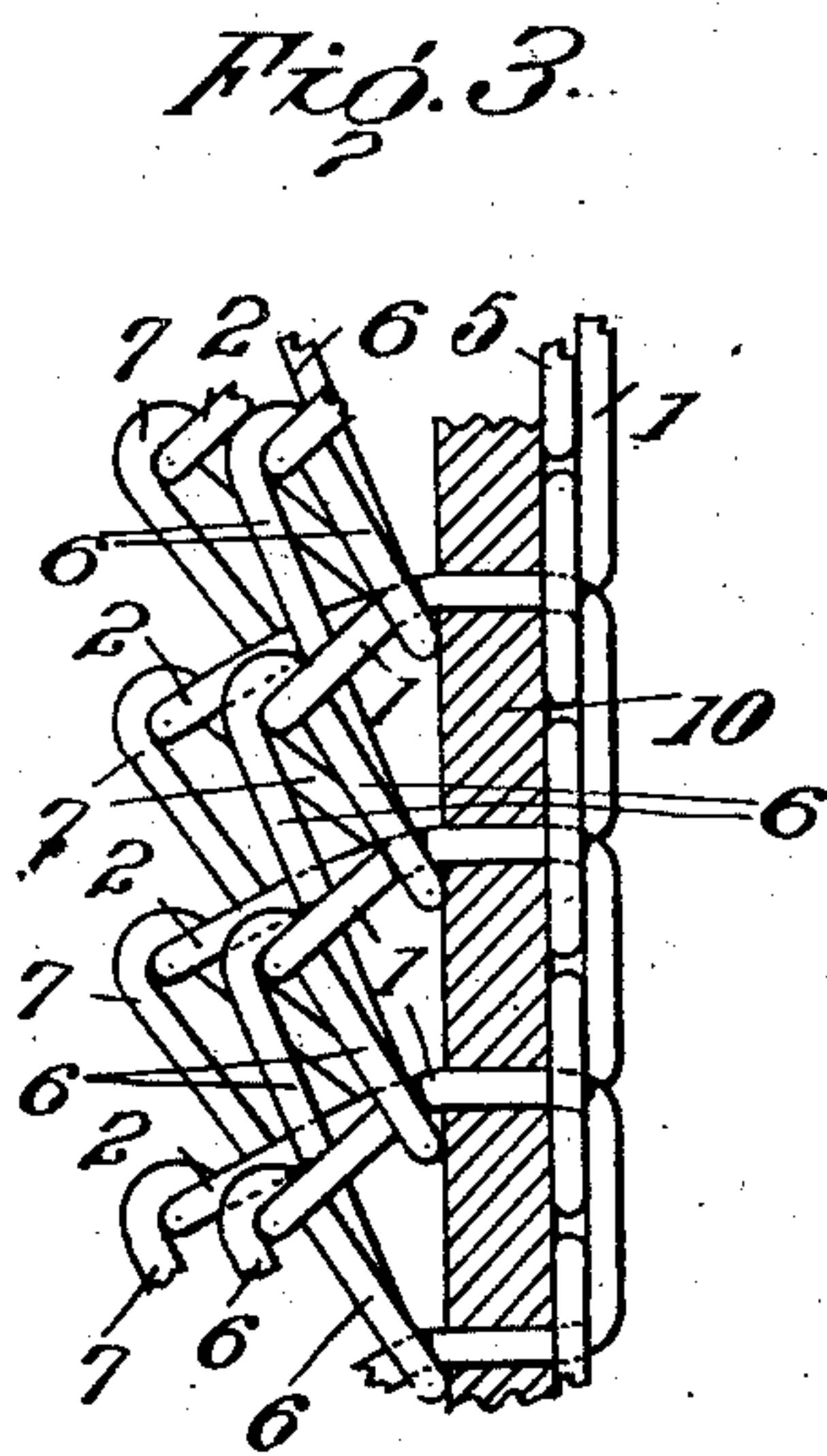
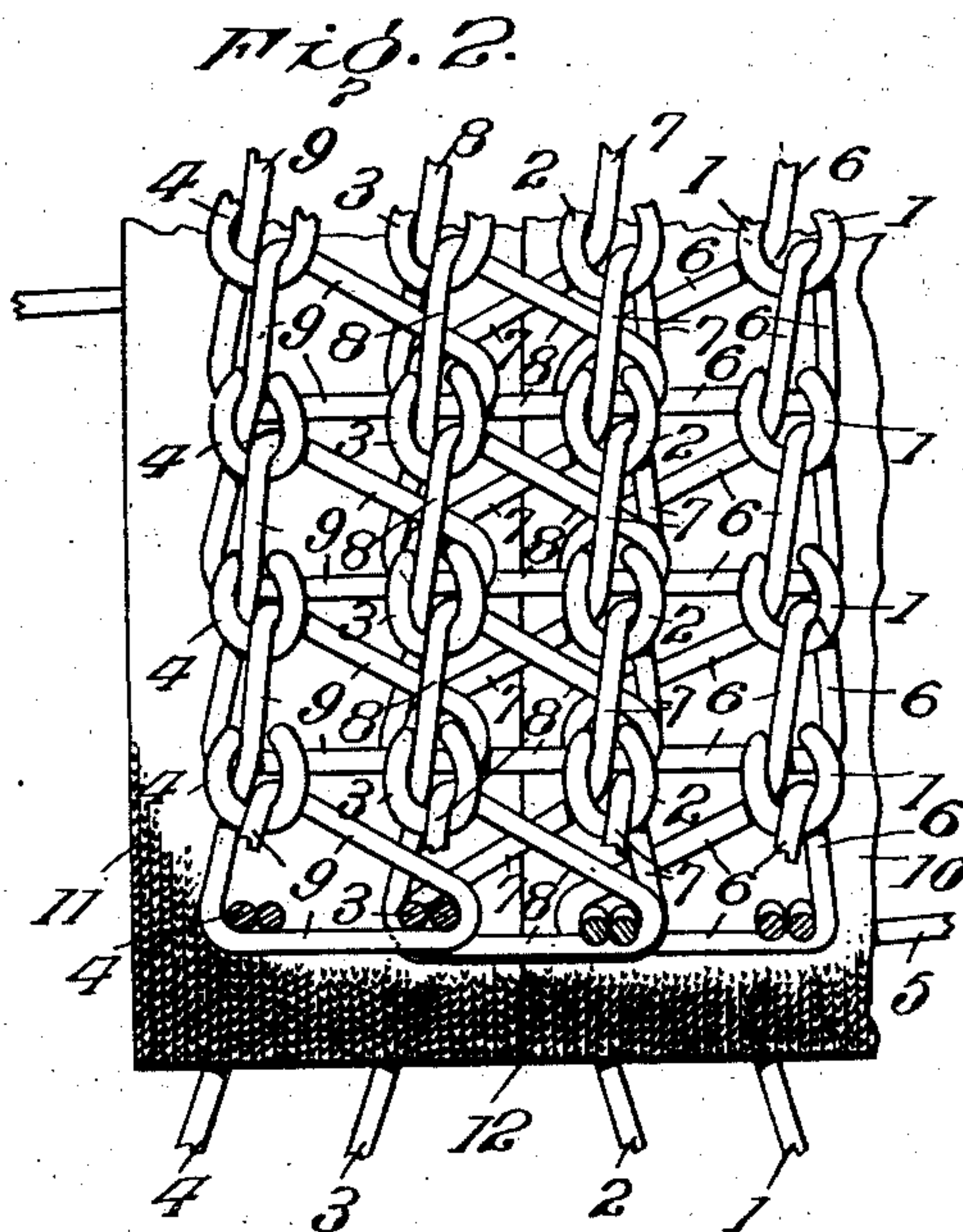
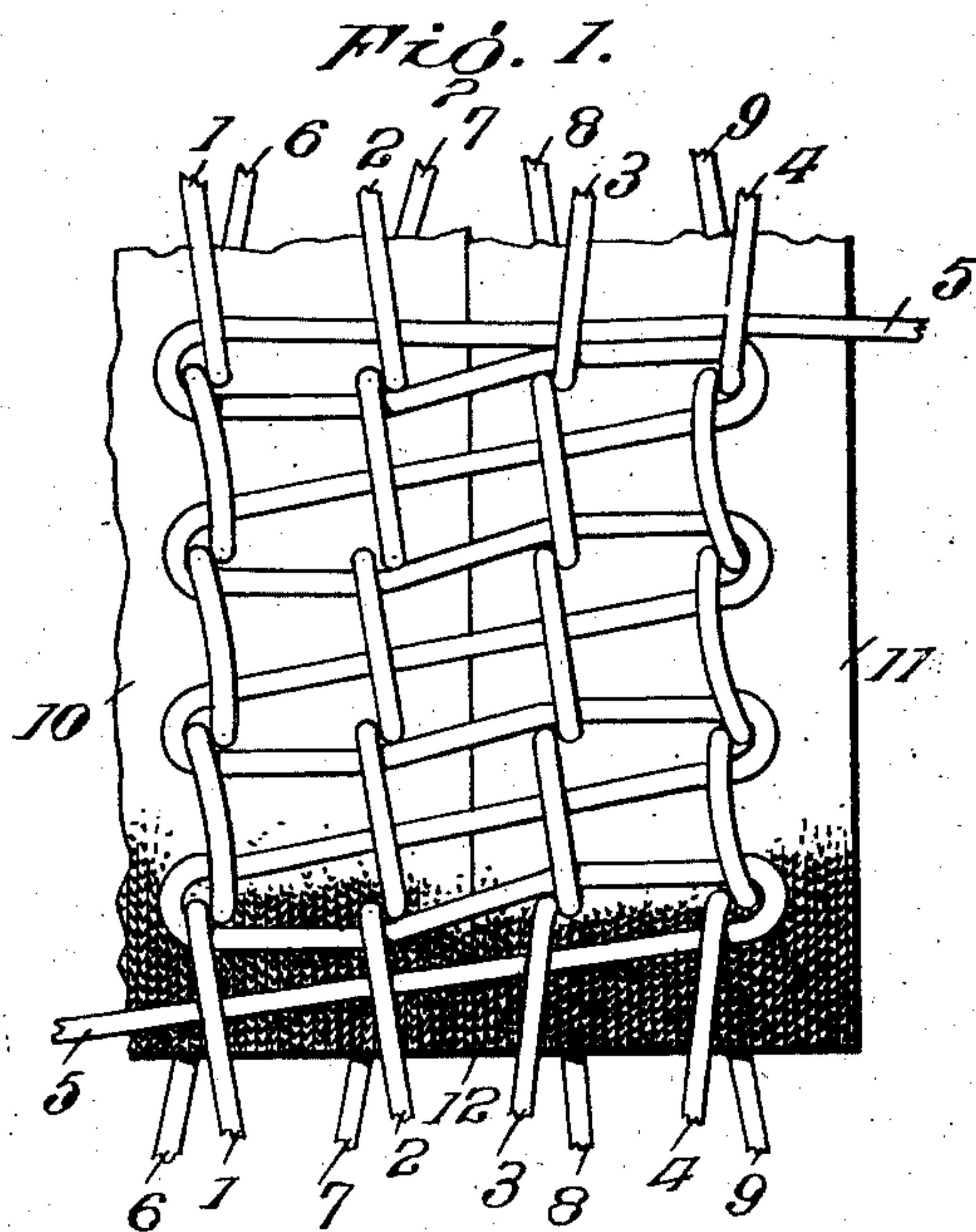


No. 883,614.

PATENTED MAR. 31, 1908.

S. BORTON.
SEAM.

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SEAM.

No. 883,614.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed March 9, 1906, Serial No. 305,140. Renewed July 10, 1907. Serial No. 383,144.

To all whom it may concern:

Be it known that I, STOCKTON BORTON, of Providence, Rhode Island, have invented a new and useful Improvement in Seams, which invention is fully set forth in the following specification.

The improved seam constituting my present invention is particularly designed for and adapted to joining together the edges of cut knit goods, but may also be employed to advantage with other kinds of fabrics and for ornamental and other purposes.

My principal object is to provide a seam, capable of being made by a single operation of a suitable machine, which will securely join two abutting edges of cut-knit goods and hold down, cover and secure the thread ends of the rough raw edges, thereby preventing said thread ends from sticking up and marring the smoothness, appearance and finish of the seam. This object is, it is believed, satisfactorily accomplished by the novel arrangement of stitches and threads forming said stitches and correlated thereto, which constitute the seam of this invention, said seam being neat, compact and attractive in both design and appearance, and may, if desired, be used solely for decorative purposes.

The improved seam may be more readily described in conjunction with the accompanying drawing, illustrating one embodiment of the invention, Figures 1 and 2 being plan views of opposite sides, respectively, showing on an enlarged scale two abutting edges of fabric or cut knit goods joined by the seam; Fig. 3 is a side elevation from the right of Fig. 2, with the goods in section; and Fig. 4 is an end view, partly in section, looking from the lower end of Fig. 2.

Assuming the seam to be formed in a suitable two-thread chain-stitch machine in which the needles operate from above, Fig. 1 shows the upper side and Fig. 2 the lower side of the seam as formed on the goods in passing through the machine; for convenience they will be referred to in the description which follows as the "upper" and "lower" sides of the seam. The seam may, however, be formed in a machine in which the needles operate from below, in which case the relation of the sides would be reversed. The seam may also be so formed that either of its sides, but preferably the

side formed by the needle and cross threads, appears on the right or outer side of the goods when in use.

In the drawings 10 and 11 are two pieces of fabric, such for example as cut knit goods, the opposing or abutting edges of which are brought together along the line 12. The seam is formed of nine threads, namely, the four needle threads 1, 2, 3 and 4 on the upper side, loops of these threads being carried through the goods to the lower side; a cross thread 5 on the upper side; and finally four hook threads 6, 7, 8 and 9 on the lower side. The needle threads 1, 2, 3 and 4 with their corresponding hook threads 6, 7, 8 and 9 form four parallel or approximately parallel rows of stitches; two rows on either side of the meeting line 12 of the two edges to be joined. On the upper side, Fig. 1, the cross thread 5, in running to the left, always passes beneath four stitches of the four parallel lines of stitches, all of said four stitches being in transverse alinement; in returning said cross thread passes beneath the next succeeding stitch in each of the two parallel lines of stitches in the fabric 10, but beneath the same stitches in fabric 11. It follows that at the outer edges of the upper side of the seam the cross thread 5 forms a succession of loops each passing through two adjacent stitches and connecting each end of every stitch to the end of an adjacent stitch. On the under side, the hook-thread 9, after passing through a loop in needle thread 4, passes around the shank of the next succeeding loop in thread 4, then to the right around the shank of a loop in needle-thread 3, thence backward and upward passing again through the first mentioned loop in needle-thread 4, and so on. In a similar manner, the hook-thread 8, after passing through a loop in needle thread 3, passes around the shank of the next succeeding loop in thread 3, then to the right around the shank of a loop in needle-thread 2, thence backward and upward again through the loop in thread 3 through which it first passed, and so on. The hook-thread 6, after passing through a loop in needle-thread 1, is carried to the left around the shank of a loop in needle thread 2, thence around the shank of the next loop in needle-thread 1, hence backward and upward again through the loop in thread 1 through

which it first passed—and so on. Likewise the hook-thread 7, after passing through a loop in needle thread 2, is carried to the left around the shank of a loop in needle-thread 3, thence around the shank of the next loop in needle-thread 2, thence backward and upward again through the loop in thread 2 through which it first passed—and so on. It thus appears (see Fig. 2), that for each stitch in the left-hand line of two-thread chain-stitches, a loop—approximately triangular in shape—in one stitch-forming thread 9 is extended forward through a loop in the other stitch-forming thread 4 and around the shank of the next succeeding loop in thread 4, and crossed or extended laterally (to the right) around the shank of a loop in stitch-forming thread 3 in the neighboring line of stitches. This is also true of the line of two-thread chain-stitches formed by threads 8 and 3; it is likewise true of the two lines of stitches formed by threads 7 and 2 and 6 and 1, except that in this instance the loops are crossed or extended laterally to the left. As shown in Fig. 4, of the three hook-thread loops around the shank of the loop in needle-thread 3, the loop in hook-thread 7 lies next to the fabric, with the loop in hook-thread 8 between it and the loop in hook-thread 9; and of the three hook thread loops around the shank of the loop in the needle-thread 2, the loop in hook-thread 6 lies next to the fabric, with the loop in hook-thread 7 between it and the loop in hook-thread 8. These loops may assume this or any other relative arrangement according to the manner of operation of the mechanism used in the formation thereof.

In the seam formed as explained above, the two inside parallel lines of stitches may, without danger of being pulled out, be placed very near the abutting edges of the two pieces of goods 10 and 11, as the outer parallel rows of stitches take a wide hold on the goods and are principally relied upon to resist transverse strain or pull tending to separate the joined edges. The cross-thread 5 on one side and the crossing of the hook threads on the other side securely binds together the four parallel rows of stitches and therefore distributes and equalizes all strain or pull tending to separate the connected edges. Furthermore, the disposition of the threads, and particularly the crossing of the hook threads, gives advantageous elasticity to the seam. The crossing of both hook-threads 7 and 8 twice across the line of abutment 12 for each stitch, affords a double covering of crossing threads at the middle of the seam where they are most needed to catch, hold down and confine projecting thread ends when the seam is employed to connect two edges of the cut-knit goods. At the outer edges of the seam only one of the hook threads (6 or 9) is crossed between the par-

allel rows of stitches, thus making the seam light and thin at these portions. The cross thread 5 and the crossing portions of the hook-threads are bound down by the needle threads and secured against the surface of the goods.

As will be apparent, my invention is capable of embodiments specifically different from that herein particularly shown and described. While it is preferably made by a machine of suitable construction, it may be, of course, made by hand, or by a single thread chain-stitch or a two-thread chain-stitch machine.

While I have explained above embodiments of the invention in which there are four approximately parallel lines of stitches, other embodiments within the generic invention may have only two approximately parallel lines of stitches.

As has been explained, an important function of the two outside lines of stitches in the embodiments of the invention shown in the drawing, when used to join two edges of work, is to take a wide hold on the goods and resist transverse strain or pull tending to separate the joined edges, from which it follows that the presence of said outside lines of stitches is particularly useful and important in joining edges of cut-knit goods. But in joining selvages, for example, where there is materially less danger of the stitches pulling out of the goods under transverse strain or pull, the two outside lines of stitches may, if desired, be omitted in some embodiments of the invention, leaving on one side of the work only the two inside lines of stitches, a stitch-forming thread of each line crossing at each stitch into engagement with the other line of stitches. For example, in the specific form of the invention shown in the drawings, the threads 1, 6, 4 and 9, would be entirely omitted.

Other embodiments of the generic invention, in which lines of single-thread chain-stitches are used, are illustrated and described in an application for United States Letters-Patent filed by myself (Stockton Borton) and Llewellyn D. Birge, June 2, 1906, Sr. No. 319,959.

What is claimed is:

1. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at intervals to adjacent lines of stitches and passing around the thread thereof in such manner as to interconnect at intervals all four lines of stitches.

2. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of one outside line crossing at intervals to the adjacent inside line of stitches and passing around the thread thereof, another stitch forming thread of the other outside line crossing at intervals to the adjacent inside line of stitches and

passing around the thread thereof, and a stitch forming thread of one inside line of stitches crossing at intervals to the other inside line of stitches and passing around the thread thereof, thereby interconnecting at intervals all four lines of stitches.

3. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at intervals on one and the same side of the fabric to adjacent lines of stitches in such manner as to interconnect all four lines of stitches.

4. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at each stitch to adjacent lines of stitches in such manner as to interconnect all four lines of stitches.

5. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at each stitch on one and the same side of the fabric to adjacent lines of stitches in such manner as to interconnect all four lines of stitches.

6. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of one outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, another stitch forming thread of the other outside line of stitches crossing at each stitch to an adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of one inside line of stitches crossing at each stitch to the other inside line of stitches and passing around the thread thereof, thereby interconnecting at each stitch all four lines of stitches.

7. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of one inside line of stitches crossing at each stitch to the other inside line of stitches and passing around the thread thereof, said crossing of threads being all on one and the same side of the fabric.

8. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of each inside line of stitches crossing at each stitch to the other inside line of stitches and passing around the thread thereof.

9. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each outside line crossing at intervals to the adjacent

inside line of stitches and passing around the thread thereof, and a stitch forming thread of each inside line of stitches crossing at intervals to the other inside line of stitches and passing around the thread thereof, thereby interconnecting all four lines of stitches.

10. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each line crossing at intervals to the adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of each inside line of stitches crossing at intervals to the other inside line of stitches and passing around the thread thereof, thereby interconnecting all four lines of stitches, said crossing of threads being all on one and the same side of the fabric.

11. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of each inside line of stitches crossing at each stitch to the other inside line of stitches and passing around the thread thereof, said crossing of threads being all on one and the same side of the fabric.

12. In a seam, the combination with fabric, of four approximately parallel lines of stitches the stitches of each line being formed of two threads, one of said threads of some of the lines of stitches crossing at intervals to an adjacent line of stitches and passing around the thread thereof, thereby interconnecting the two inside lines of stitches and each outside line of stitches with its adjacent inside line of stitches.

13. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain stitches, one stitch forming thread of some lines crossing at intervals to an adjacent line of stitches and passing around the thread thereof, thereby interconnecting the two inside lines of stitches and each outside line of stitches with its adjacent inside line of stitches.

14. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain stitches one stitch forming thread of some lines crossing at each stitch to an adjacent line of stitches and passing around the thread thereof, thereby interconnecting the two inside lines of stitches and each outside line of stitches with its adjacent inside line of stitches.

15. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain stitches, some of the stitch forming threads crossing at intervals on one and the same side of the fabric each to an adjacent line of stitches and passing around the thread thereof, thereby interconnecting the two inside lines of stitches and

each outside line of stitches with its adjacent inside line of stitches all on the same side of the goods.

16. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain-stitches, some of the stitch forming threads crossing at each stitch on one and the same side of the fabric each to an adjacent line of stitches and passing around the thread thereof, thereby interconnecting the four lines of stitches.

17. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain-stitches, one stitch forming thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and one thread of each inside line crossing to the other inside line of stitches and passing around the thread thereof, said crossing of threads being all on one and the same side of the fabric.

18. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain-stitches, some of the stitch forming threads at intervals crossing to adjacent lines of stitches and passing around shanks of the loops thereof through which loops other threads pass, thereby interconnecting all four lines of stitches.

19. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain-stitches, some of the stitch-forming threads at each stitch crossing to adjacent lines of stitches and passing around shanks of loops thereof through which loops other threads of the respective lines pass, thereby interconnecting all four lines of stitches, said crossing of threads being all on one and the same side of the fabric.

20. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain stitches, one thread of each outside line crossing at each stitch to the adjacent inside line and passing around the shank of a loop therein through which loop another thread of the particular line passes, and one thread of each inside line crossing at each stitch to the other inside line and passing around the shank of a loop therein through which loop another thread of the particular line passes, said crossing of threads being all on one and the same side of the fabric.

21. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at intervals on one and the same side of the fabric to adjacent lines of stitches in such manner as to interconnect all four lines of stitches, and on the other side of the fabric a cross thread connecting two or more of the lines of stitches at intervals.

22. In a seam, the combination with fab-

ric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at each stitch on one and the same side of the fabric to adjacent lines of stitches in such manner as to interconnect all four lines of stitches, and on the other side of the fabric a cross thread connecting two or more of the lines of stitches at each stitch.

23. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a plurality of the stitch forming threads crossing at each stitch on one and the same side of the fabric to adjacent lines of stitches in such manner as to interconnect all four lines of stitches, and on the other side of the fabric a cross thread connecting the two outside lines of stitches at intervals and passing under the inside lines of stitches.

24. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a stitch forming thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and a stitch forming thread of each inside line of stitches crossing at each stitch to the other inside line of stitches and passing around the thread thereof, said crossing of stitch forming threads being all on one and the same side of the fabric, and on the other side of the fabric a cross thread connecting the two outside lines of stitches at each stitch and passing under the inside lines of stitches.

25. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain stitches, one thread of each outside line crossing at each stitch to the adjacent inside line of stitches and passing around the thread thereof, and one thread of each inside line crossing to the other inside line of stitches and passing around the thread thereof, said crossing of threads being all on one and the same side of the fabric, and on the other side of the fabric a cross-thread connecting the two outside lines of stitches at each stitch and passing under the inside lines of stitches.

26. In a seam, the combination with fabric, of four approximately parallel lines of two-thread chain-stitches, one thread of each outside line crossing at each stitch to the adjacent inside line and passing around the shank of a loop therein through which loop another thread of the particular line passes, and one thread of each inside line crossing at each stitch to the other inside line and passing around the shank of a loop therein through which loop another thread of the particular line passes, said crossing of threads being all on one and the same side of the fabric, and on the other side of the fabric a cross-thread connecting the two inside lines of stitches at each stitch and passing under the inside lines of stitches.

27. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a loop of stitch-forming thread of each stitch of each outside line of stitches being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the adjacent inside line of stitches, and a loop of stitch-forming thread of each stitch in one or each inside line of stitches being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other inside line of stitches, said arrangement of loops being on one and the same side of the fabric.

28. In a seam, the combination with fabric, of four approximately parallel lines of stitches, a loop of stitch-forming thread of each stitch of each outside line of stitches being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the shank of a loop in the stitch-forming thread of the adjacent inside line of stitches, and a loop of stitch-forming thread of each stitch of one or each inside line of stitches being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the shank of a loop in the stitch-forming thread of the other inside line of stitches, said arrangement of loops being on one and the same side of the fabric.

29. In a seam, the combination with fabric, of two approximately parallel lines of two-thread chain-stitches, a loop of one stitch-forming thread of each stitch in one line being extended forward through a loop of the other stitch-forming thread of said line and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, and a loop of another stitch-forming thread of each stitch in the other line of stitches being extended forward through a loop of the other stitch-forming thread of said line and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, said arrangement of loops being on one and the same side of the fabric.

30. In a seam, the combination with fabric, of two approximately parallel lines of two-thread chain-stitches, a loop or one stitch-forming thread of each stitch in one line being extended forward through a loop of the other stitch-forming thread of said line and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the shank of a loop in the thread of the other line of stitches, and a loop of another stitch-forming thread of each stitch in the other line of stitches being extended forward through a loop of the stitch-forming thread of said line and penetrated by a suc-

ceeding stitch in its own line and crossed or extended laterally around the shank of a loop in the thread of the other line of stitches, said arrangement of loops being on one and the same side of the fabric.

31. In a seam, the combination with fabric, of two approximately parallel lines of two-thread chain-stitches, a loop of one stitch-forming thread of each stitch in one line being extended forward through a loop of the other stitch-forming thread of said line, around the shank of the next succeeding loop in the last-named stitch-forming thread, and crossed or extended laterally around the shank of a loop of the other line of stitches, and a loop of another stitch-forming thread of each stitch in the other line of stitches being extended forward through a loop of the other stitch-forming thread of said line, around the shank of the next succeeding loop in the last-named stitch-forming thread, and crossed or extended laterally around the shank of a loop of the other line of stitches.

32. In a seam, the combination with fabric, of two approximately parallel lines of two-thread chain-stitches, a loop of one stitch-forming thread of each stitch in one line being extended forward through a loop of the other stitch-forming thread of said line and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, and a loop of another stitch-forming thread of each stitch in the other line of stitches being extended forward through a loop of the other stitch-forming thread of said line and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, said arrangement of loops being on one and the same side of the fabric, and a cross-thread extending back and forth between the lines of stitches on the other side of the fabric.

33. In a seam, the combination with fabric, of two approximately parallel lines of chain-stitches, a loop of stitch-forming thread of each stitch in one line being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, a loop of another stitch-forming thread of each stitch in the other line of stitches being extended forward and penetrated by a succeeding stitch in its own line and crossed or extended laterally around the thread of the other line of stitches, said arrangement of loops being on one and the same side of the fabric, and a cross-thread extending back and forth between the lines of stitches on the other side of the fabric.

34. In a seam, the combination with fabric, of two approximately parallel lines of chain-stitches, each line being formed of two threads, a needle-thread and a hook-thread, a loop of the hook-thread of each

stitch in one line being extended forward through a loop of the needle-thread of said line, around the shank of the next succeeding loop in said needle-thread, and crossed or extended laterally around the shank of a loop in the needle-thread of the other line of stitches, and a loop of another hook-thread of each stitch in the other line of stitches being extended forward through a loop of the needle-thread of said line, around the shank of the next succeeding loop in said last-named needle - thread, and crossed or extended laterally around the shank of a loop in the needle-thread of the other line of stitches, said arrangement of loops being on one and the said side of the fabric.

35. In a seam, the combination with fabric, of four approximately parallel lines of chain - stitches, each line being formed of two threads, a needle-thread and a hook-thread, a loop of the hook-thread of each stitch of each outside line of stitches being extended forward through a loop of the

needle-thread of said line, around the shank of the next succeeding loop in said needle-thread, and crossed or extended laterally around the shank of a loop in the needle-thread of the adjacent inside line of stitches, and a loop of another hook-thread of each stitch in one or each inside line of stitches being extended forward through a loop of the needle-thread of its own line, around the shank of the next succeeding loop in said last-named needle-thread, and crossed or extended laterally around the shank of a loop in the needle-thread of the other inside line of stitches, said arrangement of loops being on one and the same side of the fabric.

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

STOCKTON BORTON.

Witnesses:

R. H. CHAPMAN,
LORNE E. ETIENNE.