

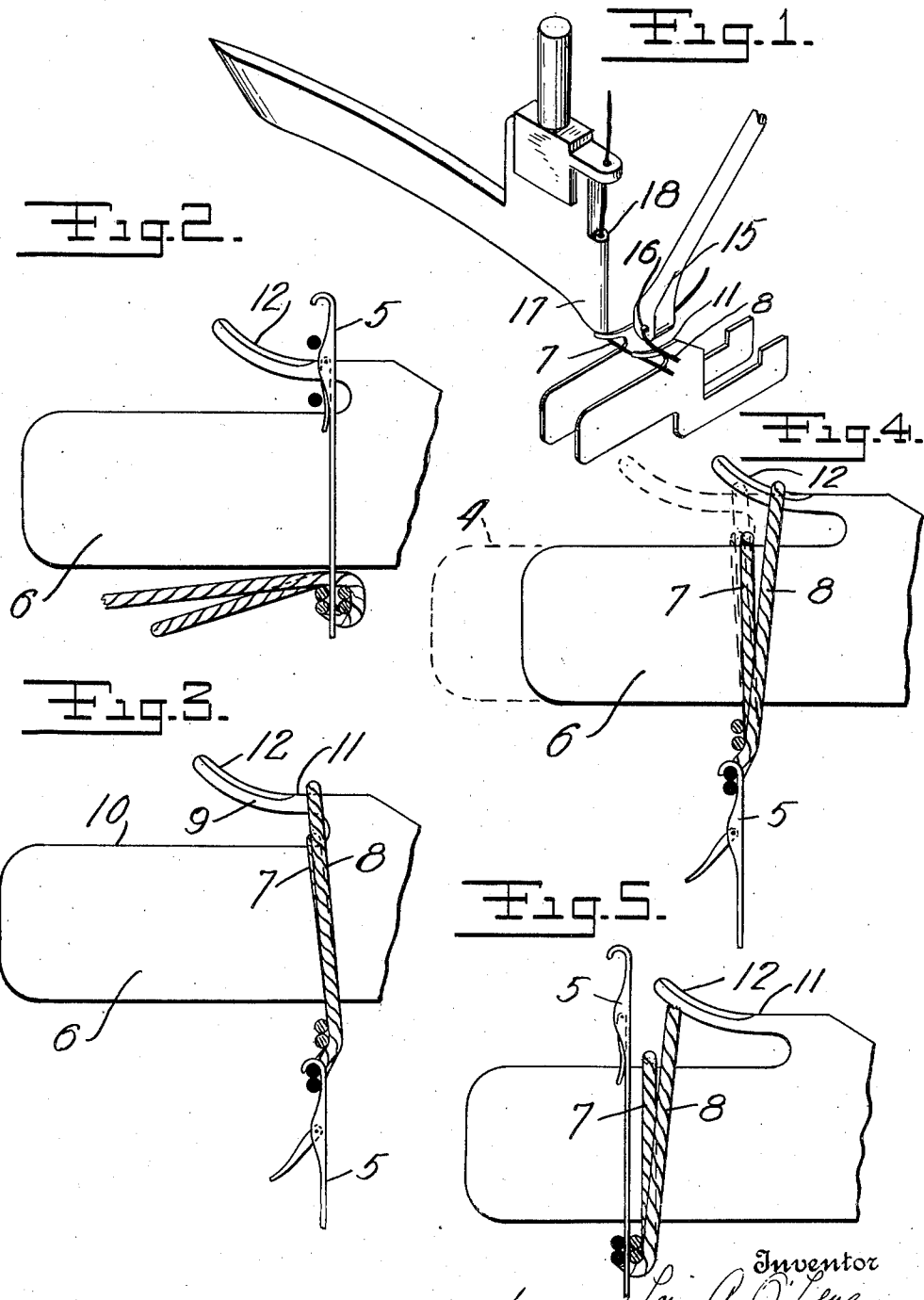
July 21, 1925.

1,546,790

L. A. O'LENA
KNITTING MACHINE

Filed Feb. 15, 1923

2 Sheets-Sheet 1



Inventor
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By his Attorney Mark & Hunt

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Fig. 7.

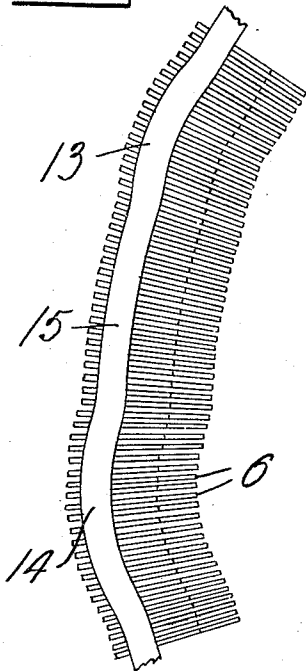


Fig. 8.

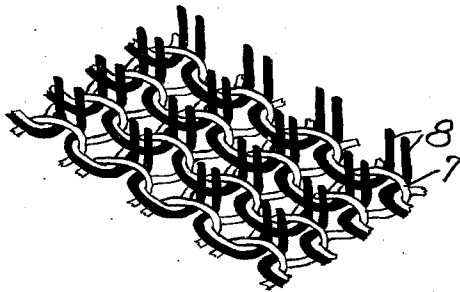
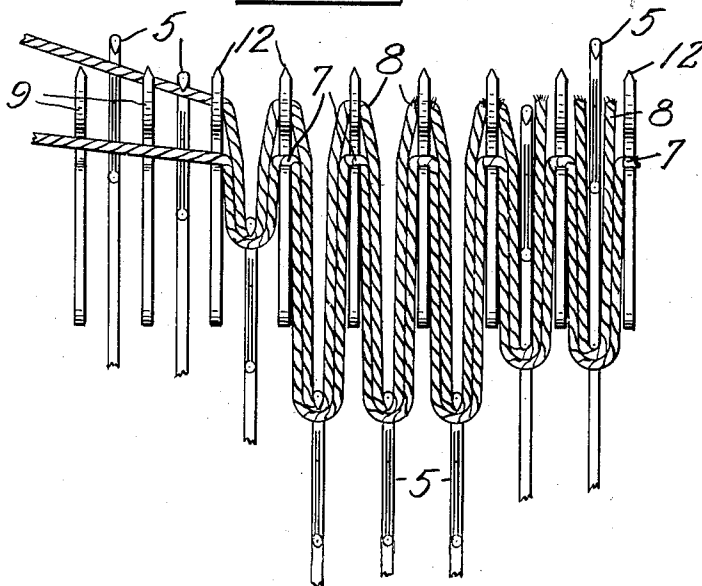


Fig. 6.



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UNITED STATES PATENT OFFICE.

LOUIS ALBERT O'LENA, OF BROOKLYN, NEW YORK.

KNITTING MACHINE.

Application filed February 15, 1923. Serial No. 619,100.

To all whom it may concern:

Be it known that I, LOUIS ALBERT O'LENA, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Knitting Machines, of which the following is a specification.

This invention relates to knitting machines particularly adapted to produce a fabric having a pile or nap.

In Patent No. 1,441,110 granted to me on Jan. 2, 1923, there is described and claimed a knitting machine of this general character in which specially formed sinker members were included having two thread-engaging surfaces so related to each other that when a double thread used in the knitting operation is caught and drawn into engagement with the sinkers by the downward movement of adjacent needles, one of the threads is formed into an extended loop formation with relation to the other thread. An important feature of the patent resides in the provision of a thread cutting member which operates to sever the extended loop, when the sinker member is withdrawn at the conclusion of the interlooping operation performed by the needle, to provide a pile or nap in the finished fabric, having severed and open rather than looped end.

The present invention relates to an improved knitting machine construction of the general type referred to in said patent and particularly includes improved loop-severing means as well as thread-guiding means.

The loop-severing means consists of a cutting edge formed along a portion of the upper thread engaging edge of the sinker and having a curved formation such that a drawing cut is produced upon movement of the sinker transversely to the extended loop. Means are also included for producing a reciprocating or multiple cutting movement of the thread severing device.

The improved thread-guiding means includes a thread feeding member arranged to travel substantially in the level in which the lower thread is to lie when in engagement with the corresponding edge of the sinker, so that the thread is securely and invariably laid in its proper position beneath the upper thread-engaging edge and the knife edge formed thereon.

In the drawings, in which a preferred embodiment of the invention has been selected for illustration,

Figure 1 is a view in perspective of a detail of knitting machine mechanism showing thread guiding means embodying the invention.

Figure 2 is a view in side elevation and on an enlarged scale of a detail showing the relation of a sinker, thread severing member, and needle just as the downward movement of the needle is about to begin.

Figure 3 is a view similar to Figure 2 showing double thread loops formed by the descent of the needle.

Figure 4 is a view similar to Figure 3 showing in full lines the withdrawal of the sinker to produce a thread cutting operation and in dotted lines a forward movement of the sinker preliminary to a second thread cutting withdrawing movement.

Figure 5 shows the position of the sinker following the second withdrawing movement and the completion of the thread severing operation.

Figure 6 shows in one view and in diagrammatic form the several operations in their successive order reading from left to right.

Figure 7 is a plan view showing a double cam member used in producing the reciprocating cutting movement of the sinker member.

Figure 8 is a view in perspective and on a greatly enlarged scale of a section of material produced by the operation of a machine of the type herein described and claimed.

Referring to the drawings for a more detailed description of the invention, in Figure 2 is shown a needle 5 of the ordinary hook and latch type such as is commonly used in standard forms of knitting machines, and a sinker member 6 arranged to mechanically cooperate with the needle 5 in the operation of the machine. In operation the needle 5 is reciprocated in a vertical path to draw the threads 7 and 8 downwardly as in Figure 3 to draw the threads 7 and 8 through the loops formed in the threads in the previous operation. The sinker members 6 are adapted to be moved horizontally in synchronism with the movement of the needle 5 in the usual man-

ner into and out of position between adjacent needles to hold the yarn or thread in the position and arrangement best adapted for the effective engagement therewith of the needles. The sinker members 6 differ from the sinker members ordinarily used, in the provision of a forwardly extending projection or arm 9 above the upper margin proper 10 of the body of the sinker 6. The arm 9 presents an upper and secondary edge 11 for engaging the thread member 8 and causing it to project in an extended loop formation beyond the companion loop formed in the thread 7 by its engagement with the edge 10 of the sinker. The upper edge 11 of the arm 9 has curved and sharpened formation 12 in its forward part, the sharpened edge thus provided being utilized to produce a drawing cut on the withdrawal of the sinker member to the right as indicated in Figure 4, to sever the extended loop formed in the thread 8.

In order to insure the severing of the engaged loop in each operation of the cutting edge 12, double cam portions 13 and 14 are provided in camway 15, the effect of which is to produce a reciprocating or multiple movement of the sinker member 6 and thereby produce a corresponding multiple cutting action on the engaged thread 8. The movement of the sinker member 6 to the left between the first and second cutting movements is indicated in dotted lines in Figure 4 of the drawing. The final withdrawing movement of the sinker member 6 to the right and the completion of the severing operation is indicated in Figure 5 of the drawing and in this figure the elevation of the needle 5 to a position ready to again engage another section of the threads 7 and 8 is also illustrated.

It will be seen that the severing action produced in the operation described will invariably cut the more extended of the two thread loops and thereby insure the production of a pile or nap in the finished fabric which is the desired result of the operation of the machine.

In addition to the improved loop severing means described, means are also provided for an improved guiding or feeding of the thread into proper position with relation to the two separate thread engaging edges of the sinker. By reference to Figure 1 of the drawing it will be seen that a thread guiding member 15 is arranged to lay the upper thread 8 in a position immediately above the upper thread engaging edge 11 of the sinker. The thread guiding member 15 takes the form of a downwardly extending arm having a downwardly extending passage 16 extending therethrough with its outlet closely adjacent the level in which the thread is to be laid and closely adjacent the thread engaging edges 11 which are to receive the

thread preparatory to the loop forming operation of the vertically reciprocating needles.

In order to insure the proper laying of the second or lower thread 7 beneath the forwardly extending arm 9 and over the thread engaging edge 10 of the sinker, a thread guiding member 17 is provided which is suitably mounted to be carried along the series of sinkers in succession and to deliver the thread 7 thereto substantially in the level of the thread engaging edge 10 of the sinker. In order to effect this the thread guiding member 17 is provided with a vertical passage 18 through which the thread travels downwardly and emerges immediately above the thread engaging edge 10 which is to receive it. By thus doing away with the slanting or inclined position which the thread assumes in machines of this type heretofore known the likelihood of the thread 7 taking a position above instead of beneath the arm 9 is completely obviated. I thus insure the maintenance of the closed loop formation in the thread 7 and the severance of the loop formed in the thread 8 and thereby guard against the accidental cutting of the foundation fabric formed of the thread 7.

What is claimed is:—

1. In a knitting machine adapted to operate with a double thread, a sinker member having a pair of spaced apart thread engaging surfaces for holding the threads in a correspondingly spaced apart relation, one of said thread engaging surfaces having a cutting edge formed to produce a drawing cutting action on the engaged thread in the retraction of the sinker member.

2. In a knitting machine adapted to operate with a double thread, a sinker member having a pair of spaced apart thread engaging edges for holding the threads in a correspondingly spaced apart relation, one of said thread engaging edges having a curved and sharpened formation whereby to produce a drawing cutting action on the thread loop engaged thereby in the withdrawing movement of the sinker member.

3. In a knitting machine adapted to operate with a double thread, a sinker having a pair of spaced apart thread engaging edges for holding the threads in a correspondingly spaced apart relation, one of said thread engaging edges being sharpened and extending at an angle other than a right angle with relation to the path of movement of the sinker whereby to produce a drawing cut on the engaged thread in the retraction of the sinker.

4. In a knitting machine adapted to operate with a double thread, a sinker having a pair of spaced apart thread engaging edges for holding the threads in a correspondingly spaced apart relation, one of

said thread engaging edges being sharpened and extending at an angle less than a right angle with relation to the path of movement of the sinker whereby to produce a drawing
5 out on the engaged thread in the retraction of the sinker.

5. In a knitting machine adapted to operate with a double thread, a sinker having a pair of spaced apart thread engaging
10 edges for holding the threads in a correspondingly spaced apart relation, one of said thread engaging edges being sharpened and extending at an angle of substantially forty-five degrees with relation to the path
15 of movement of the sinker whereby to produce a drawing cutting action on the thread in the retraction of the sinker.

6. In a knitting machine adapted to operate with a double thread, a sinker having a pair of vertically spaced apart thread engaging edges for holding the threads in a
20 correspondingly spaced apart relation, and a guiding member for each thread, each guiding member being arranged to lay its respective thread substantially in the level
25 in which it is engaged by the corresponding thread engaging edges of the sinker, one of said thread engaging edges having a cutting edge to produce a drawing cutting action on
30 the supported thread thereon in the retraction of the sinker.

In testimony whereof I affix my signature.

LOUIS ALBERT O'LENA.