Oct. 6, 1936. R. K. MILLS 2,056,686

PRODUCTION OF KNITTED FABRIC

Filed April 11, 1934 6 Sheets-Sheet 1

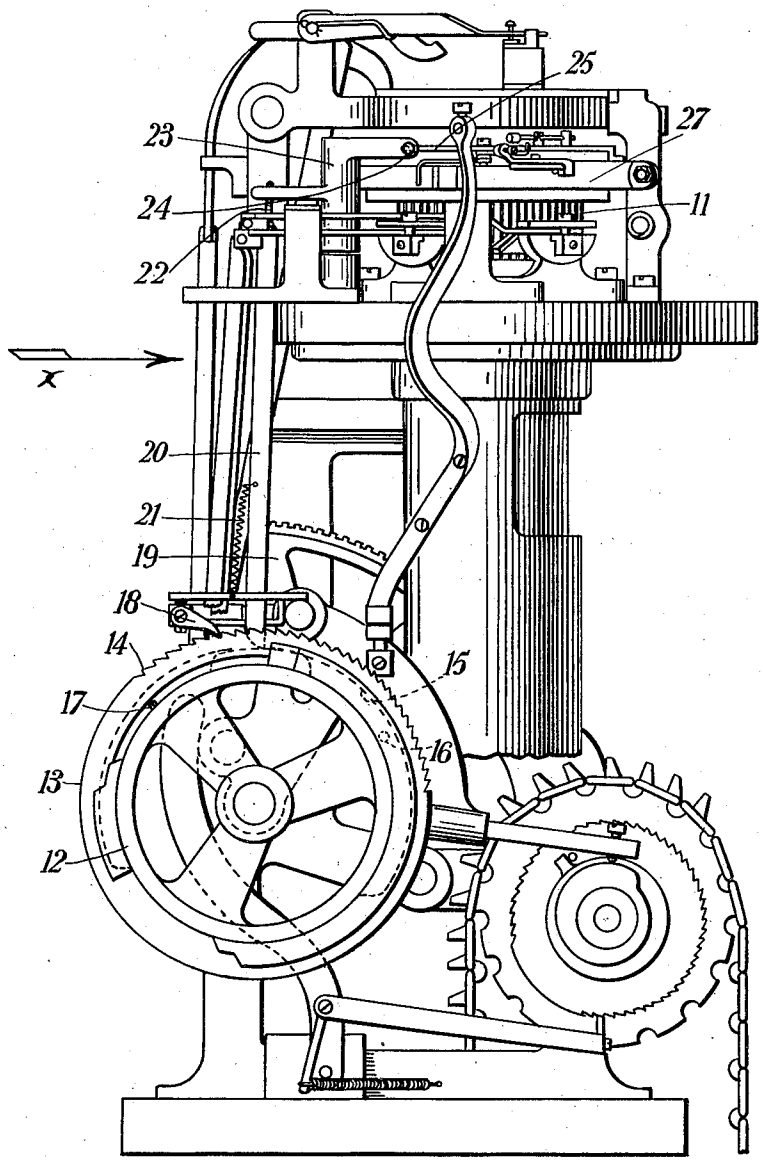


Fig. 1.

R. K. MILLS INVENTOR.

By Parker & Collings

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PRODUCTION OF KNITTED FABRIC

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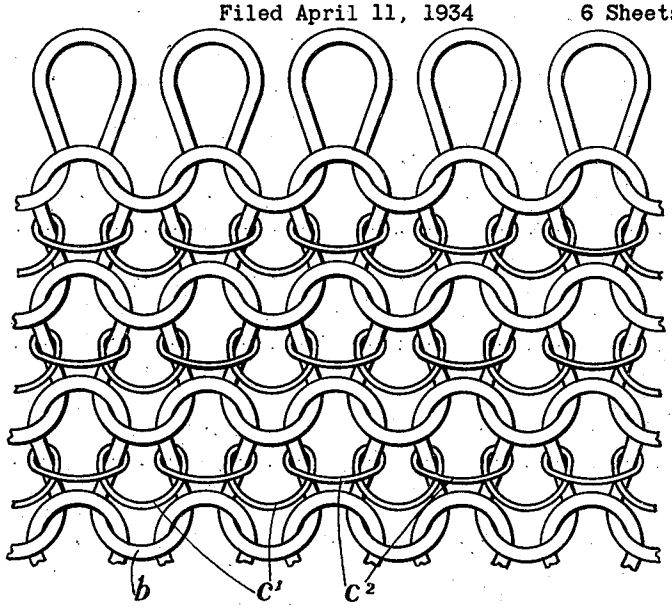


Fig. 2.

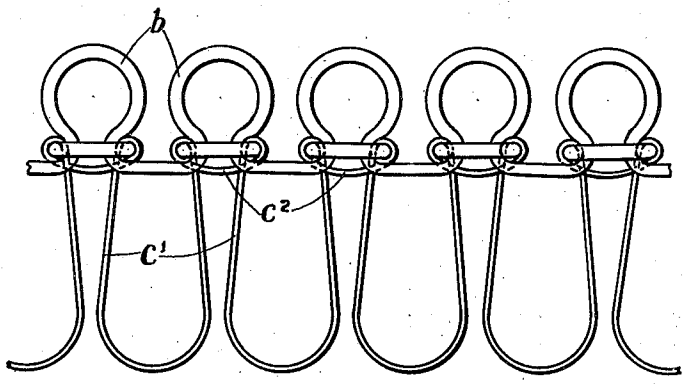


Fig. 3.

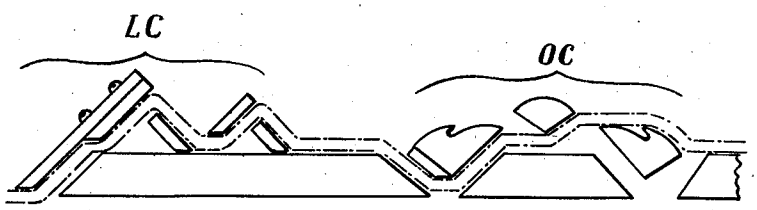


Fig. 21.

R. K. MILLS. INVENTOR

By Barker & Collings

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Oct. 6, 1936. R. K. MILLS 2,056,686

PRODUCTION OF KNITTED FABRIC

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Fig. 4.

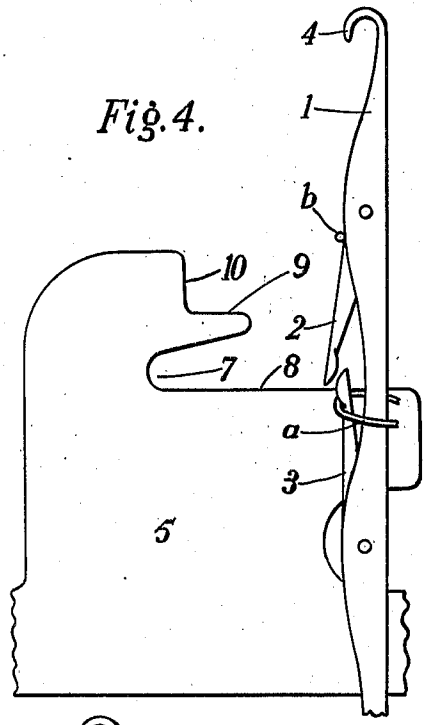


Fig. 5.

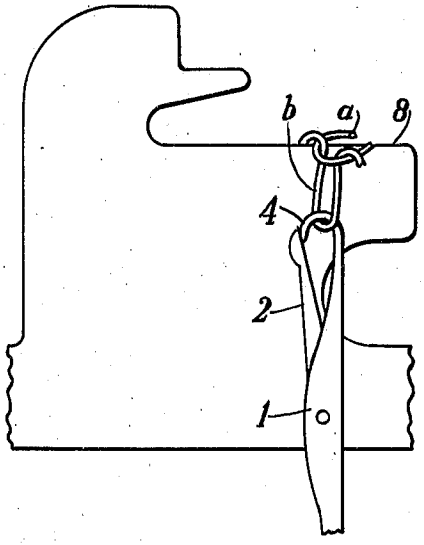


Fig. 6.

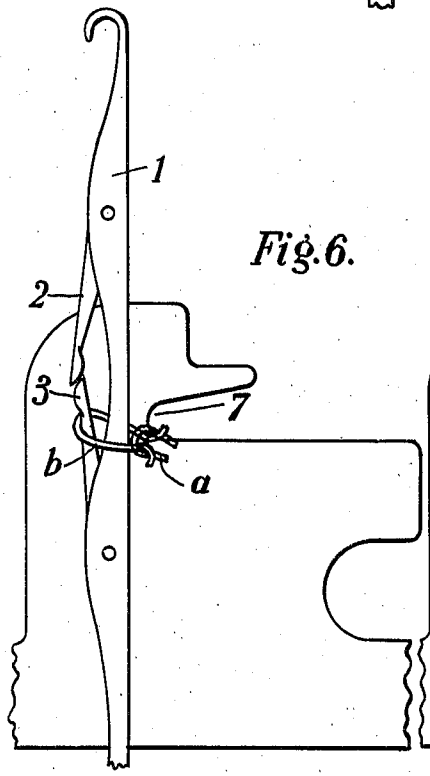
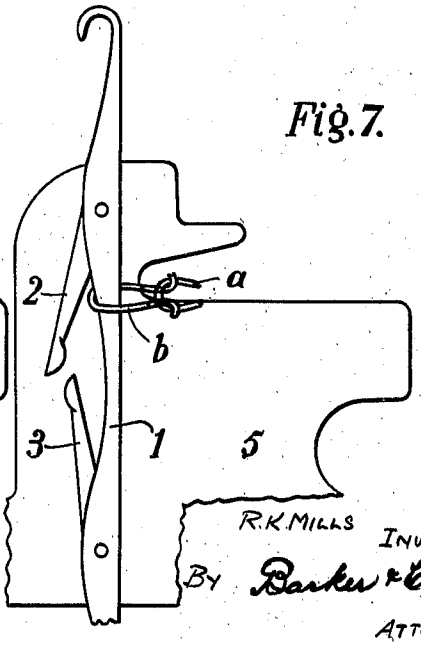


Fig. 7.



R. K. MILLS INVENTOR

BY Barker & Collings

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Oct. 6, 1936. R. K. MILLS 2,056,686

PRODUCTION OF KNITTED FABRIC

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Fig. 8.

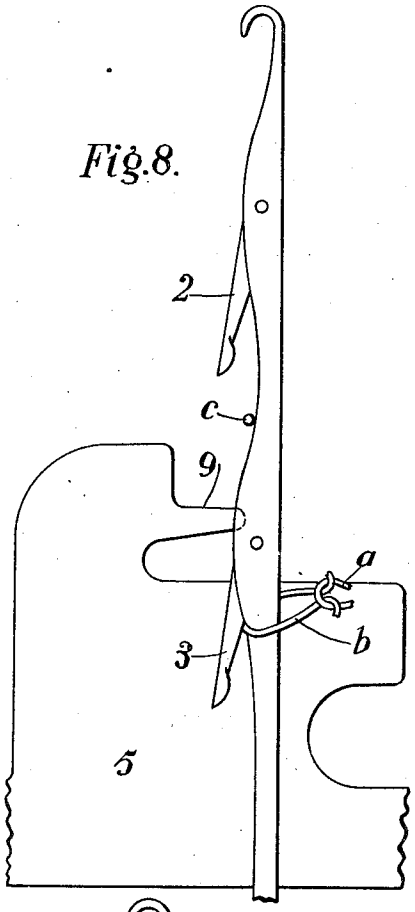


Fig. 9.

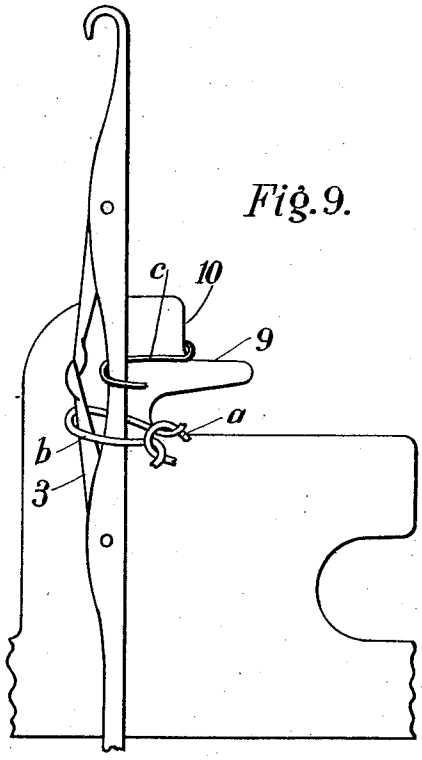


Fig. 10.

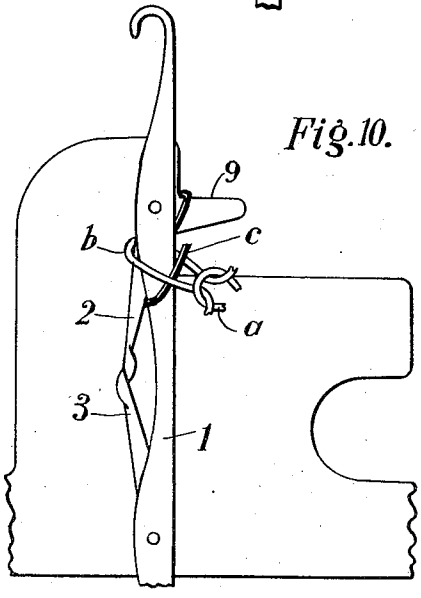
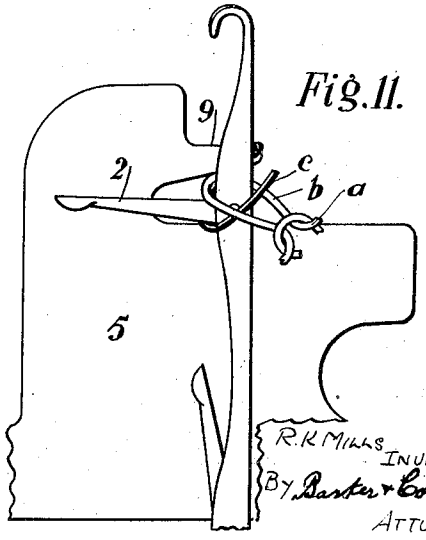


Fig. 11.



R. K. MILLS INVENTOR

By Baxter & Colling

ATTORNEY

Oct. 6, 1936. R. K. MILLS 2,056,686

PRODUCTION OF KNITTED FABRIC

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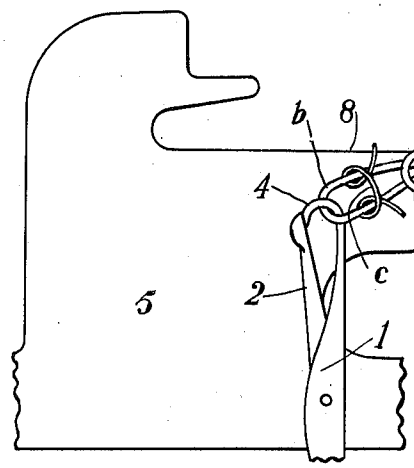


Fig. 12.

Fig. 13.

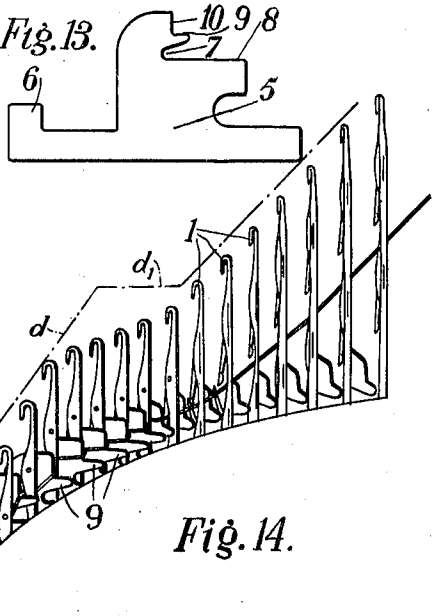


Fig. 14.

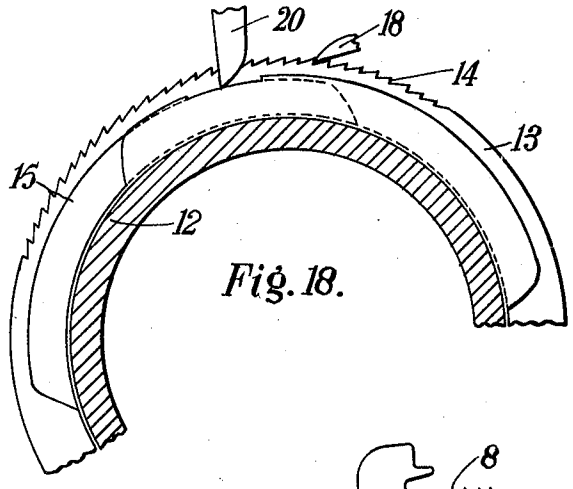


Fig. 18.

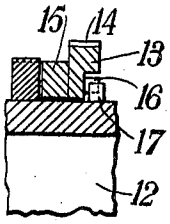


Fig. 19.

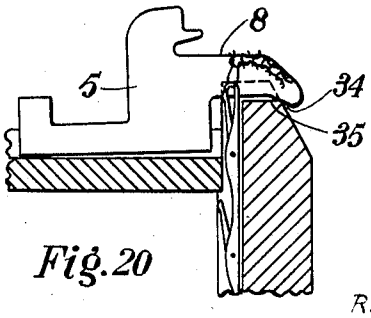


Fig. 20

R. K. MILLS INVENTOR

By Barker & Collings

ATTORNEYS

Oct. 6, 1936. R. K. MILLS 2,056,686

PRODUCTION OF KNITTED FABRIC

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Fig. 15.

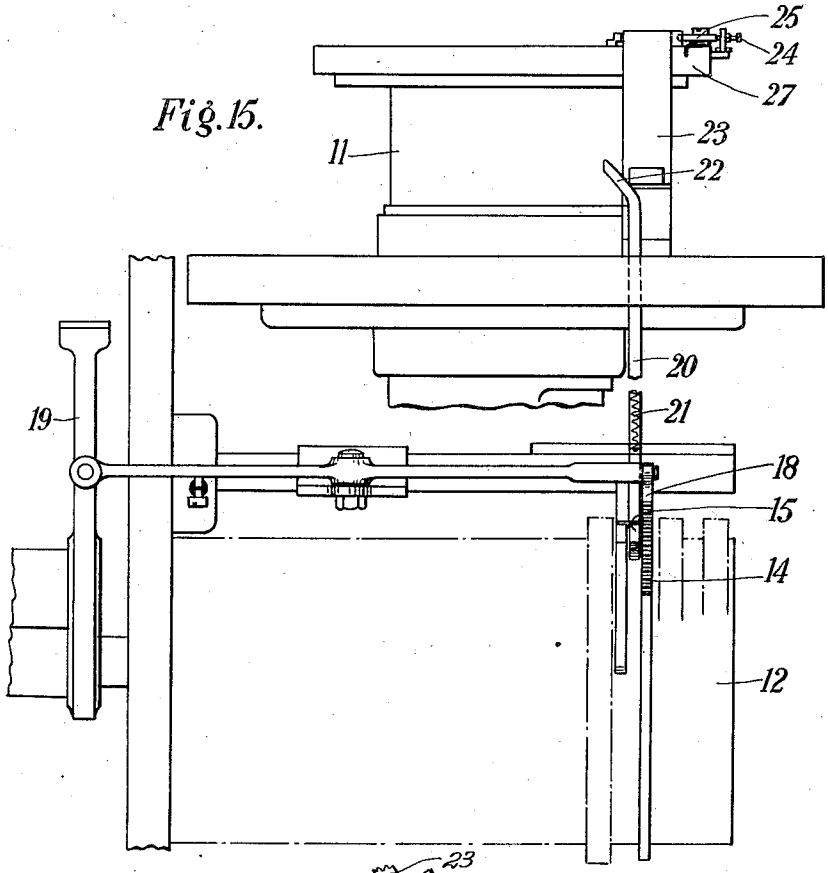


Fig. 17.

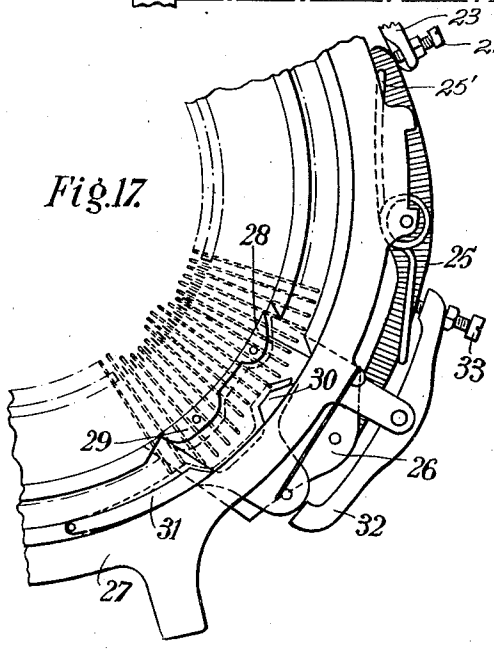
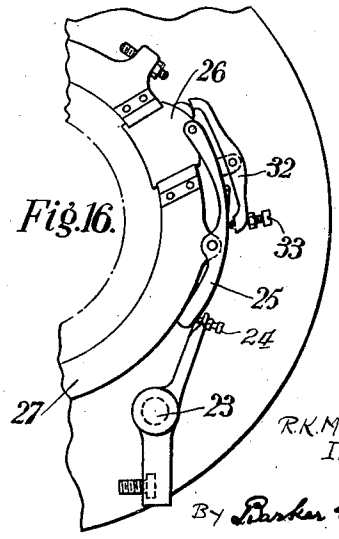


Fig. 16.



R. K. MILLS
INVENTOR

BY Barker & Colling

ATTORNEY.

Patented Oct. 6, 1936 2,056,686

UNITED STATES PATENT OFFICE

2,056,686

PRODUCTION OF KNITTED FABRIC

Robert Kirkland Mills, Sherwood, Nottingham, England

Application April 11, 1934, Serial No. 720,105
In Great Britain April 18, 1933

10 Claims. (Cl. 66—9)

This invention relates to improvements in the production of knitted fabric of the type embodying intermeshing thread loops selected of which are bound or tied one upon another by passing one loop through and around another loop.

Heretofore in this type of fabric the locking thread loops extend substantially straight between the stitch loops locked thereby. This inevitably reduces elasticity of the fabric in a direction at right angles to the wales, while additionally strain on the fabric in the direction of the stitch courses (at right angles to the wales) is taken by the locking thread only and the fabric strength is consequently determined by and limited to the strength of the locking thread.

Attempts have been made to overcome these disadvantages; for example by tensioning the locking loop thread to a different degree from that applied to the ordinary stitch loop thread. In another example, holding-down sinkers of the kind usually employed in latch needle knitting machines have been given a greater forward movement towards the needles than is normal, subsequent to the loops of the locking thread being drawn through the loops to be locked, in order to draw or measure the desired length of locking thread around the shanks of the needles. Seeing, however, that the locking thread and also the thread of the loops to be locked both extend through the same throats in the sinkers, this additional forward movement of the sinkers inevitably exerts a strain on the thread of the previously formed stitch loops to be locked which are carried on the needles, and such strain results in breaking or weakening of said previously formed loops.

The present invention has amongst its objects to provide a locked fabric of the type referred to wherein the elasticity is maintained without exerting excess strain on, or otherwise adversely affecting, any thread during fabric production, and wherein the strength of the fabric (resistance to thread breakage) is appreciably increased.

According to the present invention, these and other desirable characteristics are obtained in a non-ladder or ladder-resisting fabric of the type referred to by the employment of a knitting machine embodying means whereby the two types of thread loops, i. e. stitch loops and stitch-locking loops, are drawn or sunk by independent means or elements or by different parts of the same means or elements.

By virtue of controlling the draw of the two classes of loop (stitch loops and stitch-locking loops) by different elements or parts, strain upon the loops of either class when drawing the loops of the other class is eliminated, and the possibility of thread breakage during stitch production is minimized; while additionally adjustment or variation of the thread draw for either class of loop is rendered a practical proposition. Consequently another feature of the invention resides in the provision of means for variably adjusting the draw of stitch loops and/or stitch locking loops so as variably to determine the relative length or size of said two classes of loops. This variable adjustment in the draw of the stitch loops and/or locking loops enables other novel and desirable effects to be obtained in the type of locked fabric under consideration. For example, the relative lengths of the stitch loops and locking loops can be so determined that the threads appertaining to both types of loop equally share tensile strain in the produced fabric, in which case the fabric strength (resistance to thread breakage) at right angles to the stitch wales is equal to the combined strength of the two threads (stitch thread and locking thread). This enables fabric to be produced which, as compared with locked fabric of the same type heretofore constructed, is considerably stronger and more durable without increasing the strength or count of yarn employed; or alternatively a fabric of undiminished strength can be knitted with comparatively finer or weaker yarn. Also the selective variation of the length or size of either the stitch loops or locking loops enables fabric to be tightened or slackened at will; while additionally one of the two classes of loops (preferably the locking loops), can be extended to such a size or length as to stand out from the fabric face and produce a chenille or pile fabric.

The invention is more particularly concerned with latch needle machines, and preferably with the type of machines wherein each or selected of the needles have a plurality of displaceable latches located one below another on the needle stem, there being provided thread feeding means and means for effecting relative movement between the said plural latch needle or needles and thread feed so as to cause a thread loop to be drawn through and passed around or over another loop so as to tie one loop upon another. The invention is, however, also applicable to machines incorporating means other than plural latch needles for passing one loop through and around another without casting off, in the production of the aforesaid fabric.

A further feature of the invention resides in

the provision in a knitting machine for knitting fabric of the kind referred to, of loop-forming elements over which the needles upon their descent draw their loops, which elements are so arranged or formed that the parts or elements over which the locking loops are drawn are located at a higher level than other parts or elements over which the loops to be locked are drawn. For example, sinkers or equivalent loop-forming instruments may be employed each or selected thereof being provided with a throat for accommodating and controlling a stitch loop to be locked and also with a part above said throat for drawing or measuring a loop of locking thread by which the stitch loop is to be locked or tied; the said stitch loop to be locked being, as is customary, received within the throat as the needle rises to clear a previously formed loop, and the depth of said throat (the distance to which the throat extends into the sinker) being such as to permit of the required length of locking thread being drawn to ensure elasticity without exerting tension or strain on the previously drawn stitch loop accommodated in the throat.

Preferably, each sinker or instrument is provided with a neb or nose above the throat, which neb serves to separate the locking thread from the loop in the throat and also prevents the locking thread being drawn down into the throat when the needle is lowered to draw a loop of the locking thread through the loop to be locked; it being appreciated that during retraction of the needles loops to be locked are drawn in the normal manner over the belly or nose of two adjacent sinkers below the throat thereof, while locking loops are drawn over the top edge of the neb above said throat without imparting any strain upon the first drawn loop.

For the purpose of more fully describing the nature of this invention reference will now be made to the accompanying drawings, wherein:—

Figure 1 is a general elevational view of a circular knitting machine in accordance with the present invention.

Figure 2 shows a portion of locked knitted fabric produced in accordance with this invention.

Figure 3 shows in cross section a modified form of fabric produced in accordance with this invention.

Figures 4 to 12 inclusive show successive steps in the production of fabric according to Figure 2.

Figure 13 shows a sinker member employed in the production of the fabric.

Figure 14 is a detail in perspective showing the operation of the needles and sinkers while producing locked stitches.

Figure 15 is a side elevational view of part of the machine shown in Figure 1 looking in the direction of arrow X.

Figure 16 is a plan of part of Figure 15.

Figure 17 is an underneath plan, enlarged, of part of the sinker cam ring and sinker operating cams at the locking thread feed.

Figure 18 is an enlarged sectional detail of part of the mechanism shown in Figures 1 and 15 for adjusting the sinker cam at the locking thread feed.

Figure 19 is another enlarged sectional detail of part of the mechanism for controlling the sinker cam associated with the locking thread feed.

Figure 20 is a sectional detail showing one method of varying the draw of stitch loops to be locked.

Figure 21 is a development of the needle-operating cams for producing ordinary stitches and locked stitches.

In a preferred embodiment of this invention, hereinafter described with reference to a circular latch needle machine, needles 1 having two latches 2, 3, one below the other, are employed, which latches are so spaced that the lower latch 3 when raised abuts against the end of the upper latch 2 when the latter is in the lowered position, so that said upper latch (which is arranged to abut against and close the hook 4 in the usual manner) may be held open by the lower latch. For each such plural latch needle there is a sinker 5 which is movable backwards and forwards between the needles in the usual manner (by means of a butt 6 working in a camtrack) and is provided with a throat 7 to receive and control the loop which is to be locked, and below said throat with a belly or nose 8 of normal shape; see Figure 13. Above this throat 7 there is a narrow forwardly projecting neb or nose which has a straight top edge and above and at the rear of this neb 9 there is a part or catch with a vertical edge 10, the function of which is to form, divide or measure loops of the locking thread. It is important that the throat 7 shall be cut deeper into the sinker 5, that is to say extend further back, than the vertical edge 10 of the catch so that loops of the locking thread may be sunk by the advance of the sinkers without straining the loops to be locked, which are accommodated in the sinker throats 7.

Suitably spaced around the needle cylinder 11 of the machine are two different types of needle-operating or stitch cams one OC for producing ordinary knitted stitches to be locked and the other LC for producing locked stitches, (see Figure 21). The two types of cams operate in succession upon the needles, and considering the movement of one needle, the successive steps in the production of a locked stitch will now be described with reference to Figures 4 to 12. In Figure 4 the needle is moved by the ordinary stitch cams OC to a position wherein the old stitch loop *a* is cleared below the top latch 2 and a thread *b* is fed into the hook 4, the needle being then lowered to knock over and produce an ordinary stitch *b* (Figure 5) the length or size of said stitch *b* being determined by the extent to which same is drawn down over the belly or nose portion 8 of the sinker, i. e. by the distance to which the hook 4 passes below the top edge of said portion. During this movement the sinkers 5 (one of which is shown) are retracted in the customary manner by any known or suitable type of sinker cam (not shown). The needle is then operated upon by the locked stitch cams LC and is first raised thereby from the normal lowered position until the previously formed stitch loop *b* is brought on to the raised bottom latch 3 to the position shown in Figure 6. During this upward movement of the needle 1 to bring said loop *b* to this position, the top latch 2 is, of course, swung down and its end therefore overlies the end of the raised bottom latch 3. The needle is then lowered somewhat so that the said loop *b* (which is to be locked) passes underneath the top latch 2 to the position shown in Figure 7; and next the needle is raised to clear the loop down below the bottom latch 3, by which movement the said bottom latch is opened; (see Fig. 8). With the needle in this position a thread *c*, which may be termed the "locking" thread, is fed across the needle in the space between the two latches, above the nebs 9 of the sinkers 5

which are now being advanced between the needles. During the forward movement of the sinkers, the locking thread *c* is engaged and drawn by the vertical edges 10 thereof, and the needle is lowered by the stitch cam, during which movement the stitch loop *b* which is to be locked causes the bottom latch 3 to swing up and to hold the top latch 2 in its lowered position so that the loop of the locking thread *c* on the needle is enclosed between the two latches; (Fig. 9). As the sinker loop of the locking thread is held by the angular recess in the sinker neb 9, continued downward movement of the needle draws the loop *c* through the previously formed loop *b*, which latter passes up over the top latch 2 (Fig. 10) with the result that the said top latch is swung up by the loop *c* of the locking thread, (Fig. 11), the sinker meanwhile being retracted. On the final part of the downward movement of the needle the previously formed loop *b* is enclosed in the hook 4, and the loop *c* of the locking thread is cast off over and around the old stitch loop *b* which is retained in the hook; see Fig. 12; the sinker having by this time been withdrawn to disengage the loop *c* from the neb 9. By this means a long loop is drawn from the locking thread *c*, because said loop is drawn over the nebs 9 of the sinkers 5 to each side of any needle 1 under consideration, while the loop *b* to be locked is, during the formation of said loop and during the descent of the needle to draw the locking loop through it, held over the bellies or noses 8 of said sinkers, and as clearly shown in Figs. 9, 10, and 11 is in no way strained while drawing said locking loop.

It will be understood that there is a thread feed for each set of cams OC and LC, (ordinary stitch and locked stitch cams), so that after a needle has produced an ordinary stitch at the ordinary cams said needle passes on to the locking cams where said stitch is locked in the manner before-described, and upon subsequent arrival of the needle at the ordinary cams, a normal stitch is drawn through the locked stitch and the latter is cast off.

The above described operations result in a locked fabric of the kind referred to, in which each of the loops of locking thread *c* extends when the fabric is relaxed in a curve or loop of substantial length or curvature from thread bar to thread bar of locked loops *b*, both across the loops and across the wales between said loops, as shown in Fig. 2, so that such loops incorporate a sufficient length of thread to permit of the fabric stretching in a normal manner. By virtue of the additional draw imparted to the sinker loops of the locking thread, these loops are somewhat longer or more pronounced in the finished fabric than the locking thread stitch loops; this effect being clearly shown in Fig. 2 where c^1 indicates the longer sinker loops and c^2 the shorter stitch loops.

By virtue of relaxing or lengthening the loops of locking thread *c* the strength of the fabric, i. e. resistance to thread breakage under strain, is considerably increased, as by suitably determining the relative lengths of the loops *b* and *c* the strength of the thread *c* can be added to that of the thread *b*. It will be appreciated that this would not be the case if the loops of locking thread *c* were so tightly drawn as to extend approximately straight across the stitch loops *b* and the stitch wales, as in the latter case transverse stretch (tension in the direction of the stitch courses) would necessarily first be taken only by the locking thread *c* and not by the combined threads *b* and *c* as is possible in the present invention. Additionally, the relaxation of the thread *c* so that same does not receive the full force of imparted tension permits the employment of a locking thread which is appreciably finer or thinner than the ordinary stitch thread *b* without in any way weakening the fabric, i. e, without reducing its tensile strength; in fact even with a comparatively thin locking thread, the strength of the fabric is increased as compared with ordinary (unlocked) knitted fabric which is knitted with yarn of the same count as the ordinary stitch thread *b* of a locked fabric.

The set of ordinary stitch cams OC and the locking stitch cams LC and also the sinker cams operating in conjunction therewith are advantageously so designed that during the thread draw, the sinkers co-operating with a small group of adjacent needles, e. g. five needles, are maintained fully advanced and said group of needles are also maintained at an equal height immediately prior to the delivery of the drawn or sunk loops from the sinkers to the needles. This ensures a uniform amount of each thread (stitch thread and locking thread) being delivered to each needle and equalizes the loops of said threads on the needles, thereby also rendering more uniform than heretofore the distribution of the two threads over the needles in knitting a complete course. At the locking thread feed this "dwell" in the needle and sinkers is provided substantially midway in the downward or thread-drawing movement of the needles. In Figure 14 is shown the operation of the needles and sinkers at the locking thread feed, and the broken line *d* illustrates the track traversed by the needles over the locking stitch cams during the thread-drawing operation, the position of the "dwell" being shown at d_1. Where sinkers are employed of the type shown in Figure 13 having a flat topped nose portion 8, it may not be required to provide a specially shaped sinker cam with a short straight portion for producing the "dwell" and maintaining a group of adjacent sinkers advanced to a uniform extent during the operation of drawing over said noses the ordinary stitch thread so long as the needle-operating cam is designed to maintain the needle group at a uniform height, i. e. fully lowered, while the thread is being drawn over said noses. If, however, the sinkers have inclined noses over which the stitch thread is drawn, the sinker cam will be provided with a short straight portion to obtain the required "dwell".

As before-stated the length or size of the locking stitch loops relatively to the stitch loops to be locked can be varied without subjecting either set of loops to excess strain; and in this invention means are provided for progressively controlling the sinker displacement at predetermined intervals (e. g. course by course) at the locking thread feed so as to produce gradual decrease or increase of the locking stitch size.

Considering for example the manufacture of seamless stockings, it is usual to incorporate means on the machine for gradually tightening the stitches as the knitting proceeds down the leg towards the heel, such operation being known as "stiffening"; and during this stiffening process the locking stitches are also progressively tightened. This is advantageously effected by gradual adjustment of the sinker cam at the position of the locking thread feed; and one con-

venient method of accomplishing this will now be described. At the end of the main cam drum 12 of the machine (which drum controls the thread feeders and the movement into and out of operative position of the locking stitch cams in a manner similar to that described in Patent No. 1,977,522, issued to me) is a ring 13 having on it a rack 14 of, say, thirty teeth and a cam or graduated segment 15 having a drop of say .030". This ring 13 is freely mounted on the drum 12 but has an axially projecting pin 16 which is in the track of a radial driving pin 17 on the drum 12. Therefore, as the drum is periodically racked, the driving pin 17 will eventually be brought against the pin 16 on the ring 13 and the latter rotated. This rotation brings the rack 14 into the range of a pawl 18, which is worked from the oscillating quadrant 19 common to this type of machine, and said movement is so timed that it occurs at the time when stiffening is to commerce. Thereafter, the ring 13 is racked independently of the drum 12, step by step, but each step permits a push rod 20 associated with said segment to fall a thousandth of an inch on the aforesaid cam 15; said rod being pulled down by a spring 21. The top end of this push rod 20 is chamfered as at 22 and cooperates with one arm of a centrally pivoted, two-armed lever 23. The other arm of this lever 23, which is provided with an adjusting screw 24, bears against the outer face of one arm of another horizontal centrally pivoted lever 25, which is influenced by a spring 25' pressing the two levers 23, 25 together and biasing the lever 23 against the push rod 20. The other arm of the lever 25 is attached to a radially slidable plate 26 on the sinker ring 27, which plate 26 carries a cam device serving to withdraw the sinkers, as will hereinafter be described. The withdrawal cam device on this plate 26 embodies two cam portions 28, 29 spaced apart circumferentially, and between said cam portions radially spaced therefrom there is a sinker advancing cam 30 which is adjustable independently of the withdrawal cam device and serves to advance the sinkers to measure the loops of the locking thread. The arrangement is such that at the same time that the withdrawal cam portions 28, 29 are moved inwards gradually by the fall of the push rod 20 the advancing cam 30 is moved outwards so that the sinkers are pushed inwards to a lesser degree and progressively smaller locking thread loops are drawn as knitting proceeds down the leg of the hose. The said advancing cam 30 is formed upon a circumferentially extending finger 31 which is pivoted to the sinker cam-ring 27, and the free end of said finger is engaged by one end of a small centrally pivoted bell crank lever 32 the other end of which lever bears, by means of an adjusting screw 33, against the outer face of that arm of the aforesaid lever 25 which is attached to the sliding plate 26. Thus as the plate 26 is moved in, the free end of the cam-carrying finger 31 is moved out, suitable biasing springs being provided.

It will be appreciated that slackening or lengthening of the locking thread stitches can be accomplished with the same facility as the tightening by causing the push rod 20 to rise on a suitable cam instead of fall.

Chenille or pile fabric can also be readily made by lengthening the locking thread loops to an extent sufficient to produce a pile. One method of doing this is by lengthening or deepening the throat 7 in the sinkers 5 and advancing said sinkers to an increased degree; and if desired the edge 10 of the neb 9 controlling the locking thread loops may also be provided at a more forward position on the sinkers.

As will be clearly understood from the foregoing, the relative amounts of ordinary stitch thread and locking thread fed per course of stitches can readily be determined to meet particular requirements or produce desired effects; e. g. to ensure that both threads share strain or tension applied to the fabric in the direction of the stitch courses. For instance, when knitting seamless silk stockings on a 3¾ inch diameter machine employing 348 needles, the ratio of the ordinary stitch thread to the locking stitch thread is advantageously 37 to 38; in other words, 37 inches of pure silk yarn is fed at the ordinary stitch feeder and 38 inches of similar yarn at the locking stitch feeder in each stitch course irrespective of the diameter or count of yarn.

For varying the draw of the ordinary stitch loops any one of several methods may be employed. For example, this may be accomplished by varying the draw or degree of retraction of the needles; or alternatively by varying the extent to which the sinkers are advanced between the needles and designing said sinkers to draw more or less thread in accordance with the degree of advancement. In another arrangement the draw can be varied by imparting a vertical or rising motion to the sinkers, and one such arrangement is illustrated in Fig. 20, wherein the sinker nose 8 over which the stitch thread is drawn by the needles is downwardly inclined on its under face 34 at its outer end, said face coacting with a horizontal recess 35 at the top of the needle cylinder. By varying the degree of radial displacement of the sinker at the time of drawing the stitch thread over the nose 8, said nose is moved up or down (i. e. lengthwise of the needles) and the amount of thread drawn is increased or diminished. The sinker cam operating this sinker would preferably have a flat portion for obtaining the "dwell" as before-described, that is to say, for causing a small group of adjacent sinkers to be simultaneously projected to an equal extent.

Although in the foregoing description both the ordinary stitch loops and the locking stitch loops are drawn over the same sinker, it is to be understood that separate sinkers or loop-drawing instruments may be employed for each class of stitch loop; in which case two sinkers (one appertaining to each class of loop) could be slidably disposed side by side in one and the same trick in the sinker carrier. For example; a sinker may be employed similar to that described with reference to Fig. 20 functioning to vary the draw of an ordinary stitch loop by a vertical movement (movement longitudinally of the needles), and an additional sinker may be slidably accommodated alongside same and operated to draw or sink a locking thread loop by movement laterally of the needles. Alternatively, one and the same sinker can be designed and operated to draw or sink an ordinary stitch loop by a vertical movement and a locking stitch loop by a horizontal or lateral movement relatively to the needles.

I claim:—

1. A machine for the production of knitted fabric of the type referred to embodying needles and sinkers co-operating to produce stitch loops

and also to produce loops which embrace said stitch loops and lock or tie same, the stitch-locking loops being drawn by the advancement of sinkers between the needles, and said stitch-locking loops being drawn over sinker portions or elements other than those over which the stitch loops are being drawn.

2. A machine according to claim 1 and including means whereby the degree of advancement of the sinkers between the needles is adjustable to vary the length or size of locking loops.

3. A machine according to claim 1 wherein the stitch-locking loops are drawn around the needles by sinkers advancing between said needles and the stitch loops are drawn over the sinkers by retraction of the needles.

4. A machine according to claim 1 including means whereby the relative size of the two types of loop (stitch loop and stitch-locking loop) is variably determined.

5. A knitting machine in accordance with claim 1 employing needles having two latches pivoted one below another on the needle stem, loop drawing sinkers co-operating between said needles, thread feeding means, means functioning to effect relative movement between the needles and thread feed to cause a loop of locking thread to be drawn through and passed around a previously formed stitch loop and lock or tie said stitch loop, means whereby loops of stitch-locking thread are drawn by sinker parts or elements different from those which draw the stitch loops to be locked, and means whereby the size of the stitch-locking loops is variably determined.

6. A process of knitting a knitted fabric of the type referred to by the employment of needles having a plurality of latches pivoted one below another on the needle shank, said production being effected by the following sequential operations, namely:—first forming an ordinary stitch by feeding thread into a needle hook while the needle is projected, retracting the needle to knock over and drawing a stitch loop of the required length over the noses of sinkers at each side of said needle, feeding locking thread between the needle latches, retracting said needle to draw a loop of said locking thread of the required length over a sinker portion separate from and above the sinker throat during advancement of said sinker, drawing said locking loop through the previously formed stitch loop and casting said locking thread loop off said needle over said stitch loop.

7. A knitting process according to claim 6, wherein the loop of locking thread is drawn against an upstanding portion on a neb of the sinker located above the throat which accommodates the stitch loop being locked.

8. A machine according to claim 1 employing loop sinker instruments each having a throat and a neb or nose above said throat, the neb terminating in an upstanding edge or shoulder which provides an angular recess functioning to draw and measure a loop of locking thread and maintain said locking thread loop separate from a previously formed stitch loop to be locked, while the sinker throat beneath said neb functions to receive a sinker bar of the stitch loop to be locked.

9. A machine in accordance with claim 1 including means whereby the extent to which the sinkers are advanced between the needles is gradually and progressively varied so as to gradually and progressively vary the size of the stitch locking loops which embrace the stitch loops, and means whereby a gradual and progressive variation of the size of the stitch locking loops is effected simultaneously with the variation in the size of the stitch loops embraced and locked by said locking loops.

10. A machine for the production of knitted fabric of the kind herein referred to, embodying means whereby stitch locking loops and stitch loops to be locked thereby are formed, and are drawn or sunk by different parts of the same means or elements, and comprising a loop drawing or sinking instrument having a throat for accommodating and controlling the stitch loops and a neb portion located above said throat for determining the draw of thread in the formation of locking loops to be bound or tied about said stitch loops.

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