June 14, 1938. K. R. LIEBERKNECHT 2,120,336

KNITTING MACHINE

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Fig. 1

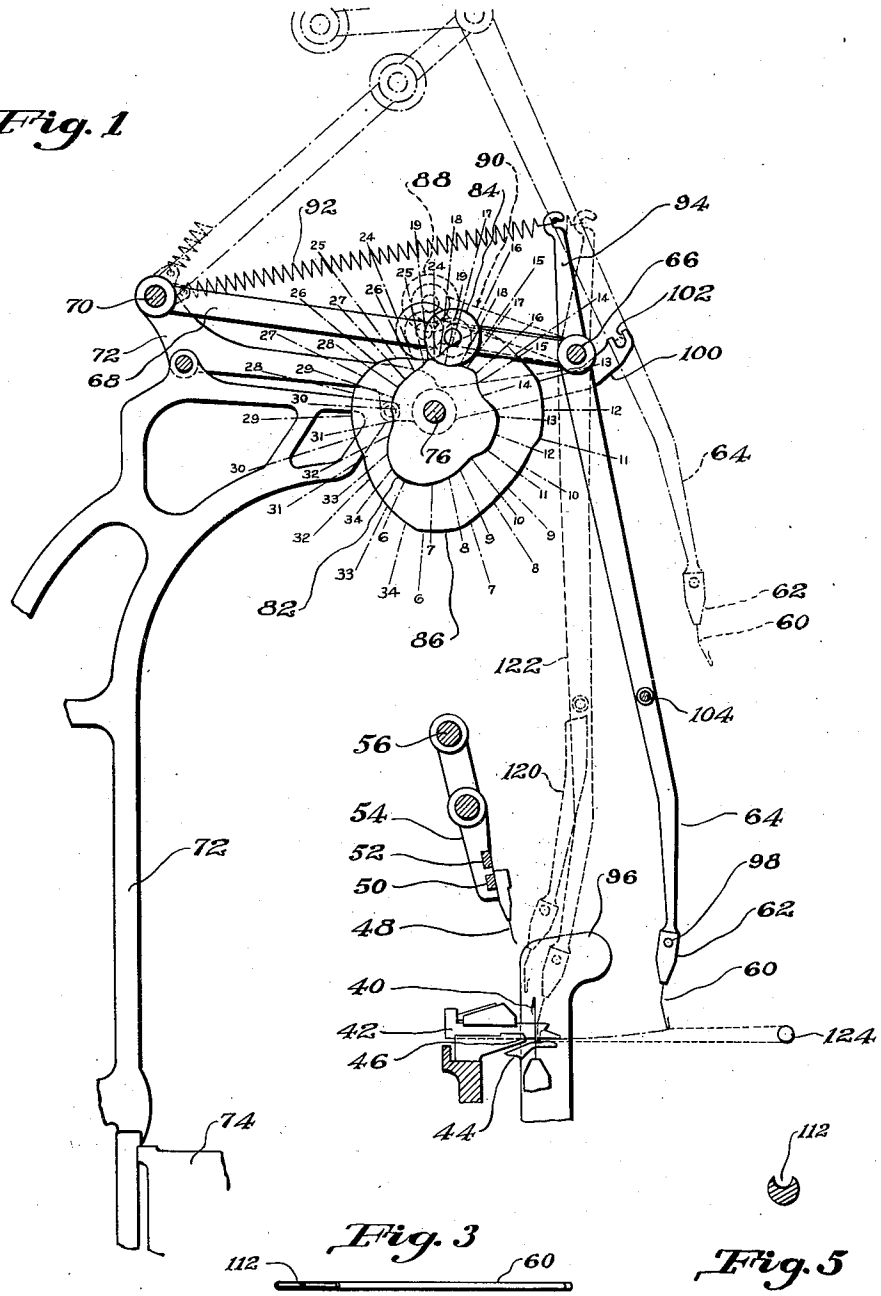


Fig. 3

Fig. 5

Fig. 6



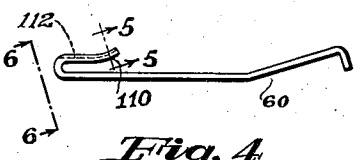


Fig. 4

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Leary & Jenney
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June 14, 1938. K. R. LIEBERKNECHT 2,120,336

KNITTING MACHINE

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Fig. 2

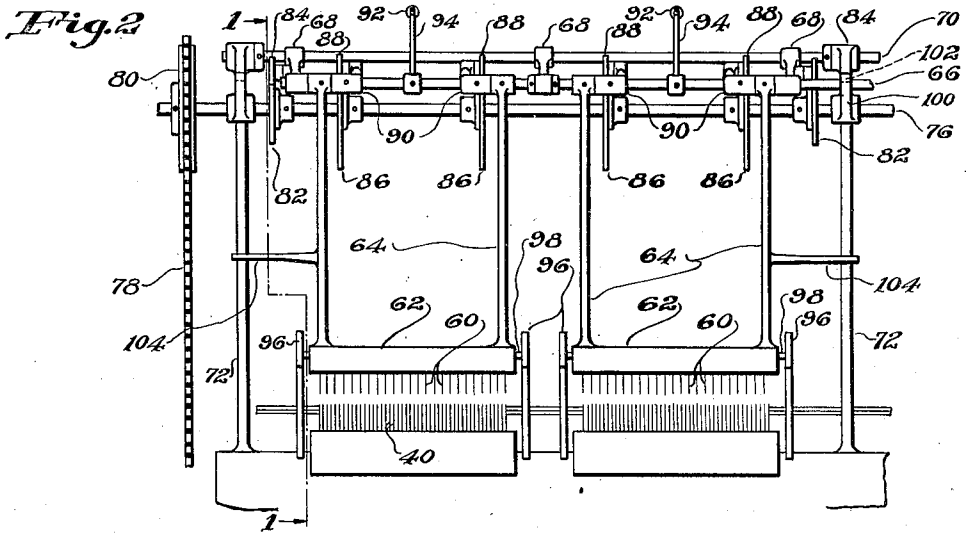


Fig. 24

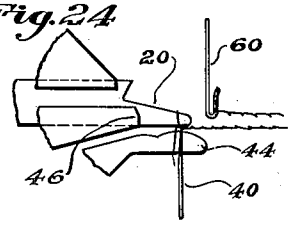


Fig. 25

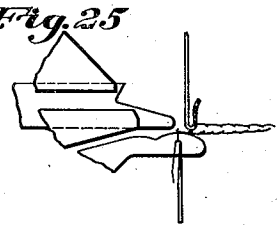


Fig. 26

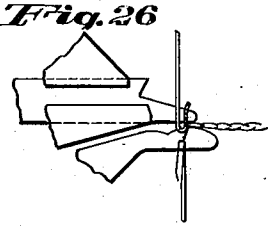


Fig. 27

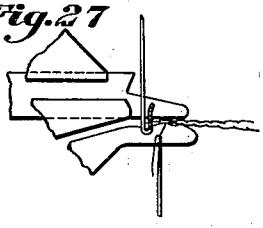


Fig. 28

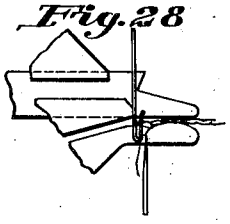


Fig. 29

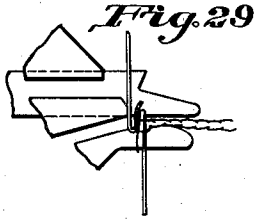


Fig. 30

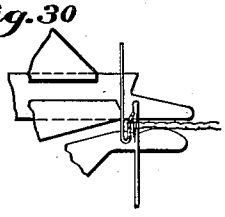


Fig. 31

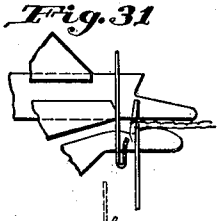


Fig. 32

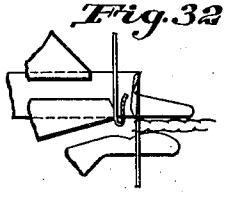


Fig. 33

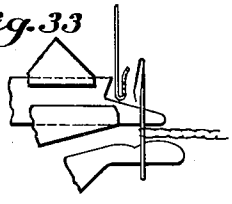
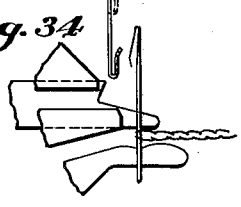


Fig. 34



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Fig. 7

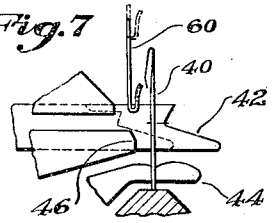


Fig. 8

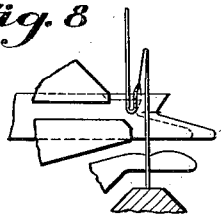


Fig. 9

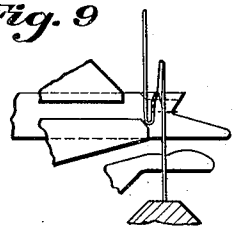


Fig. 10

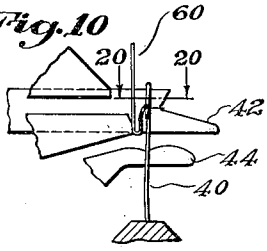


Fig. 20

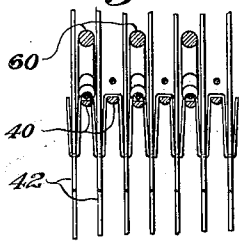


Fig. 11

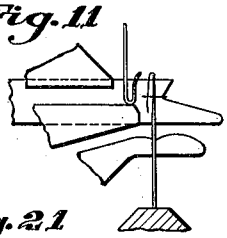


Fig. 21

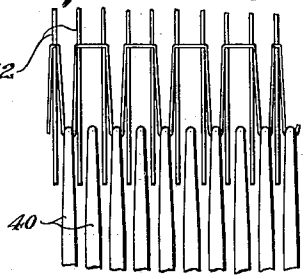


Fig. 12

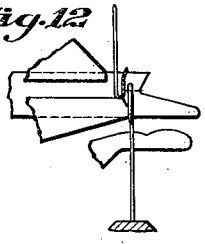


Fig. 13

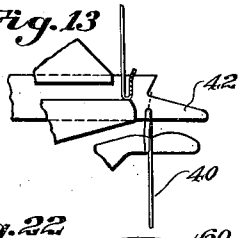


Fig. 22

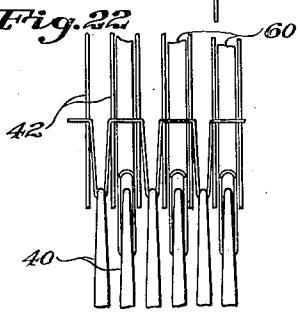


Fig. 14

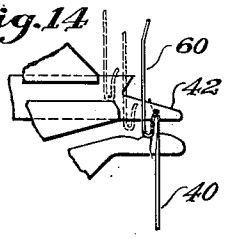


Fig. 15

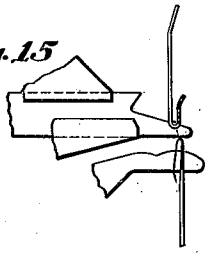


Fig. 16

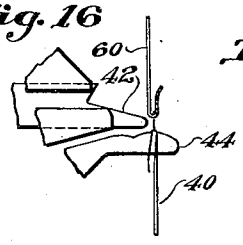


Fig. 23

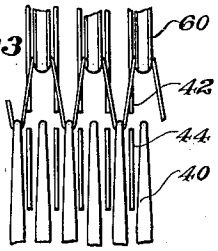


Fig. 17

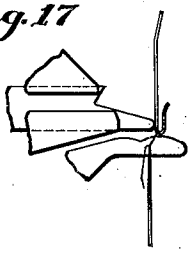


Fig. 18

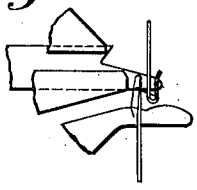
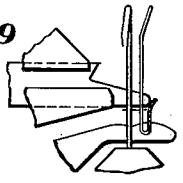


Fig. 19



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Patented June 14, 1938 2,120,336

UNITED STATES PATENT OFFICE

2,120,336

KNITTING MACHINE

Karl Richard Lieberknecht, Oberlungwitz, Germany, assignor to Knitting Machines Corporation, a corporation of Delaware

Application April 24, 1936, Serial No. 76,180
In Germany May 4, 1935

16 Claims. (Cl. 66—96)

The present invention relates to improvements in knitting machines, and more particularly to an improved loop transfer mechanism which is well adapted for use with a flat full-fashioned hosiery machine.

It is a principal object of the present invention to provide a loop transfer mechanism of this general description comprising a novel fabric hook which is constructed and arranged to cooperate in a new and more efficient manner with the spring beard needles and cooperating knitting elements of a flat full-fashioned hosiery machine for the formation by said loop transfer mechanism, of an alternate needle set-up of new fabric on the needles.

It is another object of the invention to provide in a loop transfer mechanism for a flat full-fashioned hosiery machine, a series of novel fabric hooks which are arranged for operation in timed relation to the needles and cooperating knitting elements to press the beards of alternate needles above the yarn sinking level, to engage with the cast-off bars of yarns supported on the noses of adjacent sinkers, forming an alternate needle set-up on said hooks, and thereafter when a sufficient amount of welt fabric has been knitted to return the setting-up course held on the hooks.

It is another object of the invention to provide a novel method of operation of applicant's fabric hooks with relation to the usual operation of the needles and cooperating knitting elements of a full-fashioned machine which comprises operating said hooks to press the needle beards above the yarn sinking level to cast off the yarn held on the shanks of selected needles, and thereafter to engage said hooks with the cast off bars of yarn supported on the noses of adjacent sinkers, to position the hooks and the setting-up course of needle loops held thereon to the backs of the needles for the continued knitting of the newly set up fabric.

With these and other objects in view as may hereinafter appear, a principal feature of the invention consists in the provision of a fabric hook having a shank which is arranged to extend downwardly into engagement with the press edge, and a hook portion shaped to provide a beard engaging surface to engage with the needle beard above the yarn sinking level while supported against the press edge.

Another feature of the invention consists in the provision of a hook of this general description having formed on the outer face thereof a groove which is arranged to provide a needle beard engaging press surface, and also to receive the tip portion of the needle to permit the engagement of the needle within a loop held on said hook during the operation of transferring or returning the setting-up course to the needles.

Another feature of the invention consists in the provision of a transfer element of this general description, in which the grooved hook portion thereof is curved forwardly following generally the contour of the needle beard to permit the engagement within the hook of the cast off bars of yarn supported on the noses of adjacent sinkers.

The several features of the invention consist also in the devices, combination and arrangement of parts hereinafter described, which together with the advantages to be obtained thereby will be readily understood by one skilled in the art from the following description taken in connection with the accompanying drawings, in which Fig. 1 is a partial cross sectional view of a flat full-fashioned knitting machine of ordinary description taken on the line 1—1 of Fig. 2, only so much of the machine being shown as is necessary to illustrate the connection of the present invention therewith; Fig. 2 is a detail view in front elevation on a small scale, of two sections of the machine illustrating particularly the supporting and actuating structure for applicant's improved hooks; Fig. 3 is a detail view of applicant's improved loop lifting hook looking from the hook side thereof; Fig. 4 is a view in side elevation of the fabric hook illustrated in Fig. 3; Fig. 5 is an enlarged detail end view of the tip or end portion of the hook taken on the line 5—5 of Fig. 4; Fig. 6 is an end view of the hook member looking from the direction indicated by the line 6—6 in Fig. 4; Figs. 7 to 19 inclusive, are a series of somewhat diagrammatic views illustrating the operation of applicant's hooks with relation to the needles, sinkers, webholders and press edge of an ordinary full-fashioned machine during the several steps of the operation of setting up an initial or setting-up course of fabric on said hooks; Fig. 20 is a sectional plan view on an enlarged scale, taken on the line 20—20 of Fig. 10; Fig. 21 is a view in front elevation on an enlarged scale, of the parts in the position shown in Fig. 13; Fig. 22 is a view in front elevation on an enlarged scale, of the parts in the full line position shown in Fig. 14; Fig. 23 is a view in front elevation on an enlarged scale, of the parts shown in Fig. 16; and Figs. 24 to 34 inclusive, are somewhat diagrammatic views illustrating the operation of applicant's hooks with relation to the needles, sinkers, webholders and press edge of an ordinary full-fashioned machine during the

several steps in the operation of returning the initial or setting-up course of welt fabric to the needles.

The loop transfer mechanism including the novel and improved fabric hooks herein disclosed as embodying in a preferred form the several features of the present invention, and illustrating the method of operation of said hooks, takes the form of an attachment which is readily applied to ordinary types of flat full-fashioned knitting machines having the usual knitting devices arranged to operate in the usual manner comprising spring beard needles **40** movable as a unit, yarn measuring sinkers **42**, webholders **44**, and a fixed press edge **46**. In order to illustrate more clearly the relationship of the newly added parts to the usual machine, the usual narrowing points **48** are shown in Fig. 1, together with the narrowing point bars **50** and **52** supported on depending brackets **54** on a shaft **56** which extends the length of the machine and forms part of the usual narrowing machine frame.

Applicant's improved fabric hooks generally indicated at **60** in Figs. 1 and 2, are rigidly secured to a welt bar **62**, one such hook being provided for each alternate needle. The hooks **60** and welt bar **62** for each section of the machine, are supported for the vertical and forward and back motions hereinafter more particularly set forth, on a hanging frame or pendant **64** comprising two upwardly extending arms secured at their upper end to a rock shaft **66** which extends throughout the machine length, and is in turn supported for vertical movements on forwardly extending supporting arms or levers **68** provided at spaced intervals along the machine length. The supporting levers **68** are secured at their rear ends to a rock shaft **70** which is supported to turn in stationary bearings formed on upwardly extending brackets **72** which may be conveniently secured to the usual cross frames **74** of the machine, as indicated in Fig. 1. Any convenient form of mechanism may be employed for imparting the desired vertical and forward and back movements to the pendants **64** and fabric hooks **60** in timed relation to the usual cam shaft of the machine and knitting devices including the needles **40** actuated thereby.

In the preferred embodiment of the invention illustrated, the desired vertical and forward and back movements are imparted to the pendants **64** and hooks **60** through mechanism which comprises a subsidiary cam shaft **76** extending the length of the machine and supported in bearings formed in the brackets **72**. The subsidiary cam shaft **76** is preferably driven in timed relation to the main cam shaft of the machine by means of a sprocket chain **78** which passes over a sprocket **80** on the cam shaft **76** as shown in Fig. 2.

For imparting vertical movements to the pendants **64** and hooks **60**, identical vertical motion cams **82** are secured at spaced intervals to the cam shaft **76**, and are arranged for engagement with rollers **84** mounted on certain of the forwardly extending supporting lever arms **68**. Forward and back movements are imparted to the pendants **64** and hooks **60** by means of identical forward and back motion cams **86** secured at spaced intervals to the cam shaft **76**, and arranged for engagement with cam rollers **88** mounted on rearwardly extending cam levers **90** rigidly secured at their forward ends to the rock shaft **66**. The shaft **66** is rocked yieldingly in a direction to move the pendants **64** and hooks **60** yieldingly in a forward direction away from the needles, and to maintain the lever arms **90** and rollers **88** in contact with the forward and back motion cams **68** by means of tension springs **92** which are provided at spaced intervals along the machine length, each being connected at its rear end to the rock shaft **70** and at its forward end to an upwardly extending lever arm **94** rigidly secured to the rock shaft **66**.

In order to insure the proper alignment of the fabric hooks **60** with the needles during the operation of setting up a new fabric, and thereafter for returning the loops held on the hooks to the needles to close the welt as hereinafter more fully set forth, vertically extending guide plates **96** are provided at each end of each section of the machine, which are arranged to contact with corresponding guide pins **98** formed at each end of the bar **62** as the hooks are moved into operative relationship to the needles to insure the accurate alignment of the hooks with the needles.

In order to support the loop transfer mechanism above described, including the pendants **64** and hooks **60** in a raised inoperative position when not in use, there is formed on each of the brackets **72** a forwardly extending arm **100** having formed therein a recess **102** which is arranged for engagement with a laterally extending pin **104** formed on one of the arms of the pendant **64**.

The inoperative position of the parts is illustrated by the dot-and-dash position shown in Fig. 1, in which the pendants **64** and supporting levers **68** have been moved upwardly about the pivot provided by the rock shaft **70**, and in which the pin **104** has been engaged in the recesses **102** of the supporting arm **100** to lock the loop transfer mechanism in its inoperative position.

The fabric hook herein disclosed as illustrating in a preferred form certain features of the present invention, as best shown in Figs. 3 to 6 inclusive, is formed from round wire stock having at the upper end of the implement a right angle offset for the convenient assembly of the hooks with the hook bar **62**, and having the shank bent to cause the lower portion thereof when positioned to the beard side of its cooperating needle **40**, to extend vertically downwardly in parallel relationship to the needle shank.

As best shown in Fig. 4 of the drawings, the upper portion of the hook itself is bent outwardly as indicated at **110**, so that the tip of the hook may be permitted to overlie the tip of the needle, and thus to insure the engagement of the hook with a bar of yarn cast off from the needle and supported on the noses of adjacent sinkers. The outer face of the hook is provided with a groove **112** which extends the entire length of the hook portion of the implement to receive the tip portion of the needle for the engagement of the needle within a loop of yarn held upon the hook during the welt closing operation, and also to provide at the upper end or tip of the hook, a needle beard engaging press surface. The tip of the portion **110** of the hook is cut off at an angle which is substantially parallel to the engaging surface of the sinker nose to further insure the engagement of the bar of yarn held on the noses of the adjacent sinkers within the hook.

The operation of applicant's loop transfer mechanism including the hooks **60** to form the welt portion of the fabric, may be described in connection with the illustrative figures of the drawings as follows:—

Prior to the starting of the machine, the pendants **64** are moved from their inoperative position

shown in dot-and-dash lines in Fig. 1, to the dotted line position indicated at 120, in which the vertical and forward and back motion cam rollers 84 and 88 will be engaged respectively with their cams 82 and 86. The needles are at this time in their high yarn sinking position with the sinkers 42 and hooks 60 in the dotted line position shown in Fig. 7, which corresponds to a position of the cam rollers 84 and 88 at stations 6 on their respective actuating cams 82 and 86. The subsidiary cam shaft 76 is now connected to move through substantially a half revolution in unison with the main cam shaft of the machine.

The succeeding steps in the operation of placing an alternate needle setting-up course of welt fabric on the hooks to the back sides of the needles, are illustrated in the diagrammatic views Figs. 7 to 17 inclusive, the relative positions of the cam rolls 84 and 88 with relation to their actuating cams 82 and 86 being indicated by correspondingly numbered stations on the cams, as shown in Fig. 1. As shown in full lines in Fig. 7, the hooks have moved downwardly on the beard sides of the needles to a point where the lower ends of the hooks are below the tops of the sinkers after the latter have kinked the yarn around the needles in the usual manner. As shown in Fig. 8, the grooved tip portions of the hooks now engage with the needle beards as the latter are moved downwardly in the normal manner. The continued downward movement of the hooks 60 and needles 40 to the positions shown in Fig. 9, causes the bottom shank portions of the hooks to engage against the usual press edge 46 of the machine, providing a firm support for the hooks which now act to press the needle beards above the yarn sinking level. The downward movement of the needles and hooks continues as shown in Figs. 10 and 20, causing the kinks of yarn held on the alternate needles engaged by the hooks 60, to be passed over the needle beards, and to be cast off during the subsequent movement of the needles to their normal press position. During the subsequent movement of the needles, the hooks are now slightly retracted as shown in Fig. 11.

Figs. 12, 13 and 21 show the hooks 60 still in their retracted position as the needles move to and from their press position, casting off the yarn held on the alternate needles cooperating with the hooks. At this point in the operation of the needles and sinkers, the hooks 60 are moved as shown by the successive dotted line positions in Fig. 14, to a position where the grooved portions 112 of the hooks overlie the tip portions of the needle beards with the upper ends of the hooks 110 below the top line of the noses of the sinkers and about in line with or beyond the backs of the needles. Fig. 22 is a view in front elevation of the parts in the full line position shown in Fig. 14. The hooks 60 are moved rapidly upwardly to engage with the bars of yarn which have been cast off from the cooperating needles and are now supported on the noses of the sinkers, as shown in Fig. 15. As the sinkers are now fully retracted and the needles continue their downward movement toward the knockover position as shown in Figs. 16 and 23, the initial or setting-up course is supported on the hooks and on the intermediate needles. As the needles now move inwardly following their usual motions at the knockover level, the hooks again move downwardly to position the loops held thereon below the bottom line of the sinkers, and above the web-holders, as shown in Fig. 17. At this time the forward and back motion cam roller 88 will ride off the high portion of its cam 86 as indicated at station 17 in Fig. 1, so that the hooks are moved yieldingly in a forward direction away from the needles under the take-up tension of the springs 92. The pendants 64, hooks 60, the cam lever 90 and roll 88 will at this time occupy substantially the dotted line position indicated at 122 in Fig. 1.

Figs. 18 and 19 show the continued relative movement of the hooks and the knitting elements including the needles, as the needles move rearwardly and then upwardly to their yarn sinking position. The hooks continue their downward movement to a point where the bottom portion of the hook is located between the adjacent knockover elements 44 to provide an additional guide support for these elements as they are moved forward and back with the needles during the knitting of subsequent courses. The subsidiary cam shaft 76 is stopped at the end of a half revolution, at which time the vertical and forward and back cam rollers 44 and 48 will be located opposite stations 19 of their respective cams, in which the hooks 60 are maintained at the vertical level illustrated in Fig. 19, and are tensioned forwardly away from the needles by the take-up springs 92. During the subsequent knitting of the welt fabric, the welt rods 124 which may be of ordinary description and are attached to the usual take-up straps of the machine, are laid in and operate to draw the welt fabric beneath and beyond the hooks 60 as shown in Fig. 1. The forward movement of the pendants 64 and hooks 60 is arrested in the full line position shown in Fig. 1, in which the cam roller 88 engages against the low portion of its cam 86.

After a sufficient length of fabric has been knitted, the subsidiary cam shaft 76 is again rendered operative to rotate in unison with the main cam shaft of the machine through another one-half revolution to cause the hooks 60 to return the initial course of fabric hooks held thereon to the needles. The successive steps of this transfer operation are set forth in the somewhat diagrammatic views 24 to 34 inclusive.

As shown in Fig. 24, the hooks start to move rearwardly and slightly upwardly to clear the fabric held on the needles about the time the needles operate to draw the loops of the last knitted course off the noses of the sinkers. As needles continue their movement downwardly to the knockover level and rearwardly toward the press edge, as shown in Figs. 25 to 28 inclusive, the hooks 60 are moved rearwardly over the needles, and downwardly between the knockover elements 44 into engagement with the press edge 46, while at the same time the sinkers advance following their usual mode of operation to hold down the fabric during the subsequent rising movement of the needles. As the needles now rise, the tips thereof are engaged in the grooved portion 112 of the hooks, and are guided upwardly through the loops held on the hooks 60, as shown in Figs. 29 and 30. During the continued upward and slightly forward movement of the needles, the hooks are moved to an extreme down position as shown in Fig. 31, to disengage the hooks from the initial or setting-up course of loops to complete the transfer of these loops back to the needles. During the continued upward movement of the needles to their high yarn sinking position, the hooks are moved upwardly as shown in Figs. 32 to 34 inclusive, to the high dotted line position illustrated in Fig. 34, which corresponds to the position of the ver-

tical forward and back motion cams 82 and 86 illustrated by station 6, at which point the subsidiary cam shaft 76 is again disconnected from its actuating mechanism, completing the cycle of operations of the transfer mechanism above described, to form the welt. This mechanism may now again be placed in its inoperative position shown by the dot-and-dash lines in Fig. 1, in which the pins 104 are engaged in their recesses 102 of the supporting arms 100.

While the loop transfer mechanism disclosed in the drawings including the several cooperating instrumentalities described and having the mode of operation set forth, illustrates a preferred embodiment of applicant's invention, including the several novel features thereof, it will be understood that the invention in its broader aspects is not limited to the specific construction and arrangement of the several cooperating elements set forth, and that while the transfer mechanism described is particularly well adapted for use in a flat full-fashioned machine of the so-called cotton type for the production of turn welt fabric, this mechanism may be advantageously employed for merely setting up new pieces of fabric without turning the same.

The invention having been described, what is claimed is:—

1. A fabric hook for use in a knitting machine having spring beard needles, a press edge and yarn measuring sinkers which comprises a shank and a hook having formed on the outer face thereof a groove to receive the tip portion of the needle to permit the engagement of the needle within a loop held on said hook, and having formed on the tip of said hook a needle beard engaging press surface.

2. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank arranged to extend downwardly into engagement with said press edge, and a hook having the upper or tip portion thereof shaped to provide a beard pressing surface for engagement with the needle beard above said yarn sinking level while supported against said press edge.

3. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank arranged to extend downwardly into engagement with said press edge, and a hook having the outer face thereof grooved to provide a beard press surface for engagement with the needle beard to cast off the needle loops held on said needles and having a yarn engaging upper or tip portion located in the same plane with and overlying said groove for engagement with a portion of a bar of yarn located directly above the needle.

4. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank, and a hook having formed on the outer face thereof a groove to receive the tip portion of the needle to permit the engagement of the needle within a loop held on said hook, and the upper or tip portion thereof grooved to provide a needle beard closing surface for casting off yarn held by the sinkers against the needle shank.

5. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank and a hook having formed on the outer face thereof a groove to receive the tip portion of the needle to permit the engagement of the needle within a loop held on said hook, and to provide a needle beard closing surface for casting off of yarn held by the sinkers against the needle shank, the tip portion of said grooved hook being located in the same plane with said groove and bent outwardly to permit engagement thereof with a previously cast off bar of yarn supported on adjacent sinkers.

6. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank and a hook having the outer face thereof grooved along its entire length to receive the beard portion of the needle, said hook having the tip portion thereof located in the same plane with the groove and curved outwardly to overlie the tip portion of the needle, and thereby to facilitate the engagement by said hook with a bar of yarn cast off from said needle and supported on the noses of adjacent sinkers.

7. A fabric hook for use in a knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level which comprises a shank and a hook having the outer face thereof grooved along its entire length to receive the beard portion of the needle, said hook being curved outwardly to overlie the tip portion of the needle and having its upper end cut off in a plane substantially parallel to the yarn engaging surface of the sinker noses to facilitate the engagement by said hook with a bar of yarn cast off from said needle and supported on the noses of adjacent sinkers.

8. In a flat knitting machine having spring beard needles, yarn measuring sinkers, and a press edge below the yarn sinking level, the combination of a series of fabric hook elements comprising downwardly extending shanks and hooks having formed on the outer faces thereof beard pressing surfaces, and means for moving said elements during the knitting of a setting-up course to press the beards of selected needles and thereby to cast off yarn held against said needles by the sinkers, and thereafter for moving said elements to engage the cast off bars of yarn supported on adjacent sinkers in said hooks.

9. In a flat knitting machine having spring beard needles, yarn measuring sinkers, and a press edge below the yarn sinking level, the combination of a series of fabric hook elements comprising downwardly extending shanks and hooks having formed on the outer faces thereof beard pressing surfaces, and means for moving said elements downwardly between adjacent sinkers and against said press edge to press the beards of selected needles against the support of said press edge during the knitting of a setting-up course, and thereby to cast off yarn held against said needles by the sinkers.

10. In a flat knitting machine having spring beard needles, yarn measuring sinkers, and a press edge below the yarn sinking level, the combination of a series of fabric hook elements comprising downwardly extending shanks and hooks having formed on the outer faces thereof beard pressing surfaces, and means for moving said elements downwardly between adjacent sinkers and against said press edge to engage said hook pressing surfaces with and press the beards of selected needles above the yarn sinking level and against the support of said press edge, and thereby to cast off yarn held against said needles by the sinkers.

11. In a flat knitting machine having spring beard needles, yarn measuring sinkers, and a press edge below the yarn sinking level, the combination of a series of fabric hook elements comprising downwardly extending shanks and hooks having formed on the outer faces thereof beard pressing surfaces, and means for moving said elements downwardly between adjacent sinkers and against said press edge to press the beards of selected needles against the support of said press edge during the knitting of a setting-up course, and thereby to cast off yarn held against said needles by the sinkers, and thereafter for moving said elements to engage the cast off bars of yarn supported on adjacent sinkers in said hooks.

12. In a flat knitting machine having spring beard needles, yarn measuring sinkers and a press edge below the yarn sinking level, a series of fabric hook elements spaced to cooperate with alternate needles and comprising downwardly extending shanks and hooks having formed on the outer faces thereof beard press surfaces, and means acting during the knitting of a setting-up course to position said elements against the support of said press edge to press the beards of selected needles above the yarn sinking level, and thereby to cast off yarn held on said needles by the sinkers, thereafter removing said hooks to permit the movement of the needles to press position, and thereafter for positioning said elements with the hooks thereof overlying the tip portions of the needles to engage in said hooks the cast off bars of yarn supported on adjacent sinkers.

13. In a flat knitting machine, the combination with a series of spring beard needles, yarn measuring sinkers and a press edge, a series of fabric hook elements spaced to cooperate with alternate needles and having downwardly extending shanks and hooks having formed on the outer faces thereof grooved needle beard engaging surfaces, means for moving said hooks during the knitting of a setting-up course to press the beards of alternate needles above the yarn sinking level, and thereby to cast off yarn held on said needles by the sinkers, removing the hook elements during movement of the needles to press, moving said hook elements to engage in said hooks the cast off bars of yarn supported on the noses of adjacent sinkers, and means acting thereafter to tension the hook elements and loops held thereby forwardly away from the needles.

14. In a flat knitting machine, the combination with a series of spring beard needles, yarn measuring sinkers and a press edge, a series of fabric hook elements spaced to cooperate with alternate needles and having downwardly extending shanks and hooks having formed on the outer faces thereof grooved needle beard engaging surfaces, means for moving said hooks during the knitting of a setting-up course to press the beards of alternate needles above the yarn sinking level, and thereby to cast off yarn held on said needles by the sinkers, removing the hook elements during movement of the needles to press, moving said hook elements to engage in said hooks the cast off bars of yarn supported on the noses of adjacent sinkers, means acting thereafter to tension the hook elements and loops held thereby forwardly away from the needles, and means acting when rendered operative for positioning said hooks to the beard side of the needles to effect a transfer of the set-up loops held on the hooks back to the needles.

15. The method of manipulating a hook bar having downwardly extending hook elements spaced for engagement with alternate needles and needle beard pressing surfaces on the outer faces of said hooks, to set up fabric on a flat full-fashioned hosiery machine, which comprises the steps of inserting the hook elements between the press edge and needles to engage with and press the needle beards above the yarn sinking level against the support of the press edge, withdrawing said bar as the needles move to press, and thereafter when the needles have moved away from the press but prior to the withdrawal of the sinkers again moving said hooks to engage thereon the cast off bars of yarn supported on adjacent sinkers.

16. The method of manipulating a hook bar having downwardly extending hook elements spaced for engagement with alternate needles and needle beard engaging grooves formed on the outer faces of said hooks, to set up fabric on a flat full-fashioned hosiery machine which comprises the steps of inserting the hook elements to the beard sides of the needles to engage with and press the needle beards above the yarn sinking level, withdrawing said bar as the needles move to press, thereafter when the needles have moved away from the press but prior to the withdrawal of the sinkers placing said hooks against the needles with the grooved portions thereof overlying the tip portions of the needles, and lifting the hooks to engage therein the cast off bars of yarn supported on adjacent sinkers.

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