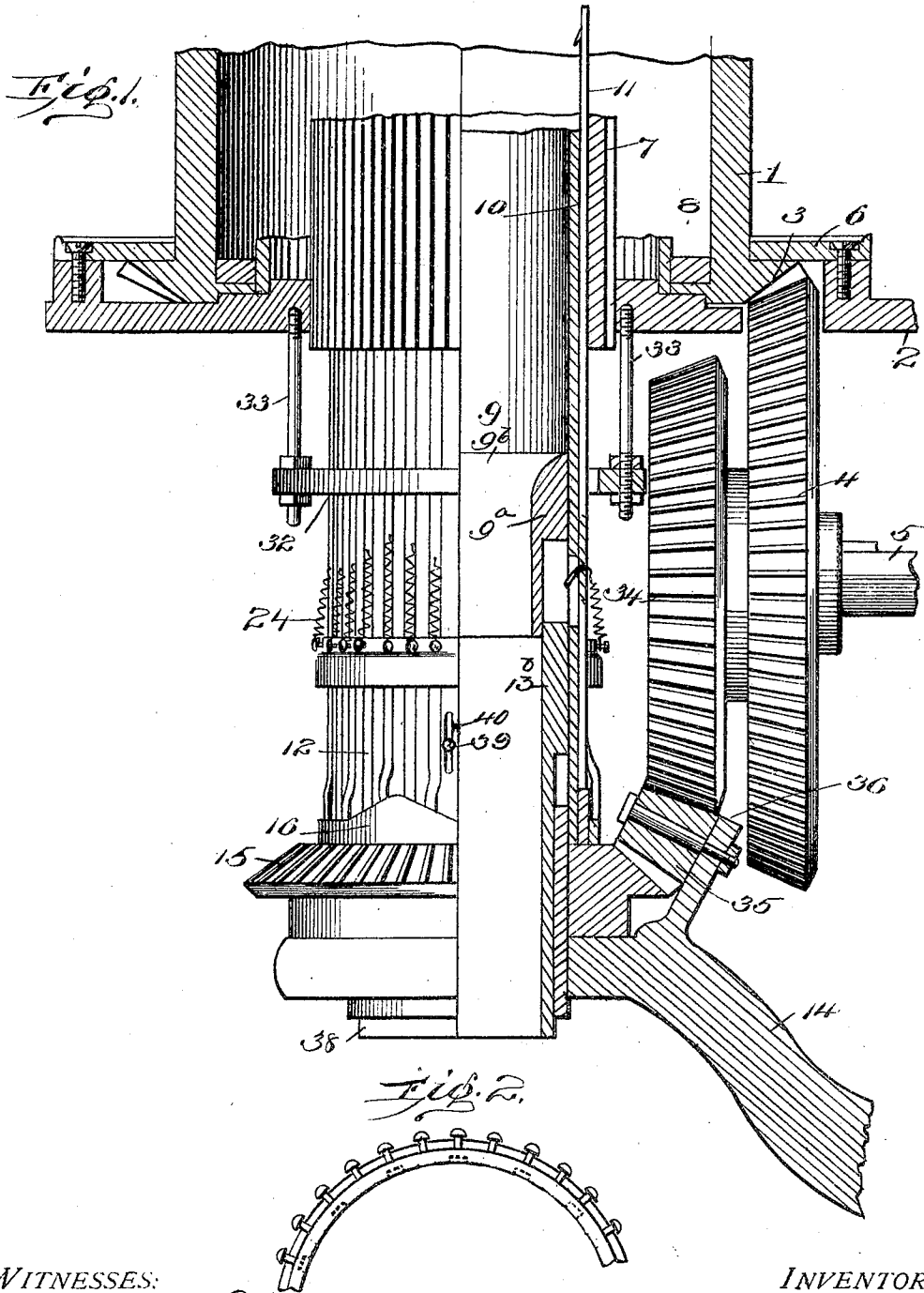


No. 801,930.

PATENTED OCT. 17, 1905.

B. T. STEBER.
KNITTING MACHINE.
APPLICATION FILED MAY 25, 1905.

3 SHEETS—SHEET 1.



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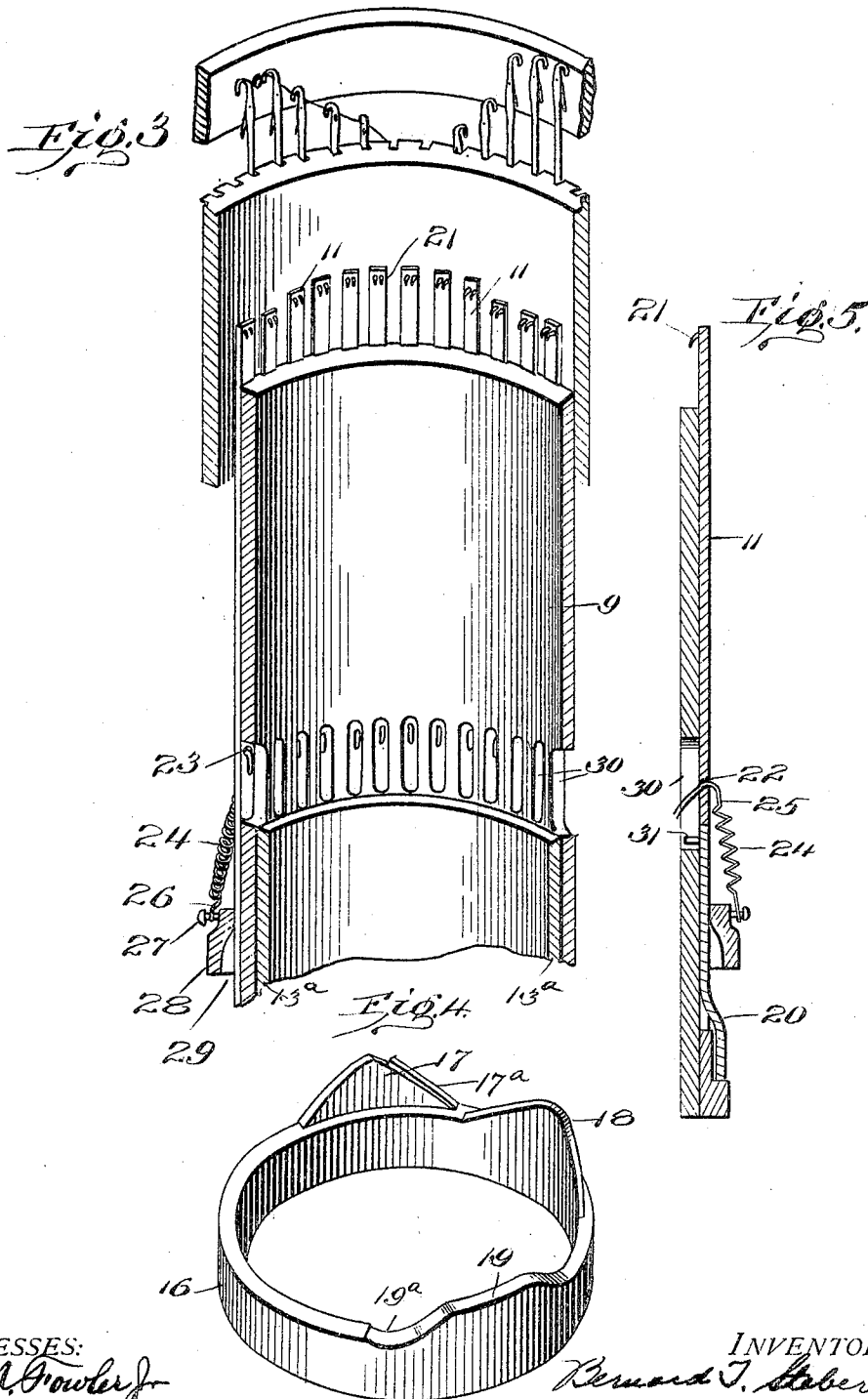
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APPLICATION FILED MAY 25, 1905.

3 SHEETS—SHEET 3.

Fig. 7. Fig. 8

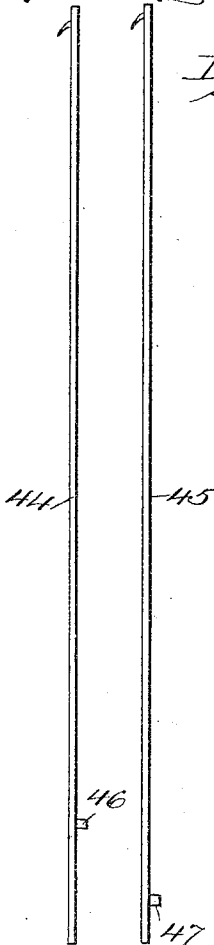


Fig. 10

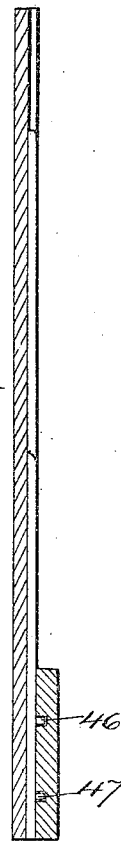


Fig. 9

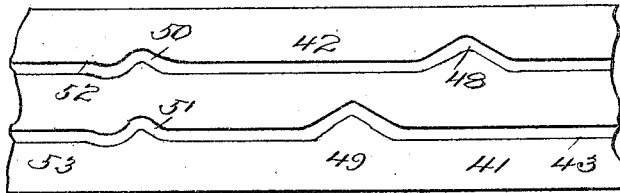
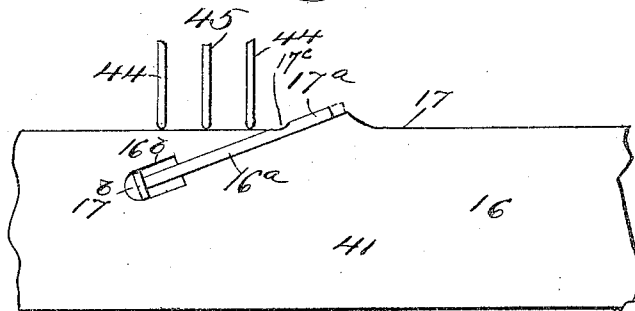


Fig. 6



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KNITTING-MACHINE.

No. 801,930.

Specification of Letters Patent.

Patented Oct. 17, 1905.

Application filed May 25, 1905. Serial No. 262,265.

To all whom it may concern

Be it known that I, BERNARD T. STEBER, a citizen of the United States, residing at Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in knitting-machines, and particularly to means for weighting or pulling downwardly the web of a knitting-machine as it is being formed.

The invention contemplates the provision of a web-holding device which is so constructed that an even strain can be always applied to the loops of a fabric as it is being knitted and so that a more even result is obtained and the machine can be run more rapidly without injury to the fabric.

The invention comprises certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a view, partially in central section and partially in elevation, showing a portion of a circular-knitting machine, the improved web-holding device being arranged in a preferred position. Fig. 2 is a detail view showing a portion of the ring for holding the web-holders in place. Fig. 3 is a detail perspective view of a portion of the knitting-cylinder and a portion of the web-holder cylinder, parts being broken away and shown in section. Fig. 4 is a perspective view of the cam-ring for operating the web-holders. Fig. 5 is a vertical sectional view through one wall of the web-holder cylinder and showing one of the web-holders in place. Fig. 6 is a detail view of a portion of the web-holder cam-ring, showing one of the elevating cam portions formed with a slide. Figs. 7 and 8 are detail views of web-holders having laterally-projecting studs at different distances from their lower ends for engaging a cam-groove path to be positively operated in each direction. Fig. 9 is a detail view showing a portion of a cam-ring provided with grooved cam-paths for operating web-holders like those shown in Figs. 7 and 8. Fig. 10 is a detail sectional view showing the web-holders engaging such a cam-ring.

In knitting circular fabrics with knitting-machines I find that a more perfect result can be obtained if the machine is so constructed

that the web-holders may be controlled with respect to the pull which they exert upon the knitted fabric to reduce the pull thereon as it comes from the needles and to regulate the evenness with which said pull may be made at the time the knitting operation takes place.

I have illustrated in the drawings the manner in which I prefer to construct the web-holding mechanism of a knitting-machine and will proceed with the description of such construction.

In Fig. 1 of the drawings I have illustrated a portion of a cam-cylinder of a knitting-machine, as 1, which is mounted upon the bed-plate 2 of the knitting-machine and is provided upon its lower edge with a downwardly-facing beveled gear 3. The gear 3 meshes with a correspondingly-beveled gear 4, which is secured to a driving-shaft 5. The shaft 5 is driven from any suitable source of power and operates to rotate the cylinder properly. The cam-cylinder is movably held in place on the bed-plate by a removable ring 6. Within the cam-cylinder is located the needle-guiding cylinder 7, and between the said needle-cylinder and the cam-cylinder is located the usual skeleton guide-cylinder 8 for holding the heels of the needles in position.

Within the needle-cylinder 7 is located the web-holder cylinder 9, which is formed with vertically-arranged parallel grooves 10 upon its outer surface for receiving and guiding web-holders 11 and 12 in their operation for pulling downwardly the fabric knitted in the needle-cylinder above. The lower end of the web-holder cylinder 9 extends to and telescopes upon the upper end of a gear-cylinder 13, which is rigidly secured to an arm 14, which projects from the frame of the machine. Loosely fitting about the gear-cylinder 13 is a beveled gear-wheel 15, and secured to the upper face of the beveled gear is a cam-ring 16, arranged for reciprocating the web-holders at the proper time for enabling them to obtain new holds upon the knitted fabric as the same lengthens.

Within the gear-cylinder 13 is arranged an inner cylinder 13^a, capable of regulating the stroke of the web-holders, and above said cylinder and within the web-holder cylinder 9 is mounted a shield or guard cylinder 9^a for protecting the fabric as it is drawn downwardly through the machine. The purposes of the stroke-regulating cylinder 13^a will be hereinafter fully set forth.

The web-holders are preferably operated by

means of cams, and I will first describe the form of cams shown in Figs. 1, 4, and 5, in which a cam-ring 16, above referred to, is employed, the said cam-ring being fastened to the beveled gear 15. This ring is formed with web-holder-elevating cams 17 and 18 and a partially-elevating cam 19 for lessening the pull of the holders. The cams 17 and 18 are not made the full width of the material of the cam and ring, but only occupy a space equal to about half the thickness of the ring, so that the cam 17 is arranged flush with the outer surface or periphery of the ring 16 and the cam 18 is arranged flush with the inner periphery of said ring. A portion of the web-holders, as indicated at 11, are made straight throughout and their lower ends are slightly rounded, so that they may easily travel over the upper edge of the cam-ring 16 and be raised at a suitable time by the cam 18 for taking a new hold upon the knitted fabric. The remaining web-holders (indicated at 12) are made shorter than the web-holders 11 and are provided with lower offset sections 20, which are bent out sufficiently at their lower ends to ride upon the outer edge of the cam-ring 16, and thus engage only the cam 17. By arranging the web-holders 11 alternately between the web-holders 12 it will be seen that as cam-ring 16 is rotated either series of web-holders will be raised first, and then as soon as they are lowered again the alternate intermediate web-holders will be raised and then lowered. The cam 19 is made the full width of the ring thickness, so that all of the web-holders are actuated thereby, and the reason for this will be hereinafter fully described. A more quiet and perfect action is secured in obtaining new holds for the web-holders when the operating cam-surfaces are of a gradual incline and they are operated alternately, for in that event there are always some holders which are pulling upon the web.

The cam-ring 16 as thus far described is suitable for a continuous operation of the machine when turning it in one or the other direction only. I preferably so form the cam, however, that it may be made to cause a little stronger pull upon the loops of the fabric at certain times, and particularly when the machine is reversed, being turned first in one direction and then in the other—as, for instance, when forming the heel or toe of a stocking. In forming such portions of a stocking it is desirable to have the loops of the fabric drawn much more tightly than when forming the foot portion or the leg portion of a stocking. This renders the completed stocking much more durable, since it is thicker and more tightly knitted at the points of greatest wear. In order to effect such closer knitting at such a time, I form the cam-ring so that it will lift the web-holders higher upon the reverse movement of the machine than when moving as originally started and as when knitting con-

tinuously in one direction. In Figs. 4 and 6 I have shown one of the cam-lifting portions, as 17, with a slide 17^a, the said slide fitting upon one face of the cam 17 and extending downwardly into a recess or guide-opening 16^a, formed in the ring 16. The recess is enlarged at its lower end, as at 16^b, to accommodate a retaining-head 17^b, formed upon the inner end of the slide 17^a. When the slide 17^a is in its lowest position, as shown in Fig. 6, it will not lift the cam-holders higher than the fixed portion of the cam 17; but when the cam-ring is reversed, so that the ends of the web-holders strike the slide first in approaching the cam 17, their ends will engage a slight depression or recess 17^c, formed in the upper surface of the slide, and the first result will be the lifting of the slide to the position shown in dotted lines in Fig. 6, after which the web-holder will ride out of the recess 17^c and be carried to the highest extent to which the slide is lifted before the web-holder begins to descend upon the other side of the cam. It will thus be evident that each web-holder which first engages the slide 17^a will be lifted higher than the web-holders which rise upon the cam 17 from the opposite side from that occupied by the slide. Thus the web-holders which are lifted higher than the others will obtain a grip upon the fabric at a higher point than the others and will correspondingly increase the tension upon the fabric at that point. The head 17^b of the slide prevents the slide from projecting too far above the cam 17. The cam thus is constructed so that when it is reversed alternately the web-holders will first engage the slide and be carried high enough to get the proper additional grip upon the web or fabric, and then as the cam moves in the other direction the slide will recede into its recesses and the web-holders will not be lifted so high.

The web-holders are formed at their upper ends with one or more web-engaging hooks or points 21, which are so shaped as to engage and pull upon the fabric when the web-holders are pulled downwardly; but when they are raised they easily become released from the fabric preparatory to obtaining a new hold thereon. I usually employ two of such hooks or points upon the ends of the holders, as shown in the drawings; but of course a greater or less number may be used, as preferred.

The web-holders are formed with apertures near their lower ends. The apertures in the ones which have offset lower sections 20 are formed quite close to the lower ends of the upper sections, as shown at 22. The apertures 23 in the longer web-holders which have no offset lower sections are arranged at the same distance from the upper ends of the web-holders as are the apertures 22 in the short web-holders.

Although I may employ weights for holding the web-holders in their lowered posi-

tions, I preferably use springs 24, which are formed with hooks 25 in their upper ends for engaging the apertures 22 and 23, while at their lower ends the said springs are provided with eyes 26 for engaging headed studs or pins 27, which project from a ring 28. The ring 28 surrounds the lower portion of the web-holder cylinder and keeps the lower ends of the web-holders in place in the grooves of the cylinder 9. The said ring 28 is rigidly secured to the cylinder 9 and is provided with a series of recesses 29 upon its inner surface opposite every other web-holder for accommodating the offset ends thereof and permitting them to rise to a suitable height for taking a new hold upon the knitted fabric. The springs 24 operate to hold the web-holders constantly against the face of the web-holder cam-ring 16, and the lifting of said web-holders by means of the cam projections on said ring is against the action of the said springs.

It will be noted that the springs of the straight web-holders draw them directly against the edge of the web-holder cam-ring, while the springs of the other web-holders draw them against the upper ends of the offset lower sections 20 and in turn force said offset sections against the cam-ring. In order to accommodate the movement of the hooked ends of the springs 24, the web-holder cylinder 9 is cut away to form elongated apertures 30. The offset sections 20 are provided with means for preventing them from dropping out of the cylinder in the event of the actuating-gear 15 being removed at any time. This means preferably consists in a pin 31, secured to the offset section 20 of the offset web-holders, the said pin being arranged to extend into the elongated recess 30 opposite that particular web-holder. If the gear 15 and the cam-ring 16 are removed, the pins 31 will engage the lower ends of the elongated apertures 30 and limit the downward movement of the sections 20 and prevent them from dropping out. The cylinder 9 of the web-holders is supported in the machine by means of a yoke 32, which is connected with the bed-plate 2 by means of depending rods 33.

I find that it is well to limit the downward movement of the web-holders when they are pulled by means of the springs 24, and for this purpose I place the stroke-limiting cylinder 13^a within the cylinder 17 and permit its upper end to extend to a point opposite the lower portions of the slots 30. The upper edge of the cylinder 13^a is thickened, as at 13^b, so as to fit snugly the inner surface of the web-holder cylinder 9. The points of the hooks 22 are made to project slightly beyond the inner surface of the cylinder 9, so that when the said hooks have pulled the web-holders to their lowest points the hooks will engage the upper edge of the cylinder 13^a. The said cylinder 13^a is adjustably secured in place in the cylinder 9, being provided with a set-screw

39, which extends through a slot 40, formed in the said cylinder 9. By adjusting the screw 39 the cylinder 13^a may be raised or lowered and clamped in such adjusted position. The upper edge of this cylinder will thus be in a position to limit the downward movement of the web-holders under the action of the springs 24. The shield or guard cylinder 9^a is also thickened at its upper portion and beveled inwardly around its upper edge, as at 9^b, for properly guiding the fabric into the center of the cylinders, and the lower edge of said shield projects a short distance within the upper end of the stroke-controlling cylinder 13^a.

I have found that in knitting a fabric the pull upon the fabric by the web-holders or rods varies the length of the loops in accordance with the position in which they are operated with respect to the point in the cylinder where the knitting operation is taking place. If the web-holders are lifted and pulled downwardly at the place where the knitting operation is taking place, the effect is the production of fabrics with loops of uneven lengths. I therefore arrange the cams 17 and 18 so that they will not be beneath the part of the cam-cylinder 1 which actuates the needles in the knitting operation. In addition to this it is necessary to have the cam-ring 16 moved exactly in accordance with the movement of the cam-cylinder 1, so as not to destroy this relation between the cams of one and the cams of the other. In order to cause the cam-ring 16 to operate with the same speed as the cam-cylinder 1 is operated, I actuate the said ring 16 through the agency of the beveled gear 15 by means of a beveled pinion 34, secured rigidly to the shaft 5, and by means also of an intermediate gear 35, which is pivotally mounted upon an arm or projection 36, extending from the support 14. I employ the intermediate gear 35 in order to impart movement to the gear 15 and the ring 16 in the same direction as that in which the cam-cylinder 1 is moved. The size of the pinion or beveled gear 34 bears the same proportionate relation to the size of the gear 15 that the gear 4 does to the beveled gear 3 on the cam-cylinder 1. By this arrangement and construction of parts a given portion of the ring will always be exactly beneath a given portion of the cam-cylinder 1. The cams 17 and 18 are arranged upon the farther side of the ring from the side which is beneath the needle-actuating portion of the cam-cylinder. In knitting with machines of this kind the action of the needles in successively drawing through the loops of yarn is greatly facilitated if the pull upon the fabric of the web-holders is lessened at the time the knitting operation takes place. In order to effect this lessening of the pull upon the fabric beneath the point at which the new loops are being formed, I provide the ring 16 with a slightly-elevated cam-path 19, as heretofore

mentioned. The said cam-path 19 is of the full width of the material of which the ring is made, so that all of the web-holders ride upon the same. As the cam revolves and the portion of the cam-cylinder 1 which causes the needles to perform the knitting operation reaches the needles the cam-path 19 will simultaneously engage and slightly elevate the web-holders which are directly beneath the needles which are knitting. This structure operates to sufficiently lessen the pull upon the loops of the fabric as to permit the needle ends, with their latches, to pass through the loops of the fabric more easily. Since the path 19 always travels beneath the cam which produces the knitting operation, the fabric will always be slightly loosened and relieved of the pulling pressure beneath the needles which are knitting, and an absolutely-uniform result will be attained entirely around the circumference of the fabric. I find this feature is a very valuable one, especially in using machines in which the knitting operation is rapidly performed. To still further increase the evenness with which the knitting operation is carried on, I form a depression 19^a in the upper edge of the ring 16 at the end of the path 19, which last engages the web-holders, so that the said web-holders in passing from the path 19 will descend into the recess 19^a. As above stated, the path 19 slightly elevates the web-holders at the time when new stitches are being formed, so as to relieve the pull upon the same, and by providing the recess 19^a immediately following the said path the holders will descend into the same as soon as the new loops of the knitted fabric are formed just sufficiently to compensate for the new threads which are thus added to the fabric. This is found in practice to add to the evenness of the result obtained in making a knitted fabric. In knitting fabrics by means of circular machines heretofore it has been difficult to exceed a certain speed, for there was danger of breaking the yarn, especially where delicate strands were used in knitting certain kinds of garments. With the novel construction above described I am enabled to materially increase the speed with which the machine is operated, and yet not tear or break delicate threads in the operation of the device.

It will be observed that any of the hook-bars 11 can readily be withdrawn from the upper end of the needle-cylinder, if so desired, by first unhooking the spring connections 25. The cams 17 and 18 are preferably higher than required, so the machine can be made to knit from coarse or fine yarn with long or short loops, and yet the web-holders will pull the required length according to the loops being knitted without giving an unequal or unnecessary strain upon the cloth, as the limiting-cylinder 13^a is located to limit the stroke of the web-holders with reference to the structure of the cloth to be knitted.

Instead of employing a cam for moving the web-holders in one direction and a series of springs for moving them in the other direction I may employ a cam for positively moving the web-holders in both directions. As shown in Fig. 9, a cam-ring 41 may be substituted for the cam-ring 16 and provided upon its inner face with upper and lower cam-paths 42 and 43. These paths are adapted to be engaged by the lower ends of web-holders, such as shown in Figs. 7 and 8 at 44 and 45. The two cam-paths permit of an alternate operation of the web-holders, as above provided for, and the web-holders are correspondingly formed, having elevating-studs 46 and 47 arranged at different distances from their lower ends. The stud 46 is at such a point that it will be engaged by the cam-groove 42, and the stud 47 is at such a point upon the holder that it will engage the lower cam-groove 43. Each of the cam-grooves 42 and 43 is provided with upwardly-extending portions, as at 48 and 49, respectively, for elevating the holders to obtain a new hold upon the fabric, as described with respect to the cams 17 and 18 on the ring 16. These grooves are also provided with lesser elevating portions, as at 50 and 51, for reducing the pull upon the fabric at the time when the knitting-needles are performing the knitting operation and making new loops. These portions of the cam-ring 41 correspond with the portion 19 of the cam-ring 16. Depressed portions following the parts 50 and 51 may also be used, as at 52 and 53, for tightening the fabric immediately after the knitting operation has taken place and exerting a pull upon the said fabric in proportion to the addition of loops thereto. The operation of the web-holders by means of such a cam-ring as 41 is practically the same as the operation of the cam-ring 16, taken in conjunction with the springs 24. The cam-grooves 42 and 43 being capable of engaging the studs 46 and 47 above and below of course are able to positively move the web-holders in each direction, and there is no necessity for the use of springs.

It will be apparent also that other minor changes in the details of construction may be made without departing from the spirit of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A web-holder for knitting-machines, comprising reciprocating web-engaging holders, means normally tending to pull them downwardly and a rotating cam having a plurality of cam-paths capable of independent action upon different sets of holders.

2. A web-holder for knitting-machines, comprising a number of reciprocating web-holders, means for exerting a downward pressure thereon, and a rotating cam having outer and inner cam-paths capable of engaging dif-

ferent sets of holders and operating them independently for obtaining a new hold on the fabric.

3. A web-holding mechanism for knitting-machines, comprising reciprocating web-engaging holders having apertured lower ends, and spring-hooks engaging said apertured ends for drawing them downwardly.

4. A web-holding mechanism for knitting-machines, comprising reciprocating holder-rods having web-engaging hooks and being provided with apertures at their lower ends, springs having hooks engaging said apertures, a guide-ring for holding said springs and means engaging the lower ends of the web-holders for raising them to obtain new holds upon the fabric.

5. A web-holding mechanism for knitting-machines, comprising a series of reciprocating web-engaging rods, a cam moving beneath the said rods, some of said rods directly engaging the said cam and the other rods having offset sections engaging said cam, an alternate movement being secured in obtaining new holds upon the fabric knitted.

6. In a knitting-machine, the combination with a needle-operating cam, of web-holding mechanism made up of a number of web-holders and cams for lifting the web-holders to obtain new holds on the fabric, the said cams operating in exact unison with the operation of the knitting-cam and each cam capable of operating upon alternate web-holders.

7. In a knitting-machine, the combination with a needle-operating cam, of reciprocating web-holders, a cam moving beneath the web-holders for causing them to take a new hold on the fabric knitted and mechanism for driving the knitting-cam and the holder-operating cam in unison.

8. In a knitting-machine, the combination with a needle-operating cam, of a web engaging and holding mechanism made up of reciprocating web-holders, a cam-ring engaging the ends of the web-holders for reciprocating them, the lifting portions of the cam being arranged so as not to align with the needle-operating portion of the needle-cam, and means for rotating both the needle-cam and the holder-cam so that they will always maintain the same relation to each other.

9. In a knitting-machine, the combination with a needle-operating cam, of fabric-engaging holders, a grooved cylinder for guiding the said holders, some of said holders having offset lower sections, a rotating cam-ring having inner and outer lifting-cam portions at different radial distances from the axis of the cam-ring and gearing capable of driving the holder-cam ring with the same speed at which the needle-operating cam is operated.

10. In a knitting-machine, the combination with the needle-operating mechanism, of a web-holding mechanism made up of reciprocating web-holders, lifting-cams engaging the

holders in alinement with needles of the knitting-machine when in their quiet state and a relieving-cam for slightly lifting the holders in alinement with the needles when operating for knitting a fabric.

11. In a knitting-machine, the combination with a needle-operating cam, of reciprocating holders, a cam-ring supporting the lower ends of said holders, cam-sections thereon capable of lifting the holders to take new holds upon the fabric, a cam-path slightly elevated above the ring and arranged to lift the needles slightly at a point beneath the place at which the knitting is accomplished for facilitating ease in the operation of the needles when the machine is operating swiftly, and means for operating the cam-ring and the needle-cam in exact correspondence.

12. A web-holding mechanism for circular-knitting machines, comprising a grooved cylinder, reciprocating holder-bars moving in said grooves, some of said holders having offset lower ends, an actuating cam-ring engaging the lower ends of all of the holders, lifting-cam projections made of less thickness than the thickness of the ring, one section being at the outer edge of the ring and the other section being at the inner edge of the ring for operating independently the offset holders and the straight holders, and means for holding the web-holders against the upper surface of the ring.

13. A web-holder for knitting-machines, comprising a holder-cylinder having grooves in its outer periphery, reciprocating holding-bars fitting in said grooves, a guide-ring near the lower end of the holders, and rigidly supported with respect to the cylinder, studs projecting from said guide-ring, springs secured to said studs, and having hooks at their upper ends, the said holder-rods being provided with apertures for engaging the said hooks and the cylinder being cut away beneath the hooks for permitting their operation, and a cam-ring engaging the ends of the holders for reciprocating them at a proper time to obtain a new hold upon the fabric knitted.

14. A web-holding mechanism for knitting-machines, comprising a guiding-cylinder having grooves formed therein, a yoke for suspending the cylinder in the knitting-machine, offset and straight bars fitting in the grooves of the cylinder and having web-engaging hooks at their upper ends, a ring-cam engaging the lower ends of the straight and offset holders for reciprocating them alternately, a gear connected with the ring for rotating it, a driving-gear and an intermediate connecting-gear interposed between the two, and means for supporting the said gears in proper relation to the web-holding cylinder.

15. A web-holding mechanism for knitting-machines, comprising reciprocating holder-bars, a cam mechanism for lifting the holder-bars, means for drawing the holder-bars down-

wardly and adjustable means for limiting the downward movement of the said holders:

16. A web-holding mechanism for knitting-machines, comprising a holder-cylinder, reciprocating holders mounted therein, cams for lifting them to obtain new holds on the knitted fabric, springs for pulling the holders downwardly, and an adjustable stop mounted within the cylinder and engaging the ends of the springs for limiting the downward movement of the holders.

17. A web-holding mechanism for knitting-machines, comprising a holder-cylinder, reciprocating holders mounted thereon, means for lifting the holders at suitable intervals, springs for drawing the holders downwardly, the ends of the said springs projecting inwardly through apertures in the holder-cylinder, and an adjustable stop-cylinder mounted within the holder-cylinder and engaging the ends of the springs for limiting the downward movement of the springs and the holders.

18. A web-holding mechanism for knitting-machines, comprising a holder-cylinder, reciprocating holders mounted thereon, springs for drawing the holders downwardly, said springs having holder-engaging hooks at their upper ends, the said hooks extending through apertures in the holders, and apertures in the holder-cylinder, means for lifting the holders at suitable intervals, a stop-cylinder mounted within the holder-cylinder, means for adjusting the stop-cylinder with respect to the holder-cylinder, and a shield or guard cylinder fitting over the upper edge of the stop-cylinder and preventing the fabric from coming in contact with the projecting ends of the hooks.

19. A web-holding mechanism for knitting-machines, comprising vertically-movable holders, capable of engaging the knitted fabric, means for drawing the holders downwardly, and a holder-elevating cam engaging the lower ends of the holders and formed with lifting-cam portions and a tension-relieving portion, the said cam being depressed at the

end of the relieving portion for permitting the holders to exert an additional pull when new loops are added to the fabric.

20. A web-holding mechanism for knitting-machines, comprising reciprocating web-holders, a cam for lifting the same having lifting-cam portions and a slide carried by the cam and acting to increase the height of one of the lifting portions when moved upon the reversal of the machine.

21. A web-holding mechanism for knitting-machines, comprising reciprocating web-engaging holders, a cam for engaging the holders, and having lifting portions, one of said lifting portions being provided with an incline guiding-groove, a slide mounted in said guiding-groove and formed with a depression for engaging the holders, the said slide operating to lift the holders above their normal elevated position when the machine is reversed.

22. A web-holding mechanism for knitting-machines, comprising reciprocating web-engaging holders, a cam-ring engaging their lower ends for lifting them, the said ring having a holder-lifting portion formed with an inclined guide-groove having an enlargement at one end, a slide mounted in said groove and having a stop or head moving in the enlarged portion of the groove, the upper end of the slide being capable of lifting the web-holders above the normal web-engaging position, the said slide being also provided with a depression or recess in one side for engaging the ends of the holders, the said holders thus being capable of pushing the slide upwardly and means for normally holding the web-holders against the cam-ring.

In testimony whereof I affix my signature in presence of two witnesses:

BERNARD T. STEBER.

Witnesses:

FRANK STEBER,
WILLIAM HOWARTH.