

(No Model.)

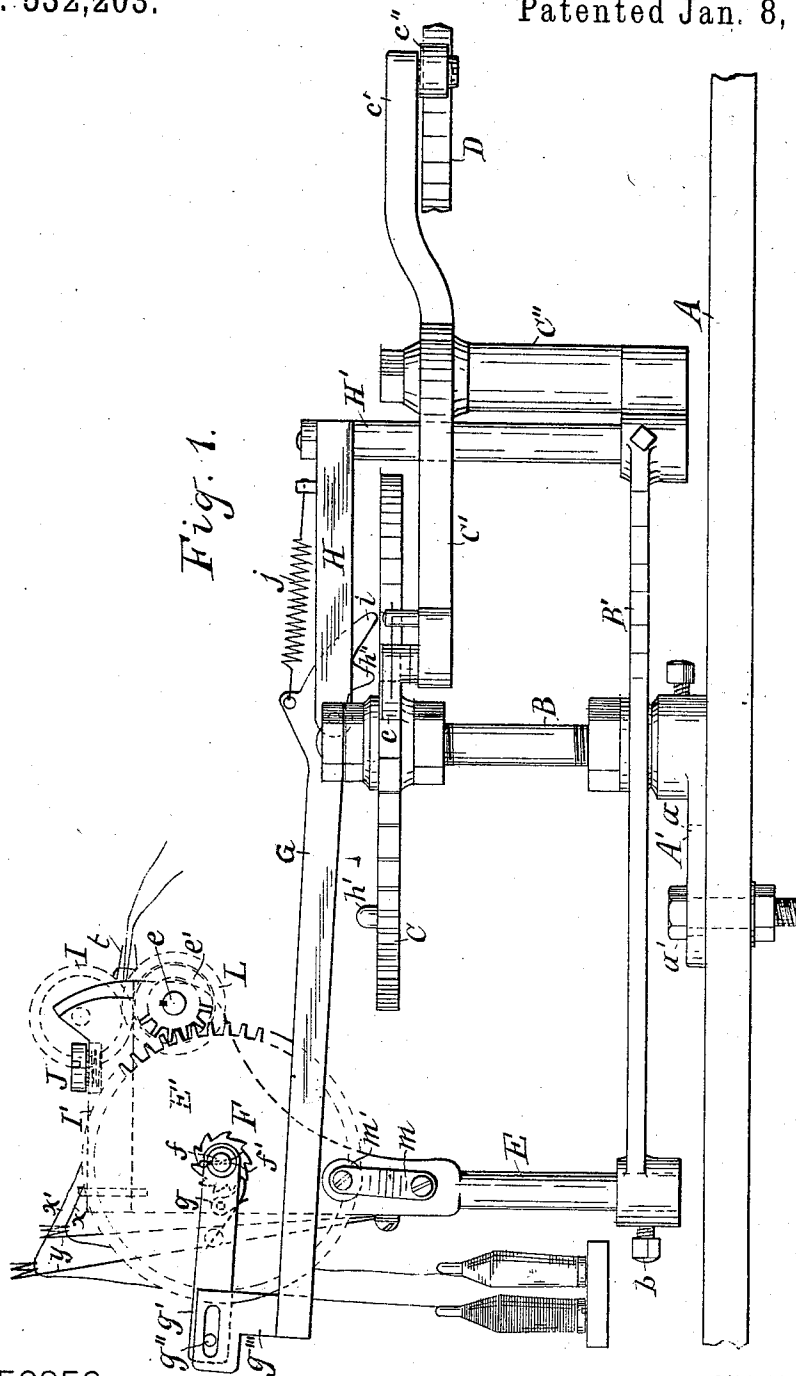
3 Sheets—Sheet 1.

M. A. J. KEANE.

STRIPING ATTACHMENT FOR KNITTING MACHINES.

No. 532,203.

Patented Jan. 8, 1895.



WITNESSES:

Mark W. Dewey
H. M. Searns

INVENTOR,

Michael A. J. Keane,
By C. H. Drnell
his ATTORNEY.

(No Model.)

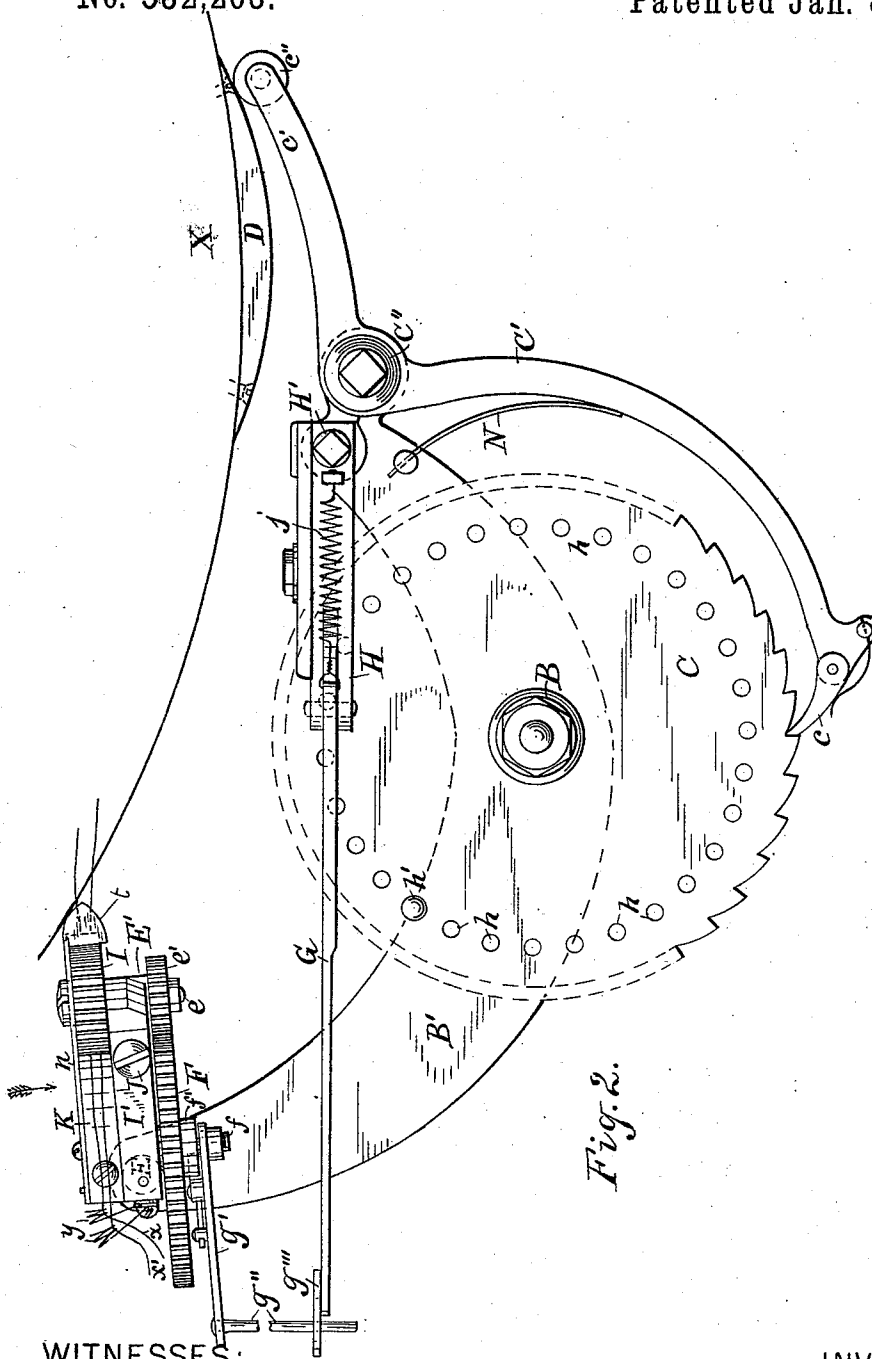
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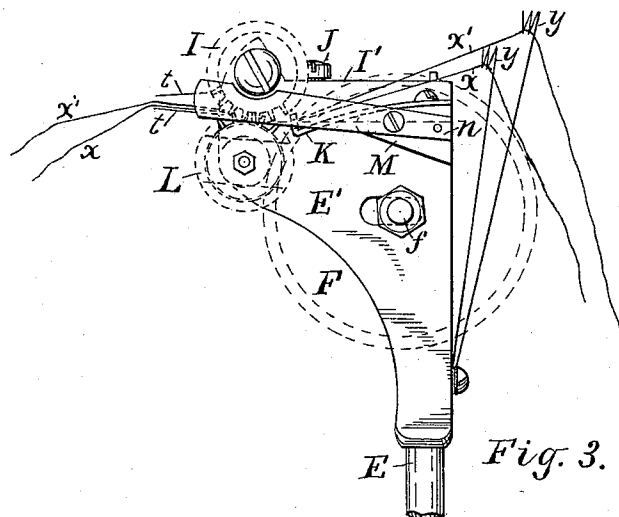


Fig. 3.

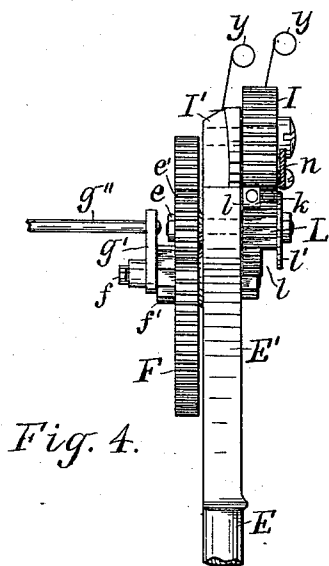


Fig. 4.

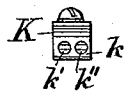


Fig. 5

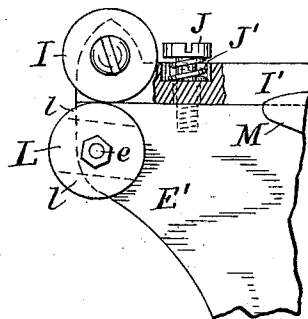


Fig. 6

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UNITED STATES PATENT OFFICE.

MICHAEL A. J. KEANE, OF AMSTERDAM, NEW YORK, ASSIGNOR OF ONE-HALF
TO JOHN H. GILES, OF SAME PLACE.

STRIPING ATTACHMENT FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 532,203, dated January 8, 1895.

Application filed February 3, 1894. Serial No. 499,009. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL A. J. KEANE, of Amsterdam, in the county of Montgomery, in the State of New York, have invented new and useful Improvements in Striping Attachments for Knitting-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to knitting machines, and the object is to provide simple and effective means whereby, when two colors of yarn are used, they will be fed and stopped alternately and automatically, as desired, thus allowing various widths of stripes to be made without stopping the machine and without defective spots being made in the goods when the change from one color to the other is effected.

My invention consists in the combination in a knitting machine of a pair of intermeshed pinions, one of said pinions having segments removed from opposite sides thereof and at diametrically opposite sides of the pivot of the pinion, guides for the yarn, a pattern wheel provided with a ratchet, a cam on the knitting cylinder, a pawl and lever connecting the ratchet with the cam, a projection on the pattern wheel, a lever in the path of the projection to be operated by the latter, a pawl and ratchet wheel operated by the said lever, and a train of gearing connecting the ratchet-wheel with the said intermeshed pinions; and my invention consists in certain other combinations hereinafter described and specifically set forth in the claims.

Referring to the drawings hereto annexed and forming a part of this specification, Figure 1 is a side elevation of my improved device. Fig. 2 is a top plan view of the same. Fig. 3 is a side view of the feeding devices looking in the direction of the arrow in Fig. 2. Fig. 4 is an edge view of the feeding devices or looking from right to left in Fig. 1. Fig. 5 is a view of the yarn guide, and Fig. 6 shows a modification of the feeding and stopping rolls, also the tension spring.

Referring specifically to the drawings A is the bed-plate of the machine.

A' represents an arm having an elongated slot, *a*, by means of which the arm may be ad-

justably secured to the bed-plate by a bolt *a'*. Projecting upwardly from one end of the arm A' is a post B upon the upper part of which the pattern wheel, C, is pivoted. The periphery of the pattern wheel is provided with ratchet teeth. Engaging the said teeth is a pawl, *c*, carried upon one end of an arm of a two-armed lever C'. The end of the second arm *c'* of the lever C' carries a roller, *c''*, which lies in the path of a cam D secured to the periphery of the needle cylinder X. The lever C' is fulcrumed upon a post C'' extending upward from one end of a curved bar B' mounted on the post, B, at its base. The opposite end of the bar, B', is provided with a socket in which the post, E, of my improved feeding and stopping device is held. The bar B' is adjustable on the post, B, that is, it may be turned on said post and held thereon to fix the feed pinions in proper proximity to the knitting cylinder, and the post E may be raised, lowered or turned in the said socket so that it may be set by the screw, *b*, as desired, in relation to the knitting cylinder and as close as possible to the feed-wheel in such a position that the yarn fed through the device will enter the feed wheel of the knitting machine to be taken under the barbs of the needles and knit into the web.

The upper end of the post, E, terminates in a projection E' extending at right angles therefrom, and projecting laterally through the end of said arm is a shaft, *e*, provided on one end on the side shown in Fig. 1, with a small pinion, *e'*, which is keyed to the shaft, *e*. This pinion meshes with a much larger cog wheel F mounted upon an adjustable arbor *f*, near the post E. On the same arbor and secured to the wheel F is a small ratchet-wheel *f'* which is turned by a pawl, *g*, carried by a lever, *g'*, fulcrumed on the end of the arbor. The free end of the lever, *g'*, is provided with a pin, *g''* extending at right angles therefrom and entering a slotted plate, *g'''*, rigidly secured to one end of the lever, G, operated by the pattern wheel C. The pattern wheel is provided with one or more annular rows of perforations, *h*, in its face, as usual, which are adapted to receive suitable pins, *h'*, which, as the wheel is turned by its ratchet hereinbefore described, pass beneath the

tooth, h'' on the lower side of the lever at the end near which the said lever G is pivoted. The said lever is pivoted in the end of a bifurcated arm, H , extending at right angles and secured to the top of a post H' extending upward from the bar B' , and extends over, a short distance above the top face of the pattern wheel. On the extreme end of the lever, G is a stop i , to prevent this end of the lever from falling too far. The said stop rides upon the top face of the pattern wheel. A spring, j , connects an eye in the lever G above the pivot with a small post rising from the top side of the arm, H , to raise the free end of the lever to its normal position after it has been depressed by a pin, h' , striking and raising the tooth h'' .

On the opposite end of the shaft, e , hereinbefore referred to, and on the opposite side of the projection, E' , shown clearly in Figs. 3 and 4, is a pinion L having segments, l, l' , of its periphery removed or cut away. The two segments removed lie on opposite sides of the shaft, e , to which the pinion is keyed or otherwise secured. The said segments are removed from opposite sides of the pinion to the center thereof, or to a plane midway between and parallel to the flat sides of the pinion. A small circular plate, l' , is secured to the outer side of the said pinion. Above and meshing with the pinion, L , is another pinion, I , of the same size, but somewhat larger than the pinion, e' . The pinion, I , is of the same width as the pinion, L , and is pivoted to an upwardly extending ear on the end of a bar, I' , secured yieldingly, by means of a screw, J , and spring J' , to the top side of the projection E' . A pin also passes through the rear end of the bar, I' , down into the said projection to steady the bar and to prevent it from turning. The said screw, J , extends down through the bar, I' , into the top side of the projection, E' , and the spring J' lies in a socket in the bar below the head of the screw, so that lumps or knots in the yarn, x, x' , may pass freely between the pinions, L , and I without clogging when the said pinions are rotated. A lump or knot passing between said pinions will cause the pinion and the end of the bar to which it is pivoted to be slightly lifted against the pressure of the spring, J' , as will be readily understood.

Just back of the pinions just referred to and shown in Figs. 3, 4 and 5 is the yarn guide which consists of a thin curved metal strip K secured at one end by a screw to an extension, M , on the side of the post, E' , and with its opposite end terminating with an upturned lip, k , near the junction of the pinions L and I . This lip is provided with two holes or eyes k' and k'' placed side by side for the strands of yarn, x, x' , to pass through.

Before reaching the described guides the yarn passes through wire guides, y, y , secured to the side of the post, E . Secured to the side of the extension, M , is a metal strip n which extends alongside of the pinions, L , and I and

is provided with triangular shaped thin metal pieces t secured a distance apart and soldered to its end in front of the pinions. These triangular pieces serve to guide the yarn properly to the feeding-wheel, the yarn passing between the pieces after passing from between the pinions.

Fig. 6 shows rollers L and I with smooth peripheries for feeding the yarn. Therefore I do not desire to be limited to cog-wheels or wheels with rough peripheries for this purpose. Neither do I wish to be limited to the position of the pattern wheel and the exact form of its motion transmitting devices as any other well known position and forms of operating devices may be employed without departing from my invention.

The operation of the feeding pinions L and I is as follows: The knitting cylinder, X , carrying the cam, D , is revolved by any suitable means or power. When the said cam strikes the arm c' , of the two-armed lever C' , which is held close to the cylinder by the spring, N , the lever, C' , is moved with the pawl, c , to turn the pattern wheel, C , one tooth. After a certain number of revolutions of the knitting cylinder, X , the pattern wheel will be rotated so that a pin, h' , will strike the tooth h'' and lift the same causing the end of the lever, G , connected to the arm g' of the ratchet, f' , to be depressed to a certain extent, depressing with it the arm g' and turning the ratchet-wheel, f' , and gear wheel F . Motion is thus imparted by the pinion e' to the shaft, e , and pinions, L , and I . At each movement of the lever, G , the said pinions are turned one-half round or from the position indicated in Figs. 3 and 4 to the reverse position, and there resting until the lever, G , is again operated. It will be obvious that by this means the strands of yarn will be automatically, intermittently and alternately fed when their pinions are rotated, and while one strand is being fed to the feed-wheel and allowed to pass freely through the space made by the removed segment, the other strand will be stopped and held from passing between the cogs of the two pinions and is broken off. Then when the pinions are operated again, the strand that was stopped is started and allowed to pass while the other strand is stopped.

On the side of the post, E , is secured a spring, m , which carries a disk of leather m' which bears on the side of the gear wheel F to prevent a retrograde movement of the train.

It will be obvious that three colors of yarn can be used in succession by removing three segments on the pinion, L , that is, in the periphery, at equal distances apart, one segment cut out of the periphery on each side of the said pinion and the third cut out in the center of the periphery.

In all stopping devices heretofore made, when the yarn was stopped, it was done suddenly, which was a shock to the stitch wheel and the cause of many needles breaking, thereby causing imperfections in the fabric.

My invention overcomes this, as the yarn is not stopped suddenly but gradually, thus allowing the yarn to be pulled apart, rather than divided suddenly. This gradual stopping of the yarn, allowing it to be pulled apart, is owing to the pinions or rollers, between which the yarn is fed, being advanced in the same direction as or with the knitting cylinder, but with a slower motion than that of the said cylinder.

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

1. In a knitting machine, the combination of a pair of rollers, a segment removed from the side of one of said rollers, a guide for the yarn, a knitting cylinder, and suitable means connecting the knitting cylinder with the rollers to move the same intermittently, as set forth.

2. In a knitting machine, the combination of a pair of intermeshed pinions, segments removed from opposite sides of one of said pinions, and on diametrically opposite sides of the shaft of said pinion, guides for the yarn, a pattern wheel provided with a ratchet, a cam on the knitting cylinder, a pawl and lever connecting the ratchet wheel with the cam, a projection on the pattern-wheel, a lever in the path of the projection, a pawl and ratchet operated by said lever, and a train of gearing connecting the ratchet-wheel with the said intermeshed pinions, as set forth.

3. In a knitting machine, the combination of intermeshed feed-pinions, one of which has several segments removed therefrom, a drive-pinion located at one side of the latter, a gear wheel intermeshed with the drive pinion and adapted to transmit motion through the drive pinion to said feed-pinion, means for preventing a retrograde movement of the gear wheel, a vibrating arm pivoted in proximity to the gear wheel and means connected with the arm for imparting motion to the gear-

wheel during the alternate strokes of the arm, as and for the purpose described.

4. In a knitting machine, the combination of a post, an arbor projecting therefrom, a gear wheel and a ratchet-wheel mounted on said arbor, an arm also mounted on said arbor and carrying a pawl to engage with said ratchet-wheel, a shaft mounted in the post, a pinion on one end of said shaft and adapted to mesh with the gear wheel, a feeding pinion on the other end of said shaft, another feeding pinion mounted to mesh with the first-mentioned feeding-pinion, mechanism connected with the pivoted arm for actuating the feed-pinions, and segments removed from the said first mentioned feed-pinion, as and for the purpose described.

5. In a knitting machine, the combination with an upright or post, of an arbor projecting therefrom, a gear wheel and a ratchet-wheel mounted on said arbor, an arm also mounted on said arbor and carrying a pawl to engage with said ratchet-wheel, a shaft mounted in the post, a pinion on one end of said shaft and adapted to mesh with the gear wheel, a feeding pinion on the other end of said shaft, another feeding pinion mounted to mesh with the first mentioned feeding-pinion, a segment removed from one of the feeding-pinions, a pattern wheel provided with a ratchet, a cam carried by the knitting cylinder, a pawl and lever connecting the ratchet wheel with the cam, a projection on the pattern-wheel, a lever in the path of the projection, and a suitable connection between the said lever and the said arm mounted on the arbor, substantially as described and shown.

In testimony whereof I have hereunto signed my name.

MICHAEL A. J. KEANE. [L. s.]

Witnesses:

JAMES NICHOL,
BYRON J. SNYDER.