

(No Model.)

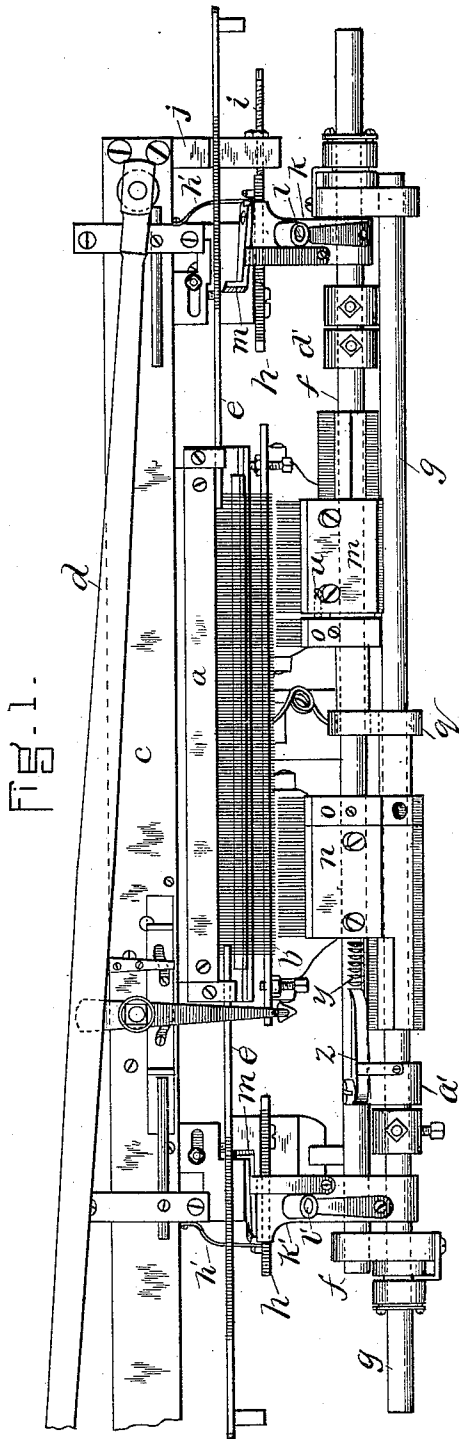
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R. H. CARTER.

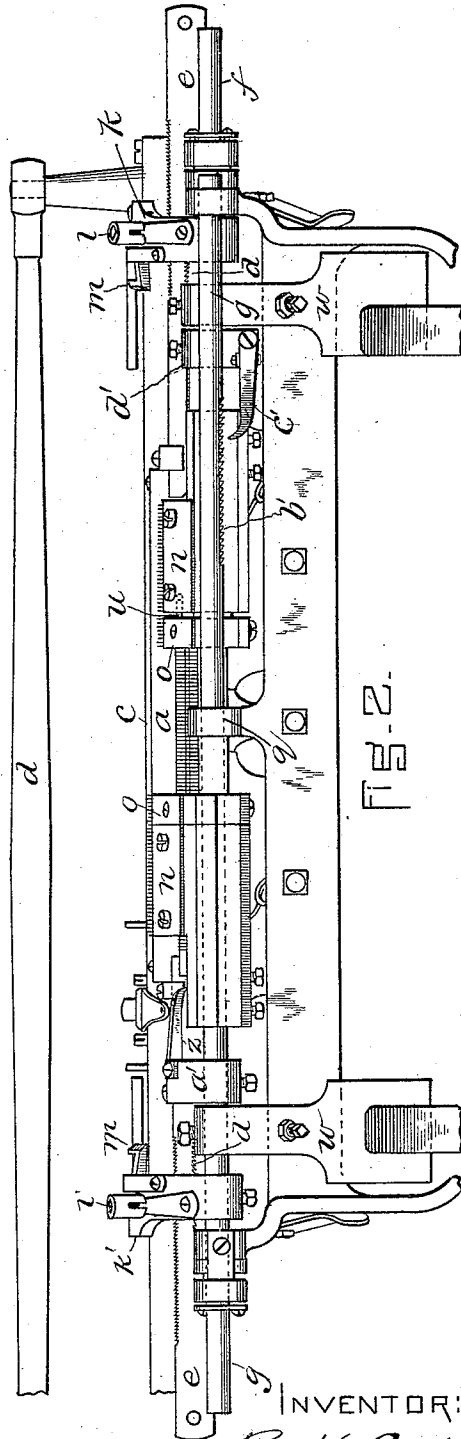
TRANSFERRING MECHANISM FOR PRODUCING TAPE NARROWINGS ON
KNITTING MACHINES.

No. 486,431.

Patented Nov. 22, 1892.



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by R. H. Carter
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(No Model.)

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Fig. 3.

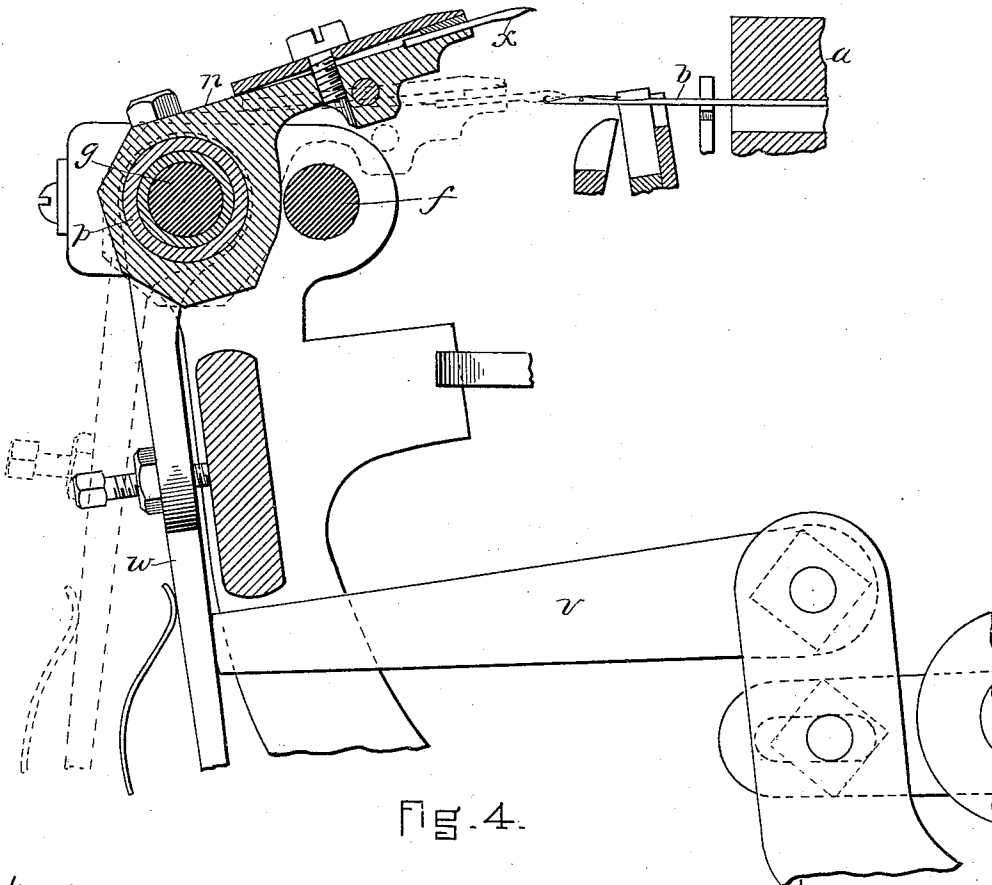
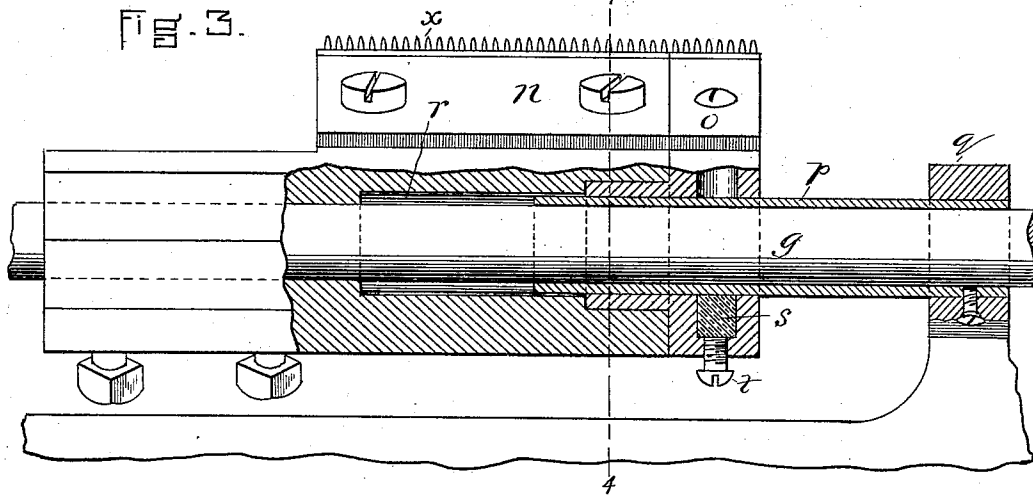


Fig. 4.

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(No Model.)

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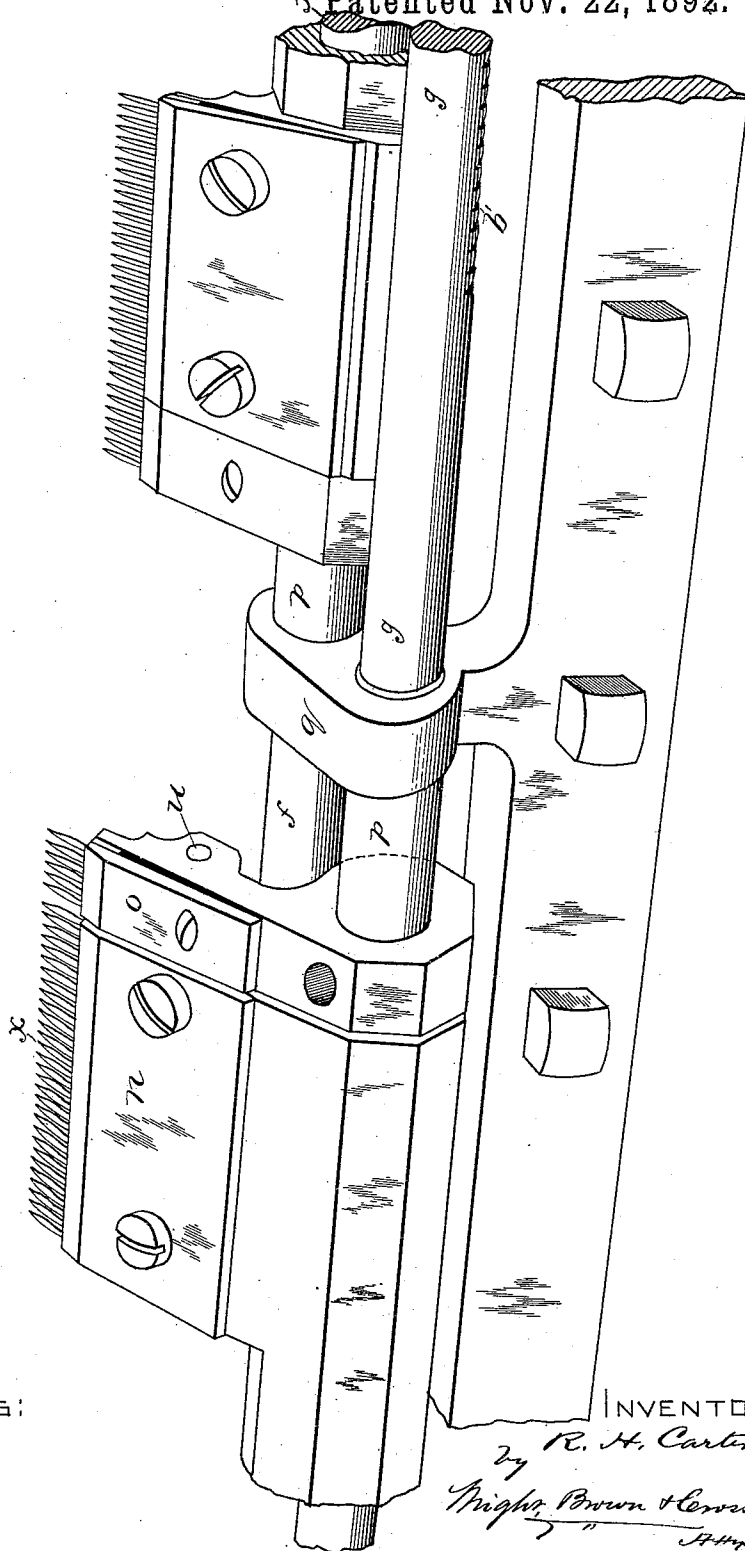
R. H. CARTER.

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Fig. 5.



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UNITED STATES PATENT OFFICE.

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TRANSFERRING MECHANISM FOR PRODUCING TAPE-NARROWINGS ON KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 486,431, dated November 22, 1892.

Application filed February 8, 1892. Serial No. 420,630. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL H. CARTER, of Laconia, in the county of Belknap and State of New Hampshire, have invented certain new and useful Improvements in Transferring Mechanism for Producing Tape-Narrowings on Knitting-Machines, of which the following is a specification.

My invention has relation to knitting mechanism adapted to knit "French-foot" stockings, and is designed to effect the "tape-narrowings" at the sides of the toe of the stocking.

It is the object of my invention to provide simple and thoroughly-efficient means for the purpose mentioned, which may be operated alternately on opposite sides of the fabric being knit without interruption of the operation of knitting.

My invention consists of the improvements which I will now proceed to describe and claim, reference being had to the annexed drawings, and to the letters of reference marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the said drawings, Figure 1 is a top plan view of a portion of a straight-knitting machine having my improvements applied thereto. Fig. 2 is a front view of the parts shown in Fig. 1. Fig. 3 is a sectional view designed to show the manner in which the transferring-point slides are arranged on their supporting and operating bar. Fig. 4 is a sectional view taken on the line 4 4 of Fig. 3. Fig. 5 is a perspective view of the transferring-point slides and their supporting and operating means.

I have herein shown my improvements as applied to the machine shown and described in United States Letters Patent No. 233,061, dated October 12, 1880, and granted to Walter Aiken, to which patent reference may be had for a fuller understanding of the construction and operation of a knitting-machine outside of my improvements than is herein given; and in order to avoid confusion and make clear my improvements, which relate entirely to the transferring-point slides and means for shogging or moving the same, I have omitted to show and shall refrain from describing in

detail such parts of the machine as are not concerned in my improvements or as have not been modified in working out my invention.

In the drawings, *a* designates the needle-bar; *b*, the needles; *c*, the cam-slide and yarn-carrier bar; *d*, the pitman or crank-rod for operating the cam-slide; *e*, the slides for depressing the empty needles in the operation of narrowing; *f*, the longitudinally-movable rod carrying the transferring-point slides on one side of the fabric being knit; *g*, a rod similar to the rod *f*, carrying the transferring-point slides on the opposite side; *h*, a reciprocating rack adapted to be engaged by the end of a rod *i*, tapped through a projecting arm *j* on the end of the cam-slide *c*, as said bar is reciprocated and be intermittently moved inward, a spring *h'* returning said bar to its normal position.

There is, as shown, a rack *h* on each side of the machine, and upon one side there is an arm *k*, connected with the rod *f*, which arm is provided with a vertically-operating pawl *l*, adapted at the proper time to be engaged with the rack *h*, and so effect the "shogging" of the transferring-point slides on the rod *f* inward. On the opposite side of the machine there is an arm *k'*, connected with the rod *g*, which is provided with a pawl *l'*, similar to pawl *l* in arm *k*, and this means effects the shogging of the transferring-point slides on the rod *g* in the same manner as the slides on the rod *f*. The slides *e* are intermittently moved to depress the needles from which the stitches have been taken by pawls *m* on the arms *k k'*, which pawls engage the toothed or "racked" upper edge of said slides and move them inward when the arms *k k'* and the rods carrying the transferring-point slides are shogged, as before described.

In the machine herein represented it will be understood that the front and rear sinker-bars are made in sections and that the machine is otherwise equipped, as described in the patent hereinbefore referred to, so as to enable narrowing to be performed upon one side while the operation of knitting is going on upon the other.

Instead of making the transferring-point slides in one piece, as described in the afore-said patent, I form them in sections *n o*, so

that the sections may be operated in unison to be engaged with and disengaged from the needles to take the loops therefrom and deposit the same again thereon, but so that they
 5 may at times be shogged the one section independent of the other. To these ends I secure the outer section *n* of each transferring-slide directly to its rod or shaft and frictionally mount the section *o* on a sleeve *p*, sur-
 10 rounding the said rod and secured in the bearing *q*. The section *n* is chambered out, as at *r*, Fig. 3, so that it may be moved on the sleeve to the extent desired for effecting the requisite narrowing. It will be understood,
 15 of course, that the rods *f* and *g* are adapted to move in the sleeves *p* without affecting the latter.

Any suitable means for frictionally connecting the slide-sections *o* with the sleeves *p*
 20 may be provided. As herein shown, a chamber is formed in the base of each section over the sleeve and a block *s*, of leather, rubber, or other suitable material, is inserted therein and a set-screw *t* is arranged to be turned
 25 down on the said block to adjust the degree of frictional connection of the section with the sleeve.

u designates a pin secured to the slide-section *o* and extending into a hole formed in
 30 the slide-section *n*, so that as the rods *f* *g* are rocked, as they may be by the operation of the movable arms *v* against the arms *w*, connected with the said rods, to engage the transferring-points *x* with the needles, as shown
 35 by dotted lines in Fig. 4, and disengage them therefrom, (see full lines, same figure,) the two sections *n* *o* may be moved in unison. Instead of securing the pin *u* to the section *o* it may be connected with the section *n* and
 40 extend into a hole in section *o*, as will be readily understood.

To effect the tape-narrowings, the sections *n* *o* will be separated to the extent of the distance existing between the points of two
 45 needles, as is shown at the left in Fig. 5, in which position the transferring-points will be depressed and take the stitches from the needles, when the slide-carrying bar will be shogged to the extent of twice the distance
 50 existing between the points of two needles, carrying the section *n* inward a distance corresponding to the extent to which the bar is shogged and moving the section *o* similarly, but half the distance. The loops will then
 55 be deposited upon the needles and the section *n* moved outward again from the section *o* to the extent of the distance existing between the points of two needles. Each time that the rod carrying the transferring-point slides
 60 is shogged inward the slide-bar *c* on the same side will be shogged inward a like distance, depressing two needles.

It will be noticed that the bars or rods carrying the slide-sections *n* are adapted to move
 65 freely in the sleeves *p* to a limited extent without affecting or being affected by the said sleeve and that the section *o* is moved or

shogged inward by contact therewith of the section *n* when the latter is shogged.

It has already been explained as to how the
 70 rods carrying the transferring-point slides are moved or shogged, and it remains to describe the manner in which section *n* is moved outward, as before described, after the stitches are transferred to the needles and
 75 the transferring-points are raised, as shown by full lines in Fig. 4.

The rod *f* is provided with ratchet-teeth *y*, as seen at the left in Fig. 1, with which when the tape-narrowings are being made a pawl
 80 *z*, pivoted upon a block *a'*, secured to the rod *g*, engages, there being half the number of teeth *y* to the inch as there are teeth to the inch in the slides *h*. The point of said pawl
 85 is engaged upon the rod *f* so as to rest midway between two ratchet-teeth, in order that when the rod *g* is moved to move or shog inward the transferring-point slides connected
 90 with the said pawl will move one-half the distance which the rod *g* is moved without affecting the position of the rod *f* and will then engage the teeth *y*, formed on the rod *f*,
 95 so as to move or shog said rod and the section *n*, connected therewith, back one-half the distance to which it was moved by the en-
 100 gagement of the rod *i* in arm *j* with the slide *h* and intermediaries, before explained. This operation effects the separation of the sections, as before described and as is illustrated at the left in Fig. 5.

The rod *g* is provided on its lower surface with ratchet-teeth *b'*, which are engaged at
 105 the proper times by a pawl *c'*, pivoted upon a block *d'*, connected with the rod *f*, and so effects the separation of the sections of the
 110 transferring-point slides on the opposite side of the machine from that previously described. In this way the section *n* of the transferring-point slides will be moved inward at each operation of narrowing to pro-
 115 duce tape-narrowings to the extent of twice the distance existing between the points of two needles, while the section *o* will be moved inward but one-half the distance of the section *n*, forming a "twist-wale" in the work
 120 along the line between the two sections *n* *o* and the regular line of narrowing at the inner edge of the section *o* in a manner well understood in the production of a French-foot stocking. After the transferring-points
 125 have been operated to produce the tape or box narrowings and the stocking is completed the points will be moved back or outward to their original positions by hand. When narrowing is being performed to form
 130 gussets in the instep portion of the foot, the sections *o* of the transferring-point slides may, if desired, be disconnected from the sections *n* and turned up on their sleeves, so as to be rendered inoperative.

It is obvious that changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

Having thus described the nature of my invention and explained a way of constructing and using the same, though without attempting to explain all the forms in which it may be made or all of the modes of its employment, I declare that what I claim is—

1. A device for operating the sectional transferring-point slides in knitting-machines to effect tape-narrowings, comprising in its construction the movable slide-carrying bars provided with ratchet-teeth, to each of which one of the slide-sections is secured, sleeves to which the other sections are frictionally secured, the said rods passing through the said sleeves, means connecting the two sections to cause the transferring-points to be raised and lowered in unison, and pawls connected with one rod and engaging the ratchet-teeth of the other rod, whereby when one rod is shogged to move the transferring-points carried thereby inward its pawl will operate to move the section secured to the other rod outward, as set forth.

2. A device for operating the transferring-point slides in knitting-machines to effect tape-narrowings, consisting of movable rods provided with ratchet-teeth, to which one section of each set of slides is secured, independent supports to which the other sections are frictionally secured, connections between the two sections to cause them to be raised and lowered in unison, and a pawl pivotally connected with each rod and engaging the teeth of the opposite rod, as set forth.

3. A device for operating the transferring-

point slides in knitting-machines to effect tape-narrowings, consisting of movable rods provided with ratchet-teeth, to which one section of each of said slides is secured, independent supports to which the other sections are frictionally secured, one section of each set being provided with a hole, a pin connected with the other section and extending laterally therefrom into the said hole to connect the two sections to cause them to be raised and lowered in unison, and a pawl pivotally connected with each rod and engaging the teeth of the opposite rod, as set forth.

4. Means for adapting the sectional transferring-point slides of a knitting-machine to be operated to produce the tape-narrowings, consisting of the longitudinally-movable rod, the chambered section *n*, secured to said rod, a sleeve through which the said rod extends and which is adapted to extend into the chamber of the section *n*, and the section *o*, frictionally supported on said sleeve, as set forth.

5. The sectional transferring-point slides *n* *o* and independent supports for the same and a pin *u*, connected with and extending laterally from one section into a hole formed in the other section.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 2d day of February, A. D. 1892.

RUSSELL H. CARTER.

Witnesses:

EDGAR F. REEVES,
JOHN W. ASHMAN.