

W. S. C. WILEY & T. WHITE.
Knitting-Machines.

No. 150,452.

Patented May 5, 1874.

Fig. 1.

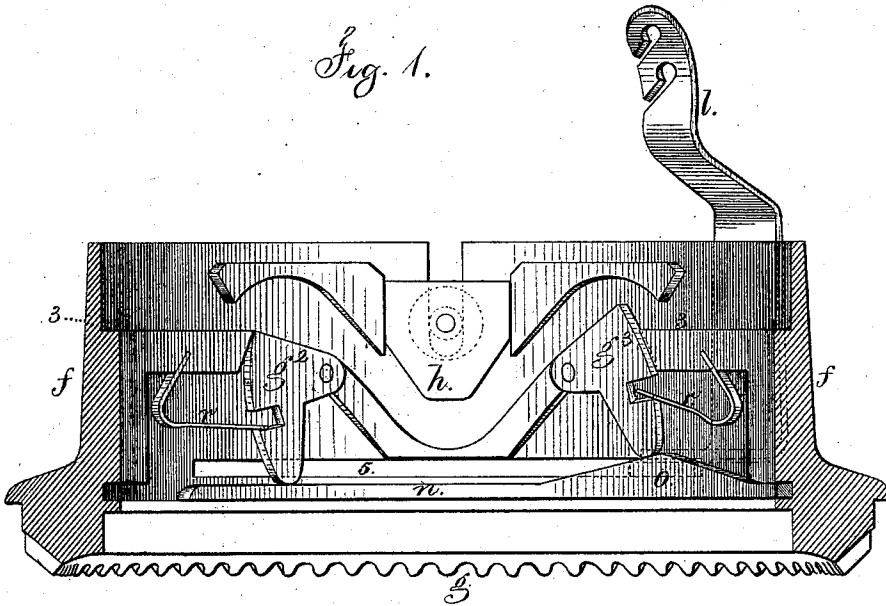


Fig. 3.

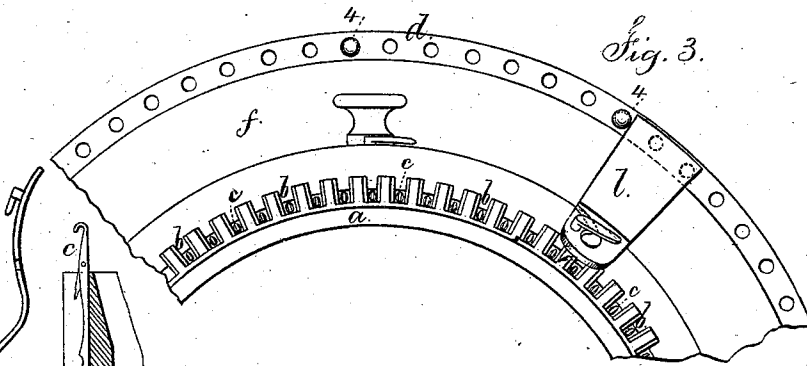
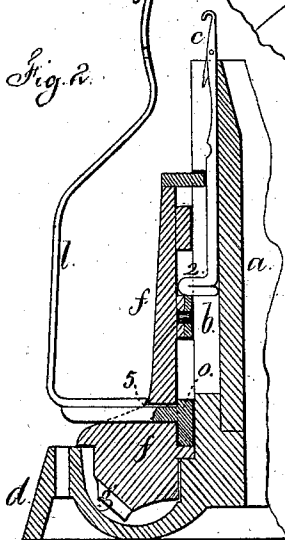


Fig. 2.



Inventors

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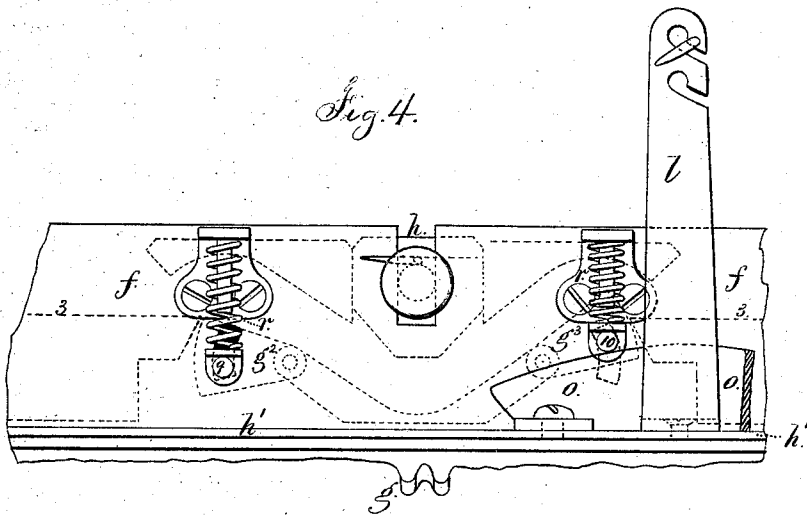
Carold Terrell

per Lemuel W. Terrell
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UNITED STATES PATENT OFFICE.

WILLIAM S. C. WILEY AND THOMAS WHITE, OF NEW HARTFORD, CONN.,
ASSIGNORS TO CHAPIN MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **150,452**, dated May 5, 1874; application filed August 1, 1873.

To all whom it may concern:

Be it known that we, WILLIAM S. C. WILEY and THOMAS WHITE, of New Hartford, in the State of Connecticut, have invented an Improvement in Knitting-Machines, of which the following is a correct description:

Knitting-machines have been made for tubular and flat knitting, and such machines have been changeable, so that tubular knitting could be arrested and the stitches narrowed down, or a flat fabric or strip knitted, by alternating the movement of the parts first one way and then the other. A machine of this character is shown in the Patent No. 92,167; and there are changeable pins and a slotted cylinder that allow a motion of the cloth-raiser after the yarn-carrier is stopped.

Our invention is made for simplifying the mechanism and rendering the same automatic when the motion is reversed in knitting flat fabrics.

In our improvement the thread or yarn carrier is kept in place by springs that produce the pressure and friction necessary to cause it to move in advance of the cams that draw down the needles, and hence the knitting is performed in the usual manner; and in knitting flat material the carrier is moved in advance of the cams until it is arrested by a movable stop that prevents further motion of the carrier, while the cams continue to move with the cylinder, so as to complete the knitting operation and raise the needles ready to receive the thread or yarn upon the return movement of the carrier in the opposite direction. Upon the base of the carrier is an incline that operates to change the cams automatically after the movement of such carrier is arrested, whereby the cams are correctly placed without requiring a separate movement by hand, as has heretofore been necessary in some cases.

In the drawing, Figure 1 is a vertical section of the revolving cylinder, showing the movable cams. Fig. 2 is a section through the stationary needle-cylinder and revolving cylinder. Fig. 3 is a partial plan of said cylinders, and Fig. 4 represents a modification of the mechanism for moving the cams.

The stationary cylinder *a* is grooved vertically at *b* for the reception of the needles *c*, and

such cylinder is upon a base, *d*, that is provided with any suitable clamping mechanism for securing the knitting-machine to the table or other support; and this bed is adapted to receive the spool or bobbin of thread or yarn. Around this cylinder *a* is the cylinder *f*, that is made with teeth *g* at its lower edge, so as to be revolved by a bevel-pinion and crank.

The parts thus far described are well known, and correspond generally with those shown in Letters Patent No. 80,121 and No. 92,146, and do not require further description.

The foot 2 of each needle ordinarily rests upon the ledge 3 of the cylinder *f*, except when raised by one of the cams *g*² or *g*³, to slip the loop of thread below the latch, or depressed to throw that loop off the needle by the edges of the cylinder *a*, while the yarn is retained in the hook of the needle to form the next loop, the cam *h*, that is adjustable vertically, being employed to draw the needles down and produce loops of greater or less length, as usual, according to the position of that cam *h*, as has heretofore been done. The yarn or thread carrier *l* is made as an arm projecting from the automatic cam-changer that is connected with the base of the cylinder *f*, so that a limited amount of movement is allowed to the cylinder *f* after the carrier *l* has been stopped by contact with one of the pins 4, that are placed in the holes around the base *d*, at the two proper places, when the machine is changed to perform flat knitting.

In Figs. 1 and 3, the carrier *l* is upon a segment, *n*, that is within the cylinder *f*, the carrier-arm passing through a slot, 5, in the cylinder *f*, and the incline *o* serves to raise either cam *g*² or *g*³, and when the cam or incline *o* is not beneath either *g*² or *g*³, then one of the cam-springs *r* throws that cam down out of action. The apex of the double incline *o*, passing beyond the arm of the cam *g*² or *g*³, insures the necessary friction for holding the carrier *l* in advance of the cam and causing it to properly deposit the thread or yarn in the hooks of the needles when the cylinder *f* is revolved in either direction; but when such cylinder is partially revolved first one way and then the other, the carrier is stopped by one of the pins 4, while the cylinder is moved to the extent

allowed by the slot; hence one of the cams g^2 or g^3 is moved from over the incline o , and is pressed down by its spring, and then the other one is raised to act, as before mentioned, in raising the needles to pass the loops below the latch, as aforesaid.

The same operations are performed by the modification shown in Fig. 4. In this the carrier l is supported by the ring h' outside the cylinder f , and resting upon its base, and the incline o is upon that ring and acts upon studs 9 10, projecting from the cams $g^2 g^3$, through the cylinder f . In this case the springs r may be external and helical, as shown.

By this construction of knitting-machine, the thread-carrier being arrested and then the movements for looping and casting off the stitches being completed before any reverse motion takes place, there is very little risk of dropping stitches, and the change from a cylindrical to a flat or segmental fabric, or the narrowing or widening of the goods, can be performed with great facility and reliability.

It will be evident that the springs r produce the necessary pressure and friction to cause the

yarn or thread carrier to be held and moved in advance of the cams, thus dispensing with the latches, hooks, or catches heretofore employed for this purpose.

We claim as our invention—

1. The segment n and incline o within the cylinder f , connected, through the slot 5, to the carrier l outside such cylinder, in combination with the cams $g^2 g^3$ and needles, substantially as set forth.

2. The yarn or thread carrier l , cylinder f , cams $g^2 g^3$, and incline for moving the cams after the carrier has been stopped, in combination with springs r , that serve to depress the cams and apply a friction to the thread-carrier, to cause the same to be held in advance of the cams, substantially as set forth.

Signed by us this 26th day of July, A. D. 1873.

WM. S. C. WILEY.
THOS. WHITE.

Witnesses:

DANIEL S. COE,
O. T. HUNGERFORD.