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YARN TAKE-UP AND TENSION FOR KNITTING MACHINES.

APPLICATION FILED AUG. 3, 1915.

1,238,716. Patented Aug. 28, 1917.

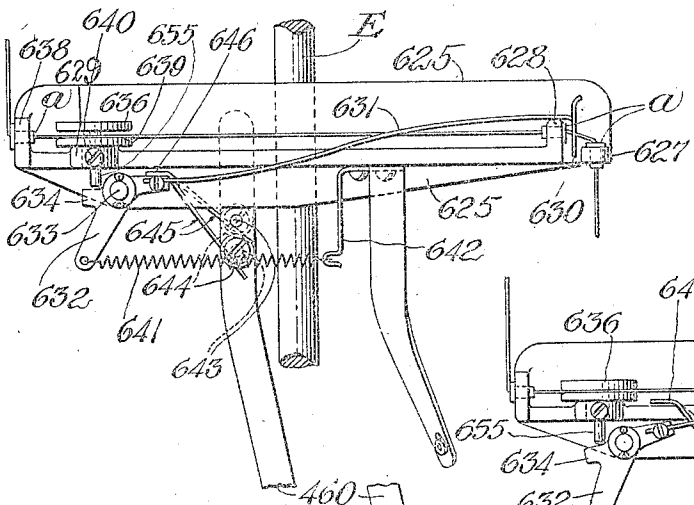



Fig. 3.

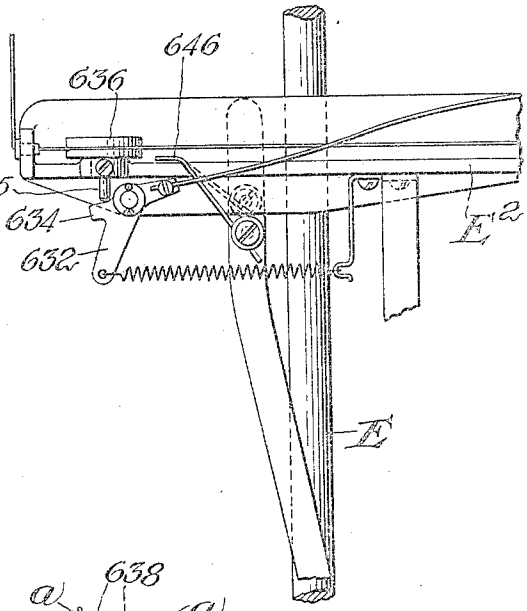



Fig. 1

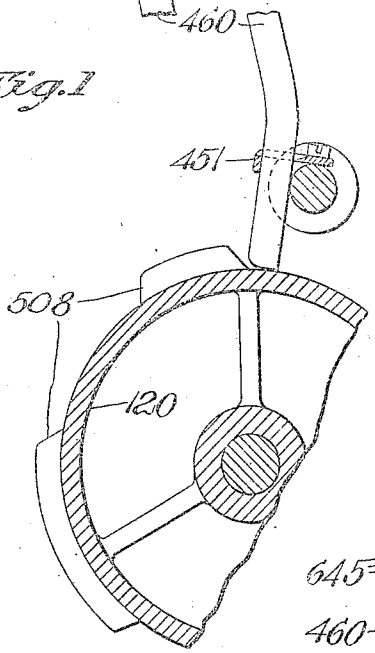
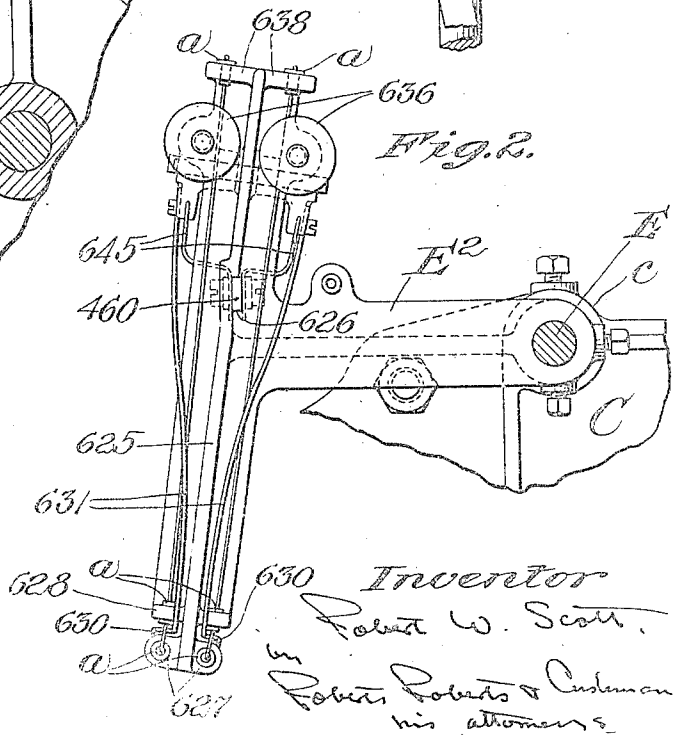



Fig. 2.




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# UNITED STATES PATENT OFFICE.

ROBERT W. SCOTT, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SCOTT & WILLIAMS, INCORPORATED, A CORPORATION OF MASSACHUSETTS.

## YARN TAKE-UP AND TENSION FOR KNITTING-MACHINES.

1,238,716. Specification of Letters Patent. Patented Aug. 28, 1917.

Original application filed February 3, 1913, Serial No. 746,070. Divided and this application filed August 3, 1915. Serial No. 43,407.

*To all whom it may concern:*

Be it known that I, ROBERT W. SCOTT, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Yarn Take-Ups and Tension for Knitting-Machines, of which the following is a specification.

My invention relates to an overhead yarn-guide or support and yarn take-up device for use in knitting machines, especially in knitting machines adapted for reciprocatory knitting.

One object of my invention is to secure by improved automatic means the automatic recovery of the slack formed during reciprocatory movements of the driven member of a hosiery or other knitting machine, and other objects are to secure by simple and adjustable means the independent recovery of two or more yarns fed together during the reciprocal movements of the driven part of such a machine.

In the accompanying drawings,

Figure 1 is a left side elevation;

Fig. 2 is a plan; and

Fig. 3 is a view similar to Fig. 1, illustrating the parts in a different position.

In my application, Serial No. 746,070, filed February 3, 1913, (Letters Patent No. 1,152,850, dated September 7, 1915,) of which this application is a division, I have disclosed a hosiery knitting machine comprising a bed-plate C having a boss *c* in a bore in which is erected a standard E upon which, at a suitable height above the knitting head, is mounted the take-up and tension-carrying member $E^2$. The usual overhead yarn-guide and the usual bobbin-stand may also be supported by the standard E.

Referring to Figs. 1 and 2, the member $E^2$ may be a casting of the T-shaped form shown having stiffening webs 625 and a central aperture 626 to receive and guide the upper end of a thrust-bar 460, which bar may be bent back toward the back of the machine as shown in Fig. 1. The lower end of said bar is guided in comb 451, the lower end of said bar resting on the face of a pattern drum 120 carrying cams 508 to encounter and lift the bar 460 at the proper times, for instance, whenever the machine is reciprocating.

The member $E^2$ is provided with short transverse webs 628, 638 bored to receive yarn guiding eyes *a*. Beyond the web 628 and at one end of the member $E^2$, the web 625 supports lugs 627 having vertical bores for eyelets *a*. Lugs 627 are separated from the web 628 by free space adapted to receive hook ends 630 of wire tension arms 631 adjustably fastened to rocker arms 632 journaled at 633 on the lower extension 626 of the web 625. Each rocker arm 632 carries a lug 634 standing beneath a vertical bore formed in a part or lug 629, integral with the member $E^2$, the parts 631, 632 and 634 constituting a yarn take-up lever. Like tension springs 641 held at one end by separately adjustable wire arms 642 screwed on the under face of member $E^2$ determine the elevating tensions of the take-up levers. Each of the lugs 629 has fixed therein by means of a set screw 640 a fixed member 639 of a yarn tension device also comprising a vertically movable member 636, having an extension 655 received and freely movable in a central bore of the member 639. The extension 635 rests on the lug 634.

The position of the eyes *a* in the flanges 628 and 638 is such as to guide the yarn or yarns on each side of the central web 625 across the upper face of the fixed member 639 of the gravity tension device comprised by the upper face of the member 639 and the movable member 636. In practice, for variations in the yarn tension, tension disks 636 of different weights or weights for addition to the members 636 are employed to vary the yarn tension when desired.

In two separated bores of the upper end of bar 460, adjusting screws 643 hold against the face of said bar by means of the grooved washers 644, bent wire tappet arms 645 which may be separately adjusted by sliding them in the grooves in the washers, or rotating them with respect to the screws, and locked in adjustment by setting up the screws 643. Said arms have bent upper ends 646 taking over the rocker 632 to hold the wire arms 631 down against the tension of spring 641, except when a cam 508 lifts the bar 460.

The operation will now be apparent. Whenever the bar 460 is lifted, each of the take-up levers is released, movement of the lug 634 at the same time permitting the movable tension disk 636 to place the yarn under tension. The components of a yarn

to be fed as a single yarn during reciprocation may be separately tensioned and separately recovered by the use of my device. It will be observed that the tension between the disks 639, 636 is delicately and separately adjustable for each pair of disks, both by varying the weight of the movable member 636 and by altering the vertical position of the fixed member 639.

Pattern drum 120 may be a main or auxiliary pattern surface of the machine, but preferably, as described in my said application, moves in unison with the pattern indications controlling the times of operation of the machine and the operation of the yarn carriers, and in normal use the cams 508 operate to release the take-up levers 631, 632 during reciprocatory knitting, passage of the cams 508 from under the bar 460 acting to release the bar 460 to hold down the levers 631, 632 during rotary knitting.

What I claim is:

1. A knitting machine having in combination a yarn take-up lever, and means for guiding and tensioning a run of yarn consisting of an adjustable fixed tension disk, and a movable tension disk having an extension adapted to contact with said lever in one position of said lever, whereby then to separate said fixed and movable disks, a pattern surface, and a direct connection between said pattern surface and said lever adapted to hold said lever in said position at predetermined times.

2. A knitting machine having in combination a pattern surface, a thrust-bar coöperating with said pattern surface, a yarn take-up lever, and means for guiding and tensioning a run of yarn consisting of a movable tension disk controlled by said lever, an adjustable fixed tension disk, and adjustable means carried by said bar for positioning said lever according to the indications on said pattern surface.

3. A knitting machine adapted to knit a plurality of component yarns fed together during reciprocatory knitting having therein in combination a similar plurality of take-up levers, one for each of the respective component yarns, separately adjustable springs for said take-up levers, separate tension devices for the respective yarns independently controlled by the take-up levers, a pattern-surface, and a single connection between said pattern surface and said take-up levers adapted to hold said levers and their respective tension-devices inoperative during rotary knitting.

4. In a knitting machine, a pattern mechanism and a movable thrust-bar coöperating with said pattern mechanism, in combination with fixed means to guide the knitting yarn, a tension disk adjustably fixed near the guided run of the yarn, a gravity tension disk to rest upon said fixed disk, a spring actuated take-up lever engaging the yarn at another guided run thereof, an arm on said lever to engage and lift said movable disk, and an adjustable tappet member on said thrust-bar, to engage and lock down the take-up arm and open the tension disks at times determined by the pattern.

5. In a knitting machine, means for rotary and reciprocatory knitting, a pattern mechanism, and a vertically movable bar coöperating with said pattern mechanism for actuation at the beginning and the end of reciprocatory movement of the machine, in combination with means to guide the knitting yarn, a fixed tension disk near the guided run of the yarn, a gravity tension disk to rest upon said fixed disk, a take-up lever engaging the yarn at another guided run thereof, a pivot for said take-up lever, an arm on said lever to engage and lift said movable disk, and an adjustable tappet member on said vertical bar, to engage and lock down the take-up arm and open the tension disks during rotary knitting.

6. A knitting machine having in combination a pattern surface, a thrust-bar coöperating with said pattern surface, a plurality of take-up levers, separately adjustable springs therefor, and means for guiding and tensioning a plurality of runs of yarn comprising movable tension disks separately controlled by said levers, adjustable fixed tension disks coöperating with said fixed disks, and separately adjustable means carried by said bar for positioning said levers according to the indications on said pattern surface.

Signed by me at Boston, Massachusetts, this thirtieth day of July, 1915.

ROBERT W. SCOTT.