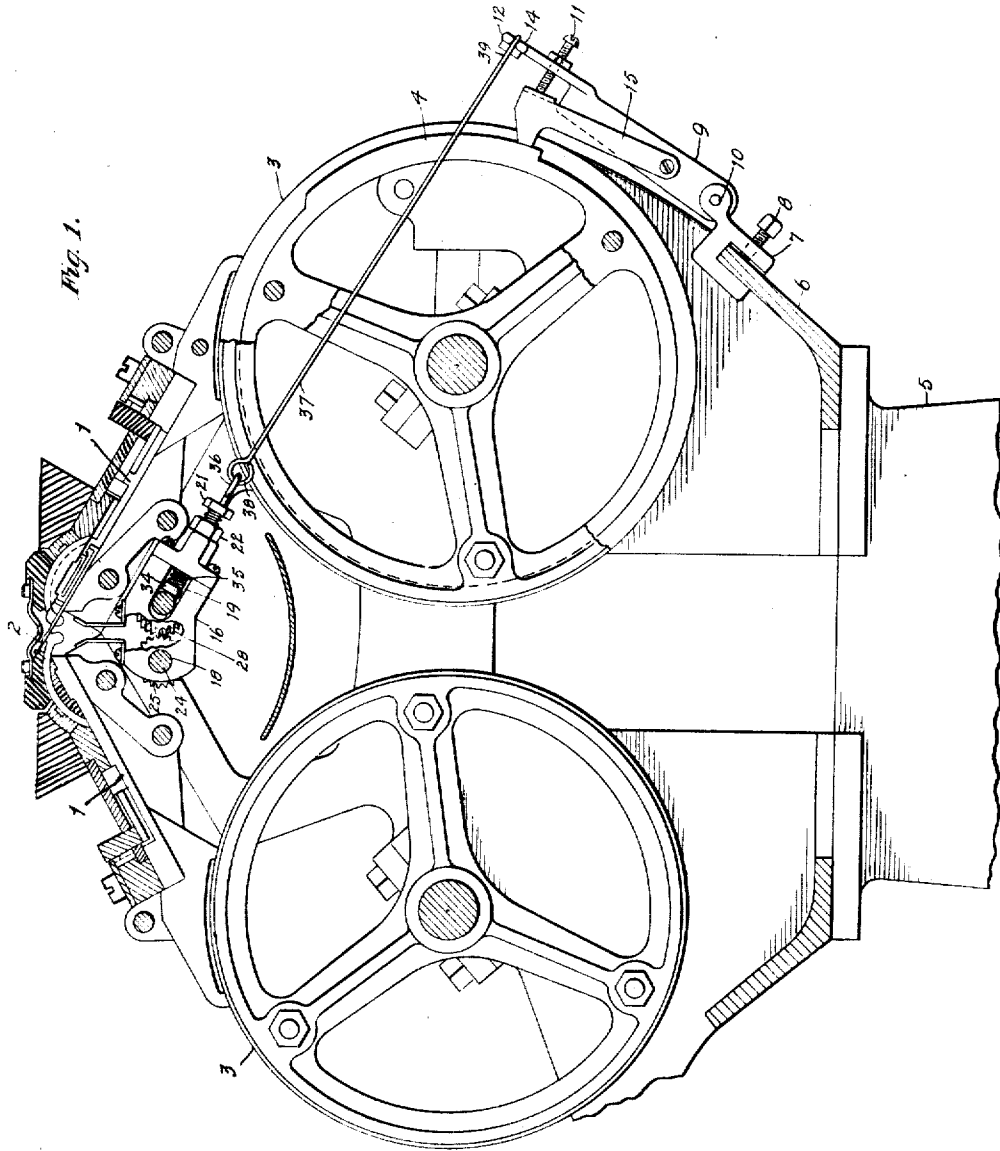


W. F. ROLSTON.
KNITTING MACHINE.
APPLICATION FILED MAY 6, 1910.

1,016,233.

Patented Jan. 30, 1912.

4 SHEETS—SHEET 1.



Witnesses:

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E. Behel

Inventor:

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By A. D. Behel

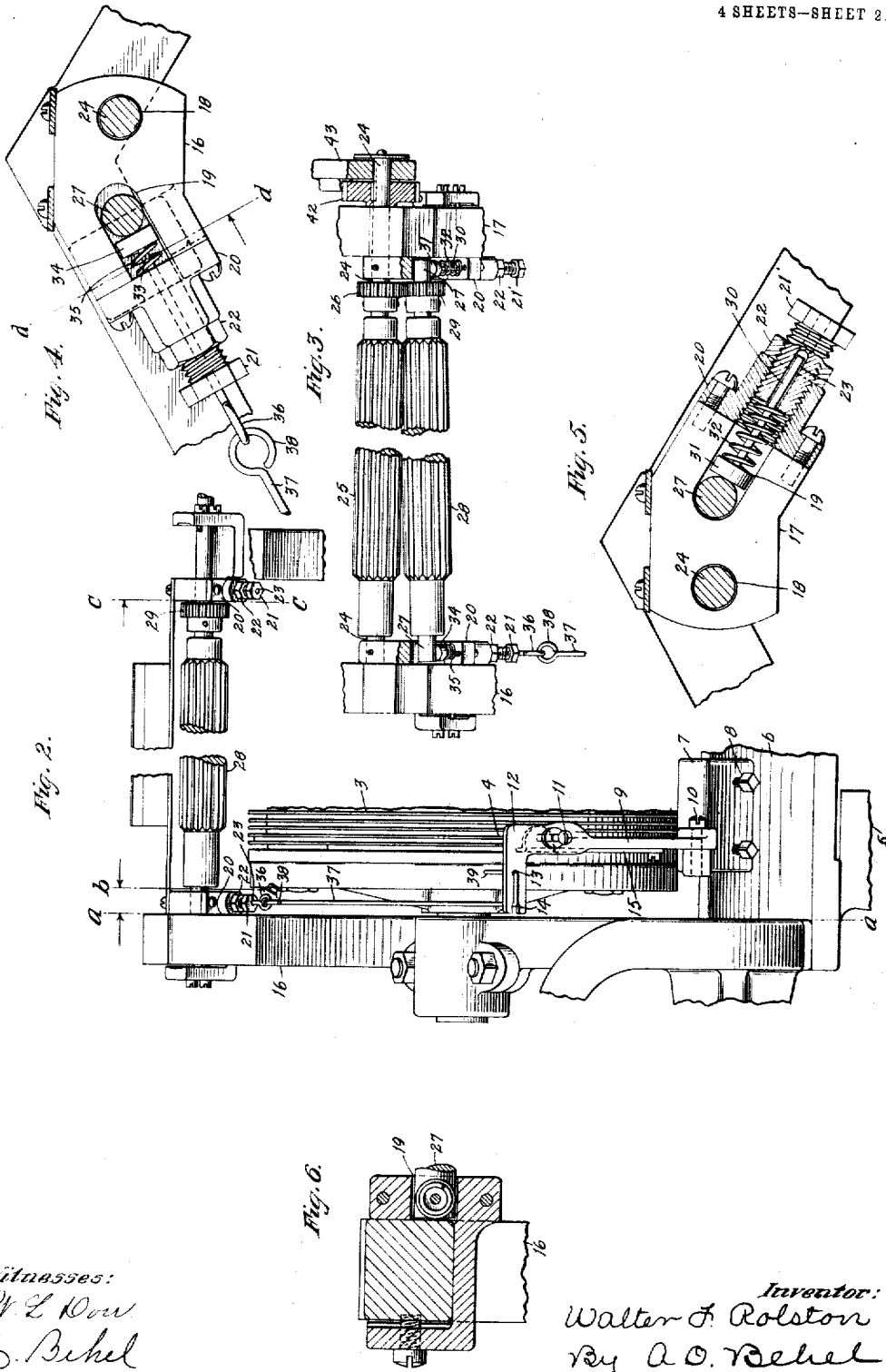
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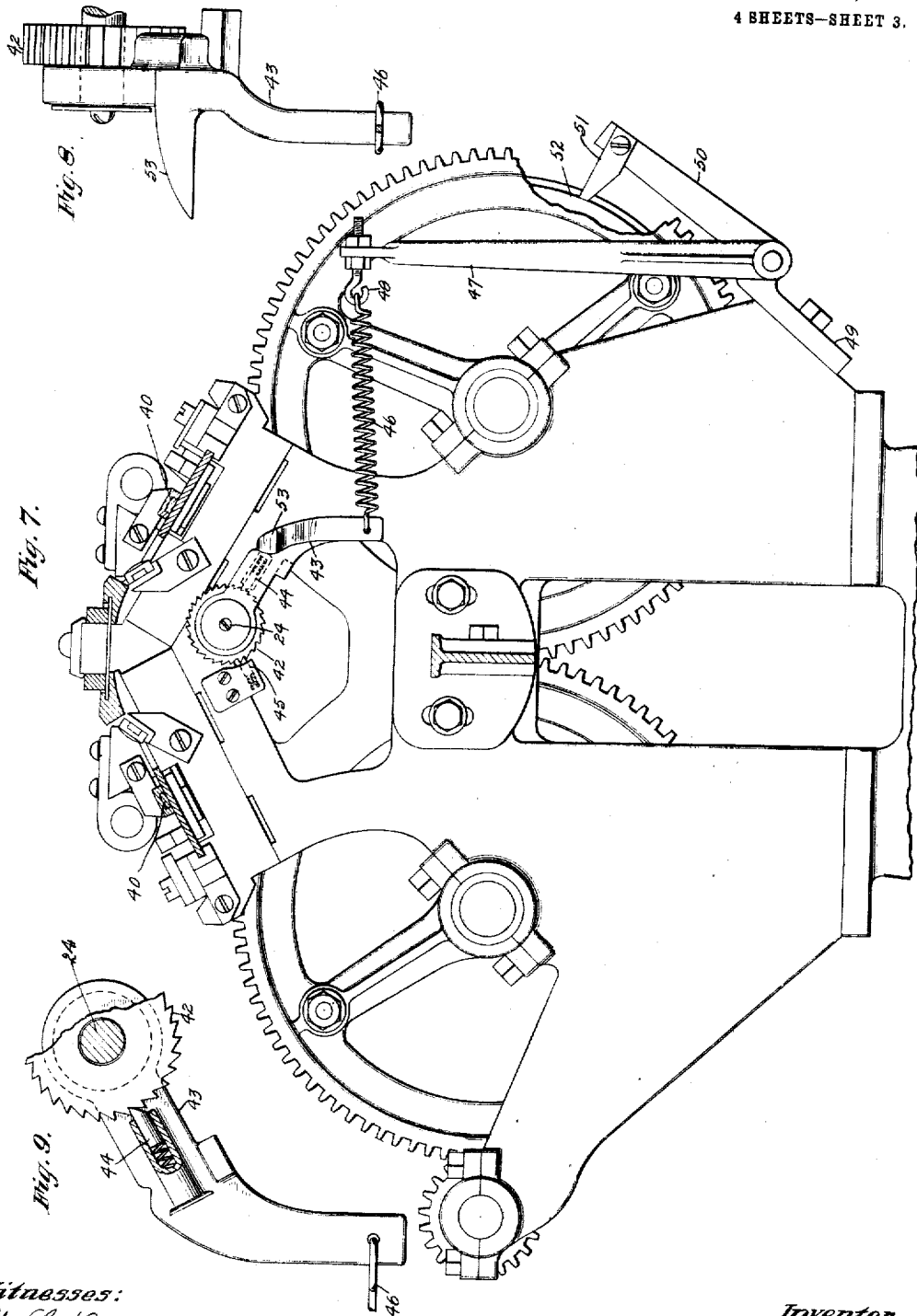


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4 SHEETS--SHEET 3.



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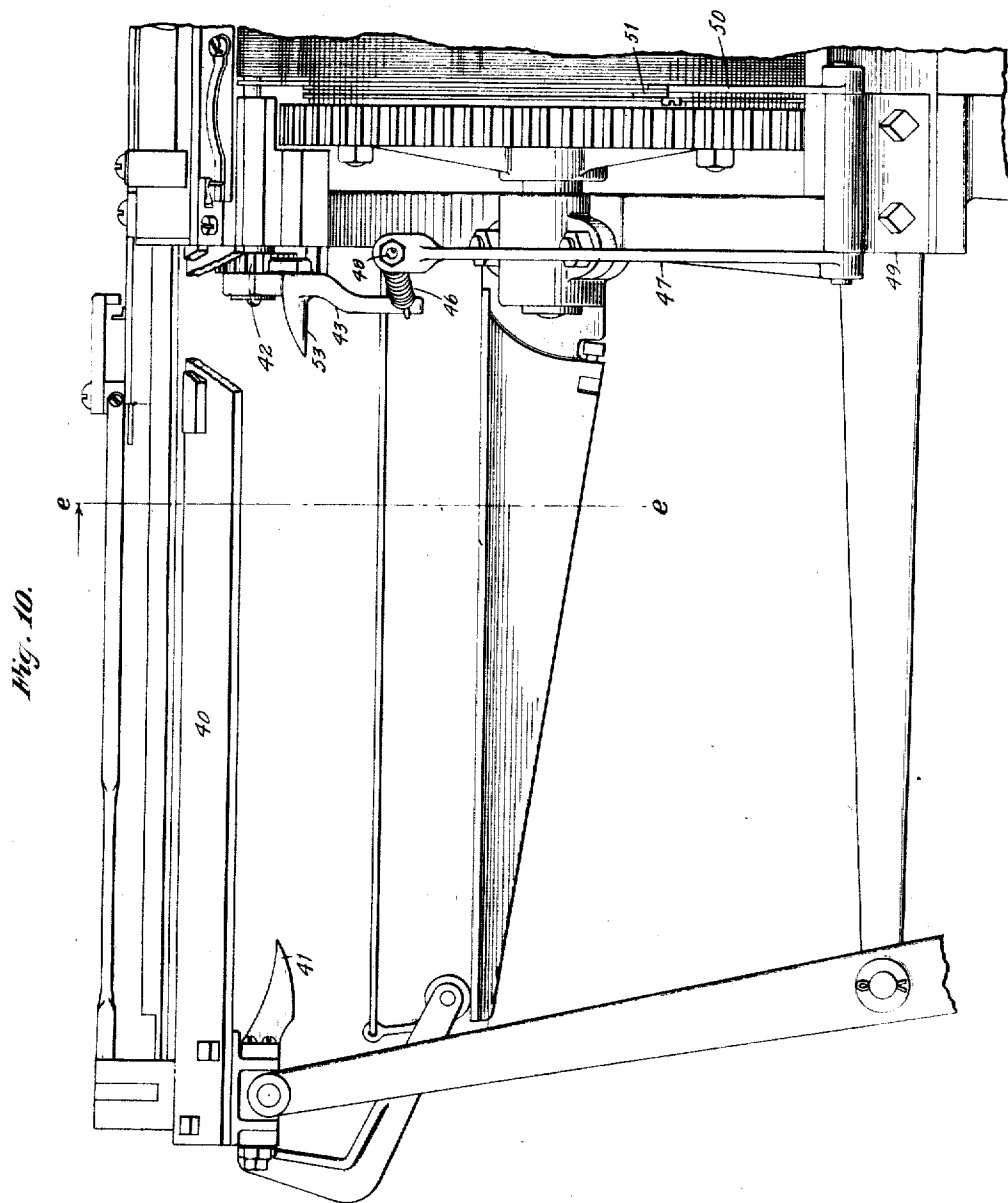
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4 SHEETS—SHEET 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

WALTER F. ROLSTON, OF ROCKFORD, ILLINOIS, ASSIGNOR TO BURSON MANUFACTURING COMPANY, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

KNITTING-MACHINE.

1,016,233.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed May 6, 1910. Serial No. 553,841.

To all whom it may concern:

Be it known that I, WALTER F. ROLSTON, a citizen of the United States, residing at Rockford, in the county of Winnebago and State of Illinois, have invented certain new and useful Improvement in Knitting-Machines, of which the following is a specification.

The object of this invention is to construct a knitting machine in which means are provided for placing a strain on the stockings while being knit, said strain being variable or relaxed during the knitting of the heel of the stocking.

In the accompanying drawings, Figure 1 is a vertical section through a straight knitting machine showing my improvements on dotted line *a* Fig. 2. Fig. 2 is a partial side elevation. Fig. 3 is a representation of the rollers and their supports. Fig. 4 is a section on dotted line *b* Fig. 2. Fig. 5 is a section on dotted line *c* Fig. 2. Fig. 6 is a section on dotted line *d d* Fig. 4. Fig. 7 is a partial elevation and section showing the means for imparting an intermittent rotary movement to the roller 25 on dotted line *e e* Fig. 10. Fig. 8 is a side elevation of the ratchet wheel 42 and bracket 43. Fig. 9 is a partial elevation and section of the ratchet wheel 42, bracket 43 and dog 44. Fig. 10 is a side elevation of one end of a knitting machine showing the cam slides and means for imparting an intermittent rotary movement to the roller 25.

The knitting machine in the main is of the well known straight variety, and comprises the two needle beds 1 with their operating cams, for imparting movements to the knitting needles 2. Pattern drums 3 are employed to control the throwing in and out of the needles during the process of knitting. One of the pattern drums is provided with a cam section 4 for a purpose to appear hereinafter. From the base 5 of the machine extends a rib 6 to which is connected a clamp 7 by the screws 8. To this clamp is pivoted an arm 9 on the screw 10, and its upper portion supports an adjusting screw 11, and its upper end has an offset portion 12 provided with a hole 13, and a slot 14. To the arm 9 is pivoted a dog 15, the upper end of which contacts with the cam section 4. The screw 11 rests in contact with the upper end of the dog 15.

To the end frames of the machine are secured two plates 16 and 17, and each is provided with an opening 18 and a slot 19. A cap 20 covers the open end of the slot 19 and is formed with a screw-threaded opening within which is turned a screw plug 21 held against rotation by the lock nut 22. This plug 21 has a central opening 23. The trunnions 24 of a corrugated faced roller 25 are supported in the openings 18, and a spur gear wheel 26 is fixedly connected to one of the trunnions of this roller. The trunnions 27 of a corrugated faced roller 28 are supported in the slots 19, and a spur gear wheel 29 is fixedly connected to one of the trunnions of this roller. This spur gear 29 meshes with the spur gear 26, and as the spur gear 26 is positively rotated a rotary movement will be imparted to the spur gear 29 and to the roller 28. The shank 30, of a plunger 31 is located within the central opening of the plug 21 and a coiled spring 32 surrounds the shank and presses against the plunger, and holds it against one of the trunnions 27 of the roller 28 to which the spur gear is connected, and serves to hold the spur gear 29 in mesh with the spur gear 26. The shank 33 of the plunger 34 is located within the central opening of the plug 21, and a coiled spring 35 surrounds the shank and presses it against the plunger, and holding it against the other trunnion 27 of the roller 28. This spring 35 in connection with spring 32 holds the roller 28 yieldingly in contact or a little separated from the roller 25. The shank 33 extends through the plug 21 and has its end formed with an eye 36. A rod 37 has an eye 38 engaging the eye 36 of the shank 33 and the other end of this rod is in the form of a hook 39 which is located in the slot 14 and hole 13 of the upper end of the arm 9. By this rod, a connection is formed between the section 4 of the pattern drum and the spring actuated plunger 34.

During the process of knitting the pattern drum will be intermittently rotated which will carry the cam section 4 against the dog 15 causing it to move the arm 9 on its pivotal support which will pull on the rod 37 and through it on the spring actuated plunger 34 thereby permitting the roller 28 to separate from the roller 25 at one end.

While the machine is knitting the foot

and leg of the stocking the roller 28 will contact with the roller 25 its full length, thereby exerting a strain on the stocking as it is drawn between the rollers. When the machine is knitting the heel of the stocking, the roller 28 will separate from the roller 25 a portion of its length so that the heel portion only will be held between the rollers.

The means for imparting an intermittent rotary movement to the rollers 25 and 28, is operated by the reciprocating movement of the cam slide 40 to which is attached a cam-shaped finger 41. To the roller 25 is secured a ratchet wheel 42, and on the trunion of this roller is pivotally mounted an arm 43. A spring actuated dog 44 is supported by the arm 43 and engages the teeth of the ratchet wheel 42 and a retaining dog 45 is supported by the main frame, and which also engages the teeth of the ratchet wheel 42 and holds it from backward movement. To the free end of the arm 43 is connected a spring 46, and the other end of this spring is adjustably connected to one end of an arm 47 by the screw threaded hook 48. The lower end of the arm 47 is pivotally supported by the bracket 49 connected to the main frame. A finger 50 is fixedly connected to the lower end of the arm 47 so as to move therewith. To the free end of the finger 50 is connected a detent 51 which engages a cam 52 supported by one of the pattern drums 3 and as the cam contacts with the detent the finger 50 will be moved which will also move the arm 47 and increase the tension of the spring 46, thereby rocking the arm 43 and causing the dog 44 to move the ratchet wheel 42. This spring 46 moves the dog in one direction, and the cam-shaped finger 41 contacting with a cam-shaped finger 53 extending from the arm 43 will move the dog 44 downward so that it will engage another tooth of the ratchet wheel, and upon releasing it, the dog will be operated by the spring 46 to rotate the take-up rollers. The cam 52, arm 47, and associated parts therefore, by varying the tension of the spring, varies the strain or tension put upon the fabric by the rollers.

I claim as my invention.

1. In a knitting machine, the combination of means for knitting a stocking, two rollers, means for imparting an intermittent rotary movement to the rollers, pattern devices, and means controlled by the pattern devices for permitting the separation of the rollers at one end thereof.

2. In a knitting machine, the combination with knitting and pattern mechanism, of coacting take-up rollers that are relatively movable toward and from each other, and means automatically controlled by said

mechanism for effecting their said relative movement.

3. In a knitting machine, the combination with knitting and pattern mechanism, of coacting take-up rollers that are relatively movable toward and from each other, a spring for relatively moving them in one direction, and means automatically controlled by the said mechanism for effecting their relative movement in an opposite direction.

4. In a knitting machine, the combination with knitting and pattern mechanism, of coacting take up rollers that are relatively movable toward and from each other, a spring for relatively moving the rollers toward each other, an arm connected to the spring, and a cam rotatable with the mechanism and operating against the arm.

5. In a knitting machine, the combination with the knitting mechanism, of take-up rollers associated therewith, means for rotating the rollers, one of said rollers being movable toward and from the other, a spring for urging the rollers toward said other roller, a swinging arm, a link connected with the arm and with the spring, for moving said spring to relieve the rollers of the tension thereof, a pattern drum, and a cam carried by the pattern drum and operating on the arm to move the same and thereby compress the spring.

6. In a knitting machine, the combination with knitting mechanism, of coacting take-up rollers, means for rotating the rollers, and means for effecting the relative movement of the rollers toward and from each other at one end only.

7. In a knitting machine, the combination with knitting and pattern mechanism, of coacting take-up rollers, springs for yieldingly holding the rollers in coacting relation, and means automatically controlled by the mechanism for relieving the rollers at one end only of the spring tension.

8. In a knitting machine, the combination with knitting mechanism, of coacting take-up rollers associated therewith, one of said rollers being movable toward and from the other, springs engaging said roller for urging it toward the other roller, a pattern drum, a cam movable therewith, an arm actuated by the cam, and a connection between the arm and one of the springs for relieving the tension on the roller at one end only.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WALTER F. ROLSTON.

Witnesses:

A. O. BEHEL,

E. D. E. N. BEHEL.