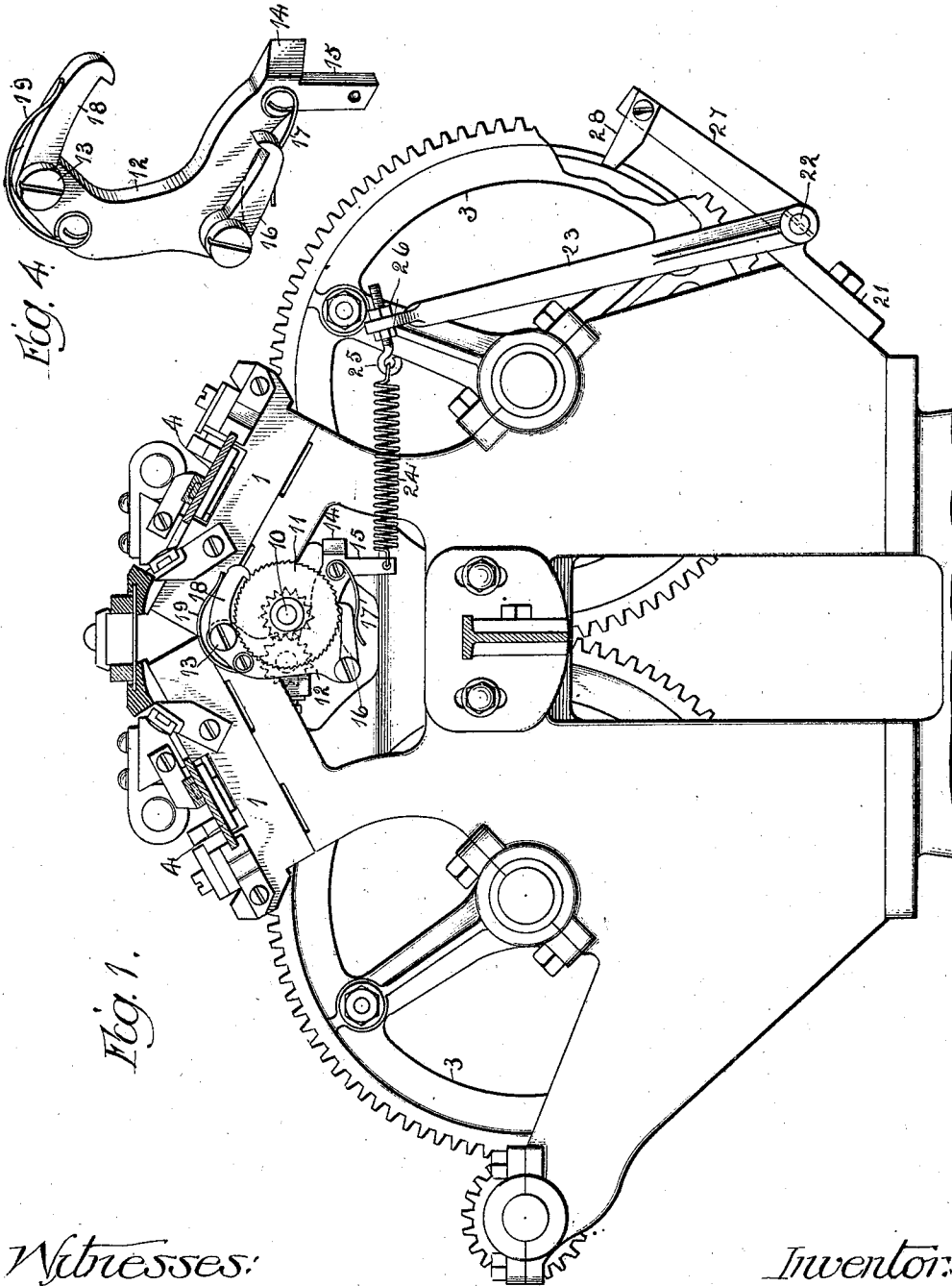


W. F. ROLSTON.
TAKE-UP MECHANISM FOR KNITTING MACHINES.
APPLICATION FILED JAN. 18, 1910.

1,012,710.

Patented Dec. 26, 1911.

3 SHEETS—SHEET 1.



Witnesses:
Harold Bennett
Robert F. Weir

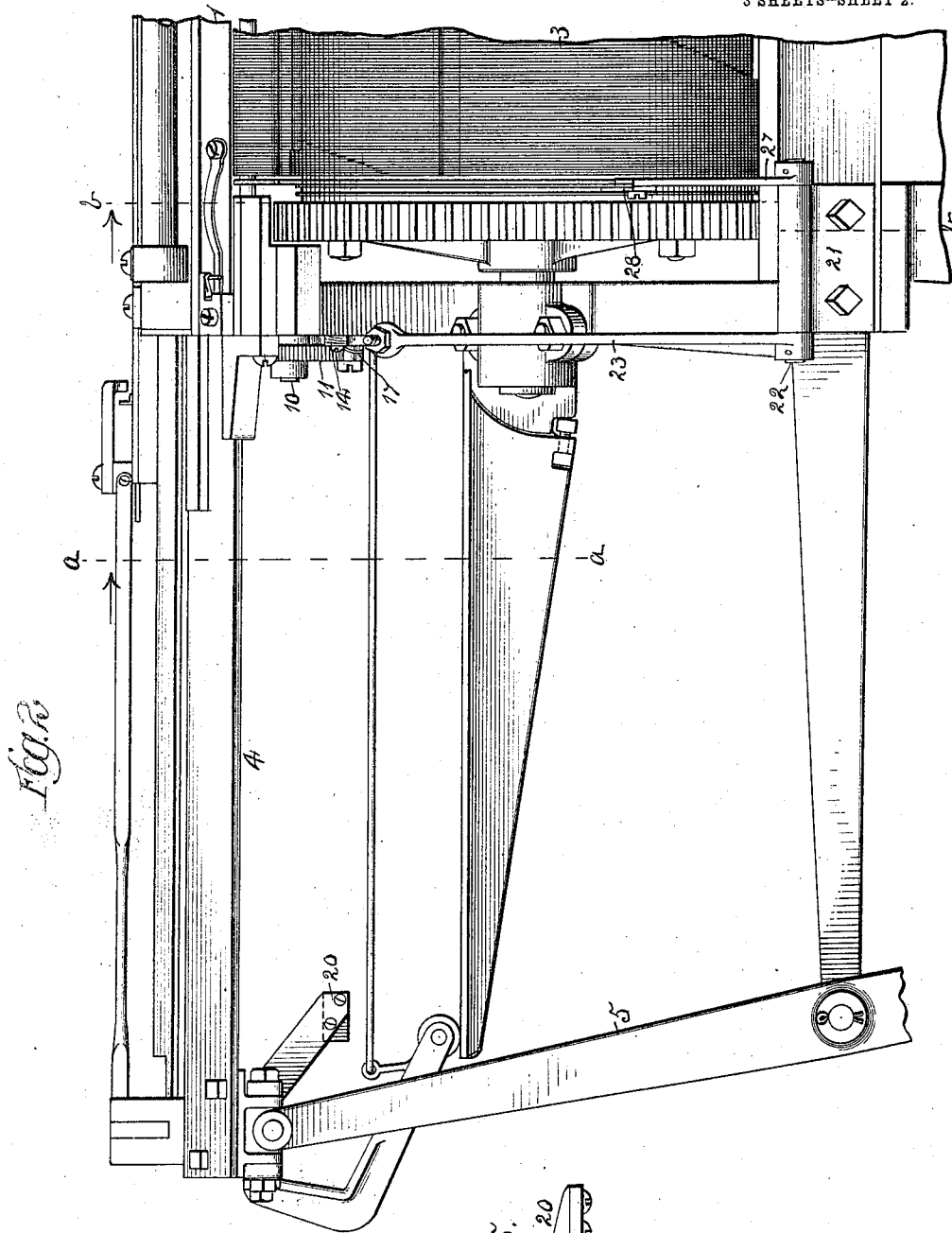
Inventor:
Walter F. Rolston
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Atty.

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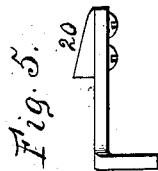
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3 SHEETS—SHEET 2.



Witnesses:
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3 SHEETS—SHEET 3.

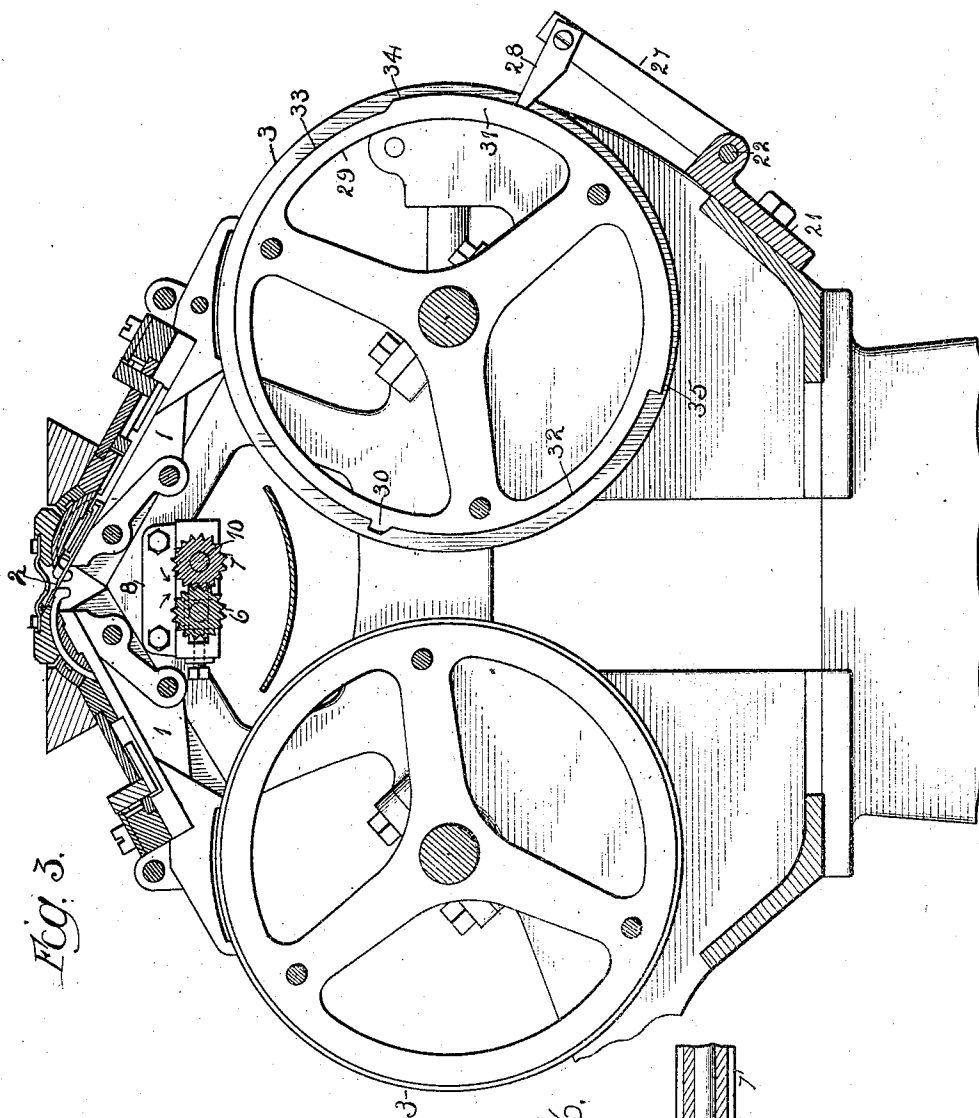


Fig. 3.

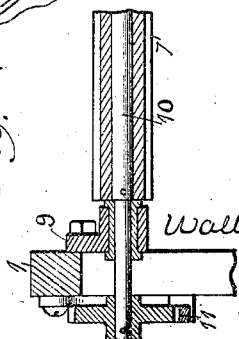


Fig. 6.

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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.

TAKE-UP MECHANISM FOR KNITTING-MACHINES.

1,012,710.

Specification of Letters Patent. Patented Dec. 26, 1911.

Application filed January 18, 1910. Serial No. 538,785.

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 Improvements in Take-Up Mechanism for Knitting-Machines, of which the following is a specification.

The object of this invention is to construct a knitting machine in which tension or downward strain will be exerted on the stockings or fabric being knit in order to elongate the stitches so that greater elasticity will be imparted to the stockings in a transverse direction.

The further object of this invention is to automatically apply and relieve the tension applied to the stockings.

The further object of this invention is to automatically increase the tension applied to the stockings as the widening process continues.

In the accompanying drawings, Figure 1 is a vertical section on dotted line *a a* Fig. 2. Fig. 2 is a side elevation. Fig. 3 is a vertical section on dotted line *b b* Fig. 2. Fig. 4 is a perspective view of the dog arrangement. Fig. 5 is a plan view of the dog operating cam. Fig. 6 is a section through the ratchet wheel and one of the take-up rolls.

The knitting machine in the main is of the well known straight variety comprising the needle beds 1, supporting the knitting needles 2 and the necessary cams for operating them.

The pattern drums 3 control the throwing in and out movements of the needles. The cam slides 4 are connected to move together and are reciprocated by the rock arm 5, which is oscillated by a connection with other parts of the machine which are not shown.

Beneath the junction of the needle beds are supported two take-up rolls 6 and 7 by the brackets 8 and 9 and which revolve in the direction indicated by the arrow on

Fig. 3 of the drawings. To the shaft 10 supporting the star wheel 7 is fixedly connected a ratchet wheel 11.

To the frame of the machine is pivoted a curved arm 12 by the screw 13. This curved arm has an inclined extension 14 and a depending perforated arm 15. A pawl 16 is pivotally supported by the curved arm 12 and a spring 17 holds the dog yieldingly in engagement with the ratchet wheel 11. A pawl 18 is pivotally supported by the screw 13, and a spring 19 serves to hold this pawl yieldingly in engagement with the ratchet wheel 11.

A pawl operating cam 20 is supported by one of the cam slides 4, and is so located that it will contact with the inclined face 14 of the curved arm 12.

A bracket 21 is connected to the frame of the machine and it supports a rod 22, to one end of which is supported an arm 23 to the upper end of which is connected one end of a spring 24 by the eye bolt 25 and nuts 26. The other end of this spring 24 is connected to the arm 15 of the curved arm 12. To the other end of this rod 22 is fixedly connected an arm 27 having an extension 28 connected to its free end.

One of the pattern drums has a section 29 formed with a projection 30, a cam section 31 and two depressions 32 and 33 against which the projection 28 rides during the revolutions of the pattern drum.

In knitting a stocking the projection 28 will remain in the depressed portion 32 of the section 29 of the pattern drum while the toe is being knit. The projection 28 will remain on the portion 30 of this section while the foot is being knit. The projection 28 will drop into the depression 33 and remain there while the heel is being knit. The projection 28 will remain at the point 34 of the cam section while the ankle of the stocking is being knit. The projection 28 will traverse the cam section 31 to the point 35 thereof while the widening of the leg of the stocking is being knit, and

will remain at the point 34 of the cam while the leg of the stocking is being knit when the projection 28 will drop into the recessed portion 32 when a new stocking is commenced. The movement of the projection will cause the spring 24 to exert more or less tension on the curved arm 12.

No great strain is required while the toe and heel are being knit. The strain on the stocking while the foot and ankle portions are being knit is approximately the same because the number of wales is about the same. As the number of wales increase in the widening of the leg portion, the tension on the stocking is increased accordingly, by the cam section 31 contacting with the projection which will increase the tension of the spring. When the widening has ceased, the tension on the leg portion of the stocking will remain uniform.

In the operation of the device, it will be noted that the arm 12 carrying the pawls 16 and 18 will be moved rearwardly by the inclined face of the pawl-operated cam 20, and that the same movement imparts tension to the spring 24, so that when the parts are disengaged from the cam 20, the spring will react and constitute a motor element to move the pawls 16 and 18 in the opposite direction, thereby effecting the rotation of the ratchet wheel 11. The tension of said spring 24 is automatically varied by the cam acting on the arms 27 and 23, and the amount of movement of the pawl when the rolls are being turned, varies according to the resistance of the fabric to the movement of said rolls. In other words, the tension of the spring 24 gives the pawl 16 its forward or driving movement, and measures the tension on the fabric that is being turned between the rolls. In actual practice, the forward or driving movement of the pawl 16 is not always the same, for while in its idle movement, it is always moved to a given point, it does not necessarily come back through the tension of the spring to the same starting point, as the knitting may not be produced fast enough to allow the spring to move the dog that distance. Therefore the rolls will only be moved as fast as the knitting is produced. Now when more needles are thrown into action, and the number of stitches is thereby increased, it becomes necessary to increase the spring tension to accommodate, or in other words, properly operate, upon the extra knitting, and in the present embodiment of the invention, this is done by the cam which forms a part of the pattern wheel.

I claim as my invention.

1. In a knitting machine, the combination with knitting mechanism, of take-up mechanism therefor, means for intermittently operating the take-up mechanism to place

tension on the fabric, and means for automatically varying the force of the operating mechanism, to vary the amount of tension on the fabric.

2. In a knitting machine, the combination with knitting mechanism, of take-up mechanism therefor, means for intermittently operating the take-up mechanism to vary the tension of the fabric, said means including a motor element for moving the take-up mechanism, and means for automatically varying the force of the motor element to vary the amount of tension on the fabric.

3. In a knitting machine, the combination with knitting mechanism, of take-up mechanism therefor, means for intermittently operating the take-up mechanism to place tension on the fabric, said means including a spring for intermittently moving the take-up mechanism, and means operating with the knitting mechanism for automatically varying the tension of the spring to vary the tension on the fabric.

4. In a knitting machine, the combination with knitting mechanism, of take-up mechanism therefor, means for intermittently operating the take-up mechanism, including a ratchet wheel, a pawl operating on the ratchet wheel, means for moving the pawl in one direction, a spring for moving the pawl in an opposite direction to actuate the take-up mechanism, a cam operating with the knitting mechanism, and a device moved by the cam and connected with the spring for automatically varying the tension of the latter.

5. In a knitting machine, the combination with knitting mechanism, of take-up mechanism therefor having a ratchet wheel, a swinging frame, a pawl mounted on the frame and operating on the ratchet wheel, a cam movable with the knitting mechanism for swinging the frame in one direction, a spring connected to the frame for moving the same in an opposite direction to cause the pawl to rotate the ratchet wheel, a swinging arm connected to the spring, and a cam operating with the knitting mechanism and operating against the arm.

6. In a knitting machine, the combination with knitting mechanism, of take-up mechanism, means for intermittently operating the take-up mechanism to place tension on the fabric, including a ratchet wheel and a pawl operating on the ratchet wheel to turn the same, a spring for moving the pawl in one direction and thereby moving the wheel, means for moving the pawl in an opposite direction and thereby placing tension on the spring to cause it to operate the pawl, and automatic means operating periodically for varying the tension of the spring and thereby varying the tension on the fabric.

7. In a knitting machine, the combination
with knitting mechanism, of take-up mechanism,
means for intermittently operating the take-up
mechanism to place tension on the fabric, including
a ratchet wheel, and a pawl operating on the
ratchet wheel to turn the same, a spring for
moving the pawl in one direction, and thereby
moving the wheel, and automatically operated cam

mechanism for varying the tension on the 10
spring.

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.