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KNITTING MACHINE.

APPLICATION FILED JAN. 12, 1922.

1,435,176.

Patented Nov. 14, 1922.

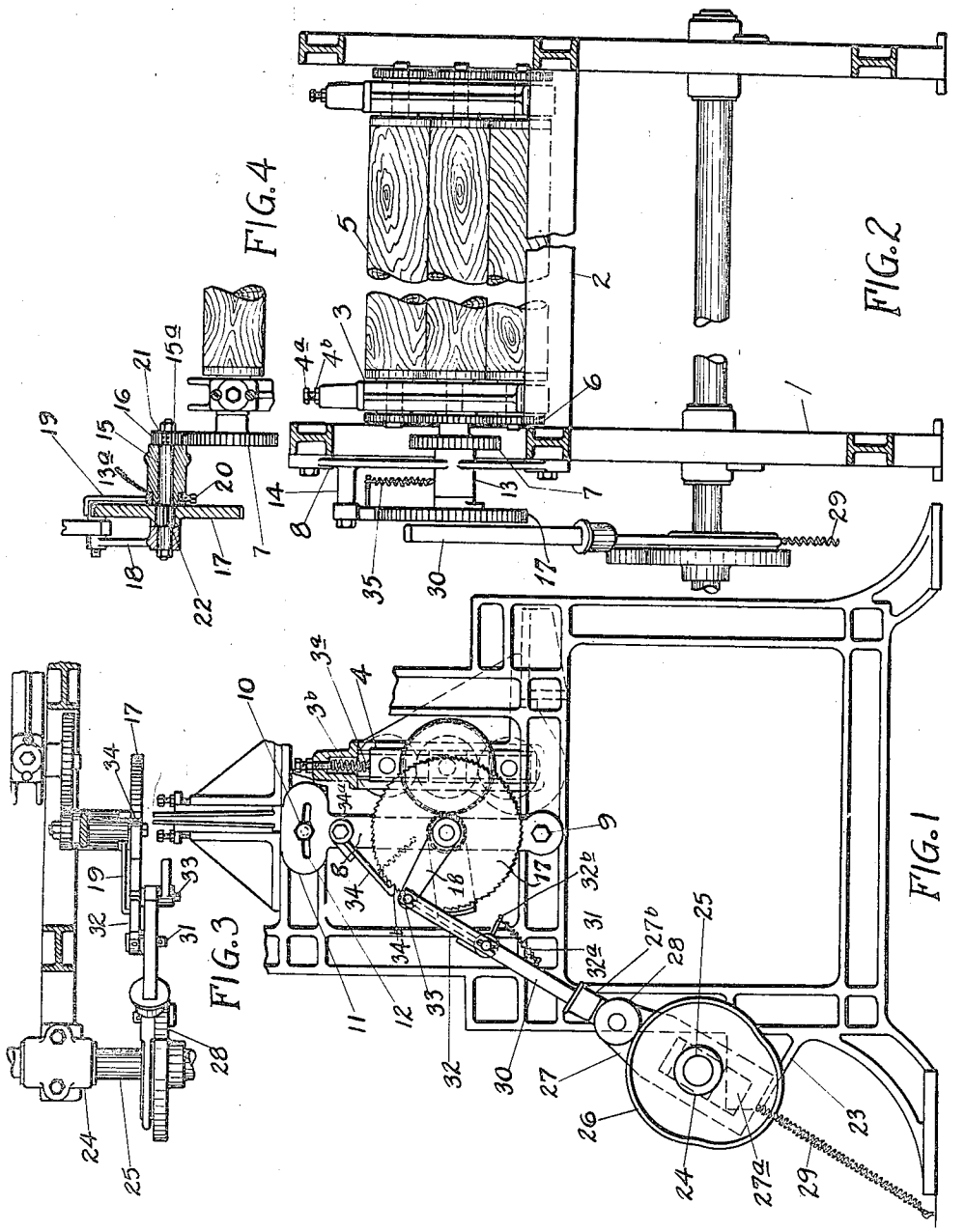


FIG. 1



FIG. 3



FIG. 2



FIG. 4

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Patented Nov. 14, 1922. 1,435,176

# UNITED STATES PATENT OFFICE.

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## KNITTING MACHINE.

Application filed January 12, 1922. Serial No. 528,774.

*To all whom it may concern:*

Be it known that I, JOSEPH S. PECKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Knitting Machines, of which the following is a specification.

The invention relates to a double rib knitting machine of the kind known as edgers on which pattern work such as embroidery used for trimming underwear, curtains and various patterns of neckties can be made.

The object of the present invention is to provide a simple, practical and comparatively inexpensive construction which will be strong and durable and adapted for winding up the finished fabric and of maintaining a proper tension thereon.

A further object of the invention is to provide mechanism of this character capable of adjustment to vary the speed of the winding rolls to adapt them to the output of the knitting machine to which the mechanism is applied and arranged in a position which will afford a ready inspection of the finished material by the operator.

With these and other objects in view the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportion and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings in which like characters of reference designate corresponding parts in the several views:—

Figure 1 is an end elevation of a knitting machine embodying my invention, parts being omitted and other parts being in section.

Figure 2 is a front elevation of the same, parts being in section and other parts being broken away.

Figure 3 is a plan view partly in section.

Figure 4 is a horizontal sectional view illustrating the construction for limiting the movement of the ratchet mechanism.

In the accompanying drawing, in which is illustrated the preferred embodiment of the invention, the means for making the various patterns of edging and the various working parts of the knitting machine are omitted as the same do not constitute a portion of the present invention. The frame of the machine comprises standards 1 tied together by horizontal connecting bars or braces 2 and mounted on the braces 2 are vertically arranged brackets 3, having vertical openings $3^a$ in which are mounted vertically slidable bearings 4. The bearings 4 have journaled in them rolls 5 which are geared together at each end by means of spur gears 6 and one of the rolls 5 has an extended journal on which is mounted an auxiliary gear 7, as clearly illustrated in Figure 2 of the drawing. The slidable bearings 4 are yieldably maintained in engagement with the knitted material by coiled springs $3^b$ and the tension of the latter is adjusted by screws $4^a$ mounted in the bearing brackets at the top thereof and equipped with lock nuts $4^b$.

Mounted on the exterior of the frame of the machine is a vertical bracket 8 pivoted at its lower end by a bolt 9 or other suitable pivot and adjustably held in position by means of a bolt 10 passing through the upper portion 11 of the bracket and operating in an elongated arcuate slot 12 which permits a pivotal adjustment of the bracket on an arc described from the center or pivot 9 of the said bracket. The slot 12 is formed in the enlargement of the upper portion of the bracket which extends laterally from opposite sides of the body portion of the bracket, as clearly illustrated in Figure 1 of the drawing.

The pivoted bracket is provided with lower and upper bosses 13 and 14 and journaled in the lower bosses 13 is a horizontal shaft 15 on which is mounted a gear 16 and a ratchet wheel 17. The gear wheel 16 and the ratchet wheel 17 are secured to the shaft 15 by means of keys 21 and 22 and the gear 16, which is arranged at the inner end of the shaft 15 meshes with the auxiliary gear 7 of the rolls 5 and is adapted to impart motion to the same and the said shaft 15 is provided at its inner end with a nut $15^a$ or other suitable fastening means for detachably securing the pinion 16 to the said shaft 15. The pinion 16 is adapted to be removed from the shaft for the purpose of permitting a pinion or gear of a different diameter to be arranged on the shaft for driving the

rolls 5 at the proper speed to correspond with the output of the knitting machine so that the feeding mechanism for actuating the rolls 5, hereinafter described, will rotate the rolls at the proper speed to maintain the desired tension on the knitted material.

The boss 13 is provided with a reduced portion 13[a] on which is mounted an adjustable arm 19, approximately L-shaped, as clearly shown in Figure 4, and extending radially with respect to the ratchet wheel and having its upper terminal portion extending across the periphery of the ratchet wheel. The adjustable arm 19 is secured in its adjustment by means of a clamping screw 20, mounted on the hub portion of the arm 19 and engaging the reduced portion 13[a]. The ratchet wheel 17 and the gear 16 turn as one on the shaft 15, due to the said keys 21 and 22, so that motion is communicated to the rolls 5 when the ratchet wheel is rotated.

The outer end of the shaft 15 forms a pivot for a rocker arm or lever 18 pivoted to the upper end of an inclined reciprocatory rod 30 which forms a longitudinal extension of and is carried by a slide or member 27 actuated by a cam 26 engaging at its upper side a roll 28 of the said slide. The adjustable arm 19 limits the downward movement of the rocker arm or lever 18 and thereby controls the length of the step by step movement of the ratchet wheel. The rotation of the cam imparts a rise and fall motion to the slide 27 and the rod 30, which constitutes a reciprocatory member for operating an actuating pawl 32 to impart to the ratchet wheel a step by step rotary movement. The cam 26 is mounted on a cam shaft 25 which is journaled in a suitable bearing 24 supported by an extension 23 of the frame of the machine. The slide or lower section of the reciprocatory member is provided with a longitudinal opening 27[a] and through which passes the cam shaft and the upper end of the slide or section 27 is provided with a suitable socket 27[b] in which the lower end of the rod 30 of the reciprocatory member is mounted. The rod is preferably square in cross section but any other suitable form of rod may, of course, be employed and the lower end of the rod may be secured to the slide in any other desired manner. The roll 28 rests upon the cam 26 at the top thereof and is maintained in contact with the same by means of a coiled tension spring 29 arranged at an inclination and suitably anchored at its lower end and connected at its upper end to the lower terminal of the reciprocatory member. The actuating pawl which engages the teeth of the ratchel wheel 17 is maintained in engagement with the said teeth by a coiled spring 32[a] connected at one end to the rod or section 30 of the reciprocatory member and at its other end to an angularly related arm 32[b] of the said actuating pawl. By this construction the ratchet wheel 17 is positively actuated by pawl 32 in the upward movement of the reciprocatory member and is adapted to ratchet over the teeth of the ratchet wheel in the downward movement of the reciprocatory member. The upper end of the reciprocatory member is pivoted to the rocker arm or lever 18 by means of a suitable pivot or pin 33 and the said rocker arm or lever 18 causes the upper end of the reciprocatory member to travel at a tangent to the ratchet wheel 17. The ratchet wheel 17 is held against retrograde rotation by means of a check pawl 34 pivoted at its upper end at 34[a] and provided at its lower end with an engaging portion 34[b]. The engaging portion of the check pawl is maintained in engagement with the teeth of the ratchet wheel by means of a coiled spring 35 connected with the pawl 34 and with the frame of the machine. The pawl 34 is located above and beyond the throw of the reciprocatory member and is disposed at an inclination, as clearly shown in Figure 1 of the drawing. When the reciprocatory member moves upwardly the ratchet wheel is partially rotated and the winding rolls 5 are correspondingly rotated and in the downward movement of the reciprocatory member the ratchet wheel and the rolls are held against movement by the check pawl 34. The winding rolls are mounted at the front of the machine so that the material passing around and between the rolls will be fully exposed to the inspection of the operator of the machine.

What is claimed is:

1. A knitting machine including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the winding rolls, one of the gears being mounted on the adjustable bracket the said adjustment of the bracket permitting gears of different diameters to be employed to control the speed of the winding rolls, a ratchet wheel carried by the said bracket and connected with the said gear for actuating the same, and mechanism for imparting a step by step rotation to the ratchet wheel.

2. A knitting machine, including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the winding rolls, one of the gears being detachably mounted on the said bracket the adjustment of the bracket permitting gears of different dimensions to be employed for driving the winding mechanism at different speeds, and means movable with the said bracket for actuating the gear thereof.

3. A knitting machine including winding rolls, a bracket pivotally mounted at one end

to swing toward and from the winding rolls and provided at its other end with adjusting means for securing the bracket in different positions, gearing for rotating the winding rolls, one of the gears being detachably mounted on the said bracket the pivotal adjustment of the bracket permitting gears of different diameters to be employed, and means movable with the bracket for actuating the said gear.

4. A knitting machine including winding rolls, a substantially vertical bracket pivoted at the lower end to swing toward and from the winding rolls and provided at its upper end with a substantially arcuate slot, fastening means operating in the slot for securing the bracket in different positions, gearing for rotating the winding rolls, one of the gears being carried by the said bracket and detachably mounted thereon the pivotal movement of the bracket permitting gears of different diameters to be employed for varying the speed of the rolls, and mechanism movable with the said bracket for actuating the said gear.

5. A knitting machine including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the winding rolls, including a gear detachably mounted on and carried by the bracket the adjustment of the bracket permitting gears of different diameters to be employed for changing the speed of the winding rolls, a ratchet wheel also carried by the bracket and connected with the said gear, and cam actuated means movable with the bracket for imparting a step by step movement to the ratchet wheel.

6. A knitting machine including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the said rolls, one of the gears being detachably mounted on and carried by the said bracket, the adjustment of the bracket permitting gears of different diameters to be employed, a ratchet wheel also mounted on the bracket and connected with the said gear, an oscillatory rocker arm pivotally mounted on the bracket and extending to the periphery of the ratchet wheel, an inclined reciprocatory member pivoted to the outer end of the rocker arm and movable at a tangent to the ratchet wheel, means for actuating the reciprocatory member, an actuating pawl carried by the said member and engaging the ratchet wheel to impart a step by step movement to the same.

7. A knitting machine including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the rolls, having a gear mounted on and carried by the bracket the adjustment of the bracket permitting gears of different diameters to be employed to vary the speed of the rolls, a ratchet wheel also carried by the bracket and connected with the said gear, a rocker arm pivoted to the bracket and extending to the periphery of the ratchet wheel, an inclined reciprocatory member pivoted to the rocker arm and movable at a tangent to the ratchet wheel, a cam for actuating the said member, a pawl pivoted to the member and engaging the ratchet wheel, and a check pawl located above the inclined reciprocatory member and also engaging the ratchet wheel.

8. A knitting machine including winding rolls, an adjustable bracket movable toward and from the rolls, gearing for rotating the rolls, having a gear mounted on and carried by the bracket the adjustment of the bracket permitting gears of different diameters to be employed to vary the speed of the rolls, a ratchet wheel also carried by the bracket and connected with the said gear, a rocker arm pivoted to the bracket and extending to the periphery of the ratchet wheel, an inclined reciprocatory member pivoted to the rocker arm and movable at a tangent to the ratchet wheel, said reciprocatory member being provided at its lower portion with a longitudinal opening, a cam having a shaft extending from the said opening, a roller mounted on the said member at the top of the cam and supported upon the latter whereby the cam is adapted to impart a rise and fall motion to the said member, and means carried by the member for actuating the ratchet wheel.

9. A knitting machine including winding rolls, an adjustable bracket movable toward and from the winding rolls, gearing for rotating the rolls, having a gear mounted on and carried by the bracket the adjustment of the bracket permitting gears of different diameters to be employed to vary the speed of the winding rolls, a ratchet wheel also carried by the bracket and connected with the said gear, a rocker arm pivoted to the bracket and extending to the periphery of the ratchet wheel, an inclined reciprocatory member pivoted to the rocker arm and movable at a tangent to the ratchet wheel, said reciprocatory member being provided at its lower portion with a longitudinal opening, said reciprocatory member being provided at one side with a roller, a cam located beneath and engaging the roller, a spring connected with the member for maintaining the roller in engagement with the cam, and means carried by the member for actuating the ratchet wheel.

10. A knitting machine including winding rolls, gearing for rotating the winding rolls, a ratchet wheel connected with the said gearing for actuating the same, a rocker arm arranged radially with respect to the ratchet wheel, an inclined recipro-

catory member pivoted to and extending downwardly from the rocker arm, a cam supporting and actuating the reciprocatory member, and means arranged to limit the downward movement of the rocker arm to control the rotation of the ratchet wheel.

11. A knitting machine including winding rolls, gearing for rotating the winding rolls, a ratchet wheel connected with the said gearing for actuating the same, a rocker arm arranged radially with respect to the ratchet wheel, an inclined reciprocatory member pivoted to and extending downwardly from the rocker arm, a cam supporting and actuating the reciprocatory member, and a radially arranged adjustable arm extending beneath the rocker arm for limiting the downward movement thereof to control the movement of the ratchet wheel.

12. A knitting machine including a frame having standards and a front connecting cross piece or tie bar, bearing brackets mounted upon the front cross piece or tie bar, winding rolls journaled in the brackets, gears connecting the rolls, an auxiliary gear connected with one of the rolls, an adjustable bracket having a gear meshing with the auxiliary gear said bracket being movable toward and from the winding rolls to permit gears of different diameters to be employed to vary the speed of the rolls, a ratchet wheel connected with the gear of the bracket, and means for imparting a step by step movement to the ratchet wheel.

13. A knitting machine including a frame, winding rolls mounted at the front of frame, an adjustable bracket having upper and lower bosses, a shaft mounted in the lower boss, gearing for rotating the winding rolls having a gear mounted on the said shaft, a ratchet wheel also mounted on the said shaft, a check pawl pivoted to the upper boss and engaging the ratchet wheel, a rocker arm mounted on the shaft, a reciprocatory member connected with the rocker arm and provided with means for actuating the ratchet wheel, and an adjustably radially arranged arm mounted on the lower boss and arranged to limit the movement of the rocker arm to control the distance of each movement of the ratchet wheel.

14. A knitting machine including winding rolls, gearing for rotating the winding rolls, a ratchet wheel connected with the said gearing, a rocker arm arranged radially with respect to the ratchet wheel, means for vibrating the rocker arm and for imparting a step by step movement to the ratchet wheel, and an adjustably radially disposed arm arranged to limit the movement of the rocker arm to control the distance of each movement of the ratchet wheel.

In testimony whereof I have hereunto set my hand.

JOSEPH S. PECKER.