J. S. BERARD.

BOBBIN AND COP BUILDER FOR WINDING, SPINNING, AND TWISTING MACHINES.

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905,049. Patented Nov. 24, 1908.

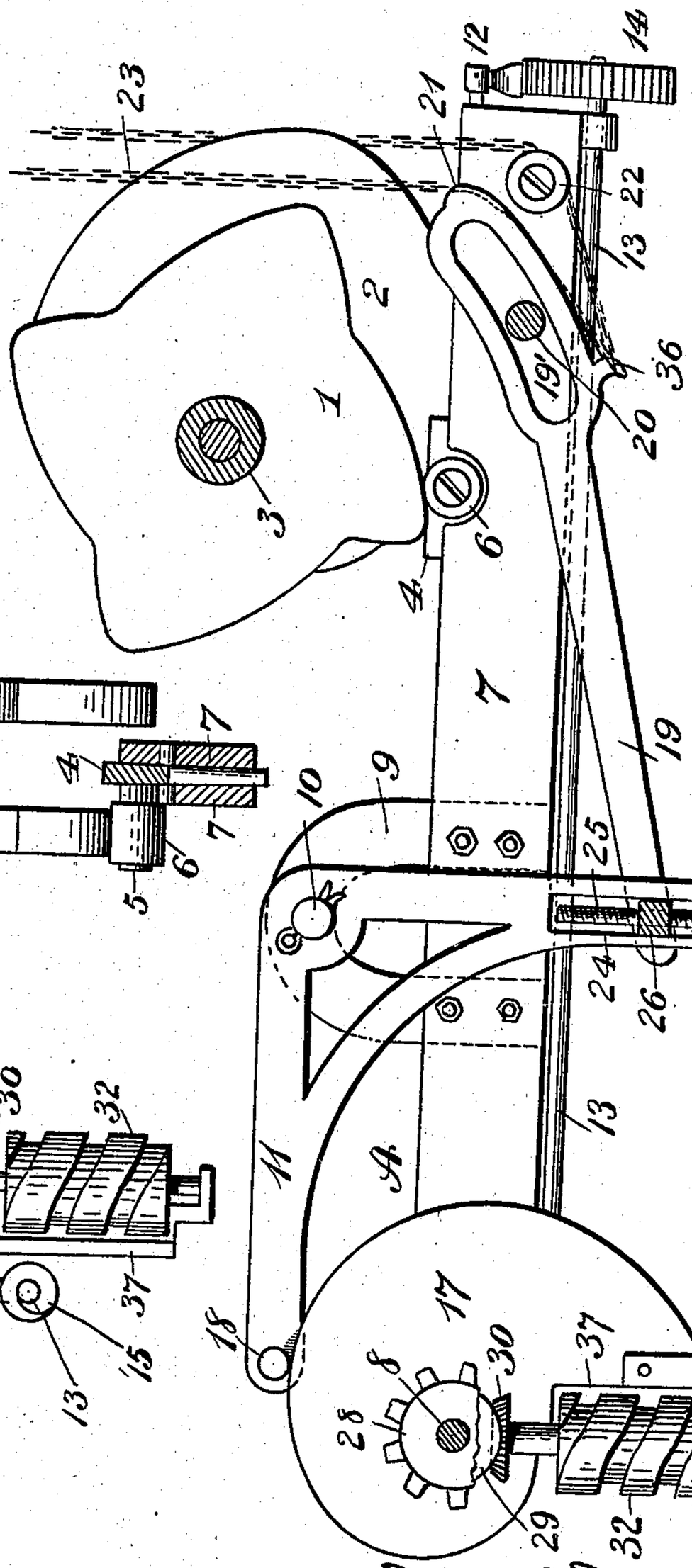

Fig. 1.

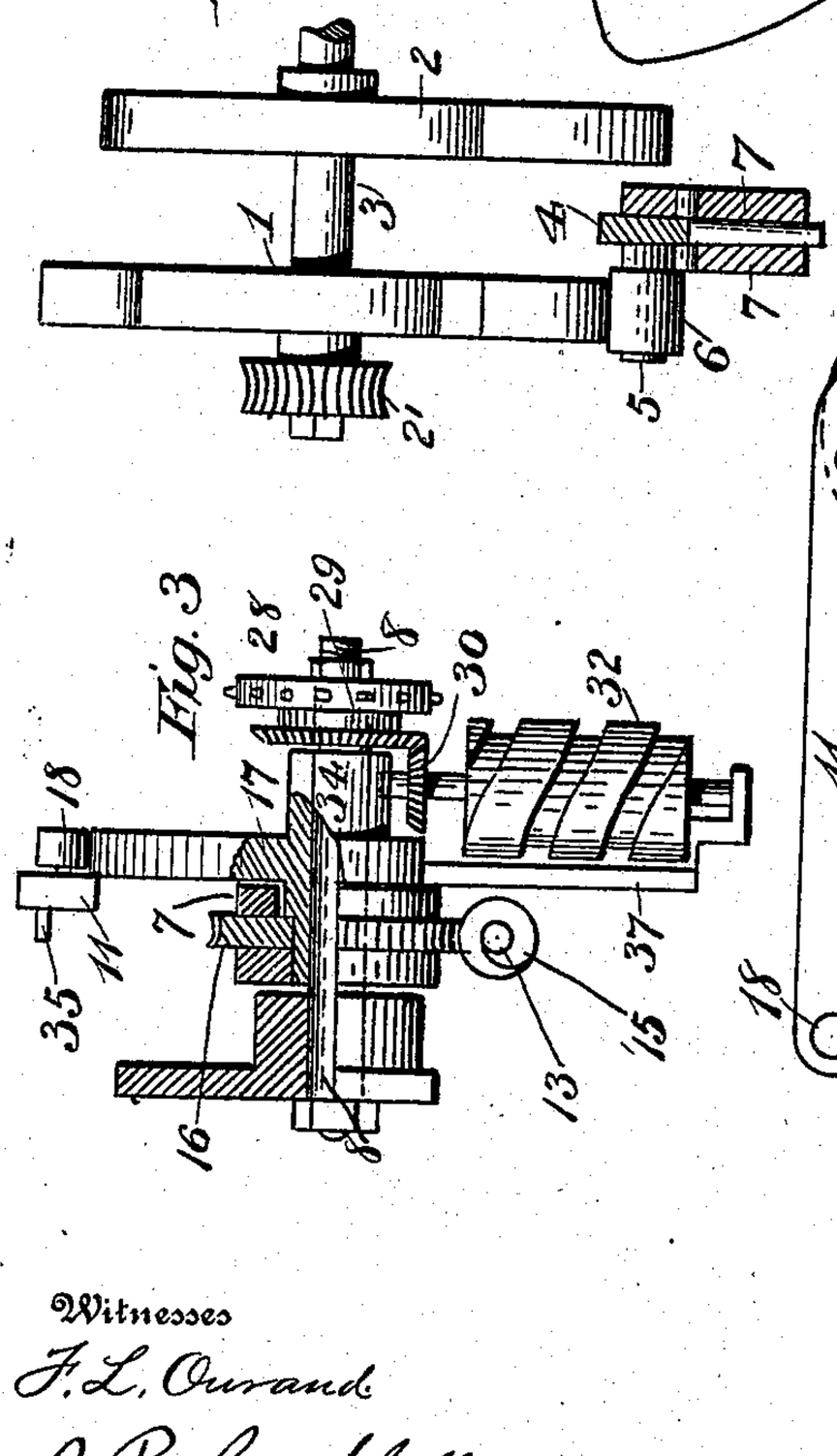

Fig. 2.

Fig. 3

Witnesses

F. L. Ourand.

J. P. Campbell.

Inventor

Joseph Lineon Berard

By Louis Bagger & Co

his Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH SIMEON BERARD, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR OF ONE-FOURTH TO SIMEON BERARD, OF ATTLEBORO, MASSACHUSETTS, ONE-FOURTH TO THEOPHILE PLANTE AND JOSEPH EDOUARD BELAND, AND ONE-FOURTH TO JOSEPH BOUCHER, ALL OF NORTH ATTLEBORO, MASSACHUSETTS.

BOBBIN AND COP BUILDER FOR WINDING, SPINNING, AND TWISTING MACHINES.

No. 905,049. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed May 21, 1907. Serial No. 374,878.

To all whom it may concern:

Be it known that I, JOSEPH SIMEON BERARD, a citizen of the United States, and a resident of Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Bobbin and Cop Builders for Winding, Spinning, and Twisting Machines, of which the following is a specification.

My invention relates to an improvement in a bobbin and cop builder for winding, spinning and twisting machines, and the object is to provide means for automatically reciprocating or moving the ring rail or spindle rail up and down so as to insure the yarn being wound evenly on the cop or bobbin, and to provide an improved cop forming cam for automatically causing the bobbin to be tapered or beveled at the ends, and means for stopping the machine when the bobbin is full.

The invention relates to other novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings Figure 1 is a side elevation of my improved builder; Fig. 2 is a front view of the filling and warp cams and a sectional view of the dog and traverse arm, and Fig. 3 is a rear view of the builder and operating parts.

A, represents a portion of the machine, and 1 is the ordinary filling cam, and 2 is the warp or heart cam mounted on the shaft 3, which is journaled in the frame. The shaft 3 is provided with a gear or sprocket 2′, which is connected by means of a chain, or other means, for rotating the cams.

A shaft 8 is connected to the frame, and journaled on the shaft is a traverse arm 7. A dog 4 is so formed as to fit tightly in the traverse arm 7, which prevents its movement when in operation. The dog is provided with a stud 5, on which is mounted a shell 6. When the stud is in upright position the shell will engage the cam 1, giving a filling motion, as by its action the bobbins are vertically reciprocated to insure an even winding of the yarn; and when it is desired to give a warp motion, by which the bevel or taper is given to the ends of the bobbins, then the dog is removed or disconnected from the traverse arm and is placed in reversed position and having the stud extending downwardly, whereby the shell will engage the cam 2.

Connected to the traverse arm is a stand 9 having a stud 10 thereon, on which is pivoted an elbow lever 11, which is provided with an elongated slot 24, in which is received a slide 26, which is connected to a builder arm 19, and the slide is adjustably supported in the slot by a check nut 27. The builder arm 19 is provided with a segmental slot 19′ in which slot is a stud 20 secured to the traverse arm 7. A chain 23 is connected to a hook 36 on the builder arm which passes through a groove 21 in the end of the builder arm, which chain is connected to the rockers (not shown) for actuating the ring rail and then back around a pulley 22 to the hook 36. By the elongated slot 24 in the lever 11 the builder arm is capable of adjustment for lengthening or shortening the wind.

Journaled in suitable bearings along the pawl arm is a rotating shaft 13 having a ratchet wheel 14 secured at one end and connected to a pawl (not shown) which is connected to the frame which operates the wheel for rotating the shaft, and the retainer 12 is adapted to engage the teeth of the ratchet wheel for preventing the wheel from turning backward when the pawl rides back over the teeth of the ratchet for its next engagement, thus giving an intermittent rotation of the shaft 13. Secured to one end of the shaft is a worm 15 which engages a worm wheel 16 secured to the hub 34 of the building cam 17 which is journaled on the shaft 8. The building cam 17 is provided with a straight edge 37, and connected to the cam is a brace or stand in which is journaled a spiral grooved shaft 32, which extends along the straight edge and is journaled in the hub 34 of the cam. The shaft 32 is provided with a bevel gear 30 adapted to mesh with the cog wheel 29, which is loosely mounted on the shaft 8. The cog wheel 29 is provided with sprockets 28 whereby it is driven by a chain (not shown).

A stud 18 is secured to the lever 11 adapted to engage the face of the cam 17, which is caused to move vertically upward as the cam is rotated by means of the shaft 13 through the ratchet wheel 14 and gears 15 and 16,

But when the cam 17 is set in motion through the ratchet wheel 14, shaft 13 and gears 15 and 16, the shaft 3 will now be rotated by connections from the driving shaft. As the shaft 3 rotates the filling and warp cams 1 and 2 are correspondingly rotated. The cam 2, acting on the shell 6 of the dog 4, which is now in its reversed or inverted position, will cause the traverse arm 7 to be reciprocated up and down, and the builder cam which is now being rotated through the mechanism just described, and which is being intermittently rotated as the pawl (not shown) which operates the ratchet wheel 14 is engaged with the ratchet for rotating the same intermittently. The stud 18, which engages the builder cam 17, causes it to be moved vertically upward with the elbow lever 11, and the lower end of the lever together with the builder arm 19, which is connected thereto through the elongated slot 24 and slide 26, will move rearwardly or toward the left of the machine. The movement of the builder arm 19 rearward will cause the ring rail through its connection with the chain 23 to move vertically in the building of the cop, and as the builder arm moves rearwardly the chain 23 will leave the groove 21, which will gradually cause the stroke of the ring rail to be shortened, so that the ends of the bobbin will be tapered. As the ends of the bobbin are tapered and cam 17 has made a complete revolution the stud 18 will ride off of the cam face and will engage the spiral grooved shaft 32 whereby the said builder arm 19 will be returned to its original position or starting point, and the elbow lever 11 will reach its normal position. A pin 35 secured to the lower side of the lever arm will strike and guide a lever (not shown), which will raise the belt shifter (not shown) so that the belt will be shifted from the fast to the loose pulley, and the machine stopped.

The dog 4 will now be reversed so that the stud 5 extends upwardly and the shell 6 will engage the filling cam 1, and the chain 23 will be passed under the grooved wheel 22. Traverse arm 7 makes four reciprocations for every revolution of the filling cam 1 and the ratchet 14 is turned by the pawl (not shown) only during the downward movement of each reciprocation, and the pawl rides over the teeth of the ratchet during the upward movement of the traverse arm. The ratchet 14 is moved one or more teeth at each reciprocation and as the builder cam 17 is intermittently rotated through the medium of the worm wheel 16 and worm 15, shaft 13 and ratchet 14, the dog will engage the face of the builder cam 17 and cause it to be moved upwardly with the upper part of the elbow lever 11 and the builder arm 19 caused to move rearwardly. As the builder arm begins to move rearwardly the ring rail (not shown) will be moved up and down and the filling operation is continued until the bobbins are full, when the builder cam will have made a complete revolution. The stud 18 will ride off the cam face and engage the spiral grooved shaft, as before explained, and will bring the ring rail to its starting point, and the pin 35 will cause the machine to be stopped.

It is evident that many slight changes might be made in the form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth, but:—

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a winding, spinning and twisting machine, the combination with a traverse arm, of a builder arm connected to a ring rail, a lever connected to the traverse arm and builder arm, a builder cam adapted to operate the lever, filling and warp cams, means whereby either cam may be placed in operative relation with the traverse arm, means for rotating the builder cam, a grooved shaft adapted to engage the lever, and means for rotating said shaft.

2. In a winding, spinning and twisting machine, the combination with a traverse arm, of a builder arm connected to a ring rail, a lever connected to the traverse arm, said builder arm adjustably connected to the lever, filling and warp cams, means by which either cam will operate the traverse arm, a worm wheel connected to the builder cam, a shaft, a ratchet wheel for operating the shaft, a worm arm shaft in engagement with the worm wheel for operating the builder cam, said builder cam adapted to operate the lever, whereby the motion transmitted to the ring rail is regulated.

3. In a winding, spinning and twisting machine, the combination with a traverse arm, of a builder arm connected to the ring rail, a lever connected to the traverse arm, a builder cam adapted to operate the lever, filling and warp cams, means by which either cam may be placed in operative relation with the traverse arm, means for rotating the builder cam, a grooved shaft connected to the builder cam adapted to engage the lever when the builder cam has made a complete revolution, a gear wheel on the grooved shaft and means for operating the gear for rotating the grooved shaft.

Dated this sixteenth day of May, 1907.

JOSEPH SIMEON BERARD.

Witnesses:

ALFRED J. BERARD,
JULES L. PINEAU.

Correction in Letters Patent No. 905,049.

It is hereby certified that Letters Patent No. 905,049, granted November 24, 1908, upon the application of Joseph Simeon Berard, of Fall River, Massachusetts, for an improvement in "Bobbins and Cop Builders for Winding, Spinning, and Twisting Machines," were erroneously issued to said Joseph Simeon Berard, the inventor, and Simeon Berard, Theophile Plante, Joseph Edouard Beland, and Joseph Boucher, as assignees, whereas said Letters Patent should have been issued to *Simeon Berard, Theophile Plante, Joseph Edouard Beland, and Joseph Boucher*, said Berard, Plante, Beland, and Boucher being assignees of one-fourth interest each in the invention, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2d day of February, A. D., 1909.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.