

No. 792,166.

PATENTED JUNE 13, 1905.

A. E. RHOADES.
SPINNING APPARATUS.
APPLICATION FILED APR. 7, 1906.

3 SHEETS--SHEET 1.

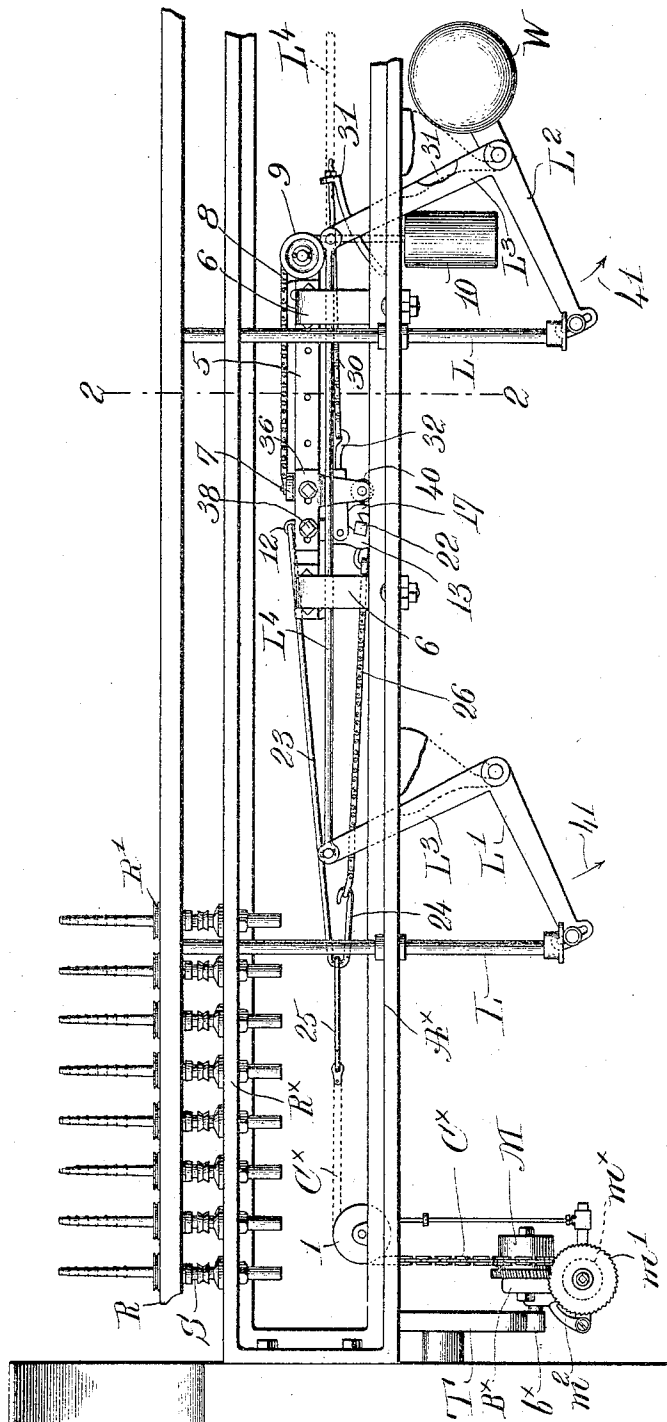


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

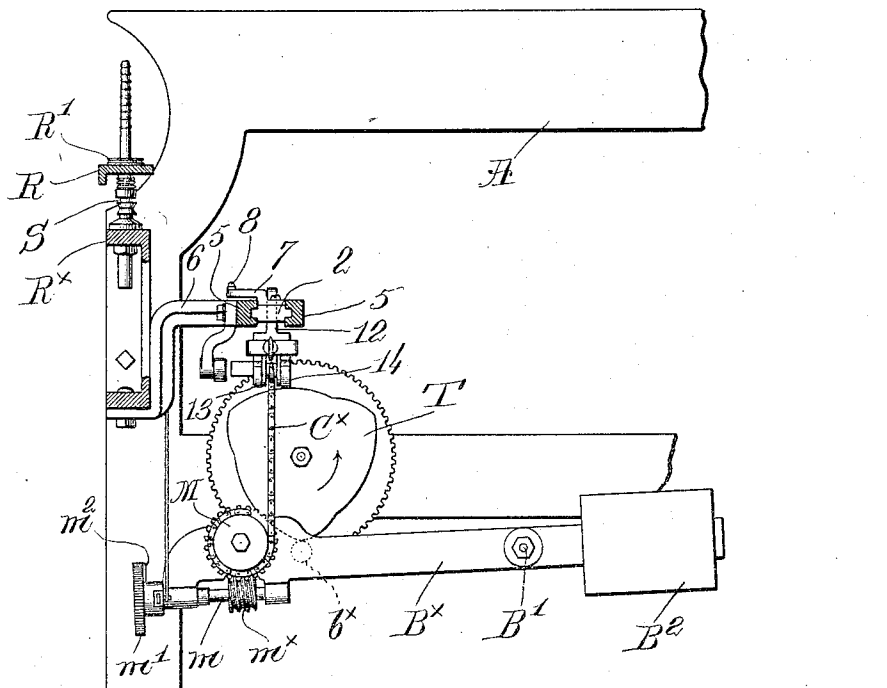


Fig. 3.

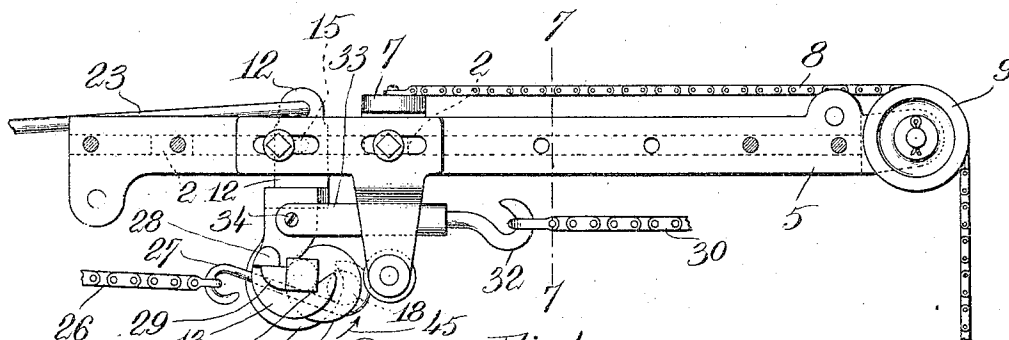
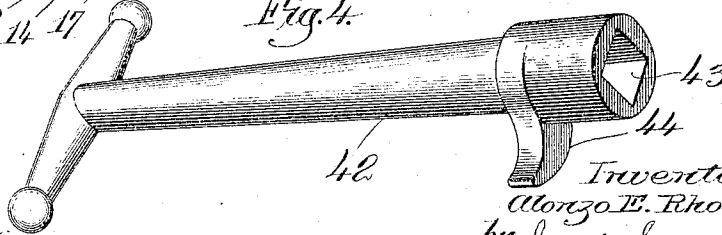


Fig. 4.

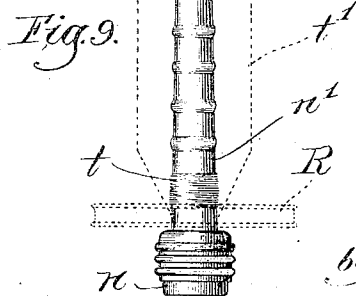
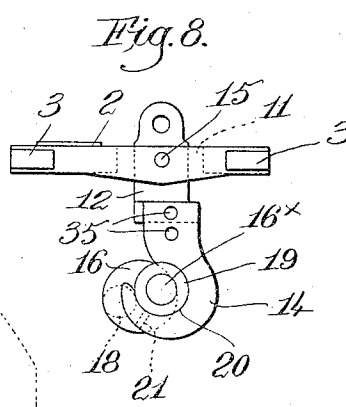
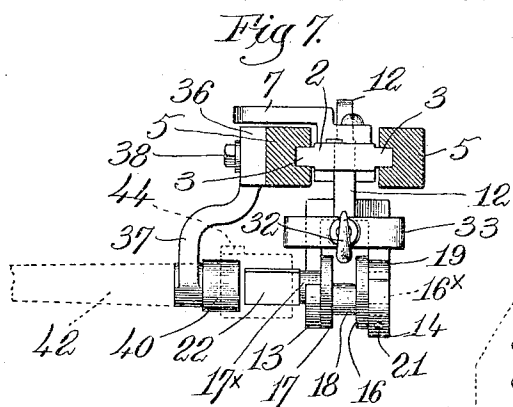
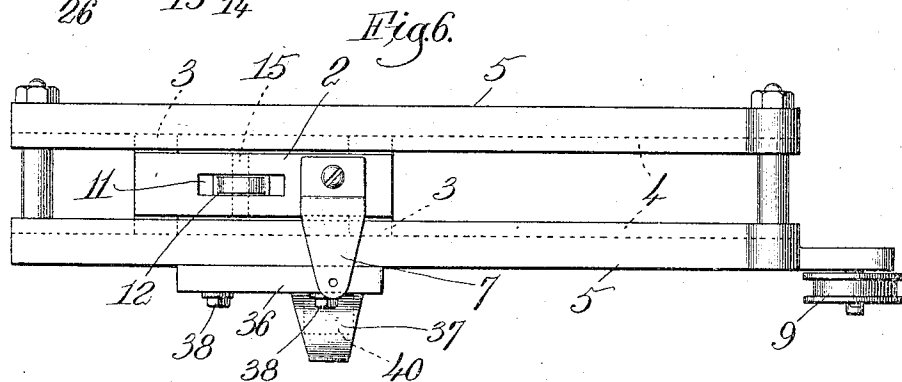
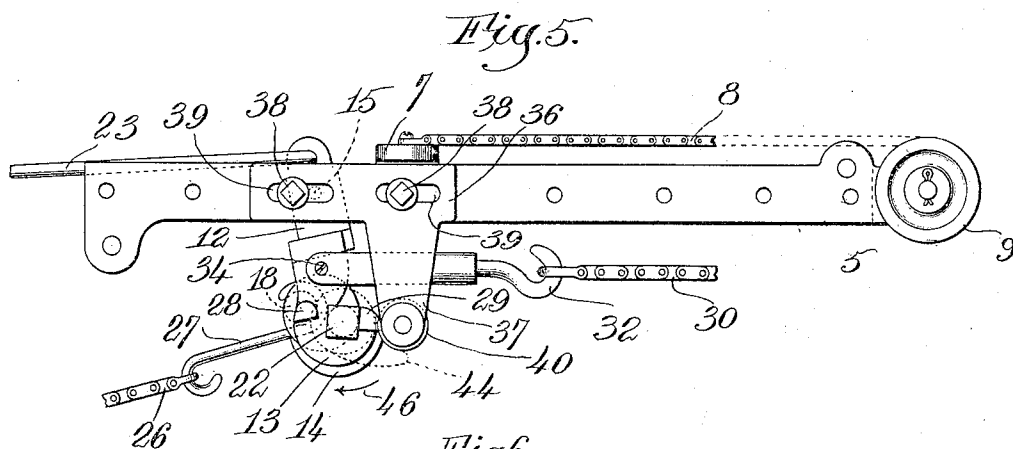


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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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SPINNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 792,166, dated June 13, 1905.

Application filed April 7, 1905. Serial No. 254,268.

To all whom it may concern:

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Spinning Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to the same general class of apparatus shown and described in United States Patents Nos. 686,906 and 722,145 heretofore granted to me, wherein means are provided to effect the winding of yarn upon a yarn-receiver or bobbin in such manner that a preliminary winding or bunch is first laid and thereafter a main or service winding of yarn is laid. The yarn-receivers so wound are subsequently used in the shuttles of automatic filling-replenishing "feeler-loom," wherein a change of filling is effected by or through a feeler when the yarn has been woven off down to a predetermined extent, the preliminary winding or "bunch," as it is usually termed, containing sufficient yarn to extend one or more times across the loom when change of filling is effected. In both of the patents referred to the change from preliminary to service winding is effected automatically, and inasmuch as means are provided for regulating the position of the preliminary winding on the barrel of the yarn-receiver, for varying the length of traverse during the formation of such winding, and for varying the volume or amount of yarn therein the apparatus is of a rather complicated character, as will be manifest upon inspection.

While the patented apparatus have given entire satisfaction in practical operation in so far as concerns the output and the character of the output, there has been some objection to the complication of the mechanism and the expense of the apparatus consequent thereupon.

My present invention accordingly has for its object the production of improved apparatus of the class hereinbefore referred to, in which the working parts are greatly simplified in construction and reduced in number, whereby the cost of the apparatus is decreased ma-

terially without any detriment to the character of the work performed or the speed of operation.

In the present embodiment of my invention the desired object is attained by effecting manually the change from the preliminary winding to the main or service winding, and by so doing the volume or amount of yarn in the preliminary winding, and consequently its relation to the volume of the service winding, can be controlled and regulated at the will of the operator, according to circumstances.

I have herein shown the raising of the ring-rail to be effected by means of a lifting-weight, and it is depressed by or through the "builder-motion," the drum thereof being gradually unwound to effect the "gain" of the traverse—*i. e.*, the movement of the ring-rail—by letting off the chain little by little as the yarn is laid upon the yarn-receiver, so that the rail rises a little higher on each upstroke and on each downstroke does not descend quite so far as on the previous downstroke to lay the yarn in successive layers upon the bobbin from the base thereof to the upper end, substantially as in my earlier patent of the two patents referred to hereinbefore.

Figure 1 is a front elevation of a portion of a spinning-frame, showing the builder-motion and cooperating parts embodying my present invention, the preliminary winding or bunch of yarn having been laid on the yarn-receivers or bobbins, the ring-rail being shown at the bottom of such preliminary winding and with the apparatus ready to begin the main or service winding. Fig. 2 is a transverse sectional view on the line 2 2, Fig. 1, looking toward the left, omitting the lifter-rod and its rocker-arm. Fig. 3 is an enlarged front elevation of the carriage, its support, and the traverse-shifter, with the locking device therefor, in the position shown in Fig. 1, the traverse-shifter controlling the operation of the builder-motion to impart a short or a long traverse to the ring-rail. Fig. 4 is an enlarged perspective view, detached, of the manually-operated device or key by means of which the manipulation of the traverse-shifter is effected. Fig. 5 is a view of the parts illustrated in Fig. 3, but showing the traverse-

shifter in position to effect the short traverse of the ring-rail to form the preliminary winding or bunch upon the yarn-receiver. Fig. 6 is a top plan view of the parts shown in Figs. 3 and 5. Fig. 7 is a transverse sectional detail on the line 7 7, Fig. 3, looking toward the left. Fig. 8 is a rear side elevation of the carriage and the traverse-shifter with the locking device thereon; and Fig. 9 is an enlarged side elevation of a bobbin, showing the completed preliminary winding or bunch thereon, the ring-rail at such time being at the lowest point of its traverse and ready to ascend to begin the main or service winding with the full traverse, the ring being indicated by dotted lines.

Referring to Figs. 1 and 2, the frame A, the spindle-rail R^x , on which are mounted suitable rotatable spindles S, the vertically-reciprocating ring-rail R, provided with rings R' , one for each spindle, the lifter-rods L, the rockers L' L^2 , each having a roll for the foot of the cooperating lifter-rod, the weight W for the rocker L^2 to elevate the ring-rail, the upturned rocker-arms L^3 , rigidly connected with the rockers, and the connecting-links L^4 to transmit from the rocker L^2 reciprocating movement to the several lifter-rods may be and are all of usual or well-known construction in spinning or similar yarn-twisting machines.

The builder-arm B^x , fulcrumed at B' and provided with a roller or other stud b^x (see dotted lines, Fig. 2) to cooperate with an actuating or traverse cam T, herein shown as a three-point cam, has mounted upon it usual winding mechanism, including a drum M, pick-shaft m , provided with a worm m^x to effect gradual rotation of the drum, pick-wheel m' on said shaft, and an actuating-pawl m^2 , operated in usual manner. Rotation of the cam T rocks the builder-arm and through connections to be described effects the traverse of the ring-rail, the weight of the winding mechanism being counterbalanced by a weight B^2 on the builder-arm, said weight also maintaining the follower b^x in engagement with the actuating-cam. It will be understood that the gradual unwinding of the chain C^x , secured at one end on the drum and connected indirectly with the ring-rail, effects the gain of the traverse to lay the yarn in successive layers upon the yarn-receiver or bobbin from the lower end or base thereof to its upper end.

The chain C^x leads up over a sheave 1, Fig. 1, on the girder A^x of the main frame and is connected, by means to be described, with a carriage 2, having lateral projections 3 to slide longitudinally in horizontal guideways 4, formed in rigidly-connected supporting-bars 5, mounted on stands 6, bolted to the girder. A bent arm 7, rigidly secured to the top of the carriage, extends forward at right angles to the path of movement of the carriage and pro-

jects above the front bar 5, and one end of a chain or other flexible connection 8 is attached to the arm, the other end of said connection passing over a guide-sheave 9 and having an attached weight 10 (see Fig. 1) to move the carriage to the right. Sheave 9 is shown as mounted on the front supporting-bar 5.

As shown in Figs. 6 and 7, the carriage 2 is longitudinally slotted at 11 to receive the upturned shank 12 of a traverse-shifter, it comprising the shank 12 and two depending and parallel hook-like extensions 13 and 14, (see Fig. 7,) the shifter being pivoted on the carriage by a transverse pin 15 nearer the upper end of the shank, so that the greater portion of the shifter depends below the carriage. A locking device is rotatably mounted in the extensions of the shifter, said device consisting of two disks 16 17, connected by an eccentric or crank-pin 18, the disks lying between the extensions. (See Fig. 7.) Alined journals 16^x 17^x project oppositely from the outer faces of the disks, journal 17^x resting in the bight of the hook 13 and the journal 16^x passing through a bushing 19, which fits in the seat 20, provided therefor in the hook 14, (see Fig. 8,) a set-screw 21 holding the bushing in place, the journal 17^x being extended at 22 and made polygonal in cross-section to form a key-seat. The journals and the crank-pin 18 are substantially diametrically opposite each other, as most clearly shown in Fig. 8, so that when the device is turned on the journals as a center the pin 18 has a circular movement of considerable radius. The locking device operates, as will be described, to prevent relative movement of the traverse-shifter and the carriage or to permit such relative movement, according to the position occupied by the locking device.

Referring to Fig. 1, I have shown a bridle-like connection between the chain C^x and the carriage, consisting of two connectors, one rod 23 pivotally connected with the upper end of the shifter a short distance above its pivot-pin 15 and bent at 24 to hook into a loop 25 on the end of the chain, the other connector being shown as a chain 26. This chain is attached at one end to the bend 24, and at its other end by an S hook 27 it is attached to the crank-pin 18 of the locking device on the shifter. (See Figs. 3 and 5.) A stop 28 on the shifter extension 13 is located in the path of movement of a radial lug 29 on the journal 17^x of the locking device, and when the latter is in the position shown in Figs. 1 and 3 the lug and stop cooperate and the direction of pull on the connector 26 passes below the center of rotation of the locking device, maintaining such cooperation of the lug and stop. The auxiliary connector 26 is then taut, and it and the main connector 23 work in unison, the shifter being held from movement to the carriage so long as the locking device is in such operative position, and the stroke of the

carriage will be transmitted to the ring-rail by the chain 30. Such chain is attached at one end to an arm 31, rigidly connected with one of the rockers, as L^2 , (see Fig. 1,) the other end of the chain being connected with a hook 32, having a yoke-like shank 33, connected by a pin 34 with the traverse-shifter below its pivot 15. By inserting the pin 34 in the upper or lower one of the holes 35, Fig. 8, the length of the short traverse will be increased or decreased, as will be more clearly apparent hereinafter, when the preliminary winding or bunch is being formed.

A bracket 36, having a depending arm 37, is secured to the front face of the front supporting-bar 5 by suitable bolts 38, extended through elongated slots 39 in the bracket, (see Figs. 3 and 5,) so that the arm 37 may be moved or adjusted to the right or left. The arm has mounted upon its lower end a fixed fulcrum member, shown as a roll 40, which is beyond the path of movement of the seat 22 when the carriage is reciprocated, as will be manifest from Fig. 7, and this fulcrum member is at times operatively connected with or coupled to the lower or free end of the traverse-shifter, so that the latter will swing about the member 40 as a fulcrum. When such swinging movement of the traverse-shifter takes place, it is unlocked and is free to move with relation to the carriage.

In Fig. 9 the bobbin or yarn-receiver is of well-known construction, it having an enlarged head or base n , and the barrel is made cylindrical near the head, as at n' , forming what is technically termed the "feeler-wood," indicating the portion of the barrel on which the preliminary winding or bunch of yarn is laid. The preliminary winding or bunch t is laid upon this feeler-wood, and thereafter the winding is completed by the main or service winding, (indicated by the dotted lines t' .) The mechanism hereinbefore described is arranged to wind such bunch and thereafter to lay the main or service winding; but the change from one to the other winding is effected manually and at the will of the operator. Both windings are laid with the filling-wind—that is, the traverse is uniform during the winding of the bunch; but it is shorter than the traverse with which the main winding is laid. Referring to Figs. 1 and 3, it is supposed that the preliminary winding or bunch has just been completed and the main winding is just beginning. As the builder-arm rises and falls the main and auxiliary connectors 23 26 will operate in unison to effect reciprocation of the carriage 2, the descent of the builder-arm pulling the carriage to the left, Fig. 1, and through the chain or other flexible connection 30 and the arm 31 swinging the rockers in the direction of the arrows 41, Fig. 1, and the ring-rail descends. As the builder-arm rises the weight 10 pulls the carriage to the right and the lifting-weight

W swings the rockers upward to elevate the ring-rail, the traverse of the latter corresponding to the traverse of the stroke of the carriage. When the main winding begins, the ring-rail starts from the bottom of the bunch or preliminary winding and makes its full traverse in accordance with the shape of the cam T, the traverse being long enough to carry the rail slightly above the upper end of the bunch, the gradual unwinding of the chain C^x permitting the carriage to move to the right a little farther at each stroke, and on the stroke to the left the carriage will move not quite so far, thus providing for the gain of the traverse. This operation continues until the main or service winding is completed, and when the bobbin or set of bobbins has been filled the frame is doffed and the winding back of the winding mechanism is effected in usual manner, so that the apparatus is in readiness to begin the winding of a new set of bobbins. In order to change from the long traverse to the short traverse requisite for the bunch-winding, the operator takes a controlling device or key 42 (shown separately in Fig. 4) and places it on the key-seat 22, as shown in dotted lines, Fig. 7, the base of the key having a recess or socket 43 to fit the said seat. The key is also provided with a curved shoe 44, so located that when the key is applied the shoe can be brought into engagement with the fulcrum member or roll 40 by rotation of the locking device. With the mechanism in the relative position shown in Fig. 3 the operator applies the key and turns it so as to rotate the locking device in the direction of the arrow 45 and into the position shown in Fig. 5. Such rotation of the locking device carries the lug 29 away from the stop 28 and swings the crank-pin 18 upward and toward the builder-motion, slackening the auxiliary connector 26 and permitting the traverse-shifter to swing on its pivot 15 into the position shown in Fig. 5, the shoe 44 at such time engaging the fulcrum member 40. The free end of the traverse-shifter is thus connected or coupled with the fulcrum member, and when the builder-arm rises the weight 10 will pull the carriage to the right, and at such time the traverse-shifter will swing or rock about the fulcrum member 40 as a center. The reverse movement of the carriage will swing the traverse-shifter about the fulcrum member, but to the left viewing Fig. 5, and the traverse of the ring-rail will then be effected through the connection 30, as before; but the length of the traverse will be very much decreased, because of the short stroke of pin 34 as compared with the stroke of the carriage. During the long traverse for the main winding it will be remembered that the pin 34 moved a distance equal to the stroke of the carriage; but as the pin is so near the fulcrum member 40 during bunch-winding its stroke will be very much lessened as the

traverse-shifter swings about such fulcrum. The gain of the traverse is effected by winding mechanism during the formation of the bunch in a well-understood manner, and when as much yarn has been laid to form the bunch-winding as desired the operator turns the controlling device or key to rotate the locking device in the direction of the arrow 46, Fig. 5. This action withdraws the shoe 44 from the fulcrum member, and thereby uncouples the traverse-shifter and fulcrum member and at the same time restores the locking device to the position shown in Fig. 3, locking the traverse-shifter from movement relative to the carriage, and thereupon the main winding is initiated. Of course the key is withdrawn as soon as the bunch-winding is completed and the change effected from bunch to main or service winding in order that the carriage may pass beyond the fulcrum member as the winding progresses. If the bracket 36 is moved to the right from the position shown in Figs. 3 and 5, the position of the bunch will be higher up on the barrel of the bobbin, and if it is moved to the left the bunch will be formed lower down on the barrel, so that the adjustment of the fulcrum member governs the position of the bunch on the barrel. After the winding of the bunch has been completed and the operator turns the key to position the parts, as shown in Fig. 3, the tightening of the auxiliary connector 26 will act to pull the chain 30 to the left viewing Fig. 1 to thereby lower the ring-rail in readiness to begin the main winding at or near the base of the bobbin. As the duration of the short traverse period is controlled absolutely and solely by the operator, it will be manifest that the amount of yarn to be laid in the bunch is determinable at the will of the operator, and consequently that the relative volume of the bunch and the service winding is also variable and determinable by the operator, thus providing for very material variations.

The parts of the mechanism necessary to accomplish short and long traverse and to effect the change from one to the other are comparatively small in number, and the simplicity of construction of the apparatus materially reduces the first cost thereof and the chance of breakage or derangement when in operation.

My invention is not restricted to the precise construction and arrangement herein shown, as modifications may be made in various particulars by those skilled in the art without departing from the spirit and scope of my invention.

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

1. In a machine of the class described, a builder-motion, and manually-operated means to control the action of and effect through said

builder-motion the formation of a preliminary winding, and thereafter a main or service winding, of yarn upon a yarn-receiver.

2. In a machine of the class described, a builder-motion, controlling means therefor to effect the formation of two successive windings of yarn upon a yarn-receiver, constituting a bunch and a service winding, and a manually-operated governor for said means to effect at will the change from one to the other winding.

3. In a machine of the class described, means to effect the formation of two successive windings of yarn upon a yarn-receiver, constituting a bunch and a service winding, and a manually-operated governor for said means to effect manually change the traverse from bunch-winding to service-winding, during the operation of the machine.

4. In a machine of the class described, means to effect the formation of a preliminary winding with a short, uniform traverse, and a succeeding main winding with a long and uniform traverse, of yarn upon a yarn-receiver, and means to effect manually the change from short to long traverse and thereby determine the relative volume of the two windings.

5. In a machine of the class described, means to effect the formation of two successive windings of yarn upon a yarn-receiver, constituting a bunch and a service winding, and manually-actuated means to start and stop the winding of the bunch and to change therefrom to the service-winding.

6. In a machine of the class described, a builder-motion, a filling-wind-actuating device therefor, and manually-operated means to change at will from a short uniform traverse to a long uniform traverse, whereby a bunch of yarn will be wound upon a yarn-receiver and the main winding of yarn will be completed with the long traverse.

7. In a machine of the class described, a builder-motion, and manually-operated controlling means therefor to effect the formation of two successive windings of yarn, of unequal and variable relative volume, laid with the filling-wind upon a yarn-receiver.

8. The combination, with a rotatable spindle, and a yarn-receiver thereon, of a builder-motion, manually-operated controlling means to effect therethrough the formation of a preliminary winding of yarn upon the yarn-receiver and thereafter a service-winding, and independent means to govern the position of the preliminary winding upon the yarn-receiver.

9. The combination, with a reciprocating ring-rail, of a builder-motion, an actuating device therefor, and connections between the builder-motion and the ring-rail, to control the movement of the latter, said connections including manually-operated means to change at will from short to long traverse to effect with the former traverse the winding of a bunch of yarn upon a yarn-receiver, and to

complete the main or service winding with the latter traverse.

10. The combination, with a reciprocating ring-rail, of a builder-motion, including an arm having a constant stroke, connections between said arm and ring-rail, to control the movement of the latter, and manually-controlled means acting through said connections to impart a short traverse to the ring-rail and at will change to a long traverse.

11. The combination, with a reciprocating ring-rail, of a builder-motion, a filling-wind-actuating cam therefor, connections between the builder-motion and the ring-rail, to control the movement thereof, and manually-controlled means operating through said connections to shift from a short traverse to a long traverse at any point in the winding, to effect the formation of two windings of yarn upon a yarn-receiver, both laid with the filling-wind but with short and long traverse, respectively.

12. In a machine of the class described, a builder-motion, including a builder-arm, and a winding mechanism carried thereby to govern the "gain" of the traverse, a traverse-cam to impart a constant stroke to the builder-arm, and manually-controlled means operatively connected with the latter to effect the winding of a bunch of yarn with a short traverse upon a yarn-receiver, and at will to change to a longer traverse and effect the service-winding, the "gain" for both windings being governed automatically by the winding mechanism.

13. In a machine of the class described, a builder-motion, including a builder-arm, an actuating-cam therefor, a carriage reciprocated by or through the builder-arm, a reciprocating ring-rail, and connections, including manually-operated traverse-shifting means, between the carriage and ring-rail, to effect reciprocation of the latter with a short traverse, and thereafter at will with full traverse corresponding to the stroke of the carriage.

14. The combination, with a reciprocating ring-rail, of a builder-motion, a carriage reciprocated thereby, connections between the carriage and ring-rail, to govern the reciprocation of the latter, a traverse-shifter mounted on the carriage, to effect reciprocation of the ring-rail with a full traverse, or with a short traverse, the latter acting to lay a bunch, and the former to lay the service-winding, of yarn upon a yarn-receiver, and a manually-operated device to move the traverse-shifter relatively to the carriage from short to long traverse position, and vice versa.

15. The combination, with a reciprocating ring-rail, of a builder-motion, a carriage reciprocated thereby, connections between the carriage and ring-rail, to govern the reciprocation of the latter, a traverse-shifter mounted to swing on the carriage, a fixed fulcrum member about which the free end of said

shifter rocks during the formation of a preliminary winding of yarn upon a yarn-receiver, a locking device for and to prevent movement of the shifter relative to the carriage, during the formation of the main or service winding of yarn, and a manually-operated controller to simultaneously render the locking device inoperative and effect cooperation of the shifter and fulcrum member at the beginning of the preliminary winding and to reverse such action when the preliminary winding is finished.

16. The combination, with a reciprocating ring-rail, of a builder-motion, a carriage reciprocated thereby, connections between the carriage and ring-rail, to govern the reciprocation of the latter, a traverse-shifter mounted to swing on the carriage, a fixed fulcrum member about which the free end of said shifter rocks during the formation of a preliminary winding of yarn upon a yarn-receiver, a locking device rotatably mounted on and to prevent movement of the shifter relative to the carriage during the formation of the service-winding, and a detachable, manually-operated controller provided with a shoe, to turn the locking device into inoperative position and through the shoe effect cooperation of the shifter and fulcrum member at the beginning of the preliminary winding, and to restore the locking device to operative position and disconnect the shifter and fulcrum member when such winding is finished.

17. The combination, with a reciprocating ring-rail, of a builder-motion, a carriage reciprocated thereby, connections between the carriage and ring-rail, to govern the reciprocation of the latter, a traverse-shifter mounted to swing on the carriage, a fixed fulcrum member about which the free end of said shifter rocks during the formation of a preliminary winding of yarn upon a yarn-receiver, a locking device rotatably mounted on and to prevent movement of the shifter relative to the carriage during the formation of the service-winding, said locking device having a key-seat, and a manually-operated key provided with a shoe and adapted when engaged with the key-seat and turned to unlock the shifter and through the shoe operatively connect it with the fulcrum member, to begin the preliminary winding, reverse movement of the key disconnecting the shifter and fulcrum member and turning the locking device to lock the shifter, to begin the service-winding.

18. The combination, with a reciprocating ring-rail, of a builder-motion, a carriage reciprocated thereby, connections between the carriage and ring-rail, to govern the reciprocation of the latter, a traverse-shifter mounted to swing on the carriage, a locking device rotatably mounted on and to prevent movement of the shifter relative to the carriage during the formation of the service-winding,

a two-part connector between the builder-motion and the shifter, one part being attached directly to the shifter and the other part to said locking device, a fixed fulcrum member
 5 about which the free end of the shifter rocks during the formation of a preliminary winding of yarn upon a yarn-receiver, and a removable, manually-operated key having a shoe and adapted to turn the locking device to
 10 slacken the attached connector part, and release the shifter, and simultaneously to effect through the shoe coöperation of the shifter and fulcrum member at the beginning of the preliminary winding, reverse movement of
 15 the key disconnecting the fulcrum member and shifter, and locking the latter when the preliminary winding is completed.

19. The combination, with a ring-rail, and a builder-motion, including a winding mechanism to govern the "gain" of the traverse, of connections between the builder-motion and the ring-rail, said connections including a carriage reciprocated by the builder-motion, a traverse-shifter pivoted at one end of the carriage, means to lock and unlock the carriage
 25 and shifter, a fixed fulcrum member to at times form a fulcrum for the free end of the shifter, to thereby impart a short traverse to the ring-rail, and manually-operated means to simultaneously unlock the shifter and effect its coöperation with the fulcrum member, to initiate the short traverse period, and to simultaneously disconnect the shifter and fulcrum member and lock the shifter with the carriage
 30 at the termination of such period, to impart a long traverse to the ring-rail while the carriage and traverse-shifter are locked together.

20. The combination, with a ring-rail, and a builder-motion, including a winding mechanism to govern the "gain" of the traverse, of connections between the builder-motion and the ring-rail, said connections including a carriage reciprocated by the builder-motion, a traverse-shifter pivoted at one end of the carriage, a device on the shifter to prevent movement thereof relative to the carriage, a fixed fulcrum member at one side of the path of movement of the shifter and adapted to at times form a fulcrum for the free end thereof
 45 to impart a short traverse to the ring-rail, and a removable and manually-operated combined key and coupling, to release the shifter and permit movement thereof relative to the carriage and simultaneously couple the free end of the shifter and the fulcrum member, to initiate the short traverse period for the ring-rail, or to uncouple shifter and fulcrum member and cause the device on the shifter to prevent movement thereof relative to the carriage, to initiate a long traverse period for the
 50 ring-rail.

21. In a machine of the class described, a builder-motion, a ring-rail, connections between them to reciprocate the ring-rail and
 55 effect the formation of a bunch, and thereaf-

ter a main winding of yarn upon a yarn-receiver, said connections including a reciprocating carriage, a shifter fulcrumed thereon at one end, an intermittingly-operative fixed fulcrum for the free end of the shifter, and
 70 means to prevent movement of the shifter relative to the carriage when the fixed fulcrum is inoperative, combined with a manually-operated device to release the shifter and simultaneously operatively connect it with the said
 75 fulcrum, and vice versa, the bunch being formed when the shifter is rocked on the fixed fulcrum and the main winding when the latter is inoperative.

22. In a machine of the class described, a ring-rail, means, including a builder-motion and a carriage reciprocated thereby, to effect the traverse of the ring-rail to lay successively a bunch and a service-winding of yarn upon a yarn-receiver, a traverse-shifter pivotally mounted on the carriage, means to prevent relative movement of the shifter and carriage during service winding, an adjustable fulcrum member for the free end of the shifter, adjustment of the fulcrum member governing
 85 the position of the bunch upon the yarn-receiver, and a removable, manually-operated controlling device to release the shifter and effect coöperation thereof with the fulcrum member to impart a short traverse to the ring-rail to wind the bunch.

23. In a machine of the class described, a ring-rail, a builder-motion, a carriage, a traverse-shifter pivotally mounted thereon, a rotatable locking device mounted on one end of the shifter, to prevent movement thereof relative to the carriage, main and auxiliary connectors between the builder-motion and the shifter, connected respectively with one end thereof and with the locking device, both connectors operating when the shifter is locked, a fixed fulcrum member about which the shifter is adapted at times to swing, a connection between the ring-rail and shifter, attached to the latter between its pivot and the locking device, and a manually-operated controlling device to render the locking device inoperative and slacken the auxiliary connector, and to simultaneously effect coöperation between the shifter and the fulcrum member, whereby the
 100 traverse of the ring-rail will be effected by the swing of the shifter about the fulcrum member, to lay a bunch of yarn with a short traverse upon a yarn-receiver, the longer traverse to lay the service-winding upon the yarn-receiver being effected by reciprocation of the carriage when the shifter is locked from relative movement and both connectors operate.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALONZO E. RHOADES.

Witnesses:

GEORGE OTIS DRAPER,
 ERNEST W. WOOD.