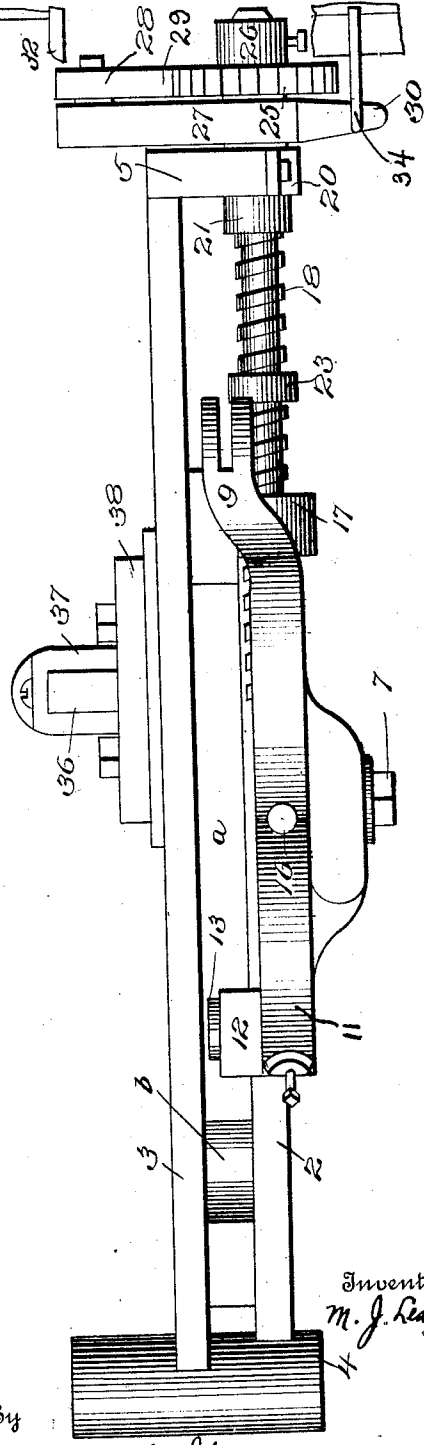
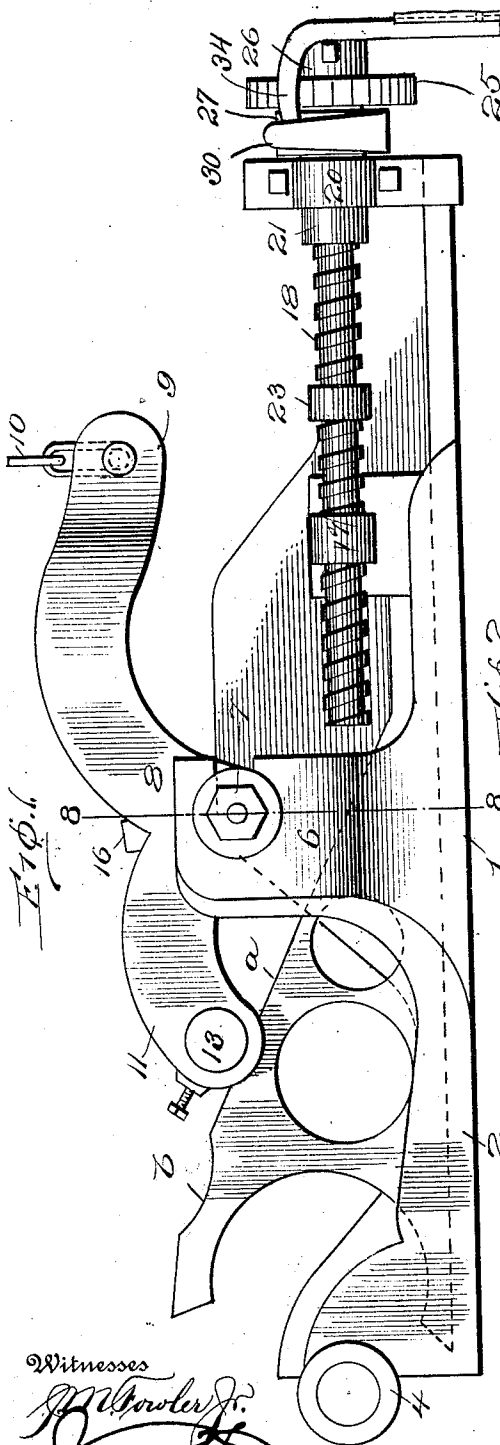


M. J. LEAHY.
 BUILDER FOR RING SPINNING FRAMES.
 APPLICATION FILED JULY 28, 1910.

1,037,645.

Patented Sept. 3, 1912.

3 SHEETS—SHEET 1.



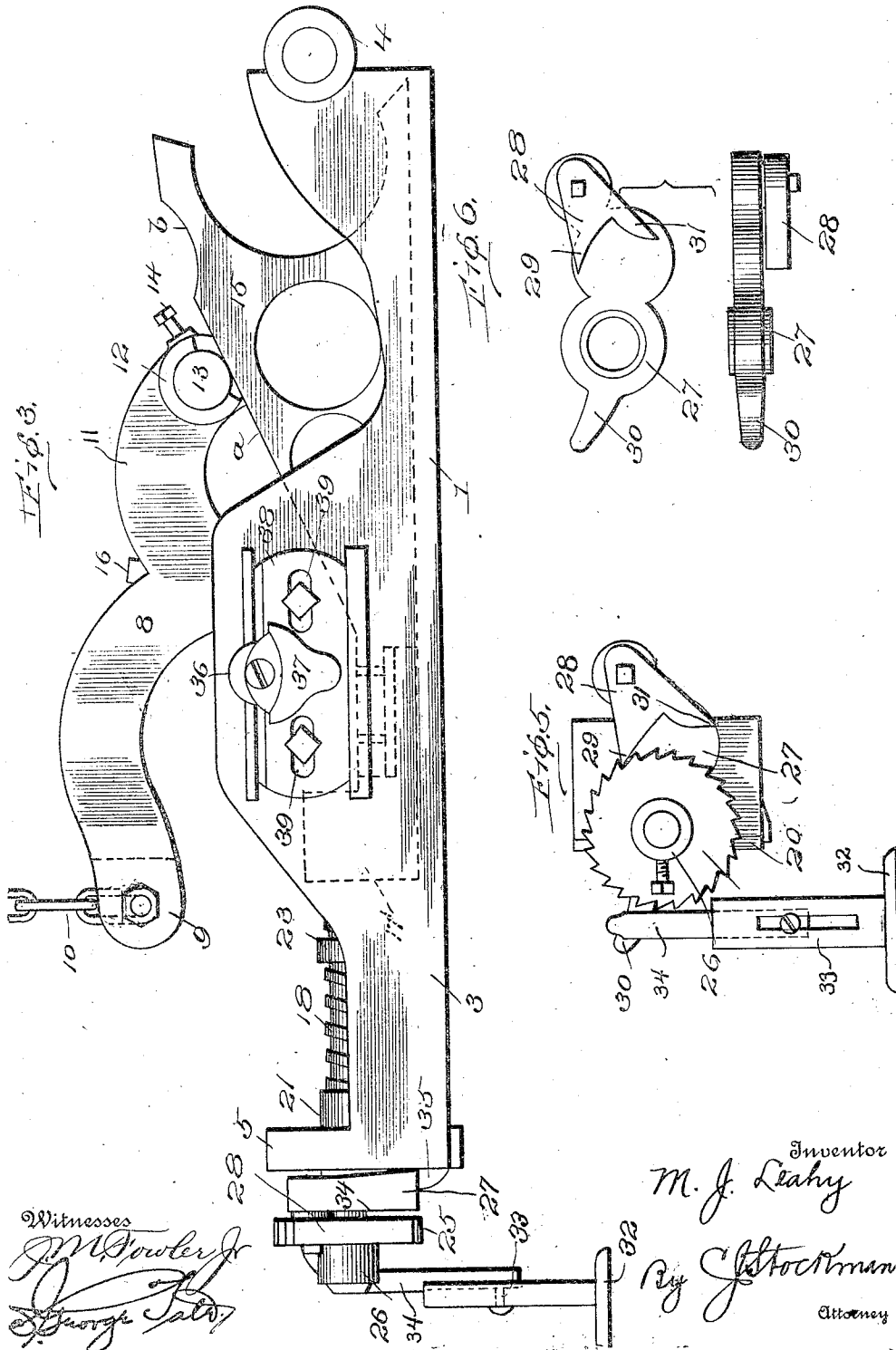
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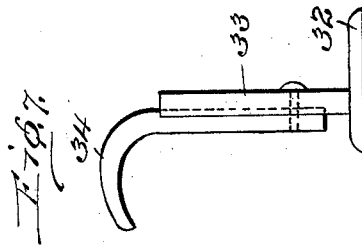
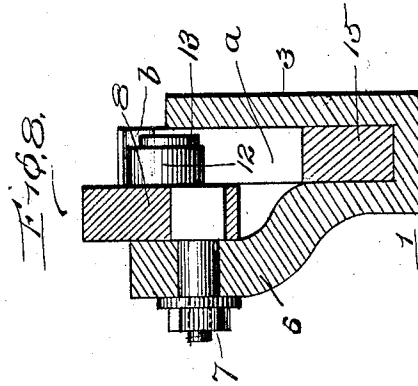
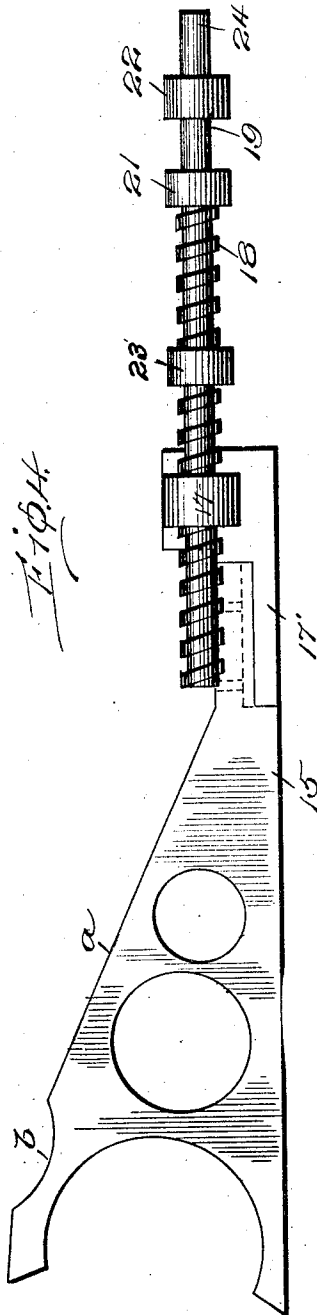


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3 SHEETS—SHEET 3.



Witnesses

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UNITED STATES PATENT OFFICE.

MICHAEL J. LEAHY, OF WATERTVILLE, MAINE.

BUILDER FOR RING-SPINNING FRAMES.

1,037,645.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed July 28, 1910. Serial No. 574,237.

To all whom it may concern:

Be it known that I, MICHAEL J. LEAHY, a citizen of the United States, residing at Waterville, in the county of Kennebec and State of Maine, have invented new and useful Improvements in Builders for Ring-Spinning Frames, of which the following is a specification.

This invention relates to a building mechanism for ring spinning frames and pertains particularly to an improved builder for the automatic regulation of the wind, whereby the spinning frame may be used to build either plain or cone bobbins.

The main object of my invention is to provide a builder of such construction that it may be readily set to build either plain or cone bobbins.

It is a further object to simplify the structure of the builder mechanism of a spinning machine, while insuring a thorough and more practicable device, which will not only properly graduate the length of the wind, but will permit the building of a cone having substantially double the amount of yarn on the base of the bobbin than is possible with builders of the old form.

With these and other objects which will hereinafter appear in view, my invention will now be fully set forth and described, reference being had to the accompanying drawings which form a part of this specification, and in which:—

Figure 1 is a front elevation of the builder, Fig. 2 is a plan view thereof, Fig. 3 is a back view of the builder, Fig. 4 is a side elevation of the cam plate, Fig. 5 is an elevation of the ratchet release mechanism for actuating the builder, and Fig. 6 shows a plan and an elevation of the gravity pawl. Fig. 7, shows an elevation of the tripping mechanism. Fig. 8, shows a section on the broken line 8—8, of Fig. 1.

Referring more particularly to said drawings, 1 indicates a carriage comprising a base plate having the front and rear longitudinal walls 2 and 3, which terminate at the rear end of the frame near a trunnion 4 which constitutes the fixed pivot point of the carriage 1 on the spinning frame (not shown). The rear wall 3 extends along the rear edge of the base of the carriage 1 from end to end thereof, and terminates at the forward end of said carriage in a preferably integral journal block 5, whose functions will hereinafter appear. The front wall 2 of

the carriage however, terminates at an intermediate point along the front edge of the base of the carriage in an upright trunnion or bearing plate 6, said bearing plate being longitudinally slotted from one edge thereof to provide for the adjustable reception of a bolt-shaft 7. Said bolt-shaft 7 has rotatably mounted upon its inner end a rock-lever 8.

The forwardly projecting end 9 of said rock-lever is apertured and vertically bifurcated or otherwise suitably formed, to receive the free end of the chain 10 whose opposite end is connected to the ring rail actuating mechanism (not shown). The rearwardly projecting arm 11 of the rock-lever 8 is journaled to provide a bearing for the stub-shaft 12 of a cam roller 13, said stub-shaft 12 being held in position by means of a set screw 14 entered from the arm 11, said cam roller 13 bearing upon the cam faces of the cam plate 15, hereinafter described. An oil cup 16 suitably disposed above the bolt-shaft 7 provides for the proper lubrication of the rock lever 8.

The cam plate 15, above mentioned, consists of a substantially triangular plate vertically disposed upon one end of its longer sides between the front and rear walls 2 and 3 of the carriage, said carriage thereby constituting an elongated slide bearing for said cam plate 15. The smaller end of said cam plate 15 extends toward the front of the carriage 1 and is provided with a screw block 17 which may be formed as an integral enlargement of said cam plate 15, but is preferably formed as a separate part having a leaf member 17' which is jointed and bolted to said cam plate 15 as best shown in Fig. 4. Said screw block 17 has a laterally overhanging portion which is interiorly threaded to receive the free end of a screw 18. Said cam plate 15 has its opposite longer side provided with two cam faces *a* and *b*, upon which the cam roller 13 operates, as will be hereinafter more fully described. The said screw 18 is provided at its opposite end with a journal 19 which is rotatably secured in a bearing provided in the journal block 5 hereinbefore mentioned, said bearing being formed in the forward edge of said journal block 5 and being closed by a plate 20 bolted or otherwise secured upon said block 5. The integral collars 21 and 22 formed upon each side of the journal 19 prevent the longitudinal movement of the screw 18 with reference to the carriage 1.

It will be evident from the above that rotation of the screw 18 will cause the forward and backward movement of the internally threaded screw block 17 and consequently of the cam plate 15. A rotatable thimble 23 is mounted upon the screw 18 and is adapted to be adjustably positioned between the screw block 17 and the collar 21, whereby the limit of the forward and backward movement of the screw 18 may be regulated, to determine the operative position of the cam roller 13 upon the cam faces *a* and *b* of the cam plate 15, hereinbefore mentioned.

The cam face *a* of the cam plate 15 is adapted for use in winding or building cone bobbins, while the shorter and more gradually inclined cam face *b* is adapted for use when it is desired to wind a plain bobbin, the incline of the cam face *b* being so disposed that the device will provide its own cone. Furthermore, the operativeness of each cam face is determined by the position of length of the thimble 23. Thus, when it is desired to wind plain bobbins, a thimble 23 of suitable length is properly located upon the screw 18 in such a position that when the screw block 17 of the cam plate 15 is drawn up against the thimble 23 by winding said screw 18 up, the cam roller 13 will be located at the upper end of the cam face *b*, and when said cam face is moved to its extreme position to throw the cam plate 15 backward. However, when it is desired to use the lower incline or cam face *a*, a thimble 23 of suitable length is run upon the screw 18 to limit the contact of the cam roller 13 with said cam face *a*. The difference in the inclines of the two faces *a* and *b* determines the speed of the roller in its upper move when working on them. Thus, if incline *b* is but one-half that of *a*, the chain will relax but one-half as much in a given time, as when the cam roller 13 is working on *a*, thus allowing double the amount of yarn to be wound on the base of the bobbin when *b* is used as when *a* is used. It is also evident that the size of the cone is regulated by the length of the thimble 23, since the shorter the thimble used, the larger will be the cone, owing to the fact that the shorter thimble will permit a greater amount of travel of cam plate 15, thus permitting a longer duration of the period during which the cam roller 13 is working on *b*.

Referring to Figs. 4, 5 and 6, 24 indicates the outer end of the screw 18, upon which is fixedly mounted a ratchet wheel 25, the latter bearing against the collar 22 and being held upon the end 24 by means of the sleeve 26. 27 indicates a weighted gravity pawl lever which is loosely mounted upon the collar 22 and carries at the extremity of its weighted end a double pointed gravity pawl 28, the outer weighted point 29 of said

gravity pawl being retained in constant engagement with the teeth of the wheel 25. A finger-piece 30 is mounted upon the opposite side of the pawl lever 27.

A suitable tripping device is fixedly mounted upon the spinning machine frame or upon the floor in a position to engage the finger 30 of the gravity pawl lever 27 to actuate the ratchet wheel 25 and thereby impart a step by step movement to the screw 18, whereby the plate 15 is intermittently moved rearwardly along the carriage 1 to permit the proper release of the rock lever 8. A suitable embodiment of this tripping device is shown in Fig. 7, in which 32 indicates a base plate suitably fixed to the machine or follower and carrying a slotted standard 33. Mounted upon said standard 33 is a finger-piece 34, whose vertical member is longitudinally slotted to permit of its adjustable positioning upon the standard 33, whereby the contact of the finger 34 with finger 30 of the gravity pawl lever 27 may be regulated.

In operation, as the builder carriage is moving upwardly, the finger 30 of the gravity pawl lever 27 strikes against the finger 34 of said standard and swings said pawl upwardly, thereby causing the weighted point 29 of the pawl to revolve the ratchet wheel 25 to properly indicate the intermittent movements of cam plate 15. In order to prevent the weighted pawl lever 27 from dropping too low upon its return movement, a stop 35 (shown in Fig. 3) is provided on the carriage 1, upon which the said pawl lever 27 may drop.

The actuating movement for the builder carriage 1 is communicated through a heart cam motion (not shown) which bears upon a cam roller 36 which is mounted transversely of the carriage in a bearing 37 formed upon a plate 38 which is secured preferably by bolts to the rear face or wall 3 of the builder carriage, said bolts being entered through longitudinal slots 39 in said plate 38, whereby the latter may be properly positioned and adjusted with relation to the heart cam motion.

In operation, when it is desired to set the builder to wind bobbins of either type, namely plain or cone bobbins, the screw 18 is provided with a thimble 23 of suitable length and set in proper position, and the screw is wound until said thimble 23 bears against the block 17, thus placing the cam roller 13 upon the upper end or summit of either the inclined face A or B. This places the rock lever 8 in the position in which the chain 10, and consequently the ring rail is drawn to its downmost position.

When the device is actuated, through the medium of the heart cam motion, and the cam roller 36, the forward or free end of the builder structure is reciprocated, thus

causing the gravity pawl 28 to be actuated in a path which traverses the finger 34 of the tripping device; whereby an intermittent and regular unwinding movement is given to the screw 18 and a consequent, retractive movement to the cam plate 15, whereby a gradual release is made of the rock lever 8, to permit it to relax the rail chain 10, and through said chain 10 of the ring rail.

It will be apparent from the foregoing, that my improved builder is fully capable of fulfilling all of the objects which are claimed for it, and that furthermore my builder is capable of use with any type of ring spinning wheel or frame, whether the latter is adapted for use in cotton, linen or silk mills, and whether the machine is used for winding plain or cone bobbins or cops.

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

1. A builder for ring spinning frames, comprising in combination, a carriage having a longitudinal bearing formed therein, a cam plate movable in said carriage, a plurality of cam faces formed on the upper edge of said cam plate, means in operative engagement with said cam surfaces for communicating the movement of said plate to a ring rail, a screw threaded in said cam plate and having a fixed bearing in said carriage, means for intermittently actuating said screw, and an exchangeable stop of varying length on said screw to select its path of movement with relation to said cam faces.

2. A builder for ring spinning frames, comprising in combination, a carriage having front and back walls, a cam plate slidable in said walls, a screw threaded in said cam plate and having a fixed bearing in said carriage, means for intermittently actuating said screw to move said plate, a variable and exchangeable sleeve on said screw between the cam plate and its fixed bearing, and means carried by said carriage adapted to communicate the movement of said cam plate to a ring rail.

3. A builder for ring spinning frames, comprising, in combination, a carriage having a longitudinal bearing therein, a vertically disposed cam plate slidable in said carriage, a plurality of cam surfaces formed on the upper edge of said cam plate, a centrally pivoted rock lever carried by said carriage and having one arm in operative engagement with one of said cam faces, a connection between the other arm and the ring rail, a screw threaded in the said cam plate and having a fixed bearing in said carriage, means for intermittently actuating said screw, and a thimble adjustably threaded on said screw, between the cam plate and fixed bearing for limiting the movement of the screw and placing either of said cam surfaces in operative position.

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

MICHAEL J. LEAHY.

Witnesses:

PETER A. MURPHY,
JOSEPH A. LOON.