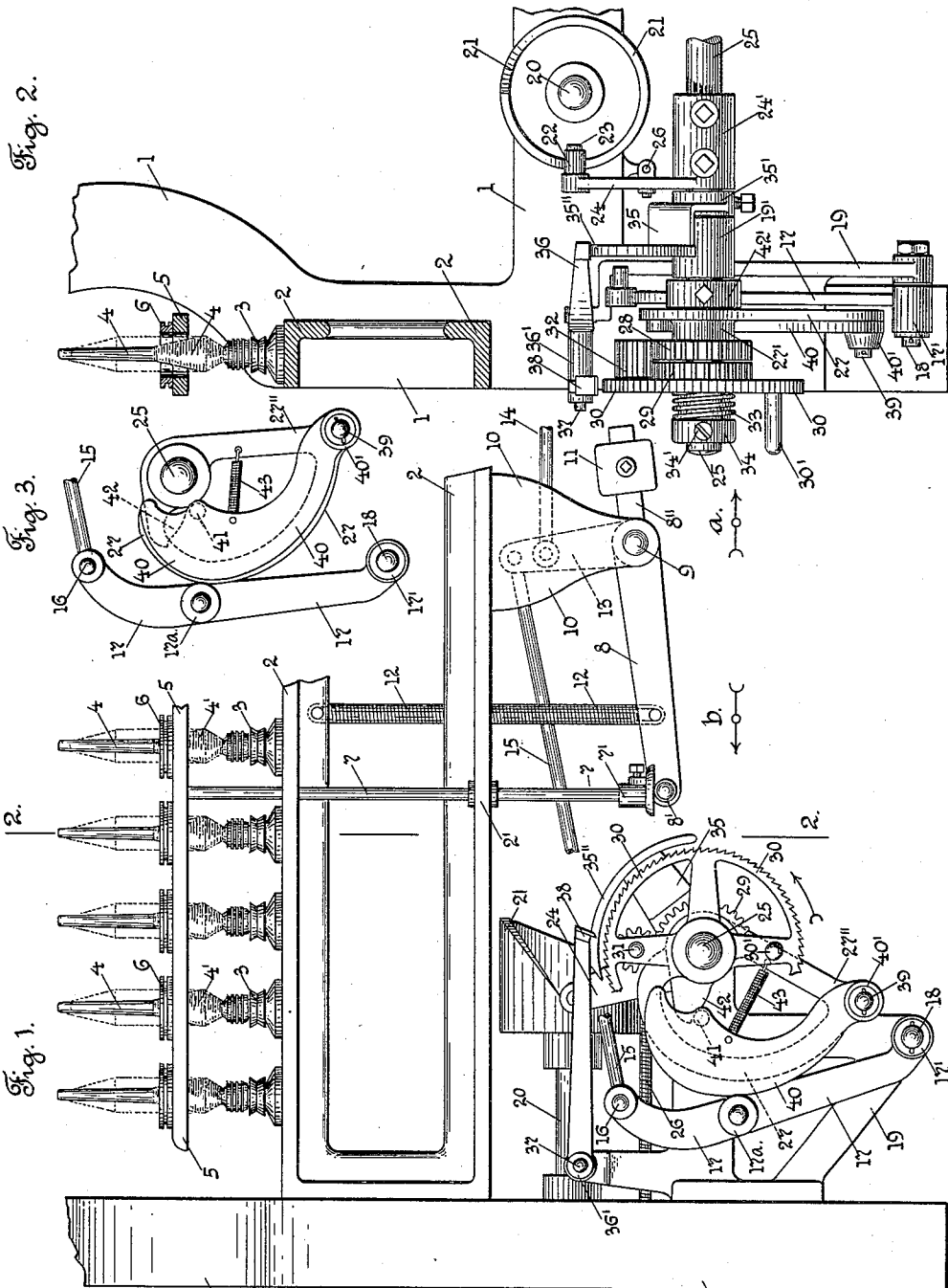


E. H. RYON.
SPINNING FRAME.
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1,055,660.

Patented Mar. 11, 1913.



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UNITED STATES PATENT OFFICE.

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SPINNING-FRAME.

1,055,660.

Specification of Letters Patent.

Patented Mar. 11, 1913.

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To all whom it may concern:

Be it known that I, EPPA H. RYON, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Spinning-Frames, of which the following is a specification.

My invention relates to a spinning frame, or a frame for winding yarn on cops or bobbins, of the type shown and described in U. S. Letters Patent, No. 1,012,714, in which an improved mechanism is provided for communicating an up and down movement to the ring rail for the yarn guides, by means of which said rail or guides are operated to have an up and down movement for a comparatively short distance, when the winding of the yarn is started near the butt or lower end of the bobbin, and then the movement gradually increases as the winding of the yarn proceeds toward the tip of the cop or bobbin, and until the extreme length of the up and down movement is reached.

The object of my invention is to improve upon the construction of the mechanism for communicating an up and down movement to the ring rail, shown and described in U. S. Letters Patent above referred to.

My invention consists in certain novel features of construction of my improvements as will be hereinafter fully described.

I have only shown in the drawing a detached portion of a spinning frame of the type above referred to, with my improvements applied thereto, sufficient to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawing:—Figure 1 is a front view of a detached portion of one end of a spinning frame, with my improvements combined therewith, looking in the direction of arrow *a*, Fig. 2. Fig. 2 is a section, on line 2, 2, Fig. 1, looking in the direction of arrow *b*, same figure, and, Fig. 3 shows the cam operating mechanism, shown in Fig. 1, detached, and in an opposite position.

In the accompanying drawing, 1 is a portion of the end frame of a spinning machine,

2 is the spindle rail, on which are mounted the rotatable sleeve whirl spindles 3, carrying the bobbins 4 on which the filling 4' is wound.

5 is the vertically reciprocating ring rail, provided with rings or yarn guides 6, one for each spindle.

7 is one of a series of lifter rods, connected at its upper end with the ring rail 5, and having its bearing in the girder 2' of the spindle rail 2. On the lower end of the vertically moving rod 7 is a shoe 7', which rests upon a roll 8' on the outer end of a rocker arm 8, which is fast on a rock shaft 9, mounted in suitable bearings in the hanger 10. On an extension 8'' on the rocker arm 8, is a counterbalance weight 11.

A helically coiled contraction spring 12 is attached at its upper end to the spindle rail 2, and at its lower end to the rocker arm 8, and acts in this instance to yieldingly move upwardly the arm 8 and the ring rail 5 thereon. Also fast on the rock shaft 9 is the lower end of an arm or lever 13. To the lever 13 is pivotally connected one end of a rod or connector 14, leading to a second lever and rocker arm, not shown.

To the upper end of the arm or lever 13 is pivotally connected one end of a rod or connector 15; the other end of said rod or connector 15 is connected to a pin 16, see Fig. 1, on the upper end of the cam lever 17. The lower end of the cam lever 17 has the hub 17' thereon, which is loosely mounted on a stud 18 on a stand 19, secured to the end frame 1. A rotary shaft 20, which is operated from some moving part of the machine, not shown, has a cam 21 fast thereon, which has a cam face thereon, see Fig. 1, which, on the rotary movement of the cam 21, engages with a roll 22 on a stud 23, see Fig. 2, on a cam lever 24.

The cam lever 24 has a hub 24' fast on a rock shaft 25, see Fig. 2. To the cam lever 24 is attached one end of a spring 26. The other end of said spring 26 is attached to the frame, see Fig. 1. On the inner end of the rock shaft 25, suitably mounted in a bearing 19' on the stand 19, see Fig. 2, is loosely mounted a cam 27, which has secured

to its hub 27' a pinion 28. A second pinion 29 is fast on the rock shaft 25. The pinion 29 has in this instance one tooth less than the pinion 28. A ratchet wheel 30 is loosely mounted on the rock shaft 25, and carries a stud 31, on which is loosely mounted a pinion 32, see Fig. 2, which is of sufficient width to mesh with both the pinions 28 and 29.

10 A helically coiled expansion spring 33 is mounted on the outer end of the shaft 25, and bears at one end against the ratchet wheel 30, and at its other end against the collar 34, secured on the rock shaft 25 by a screw 34'. The spring 33 acts to yieldingly press the ratchet wheel 30 against the gear 29, which may be provided with a suitable friction surface. The ratchet wheel 30 has in this instance a stud 30' extending out therefrom, by means of which the wheel 30 and cam 27 may be returned to their starting position, after a set of bobbins has been filled, and a new set of empty bobbins put on the spindles ready to start.

25 Fast on the rock shaft 25 is the hub 35' of an arm 35, see Fig. 2, which has an arc shaped end 35'', see Fig. 2, which is adapted to extend under and engage an arm 36, which has its hub 36' pivotally mounted on a stud 37 secured in the stand 19. Also extending out from the hub 36' is a pawl 38, see Fig. 1, which, when the arc-shaped arm 35'' moves from under the arm 36, is adapted to engage the teeth of the ratchet wheel 30, to hold or retain said ratchet wheel from its rocking motion as much as is required to make a bobbin of the required diameter, as fully described in U. S. Letters Patent, No. 1,012,714, above referred to.

40 In my improved construction, I provide the downwardly extending end 27'' of the cam 27 with a stud 39, on which is pivotally mounted the hub 40' of a second cam or cam-shaped lever 40. A stud 41, see Fig. 1, extends from one side of the cam lever 40, and is adapted to rest against and travel along a cam-shaped edge on the projection or arm 42, which has its hub 42' secured on the rock shaft 25, see Fig. 2.

50 A helically coiled contraction spring 43 has one end attached to the cam lever 40, and its other end to the arm 27'' of the cam 27, and acts to yieldingly hold the stud 41 of the cam 42 against the cam shaped projection 40.

From the above description in connection with the drawing, the operation of my improvements will be readily understood by those skilled in the art.

60 The ring rail 5, by the rotation of the ratchet gear 30 and the cam 27, is moved to its lowest position, in which position the roll

17^a on the cam lever 17 will be on the highest part of the cam 27, near the pivot 39 of the cam lever 40, when the cam lever 24, on the rock shaft 25, engages with its roll 22, the highest point on the cam 21. The arc-shaped end 35'' on the arm 35 has moved away from under the arm 36, and to the right in Fig. 1, to allow the pawl 38 to drop, and to engage the ratchet wheel 30, to hold or retain it as much as is required to make a bobbin of the required diameter. In this position of the mechanism, the pin or stud 41 on the cam shaped lever or cam 40, is engaged by the highest part of the cam shaped extension 42, which causes the cam shaped lever 40 to be moved outwardly, as shown in Fig. 1, to engage the roll 17^a and operate the cam lever 17 for the up and down movement of the ring rail 5, for a comparatively short distance, to wind the yarn near the butt or lower end of the bobbin.

By the rocking of the shaft 25 and the retarding of the ratchet wheel 30 at the end of every stroke, and through the action of the differential gearing the cam 27 will be gradually rotated in the direction indicated by the arrow in Fig. 1, which causes the pin 41 on the cam 40, to gradually travel downwardly on the cam-shaped projection 42, to gradually move the cam-shaped lever or cam 40 toward its central point, to allow the cam 27 to engage the roll 17^a, to operate the cam lever 17, as shown in Fig. 3. This operation gradually increases the stroke for the up and down movement of the ring rail, to wind the upper portion of the bobbin 4, and to finish it, as shown by dotted lines in Figs. 1 and 2.

It will be understood that the details of construction of my improvements may be varied if desired.

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

1. In a traverse motion for winding yarn on bobbins, a rock shaft, a cam loose on said shaft, means to rock said cam about its pivotal center, and means to cause it to gradually move around its pivotal center, a second cam pivoted adjacent the first mentioned cam, to rock in unison with said first mentioned cam, and to have an additional movement about its pivot, said last mentioned cam acting to operate the yarn guide for the beginning of the wind on the bobbin, and allowing the first mentioned cam to complete the winding of the yarn on the bobbin.

2. In a traverse motion for winding yarn on bobbins, a rock shaft, a cam loose on said shaft to operate, through intermediate connections, the yarn guides for the main part of the wind on the bobbin, a second cam piv-

oted adjacent the first mentioned cam, for
operating the yarn guides for the beginning
of the wind on the bobbins, means to operate
said rock shaft, a ratchet wheel on said rock
5 shaft, means to rock said ratchet wheel with
said shaft in one direction, and means to
hold said ratchet wheel at rest during a por-

tion of the return movement of said rock
shaft.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."