J. W. WATTLES.

Ring-Frame Spinning Mechanism.

No. 216,987. Patented July 1, 1879.

Fig. 1.

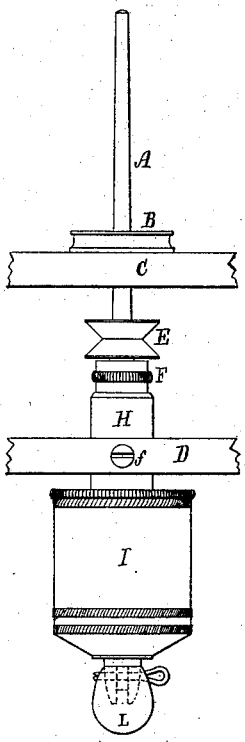


Fig. 3.

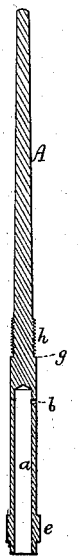


Fig. 2.

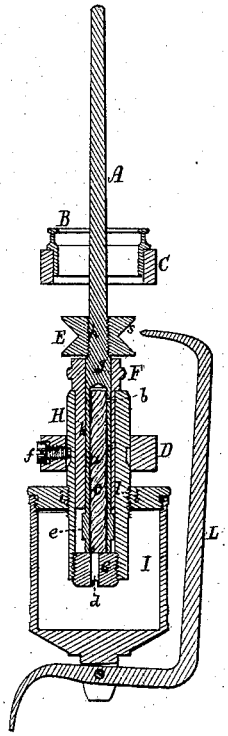


Fig. 5.

Fig. 4.

Fig. 6.

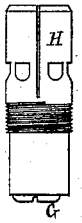


Fig. 7.

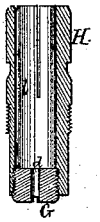
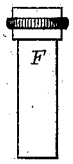


Fig. 8.

Fig. 9.



Witnesses.

S. N. Piper

W. W. Lunt

Inventor.

Joseph W. Wattles.

by attorney.

R. H. Eddy

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOSEPH W. WATTLES, OF CANTON, MASSACHUSETTS.

IMPROVEMENT IN RING-FRAME SPINNING MECHANISMS.

Specification forming part of Letters Patent No. **216,987**, dated July 1, 1879; application filed February 10, 1879.

To all whom it may concern:

Be it known that I, JOSEPH W. WATTLES, of Canton, of the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Ring-Frame Spinning Mechanisms; and do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation of a spinning-frame ring and spindle and their sustaining-rails with my invention applied thereto. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a vertical section of the spindle without the wick or oil-elevator. Fig. 4 is a horizontal section of the spindle, the bolster, and the step-carrier. Fig. 5 is a top view, Fig. 6 a side elevation, and Fig. 7 a vertical section, of the step-carrier. Fig. 8 is a top view, and Fig. 9 a side elevation, of the bolster.

With my said invention the ring is not adjustable into concentricity with the spindle, but remains fixed in position in its socket of the ring-rail, such socket having a diameter corresponding to that of the shank of the ring. The spindle, however, is provided with a peculiar mechanism for adjusting it into concentricity with the ring, and for lubricating the step and bolster of such spindle.

The nature of my invention consists as follows, viz: First, in the combination of a spinning-frame spindle and its step and an eccentrically-bored and revoluble bolster with an eccentrically-bored and revoluble carrier to such bolster and step, the bolster being arranged within the bore of the carrier and the carrier in the spindle-rail, all being arranged so that by revolving either the bolster or carrier, or both, as occasion may require, the spindle may be adjusted into concentricity with the ring; second, in the spindle provided with the open wick-chamber and its oil-escape passage, in combination with the bolster and the step and its carrier, arranged and applied substantially as set forth; third, in the combination of the oil-reservoir, surrounding the step-carrier and applied thereto, with the said step-carrier and the separate bolster, arranged therein as represented; fourth, in the combination of the oil-reservoir with the tubular step-carrier, step, and bolster, and with the spindle provided with the wick-chamber and its discharging-orifice, all being arranged substantially in manner and to operate as set forth; fifth, in the combination of the oil-reservoir with the tubular step-carrier, step, and bolster, and with the spindle provided with the wick-chamber and its discharging-orifice, and with a wick or device arranged in such chamber, and being for raising or elevating the oil therein, as explained; sixth, in the spindle provided with the open wick-chamber and its oil-escape passage, in combination with the bolster and with the spindle-supporting step, provided with an oil-passage leading through it, as set forth; seventh, in the spindle-stopper, in combination with the whirl, the spindle having a flange and the bolster, and the stopper being arranged as described, so as to work at its upper end against the upper inclined surface of the groove of the whirl only, in order that such stopper while being borne against the whirl shall force the spindle upward and its shoulder or extension against the lower end of the bolster, and thereby effect increase of friction, tending to stop the spindle from revolving.

The spindle, as shown in the drawings, is arranged in the bore of the bolster, and at its lower end such spindle is supported by a step arranged at the lower part of the carrier.

The bore *k* of the bolster is cylindrical and eccentric relatively to the outer surrounding surface of the bolster, which is also cylindrical. The bore *l* of the step-carrier is also cylindrical, has a diameter corresponding to the diameter of the bolster, and is eccentric relatively to the outer surrounding surface of the step-carrier, which is cylindrical, all being as represented in the accompanying drawings.

Furthermore, the spindle is provided with a flange at its lower part, where it extends below the bolster; and close to and above the top of the bolster the spindle has a shoulder and screw formed on it, they being to receive and support the whirl, which is screwed upon such screw and down against the shoulder, and answers as a cap to the top of the bolster.

The step-carrier is split or slitted lengthwise from its top about half its length, so as to be contractile laterally upon the bolster, or when contracted to grasp it firmly.

The step-carrier extends up through a hole in the spindle-rail, and is held in place therein and contracted upon the bolster by a set-screw screwed laterally into the rail and against the carrier.

Again, the spindle, in the part of it within the bore of the bolster, is bored axially from its foot upward to, or nearly to, the top of the bolster; and there extends out of the bore or chamber laterally a small oil educt or passage.

The bore or chamber in the spindle is to contain a wick or like capillary attractive packing; or it may have within it a screw, such as, when in revolution with the spindle, will cause oil from the interior of the step-carrier to be raised or drawn up the chamber of the spindle, such oil being discharged by centrifugal force out of the educt at the upper part of the spindle-chamber, and thence between the bearing-surfaces of the spindle and bolster.

The spindle-foot step I arrange at the lower part of its carrier, and make through such step an oil-educt, to allow oil from a reservoir encompassing the carrier to flow freely into it, such reservoir being a closed cylindrical vessel screwed upon or otherwise properly fixed to the carrier. The step at top has a flat surface to sustain the foot of the spindle, and to admit of the necessary lateral movement of the spindle during adjustment of it into concentricity with the ring.

In the drawings, A denotes the spindle; B, the ring; C, the ring-rail; D, the spindle-rail; E, the whirl; F, the bolster; G, the step; H, the step-carrier; and I, the oil-reservoir. *a* is the chamber of the spindle; *b*, its oil-educt, and *c* the wick or oil-raising stuffing placed in such chamber.

The step, having the oil-inlet *d* made down through it, screws or is fastened into the lower part of its carrier.

The part of the spindle which is below the bolster has a flange, *e*, projecting from and extending around it, such flange being to prevent the spindle from being drawn out of the bolster on an attempt being made to remove a bobbin from the spindle.

The screw for clamping the step-carrier in and to the spindle-rail and upon the bolster is shown at *f*.

By having the step-carrier split or slitted lengthwise from its top down, as described, one screw is made to answer not only to confine the said carrier to the spindle-rail, but to clamp the carrier to the bolster after the spindle may have been properly adjusted to the ring, such adjustment being effected by revolving the bolster in the eccentric bore of the step-carrier until the axis of the spindle may be coincident with that of the ring. A "centralizer" being applied to the spindle will drop down into the ring on the spindle being brought into concentricity therewith.

The shoulder of the spindle is shown at *g*, the screw for receiving the whirl being represented at *h*. The oil-reservoir is screwed to the step-carrier, as shown at *i*.

A spindle-stopper or bent lever, L, pivoted to the oil-reservoir and formed and arranged therewith and with the whirl, in manner as shown, serves to enable an attendant, by pressing his knee against the lower arm of the lever, to force the upper arm of such lever against the whirl or its upper inclined surface, *s*, and by so doing to stop the spindle or arrest its rotary motion when such may be necessary.

By the action of the lever against the whirl the spindle will be forced upward, so as to carry the flange *e* up against the foot of the bolster, such also aiding in stopping the spindle.

The bolster, at its upper part, is provided with a milled head or a shoulder to aid in turning it, and to rest upon the top of the step-carrier and determine the extension of the bolster in such carrier, and prevent the bolster from dropping down therein on the screw *f* being loosened.

From the above it will be seen that with my invention the adjustment of the spindle relatively to the ring can be easily effected; also, that the lubrication of the bearing-surfaces of the spindle will be carried on to great advantage without the necessity of frequently charging the reservoir with oil.

What I claim as my invention is as follows, viz:

1. The combination of the spinning-frame spindle and its step and an eccentrically-bored revoluble bolster with an eccentrically-bored revoluble carrier to such bolster and step, the bolster being arranged within the bore of the carrier and the carrier in the spindle-rail, all being arranged as described, so that by revolving either the bolster or carrier, or both, as occasion may require, the spindle may be adjusted into concentricity with the ring.

2. The spindle provided with the open wick-chamber and its oil-escape passage, in combination with the bolster and the step and its carrier, arranged and applied substantially as set forth.

3. The combination of the oil-reservoir surrounding the step-carrier and applied thereto with the said step-carrier and the separate bolster, arranged therein as represented.

4. The combination of the oil-reservoir with the tubular step-carrier, step, and bolster, and with the spindle provided with the wick-chamber and its discharging-orifice, all being arranged substantially in the manner and to operate as set forth.

5. The combination of the oil-reservoir with the tubular step-carrier, step, and bolster, and with the spindle provided with the wick-chamber and its discharging-orifice, and with a wick or device arranged in such chamber and being for raising or elevating the oil therein, as explained.

6. The spindle provided with the open wick-

chamber and its oil-escape passage, in combination with the bolster and with the spindle-supporting step provided with an oil-passage leading through it, as set forth.

7. The spindle-stopper L, in combination with the whirl, the spindle having the flange *e* and the bolster, and the stopper being arranged as described, so as to work at its upper end against the upper inclined surface of the groove of the whirl only, in order that such stopper while being borne against the whirl shall force the spindle upward, and its shoulder or extension *e* against the lower end of the bolster, and thereby effect an increase of friction, tending to stop the spindle from revolving.

JOSEPH W. WATTLES.

Witnesses:
R. H. EDDY,
W. W. LUNT.