J. W. Adams.

Spinning

No. 10,851. Patented May 2, 1854.

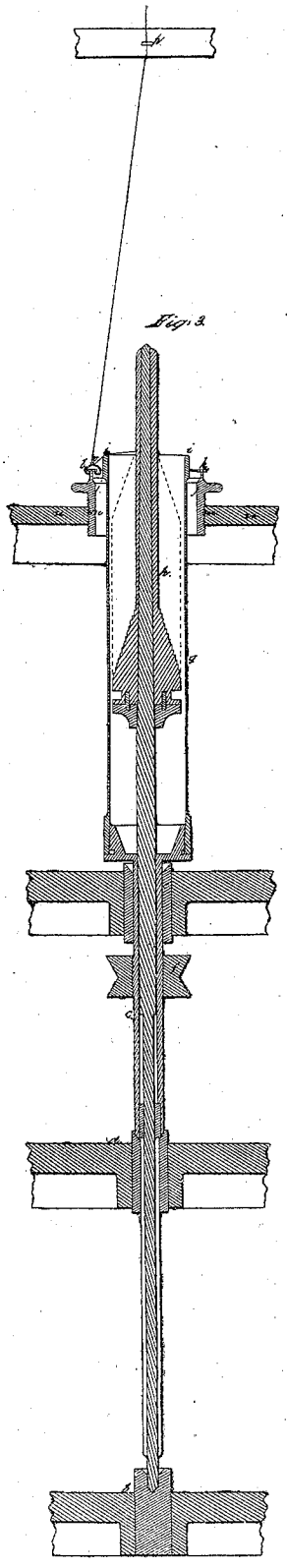


Fig. 3.

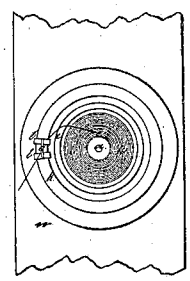
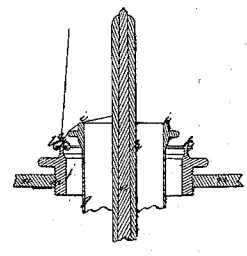


Fig. 4.



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

UNITED STATES PATENT OFFICE.

JOHN W. ADAMS, OF THOMPSONVILLE, CONNECTICUT.

SPINNING COTTON.

Specification of Letters Patent No. 10,851, dated May 2, 1854.

To all whom it may concern:

Be it known that I, JOHN W. ADAMS, of Thompsonville, in the State of Connecticut, have invented a certain Improvement in Spinning Cotton and other Fibrous Substances, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is a plan of the mode of application of my invention; Fig. 2, an elevation; Fig. 3, a vertical section; Fig. 4, a vertical section of a modification.

The same letters indicate like parts in all the figures.

All modes of throstle spinning heretofore known, such as the flier, the cop or the ring and traveler, present a serious difficulty. The thread in the process of spinning, passes through the arm of the flier over the edge of the cop, or through the traveler, and thence to the bobbin on the spindle, which is of a constantly varying diameter, gradually increasing as the cop is formed, while the arm of the flier, the edge of the cop, and the traveler is always on a constant diameter. As the thread is on the tangent of the winding circle, that is on a tangent of the circle of the body of the bobbin or the thread wound thereon, when the bobbin is on a line spindle and the thread, as it winds on, drags the flier, or the traveler, or draws on the edge of the cop, the drag is a constant resistance, while the leverage which draws the thread is a constantly increasing force as the diameter of the bobbin is increased by the winding on. From this it results that the power necessary to drag or draw around the flier or traveler or to drag the thread on the edge of the cop is constantly becoming less from the beginning to the end of the operation, as the tangent line of the thread approaches the tangent of the flier, traveler or cop, so that the thread instead of being subjected to a constant and equal resistance is subjected to a constantly decreasing resistance, and therefore the winding on cannot be regular.

The object of my invention is to avoid this defect, and to this end the nature of my invention consists in interposing between the spindle or bobbin or spool thereon, and the flier, traveler or cop or the equivalent thereof, a carrier or carriers moving with the spindle, bobbin or spool, over which the thread passes from the flier, traveler or cop, to the spindle, bobbin or spool, so that the dragging or drawing of the flier, or traveler or the thread on the edge of the cop shall be effected by the said carrier or carriers, the thread being in contact therewith, so that the power and the resistance shall at all times be at the same distance without reference to the varying of the winding diameter.

In the accompanying drawings *a* represents a line spindle, resting in a proper step at bottom on the copping rail *b* and passing through a tubular spindle *c* in which it is free to slide vertically, but with which it is connected by a feather or its equivalent so as to rotate therewith. The lower end of the tubular spindle *c*, rests and turns in a step on a rail *d*, and its upper end is fitted to turn in a collar *e*. This tube is provided with a rove *f*, in the usual manner by which it is rotated, and to its upper end is secured a tube *g*, which surrounds the bobbin *h*, secured on the spindle, the said tube being of sufficient length to admit the whole length of the bobbin within it. The upper edge of this tube should be concentric with the spindle to insure steadiness of motion at high velocities and its upper edge should be rounded and smooth to constitute what I term the concentric thread carrier *i*.

Outside the thread carrier there is a ring *j*, grooved near its upper edge inside and outside to form a double flange *k*, to receive and hold a traveler *l*, and constituting what is termed a ring groove spinner. The lower end of the ring *j*, is threaded as at *m*, and tapped into the rail *n*, so that it can be elevated or depressed relatively to the thread carrier.

The traveler instead of being made, as usual, in one part, is made in two parts as represented at Fig. 1, and connected together by a small bar *o*, at top leaving a space between the two for the passage of the thread.

The thread to be spun comes from the usual draw rollers, passes through a guide *p*, centrally above the spindle, thence through the traveler and over the edge of the carrier to the bobbin on which it is wound. The usual traversing motion is given to the copping rail for the purpose of winding on the thread in a proper manner. The traveler should be below the level

of the upper edge of the carrier, so that the thread shall be drawn and bent over the carrier.

From the above arrangement it will be manifest that when the spindle with its bobbin rotates together with the carrier, that the thread will be drawn obliquely from the carrier to the traveler in a line nearly tangential to the circle of the carrier, so that the traveler will be drawn around with very little friction and with less than if it was in a line tangent to a smaller circle, and as the carrier turns with the spindle and bobbin, and the thread is drawn tight over the edge of the carrier, the traveler will be drawn around not by the bobbin, but by the carrier, and as these are fixed diameters, always bearing a fixed and determined proportion to each other, the thread between the carrier and traveler is always under the same tension, instead of the varying tension to which it is exposed in all throstle spinners heretofore known and used. The varying winding diameter on the bobbin does not on this plan affect the drag, for that is done by the carrier, and hence at a constant distance from the traveler, and as the diameter of the winding circle increases, the motion of the traveler must increase in an equal ratio, and thus make the pull on the thread uniform throughout the operation.

The great object is to maintain a constant distance between the thread carrier and traveler so that the thread shall always maintain the same or nearly the same direction, and hence exert a uniform pull on the traveler to make the drag uniform. The drag on the thread can be regulated at pleasure by depressing or elevating the ring groove and traveler which increases or decreases the bend of the thread over the edge of the carrier, and still further to increase the capability of adjustment of the drag, I sometimes make the carrier with two concentric edges, as represented at Fig. 4, so that when the ring and traveler are depressed to the extent represented in this figure, the thread will pass over the two rounded edges of the carrier and thus brings nearer the tangent line of the circle in which the traveler moves, and if elevated sufficiently the thread will only pass in contact with the inner edge of the carrier.

It will be obvious that other modes of applying the principle of my invention may be devised—as for instance, instead of the ring groove and traveler an independent flier may be substituted, but I prefer to employ the ring groove, as the other is less adapted to fine spinning, and is not so cheap in the construction, and not so difficult to keep in repair. Nor do I limit myself to the construction of the thread carrier, or any other part above described. And it may be well to add that the thread may be wound on any diameter, and, if desired, directly on the surface of the spindle, as in the mule, which presents the well known advantage of winding a given quantity of thread on a small cop for small shuttles.

What I claim as my invention and desire to secure by Letters Patents is—

The employment of the thread carrier, substantially as specified, in combination with the central spindle for winding on with or without a bobbin or spool, and with the ring groove and traveler, or its equivalent substantially as specified.

JOHN W. ADAMS.

Witnesses:

ALEC. PORTER GROVE,

CHAS. W. BAMBURGH