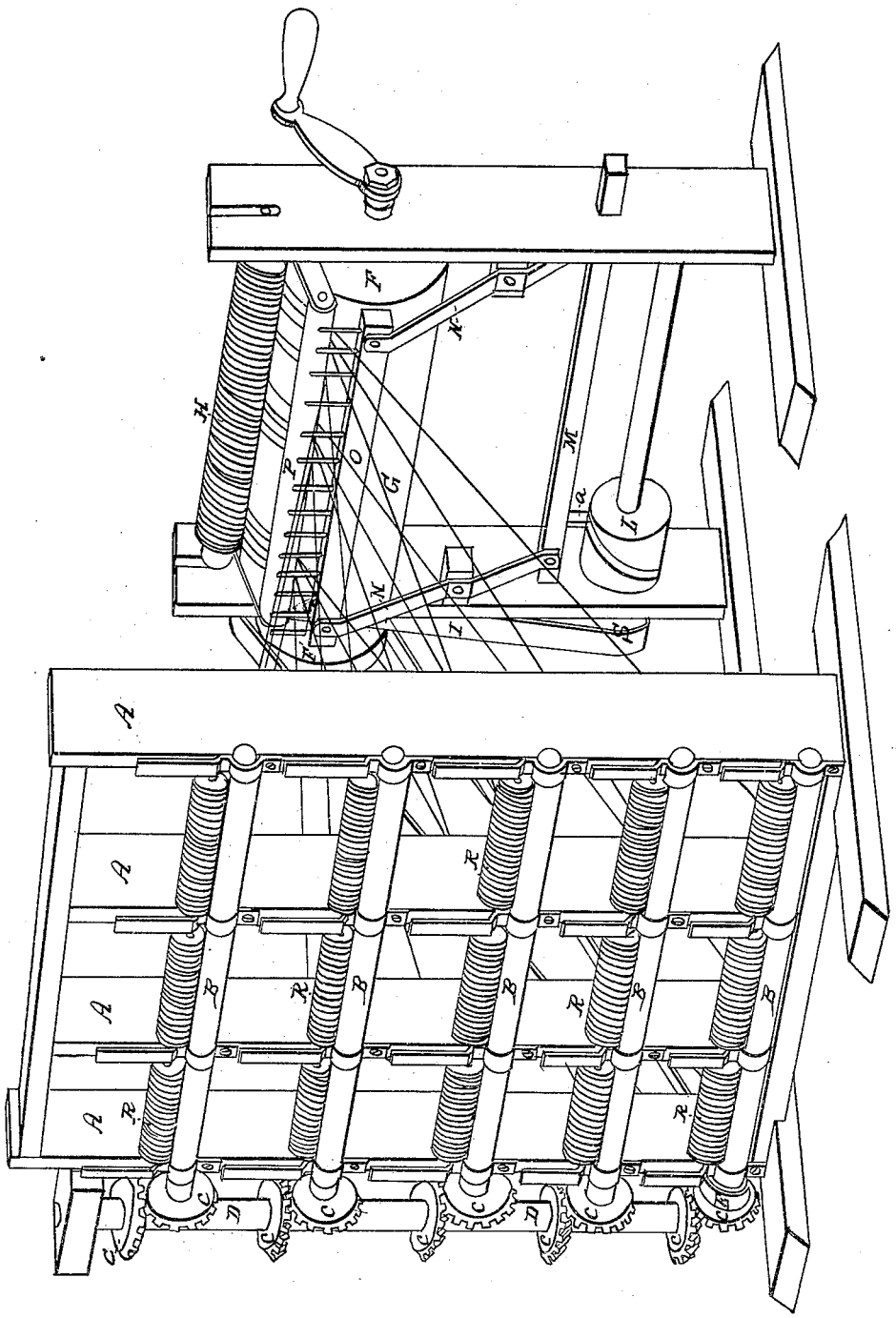
Z. Allen.

Winding Bobbins.

No. 1,316. Patented Sept. 10, 1839.



UNITED STATES PATENT OFFICE.

ZACHARIAH ALLEN, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN THE MACHINE FOR SPOOLING WOOL FROM THE BREAKER CARDING-ENGINE.

Specification forming part of Letters Patent No. 1,316, dated September 10, 1839.

To all whom it may concern:

Be it known that I, ZACHARIAH ALLEN, of Providence, in the State of Rhode Island, a citizen of the United States, have made a new and useful Improvement in that part of the process of manufacturing wool which relates to the spooling of the filaments of rovings, which are produced by the carding-engine, called "breakers," and are used to supply the feed-rollers of the carding-engines, termed "finishers," of which the following is a specification.

This improvement is carried into effect by means of a spooling-machine constructed for transferring the rovings of wool from the short spools, on which they are wound by the breaker carding-engines, to a single long spool whenever a sufficient number of these rovings are combined to form a continuous sheet or lap of a breadth adapted to that of the finisher carding-engines, to which they are applied for supplying them with the wool to be carded.

It is the common practice in woolen-mills at the present time to supply the wool to the finisher carding-engines in the form of sheets of batting when coarse wool is manufactured, and when fine wool is manufactured twenty or thirty, or more, filaments of rovings of wool are slowly drawn off from the small spools on which they are wound by the breaker carding-engine. A large frame or creel capable of holding all these small spools is set up in front of each finisher carding-engine. These slender untwisted filaments of rovings are drawn off from the short spools in common use by means of the slight cohesion of the fibers of the wool, the tenacity of which frequently yields, and portions of the rovings become thus extended in length and diminished in size, and the thread formed from such rovings becomes irregular, breaking in the attenuated places in the subsequent process of spinning and weaving, thereby delaying and rendering more costly these processes and causing the fabrics to become in a corresponding degree imperfect. These large frames or creels occupy much room and obstruct the light, in addition to performing the required operation imperfectly, as above stated; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of my spooling-machine, reference being had to the annexed drawings, making a part of this specification.

The spooling-machine consists of two parts, one (marked A) for holding the small spools filled with wool to be unwound, and the other for holding the single long spool upon which the wool is to be wound in the process of transferring it from the short spools to the long spool. The short spools are arranged in a frame formed of four perpendicular studs A A A A, about five feet six inches high. The spaces between the studs are sufficient to receive the length of the short spools. Grooves or slits are made in the studs to hold the gudgeons of said spools, which rest with their weight upon the arbors B B B B beneath them. These bearings in the studs being in the form of a groove or slit, also allow the spools to settle down upon the arbors as fast as said spools gradually become smaller in the process of being unwound.

In the drawing accompanying this specification, A A A A represent the four perpendicular studs with the slits therein to sustain the spools, and B B B B B B are arbors or round shafts, upon which the spools press with their whole weight. These arbors B B B B B B are caused to turn or revolve by means of small cog-wheels, as C C C C C C, on the perpendicular shaft D, which drives the surfaces of each of the arbors with the same relative velocity and causes the spools resting on them also to revolve with equal velocity of their respective surfaces, whatever may be the relative size of each spool of wool. By this arrangement each spool is made to unwind and deliver off an equal length of the roving at each revolution of the respective arbors without producing any stress to extend or break the said filaments.

Motion is imparted to the perpendicular shaft D by the lowest cog-wheel on the lowest arbor B, all of these cog-wheels C C C C C being of the same size to produce uniformity in their movements. On the lowest shaft B a pulley is fixed at E, on which a band operates to give it motion from the pulley F′ on the winding-machine sustaining the long spool H.

The winding-machine is formed of two per-

pendicular side pieces secured together by frame-work and having feet sufficiently extended to maintain it in an erect position firmly. This winding-machine may be operated by hand or by the application of power.

In the drawing annexed, F represents the end view of a drum or cylinder with a crank attached to one end of the shaft that extends through the same, the other end of the shaft resting on a bearing on the end of the frame, wherein it is allowed to revolve freely. Upon this drum G the long spool H is placed, and, resting with its weight upon the drum, with each end of its gudgeon supported in the slots, as represented in the drawing, of the perpendicular ends of the machine, it is caused to revolve by the friction of the surface of the drum beneath it, on which it presses with its whole weight. In order to press down the filaments of rovings upon the drum and to cause them to pass smoothly and evenly arranged to the spool H, an iron roller is placed at P, sustained by gudgeons on two movable arms, which confine it to its place and allow it to press with its weight upon the rovings as they pass beneath it. Still further to facilitate the distribution of the rovings in a regular manner on the large spool H, finger-guides with spaces for the rovings are fixed in a movable bar O, to which a reciprocating motion is imparted through the levers N N from the cam L on the lowest shaft of the machine. Motion is imparted to this cam by a band passing around the pulley S and connected with the driving-pulley F′. A pin *a* passes from the movable sliding bar M into the grooved cam L, which causes said sliding bar to have a reciprocating movement at each revolution of said grooved cam, as represented at L. The lever-bars N N are connected at one of their respective ends with the sliding bar M and with the other of their respective ends attached to the sliding bar O, and they vibrate on pins passing through the middle of each lever, serving as the fulcrum to support them.

When the cylinder G is put in motion to operate the spooling-machine, it causes the long spool H to revolve and wind up the rovings precisely as fast as they are unwound and given off from the short spools R R R R without producing any stress to stretch or break them in the operation. The respective sizes of the pulleys F′ and E, connected by the band I, and of the cog-wheels C C C C C must be so arranged as to cause the surfaces of all the respective arbors B B B B B to move with precisely the same velocity as the surface of the cylinder G. The small spools R R R R, resting on the arbors B B B B B, will thus be caused to revolve, in the process of unwinding the rovings therefrom, with a velocity corresponding with that of the long spool H in the process of winding said rovings thereon.

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

The arrangement of the spools R R R R R and arbors or rollers B B B B B, in combination with the cylindrical drum G, which sustains and gives motion to the long spool H, and the surface of which moves with equal velocity with the surface of the arbors or rollers B B B B B, all as herein described.

ZACHARIAH ALLEN.

Witnesses:
JOB ANDREWS,
CHARLES HOLDEN, Jr.,