2 Sheets—Sheet 1.

J. M. STONE.

Cop-Building Mechanisms for Spinning-Machinery.

No. 195,906. Patented Oct. 9, 1877.

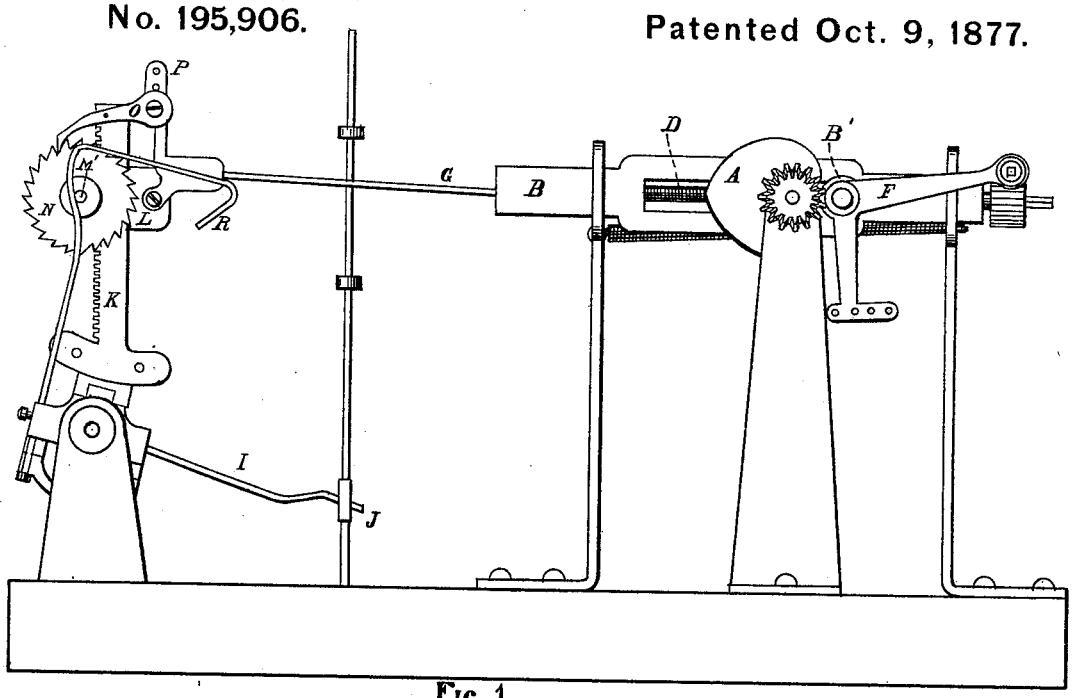

FIG. 1.

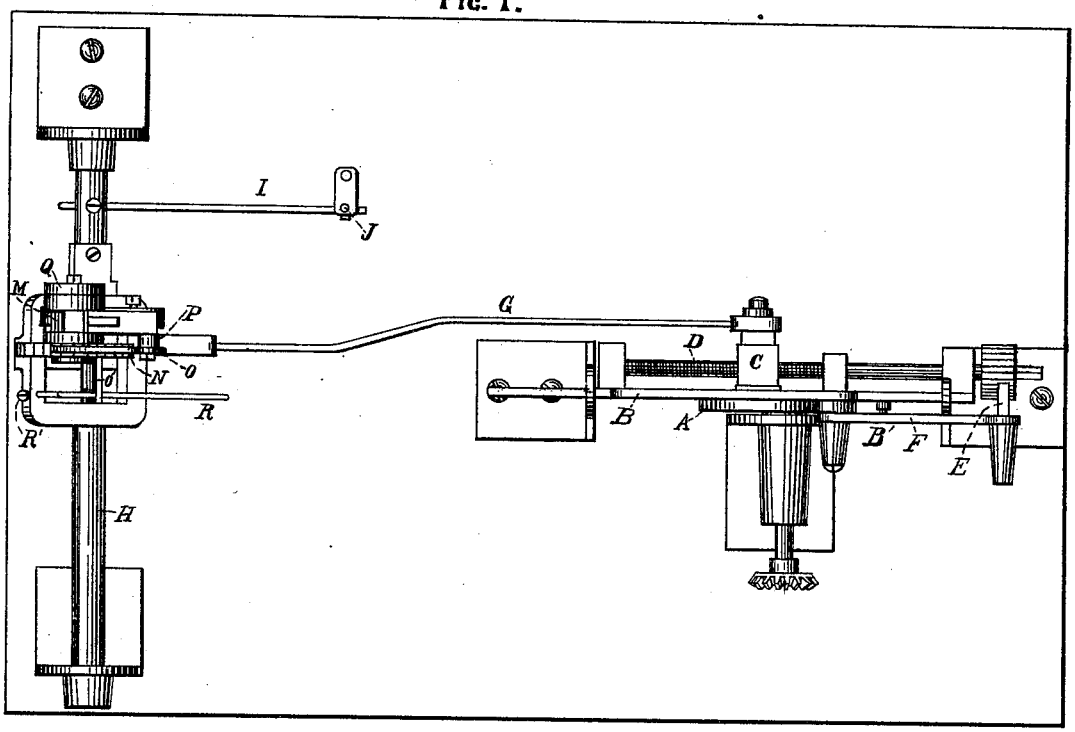

FIG. 2

WITNESSES.

Wm. B. Edwards

Mc C. Hibbard

INVENTOR.

Joseph M. Stone

2 Sheets—Sheet 2.

J. M. STONE.

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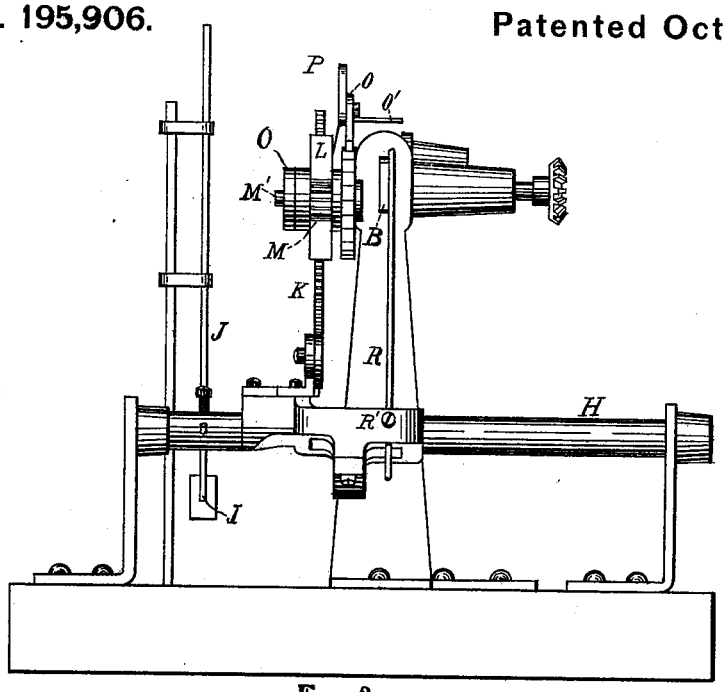

FIG. 3.

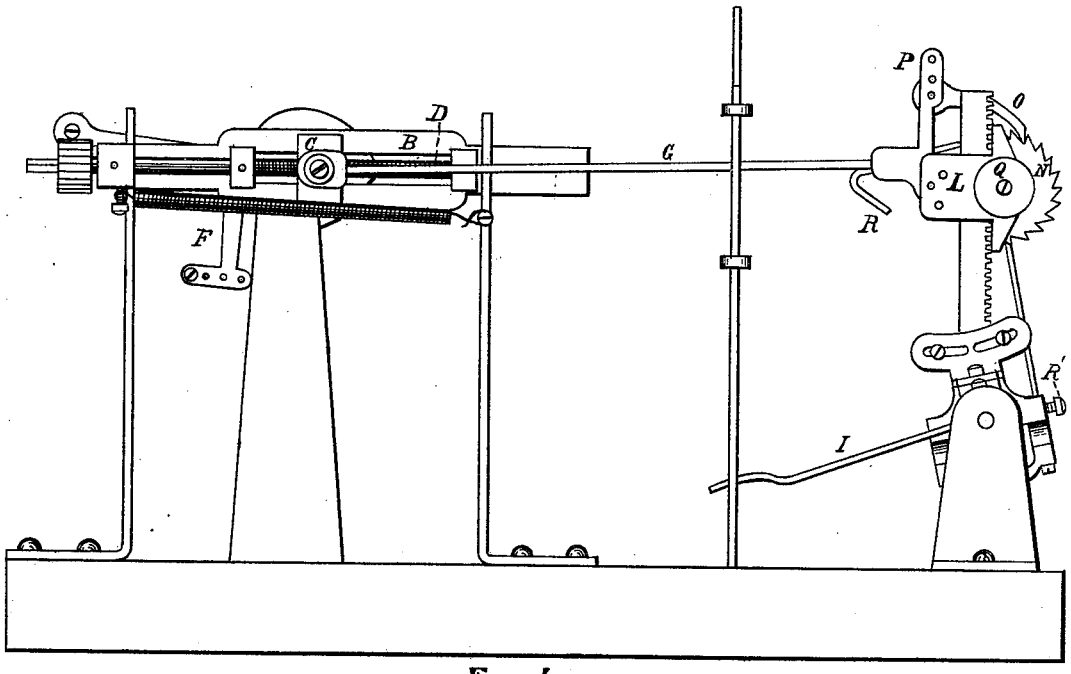

FIG. 4.

WITNESSES.

Wm. P. Edwards

Wm. C. Hibbard

INVENTOR.

Joseph M. Stone

UNITED STATES PATENT OFFICE.

JOSEPH M. STONE, OF NORTH ANDOVER, MASSACHUSETTS, ASSIGNOR TO HIMSELF, GEO. L. DAVIS, JOHN A. WILEY, GEORGE G. DAVIS, JOSEPH H. STONE, AND JAMES H. DAVIS, OF SAME PLACE.

IMPROVEMENT IN COP-BUILDING MECHANISM FOR SPINNING MACHINERY.

Specification forming part of Letters Patent No. **195,906**, dated October 9, 1877; application filed July 31, 1876.

To all whom it may concern:

Be it known that I, JOSEPH M. STONE, of North Andover, in the county of Essex and State of Massachusetts, have invented an Improved Mechanism for Winding Bobbins in Spinning-Machines, called a "Cop-Builder," of which the following is a specification:

This invention relates to the manner of building bobbins in spinning-machines, when the bobbin is made with only one head, and is progressively filled from one head to the other, beginning with a cone and continuing the same to the point from which end the yarn is unwound, and, the invention consists in the mechanism for forming a cone of yarn at the commencement; and when that cone is formed, to continue the remainder of the operation in the same form until the full length of the bobbin is completed.

It has been the usual practice, when bobbins have been built in this form, to either build the initial cone by hand with the yarn, or to make the bobbin itself with a cone next the head upon which the yarn is wound. But the purpose of this mechanism is to build the initial cone automatically with the yarn, and, after it is formed, to continue that form until the full length of the bobbin is completed.

In the accompanying drawings the general arrangement of the parts which co-operate is shown, but not to any exact scale, which, in each case, would be adapted to the size of the other parts of the machine with which they were associated; but in this case Figure 1 is a side elevation. Fig. 2 is a plan. Fig. 3 is an end elevation. Fig. 4 is an elevation of the opposite side of Fig. 1.

A is the heart-cam, arranged and driven in any convenient manner; and B is a slide reciprocating horizontally in suitable bearings, and driven by a roller, B′, working on the heart-cam. C is a block, which slides lengthwise in the slide B by means of the screw D, which is mounted in bearings in the slide B, and is turned a part of a revolution at each reciprocation of the slide B by the pawl E, by the bent lever F, as is shown in Figs. 1 and 2. To the slide C is jointed the rod G, by which the movement is imparted to the mechanism which carries the copping-rail which distributes the yarn upon the bobbin.

H is a rocking shaft, by means of which the copping-rail is carried by a series of rocker-arms, one of which, I, is shown attached to the lower end J of a series of guide-rods, which carry the ring or copping rail in the usual manner, but only partly shown in the drawing. The rocker-shaft H is oscillated by means of the upright arm K, which has a block, L, sliding radially upon it toward and from the center of the shaft, to which block the rod G is jointed, so that the range of movement of the ring or copping rail may be varied by changing the radial position of the block L upon the arm K. This is done by means of a rack upon one edge of the radial bar K, with which the pinion M engages, which is fixed upon a spindle, M′, which turns in the block L. Upon the same spindle M′ is fixed a ratchet-wheel, N, which is worked by the pawl O, which is attached to an arm, P, upon the rod G, so that the ratchet N is worked by the oscillation of the rocker-shaft H and its attachments, and thus raises or lowers the block L on the arm K, and correspondingly the extent of oscillation of the ring or copping rail, and the distribution of the yarn on the bobbin.

Q is a friction-washer upon the end of the spindle M′, to hold the pinion M and its block L in a fixed position, excepting when moved by the pawl O. R is a guard, which is fixed in the rocker-shaft H near the arm K, and extends upward, and at the top is made nearly horizontal, as shown, and forms a rest or stop with which the pawl comes in contact as it descends, and is raised out of action with the ratchet N, and stops its working thereafter until the bobbin is completed. The extent of this operation is determined by raising or lowering the guard R, and fixing it in the rocker-shaft H by the set-screw R′. The pawl O has a pin or projection, O′, at one side, which comes in contact with the top of the guard R to arrest its operation.

This mechanism, which I have just described as attached to the rocker-arm K, is for the purpose of building the initial cone upon the

bobbin with which the bobbin is first commenced, and its operation is arrested as soon as the cone is completed, after which the same conical form is preserved throughout its length by building the rest of the bobbin in this manner to the top, by gradually raising the position of the copping-rail while it retains the same range of traverse to form the cone. This is done by progressively carrying the block C along in the slide B by means of the screw D, as is already described. This movement of the screw D is continuous from the beginning to the ending of the building of the bobbin, and the extent of the traverse of the block C is to be proportioned to the length to be given to it.

To commence the bobbin, the block C is to be placed at one limit on the screw D, and the block L is to be at the outer limit on the arm K, which gives to the ring-rail a short traverse—say, five-eighths of an inch—while the yarn is winding on near the head of the bobbin and filling up the angle next the head, and, by the form of the parts, depositing the greater part of the yarn near the head of the bobbin. By the time the cone is formed near the head of the bobbin, the block L will have descended so that its pawl O will hit the top of the guard R and arrest the shortening of the arm K, and continue in that condition till the finishing of the bobbin.

What I claim is—

1. The combination, with the radial bar K, block L, and mechanism, substantially as described, for moving the latter upon said bar, of the adjustable guard R, for arresting the movement of said block, substantially as specified.

2. The combination of radial bar K, the block L and its adjusting mechanism, with the block C and its adjusting mechanism, substantially as described.

Executed July 29, 1876.

JOSEPH M. STONE.

Witnesses:

WM. P. EDWARDS,

WM. C. HIBBARD.