(No Model.)

C. H. CHAPMAN.

RING SPINNING MACHINE.

No. 316,603. Patented Apr. 28, 1885.

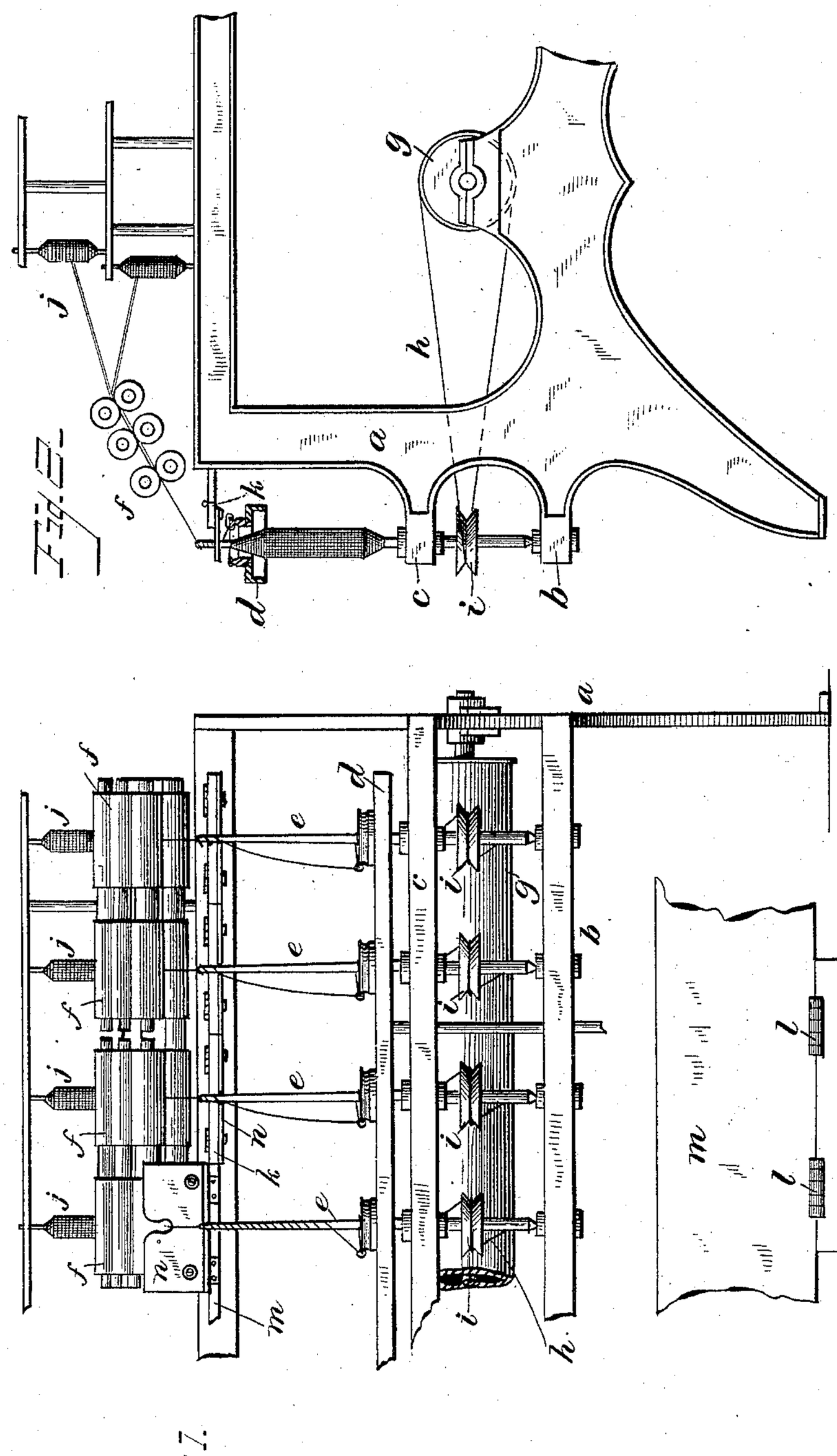

Fig. 1.

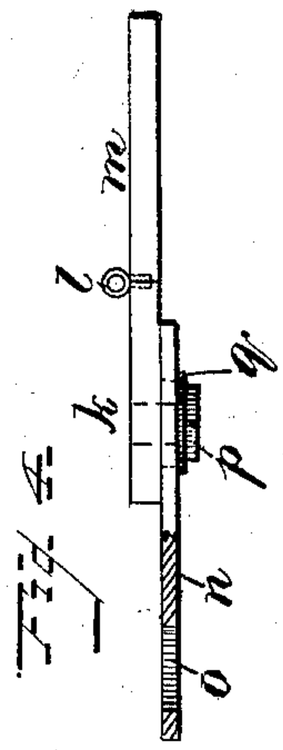

Fig. 5.

Fig. 2.

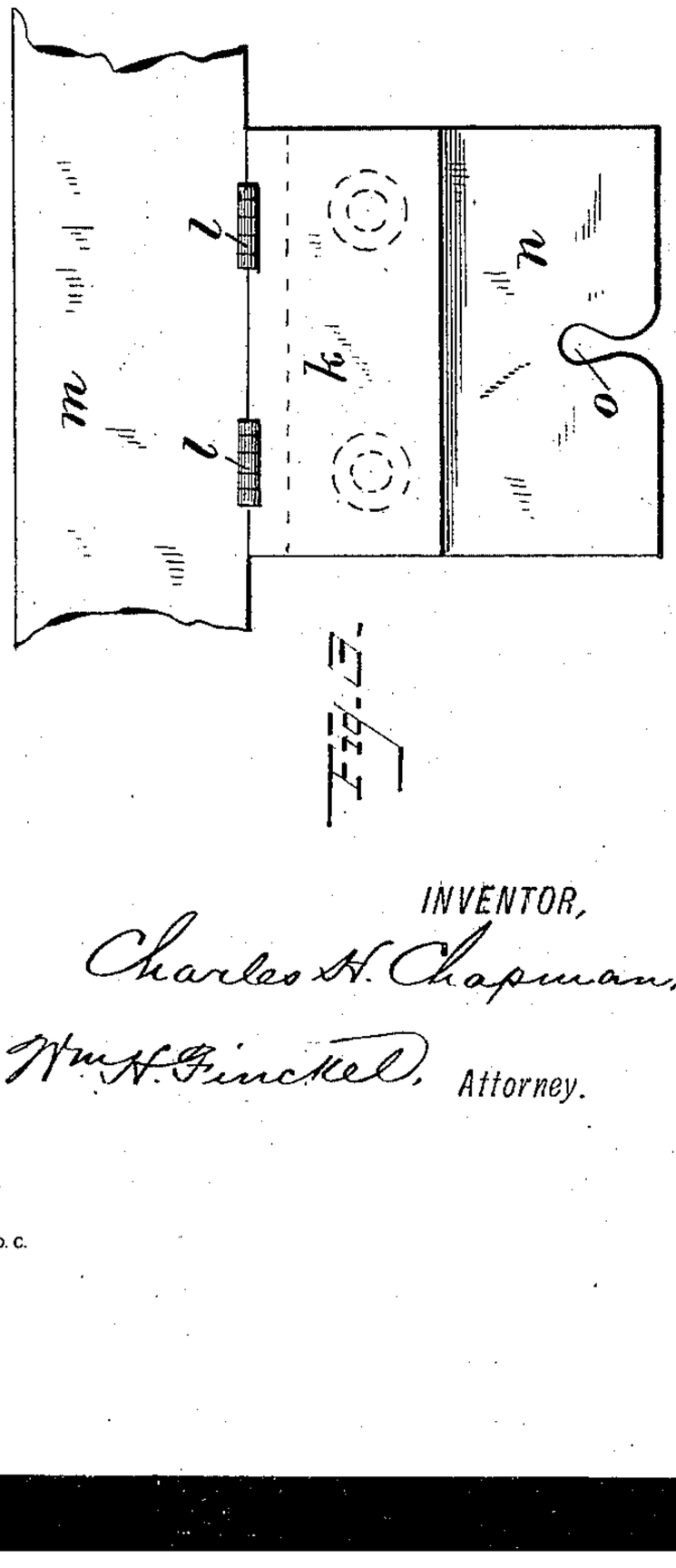

Fig. 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

CHARLES HENRY CHAPMAN, OF GROTON, MASSACHUSETTS, ASSIGNOR TO THE EUREKA SPINDLE COMPANY, OF MASSACHUSETTS.

RING-SPINNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 316,603, dated April 28, 1885.

Application filed August 3, 1883. Renewed March 21, 1885. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY CHAPMAN, a citizen of the United States, residing at Groton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ring-Spinning Machines, of which the following is a full, clear, and exact description.

My invention is in the nature of improvements in spinning machinery, and has special reference to the production of ring-spinning machinery for spinning filling-yarns or that kind of yarn usually spun upon the mule.

The invention consists in suitably-driven spindles arranged in bolster and step rails with such elevation that the tops or points of such spindles shall be in a line with the meeting edges or bite of the drawing-rolls, whereby the proper twist is put in the yarn without guide-wires, guide-plates being employed for the yarns, which plates are hinged and adjustable with relation to the spindles, and movable to facilitate piecing up broken yarns, all as hereinafter specifically set forth and claimed.

In the accompanying drawings illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a front elevation of sufficient of a ring-spinning machine or frame provided with my improvements, the extreme left-hand spindle illustrating a defect in building the cop, as hereinafter specified, and its guide board or plate being elevated, the ring-rail being at its lowermost position to begin the operation of building up the cop or winding. Fig. 2 is a side elevation of the same, with the cop or spindle filled and the ring-rail elevated. Fig. 3 is a plan view of the guide board or plate detached and shown on a larger scale; and Fig. 4, a side elevation of the same, with the edge of the guide-board in section to show a hole instead of a slot therein.

The frame *a* may be that of the usual ring-spinning frame provided with a step-rail, *b*, bolster-rail *c*, and traversing ring-rail *d*, as now commonly constructed. The spindles *e* may be arranged in the bolster and step rails, as usual, except that by adjustment of the steps therefor or other arrangements the points of the spindles are brought into direct line with the plane of the bite of the usual drawing-rolls, *f*. The spindles are driven in any usual manner, as by an appropriately-rotated drum, *g*, having bands *h* extending therefrom to and around whirls *i* on the spindles. The usual bobbins or spools *j*, arranged as common, supply the roving to the drawing-rolls, as indicated by the lines proceeding from the same. The rings are provided with travelers as usual.

Instead of applying the usual wire guides to the board *k*, hinged at *l l* to the receiving-board *m*, attached to the frame, as now practiced, I attach to said board *k* plates or boards *n*, slotted or recessed, Figs. 1 and 3, or provided with a round hole, Fig. 4, at *o*, and through these slots or holes the points of the spindles project. These guide-boards *n* are adjustably secured to the boards *k* by set-screws *p*, with or without washers *q*, and holes of a larger diameter than the shanks of the screws, as indicated in Figs. 1, 3, and 4, and the boards *n k* swing together on the hinges, connecting the latter with the boards *m*. Each spindle is provided with a guide-board or plate movable independently of the others.

Great difficulty has heretofore been experienced in spinning yarn for filling upon the ring-frame, as the slack twist required to be put into such yarn renders it impossible to get the full twist up over the guide-wires to the bite of the rolls. In attempts to do so the yarn is rendered tender and breaks badly, thereby increasing the labor and waste in operating.

My invention is designed to overcome this defect, and I succeed because, as will be seen, the twist is put in at the point of the spindle. The spindles being raised, as described, allow the twist to be driven up to the bite of the rolls, so that the yarn receives its full twist as fast as delivered from the rolls, and also its full strength, causing the work to run nicely, and thus save in labor and waste. This will be more apparent from the following: The plates *n* locate the point at which the yarns shall commence to wind upon the spindles when starting, and also when piecing up ends. If the plate *n* were absent, the thread in piecing up (when the ring-rail is down at the starting-point, as in Fig. 1,) would wind about the spin-

dle, as at the extreme left of Fig. 1, and cause so much tension upon the yarn that the traveler would be unable to draw the yarn down, and consequently it would kink and break down the end. The plates *n* furthermore serve to prevent the increasing centrifugal action of the yarn as the ring-rail rises from throwing itself off the ends of the spindles. Thus it will be seen the plates *n* have the double function of regulating the number and location of the initial twists of the yarn about the spindles, and also keeping the yarn from centrifugal escape from the spindles.

The yarn may be wound upon bobbins on the spindles instead of on the spindles themselves.

I am aware that it is not new to extend a bobbin well up to or into the guide-wire, so as to put the twist in the yarn between the bobbin end and the rolls, and so that the yarn shall extend in a substantially straight line to the bite of the rolls; but I am not aware that spindles have heretofore been extended up through a plate or plates instead of guide-wires, so that their points are in the plane of the bite of the rolls, in the manner and for the purpose herein particularly set forth and claimed.

What I claim is—

1. The combination, substantially as shown and described, of the frame *a*, the steps, step-rail, bolsters, and bolster-rail, all substantially as usual, with the vertical spindles having their tops in line with the bite of the rolls, and mechanism to drive them, and the adjustable yarn-guiding plates, one for each spindle and hinged to the frame, and receiving within them the tops of the spindles, as and for the purpose set forth.

2. The receiving-board *m*, the frame *a*, to which said board is attached, the board *k*, hinged to said receiving-board, and the series of plates or boards *n*, adjustably attached to the board *k*, and provided with openings *o* therein, combined with the spindles projecting up into said openings, and means to drive said spindles, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 30th day of July, A. D. 1883.

CHARLES HENRY CHAPMAN.

Witnesses:
LEVI WALLACE,
H. F. WALLACE.