

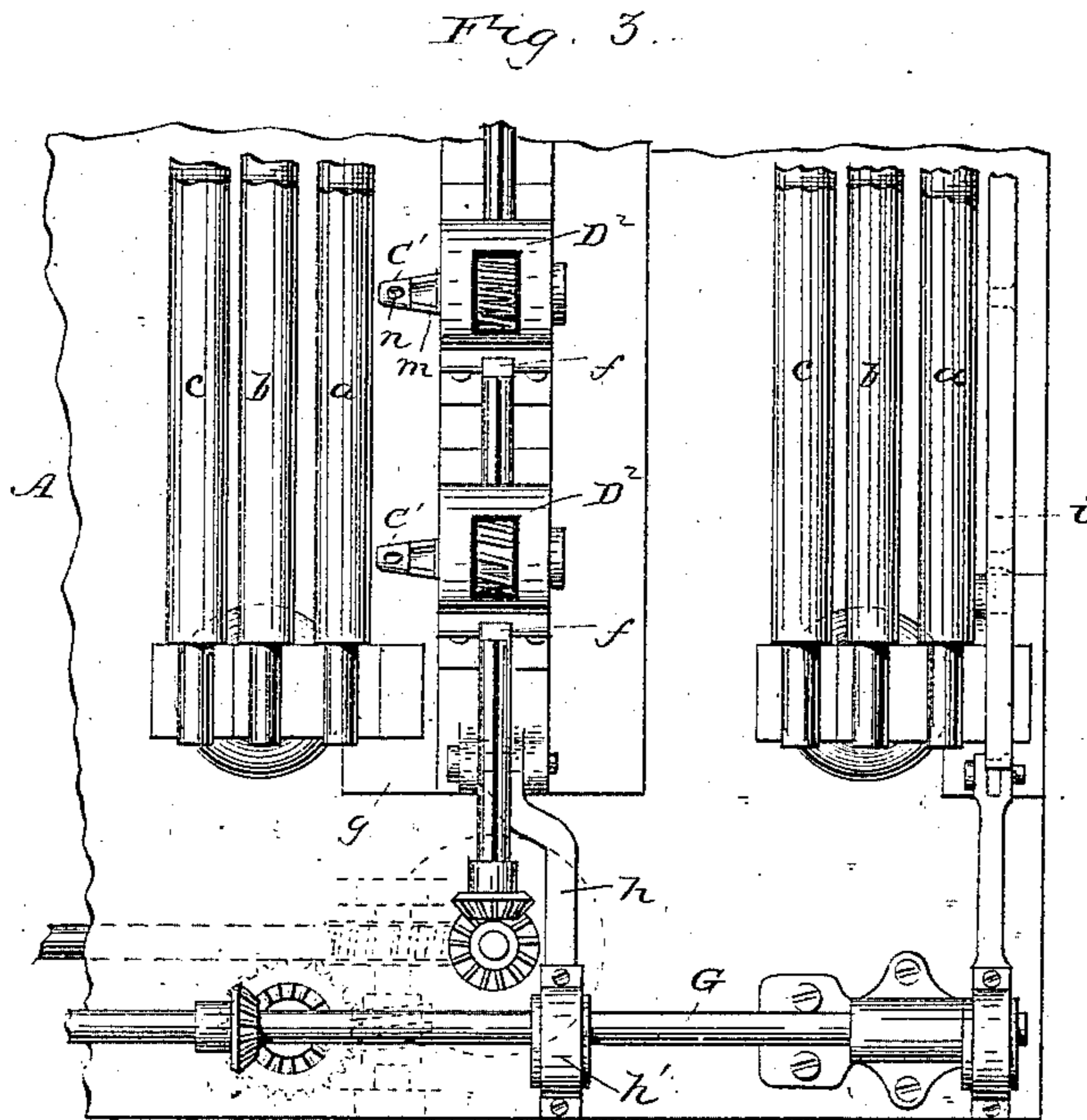
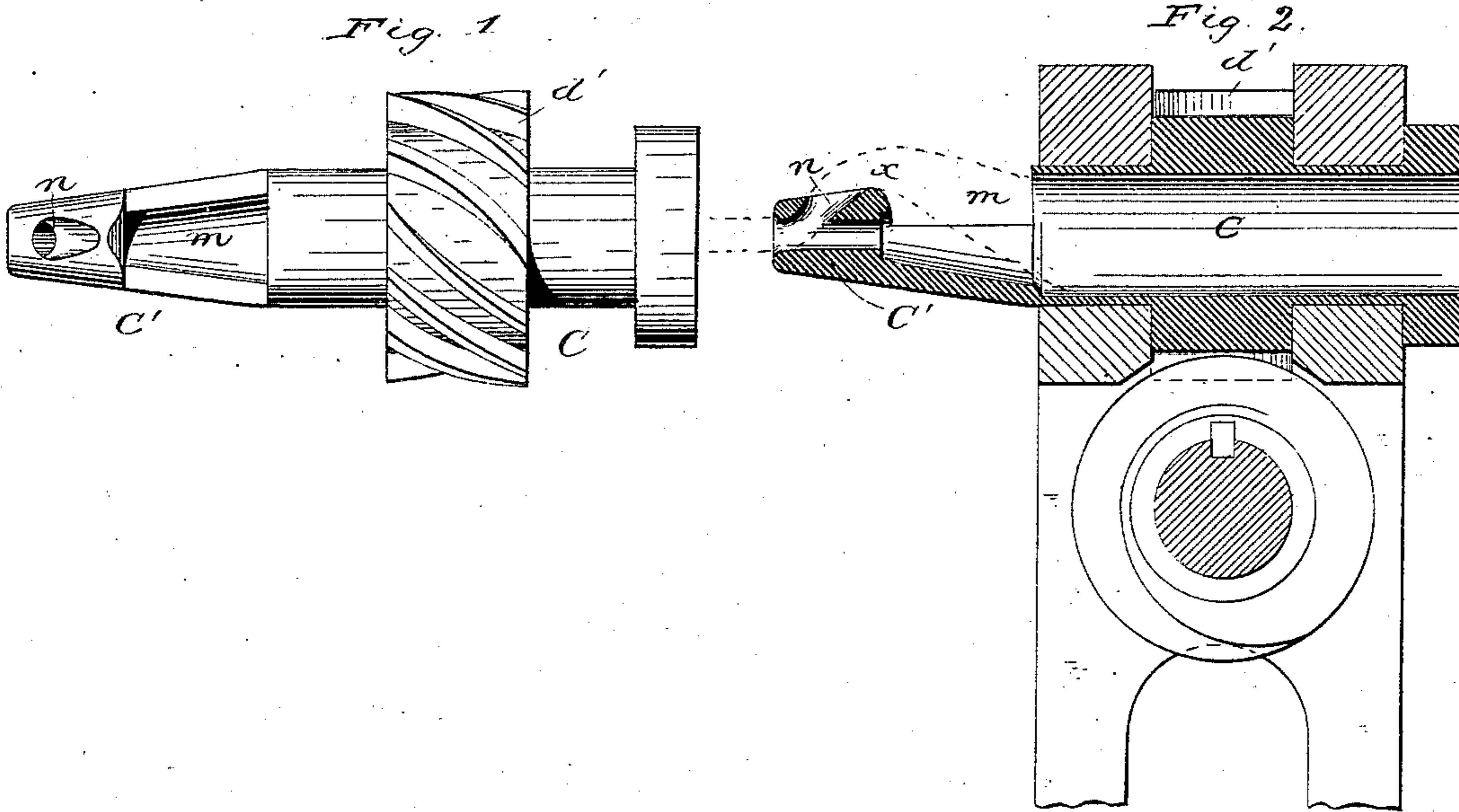
(No Model.)

A. T. ATHERTON.

MACHINERY FOR THE MANUFACTURE OF ROVING FOR SPINNING PURPOSES.

No. 311,096.

Patented Jan. 20, 1885.



Witnesses:  
E. W. Mack  
J. Walter Blandford.

Inventor  
A. T. Atherton  
by Mauller Bailey  
his atty.

# UNITED STATES PATENT OFFICE.

ABEL T. ATHERTON, OF LOWELL, MASSACHUSETTS.

MACHINERY FOR THE MANUFACTURE OF ROVING FOR SPINNING PURPOSES.

SPECIFICATION forming part of Letters Patent No. 311,096, dated January 20, 1885.

Application filed December 18, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ABEL T. ATHERTON, of Lowell, Middlesex county, State of Massachusetts, have invented certain new and useful  
5 Improvements in Machinery for the Manufacture of Roving for Spinning Purposes, of which the following is a specification.

In the manufacture of roving it has heretofore been proposed to make use of two sets of drawing-rolls, the one set revolving considerably  
10 faster than the other, so that the sliver or roving should be drawn during its transit from the one set of rolls to the next set. This method was not well adapted to the making of cotton  
15 roving, which has a short fiber; and even in the case of flax, wool, and the like it was necessary to provide between the two sets of rolls a twister, in order to give the roving sufficient coherency while undergoing the drawing operation. The more customary and better way,  
20 however, of making cotton roving was to draw the sliver in successive sets of drawing-rolls in contradistinction to drawing it between two successive sets of rolls, as contemplated by the method first above referred to. In doing  
25 this, however, it was desirable to use means for compacting the sliver as it passed from one set of rolls to the next, and these means, when used, consisted, until comparatively recently,  
30 of stationary tapering or funnel-like troughs or tubes, through which the sliver passed on its way from one set of rolls to the next. The method last adverted to was accompanied by certain difficulties and disadvantages, to remove which machinery was devised to operate  
35 on the plan disclosed in Kelley's Patent No. 250,043, dated November 22, 1881, the same being characterized mainly by the combination, with two sets of drawing-rolls, of an intermediate rotating condenser, which acts to compact and condense without permanently  
40 twisting the sliver as it passes from one set of rolls to the other. The special form of condenser shown in said patent, which may be generally described as a tube provided with  
45 a spiral bore of substantially cylindrical cross-section, possesses certain disadvantages of construction, which have, to a considerable extent, been obviated by combining with the  
50 outer tube or shell of the condenser an inner tube, which is cast with a spiral bore, as set out in my Patent No. 261,294, dated July 18,

1882. This plan, however, I have found open to some objection, for the reason that, owing to the chilling of the metal in the operation of  
55 casting, and to other causes, it is difficult at all times to obtain a spiral bore with smooth, unbroken walls, and also for the reason that the operation of withdrawing the core is a delicate one and attended with considerable  
60 trouble. Furthermore, in order to compact and condense the sliver to the requisite extent, I have found it desirable to act on it more positively than can well be done with the spirally-bored condenser.

To obviate the disadvantages hereinbefore recited, and to attain the results I have in view, I have devised a tubular rotating condenser in which the condensing action is effected, not through the instrumentality of a continuous spiral bore, but by means of lateral  
65 openings or "eyes" in the condenser, through which the sliver is "threaded," or caused to pass. These openings or eyes are of course formed in the condenser at points intermediate between its rear and nozzle ends, and I  
70 find in practice that two of them will answer the purpose. The sliver, which enters the condenser at the rear, passes out through the first lateral opening or eye that it reaches, then  
75 back into the condenser again, through the second eye or opening, and thence out through the nozzle in the usual way. Thus the sliver, at a point intermediate between the ends of the condenser, is deflected or bent to one side  
80 of the axis of rotation of the latter. The result is that when the condenser is in rotation the sliver is in a certain sense positively condensed and compacted, and this without having any permanent twist imparted to it, experience having demonstrated that in the  
85 practical use of my invention the sliver that is between the front drawing-rolls (which take it directly from the nozzle of the condenser) has its fibers untwisted and substantially parallel with one another. An incidental advantage of this construction is that by putting the  
90 second or "return" eye or opening in the nozzle I can bring the point where the sliver is in most compact and condensed condition very near to the drawing-rolls which take the  
95 sliver from the condenser, considerably nearer than is practicable with the other form of condenser above referred to, in which the  
100

spiral condensing-bore necessarily stops short of the nozzle, and thus gives the sliver more opportunity to loosen before reaching the rolls.

In the accompanying drawings, Figure 1 is a plan of the condenser. Fig. 2 is a longitudinal central section of the same, together with its supporting-stand. Fig. 3 is a plan of so much of a roving-machine containing my improvement as needed for the purpose of explanation.

The condenser consists of a metallic tube, C, having a tapering nozzle, C'. This tube may, if desired, be bored out continuously from end to end, although in practice this will not be needed, inasmuch as the metal can be left at the point *x*, where the sliver passes on the outside of the condenser.

The lateral eyes or openings hereinbefore referred to are shown at *m n*, the former leading from the main bore of the condenser to the outside, and the latter leading from the outside back into the nozzle C'. The sliver enters the rear of the condenser, passes out through the opening *m*, thence along the outside of the condenser until it reaches the front eye or opening, *n*, through which it passes back into the condenser, from whose nozzle, C', it is delivered to the front drawing-rolls in the usual way. All parts of the condenser with which the sliver is brought into contact should have smooth, unbroken surfaces without sharp edges or abrupt angles. The course of the sliver is indicated by the dotted line in Fig. 2.

The condenser is provided with a spiral or worm gear, *d'*, and, as seen in Fig. 2, is mounted in a stand of the kind shown in the Kelley Patent No. 250,043.

In Fig. 3 I have represented my condensers arranged between two sets of drawing-rolls, in the manner represented in said Patent No. 250,043. The drawing-rolls, the condenser-

stands, and mechanism for operating the same are the same as shown in Fig. 3 of said patent, and bear the same letters of reference. It is unnecessary, therefore, to describe them here in detail. In my improved condenser the front eye, *n*, can, as seen, be brought very close to the point where the sliver emerges from the nozzle, and in this way I can, as hereinbefore explained, deliver the sliver to the front set of drawing-rolls in much more compact and condensed condition than heretofore has been practicable. Inasmuch as the sliver operated on by the condenser is held by drawing-rolls both behind and in front of the condenser, the latter cannot operate to give it a permanent twist. In practice whatever slight twist may be apparent in the sliver disappears as or just before the latter enters between the front drawing-rolls.

Having described my improvement and the best way known to me of carrying the same into practical effect, what I claim as new and of my own invention is as follows:

The combination, with the two sets of drawing-rolls in which the sliver is successively drawn, of an intermediate tubular rotating condenser having its delivery-nozzle in close proximity to the forward set of drawing-rolls; and provided with lateral openings or eyes through which the sliver passes in a tortuous path on its way from the rear to the nozzle of the condenser, as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses, this 11th day of December, 1883.

ABEL T. ATHERTON.

Witnesses:

M. BAILEY,  
G. P. WALKER.