

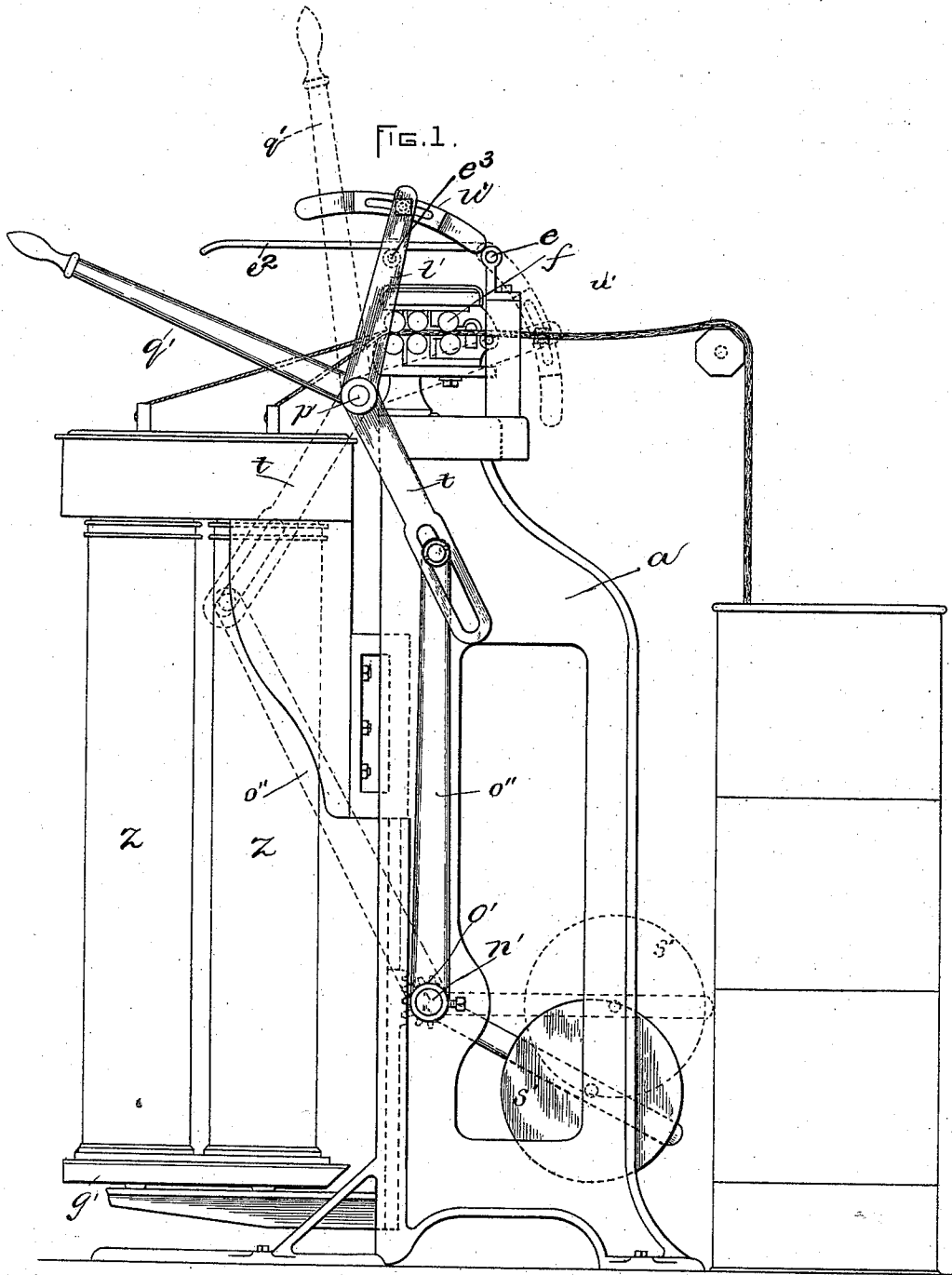
(No Model.)

6 Sheets—Sheet 1.

R. B. DALY.
TWISTING COILER AND DRAWING FRAME.

No. 535,678.

Patented Mar. 12, 1895.



WITNESSES:

A. D. Harrison,

W. J. M^cLeod

INVENTOR:

by R. B. Daly,
Might, Brown & Crossley,
Attys.

(No Model.)

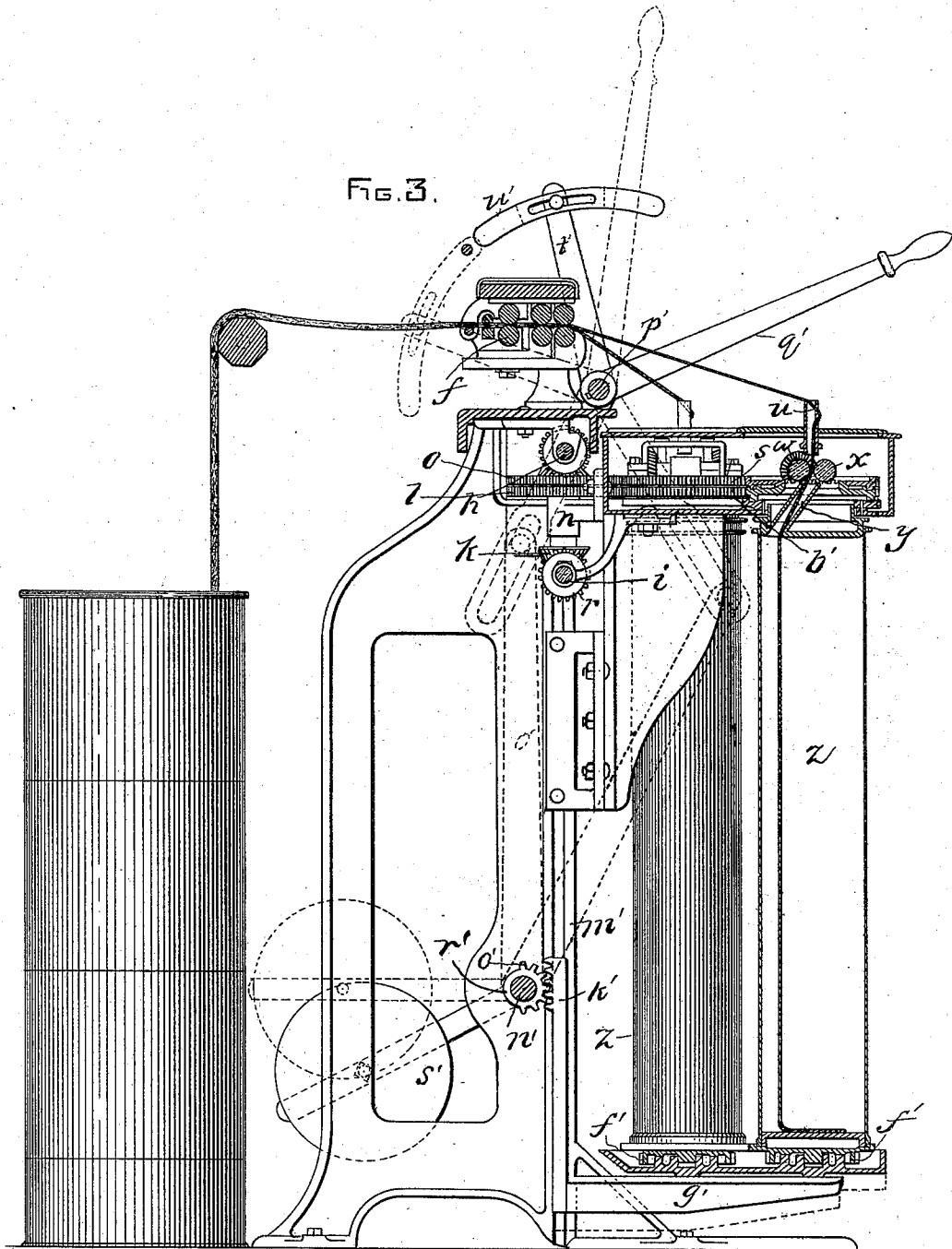
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WITNESSES:

A. D. Harrison
W. J. M. Lead.

INVENTOR:

R. B. Daly
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(No Model.)

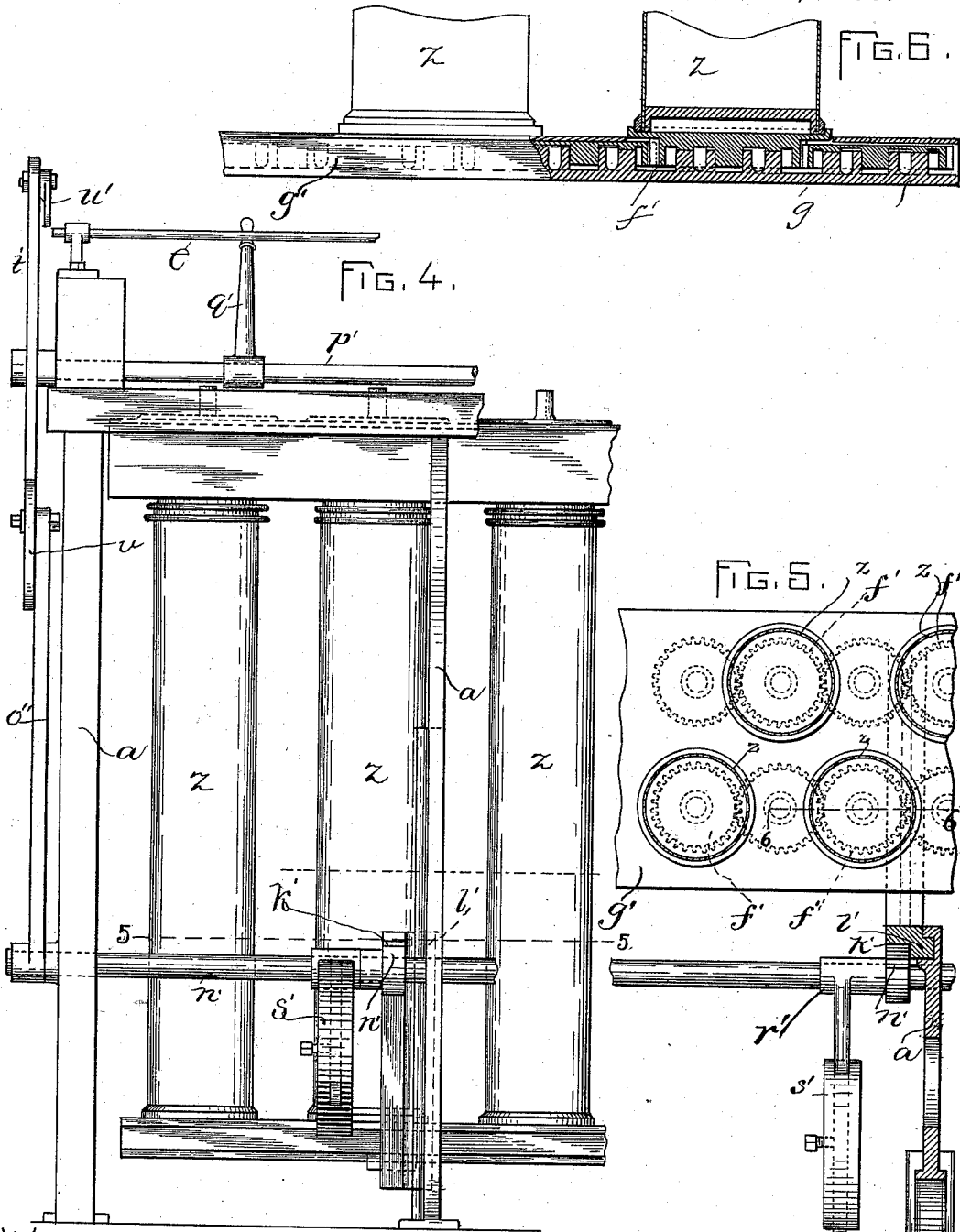
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A. S. Harrison
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(No Model.)

6 Sheets—Sheet 5.

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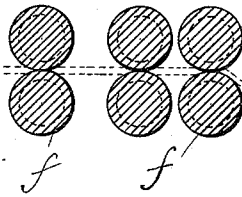


FIG. 7.

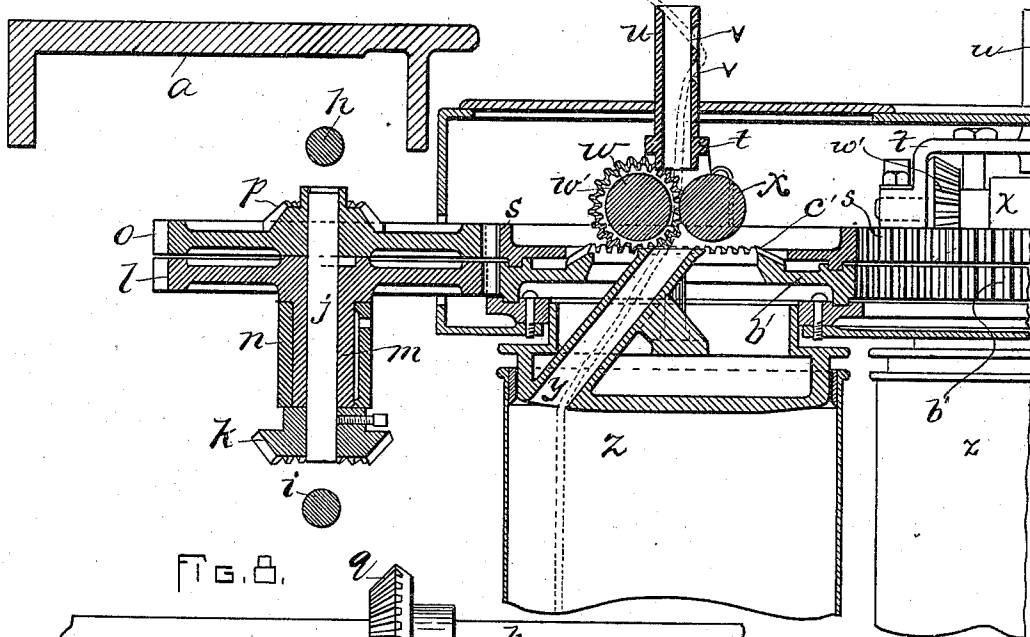
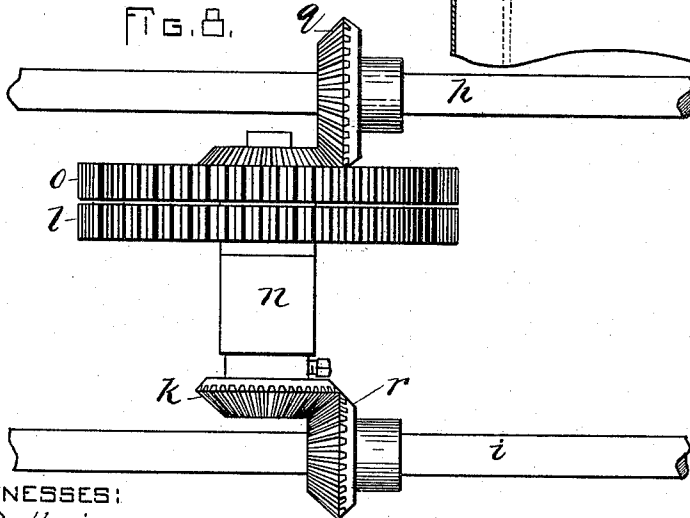


FIG. 8.



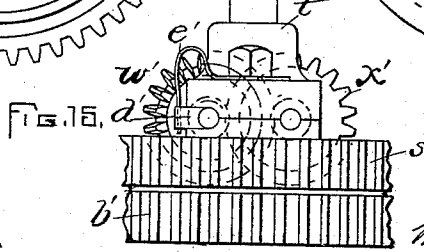
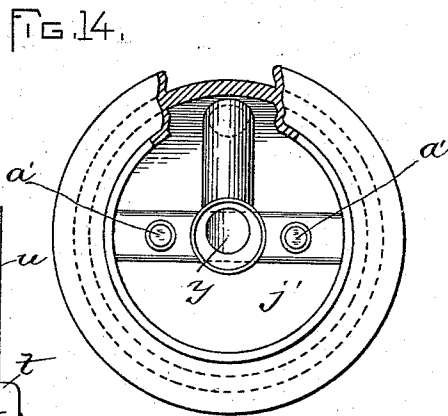
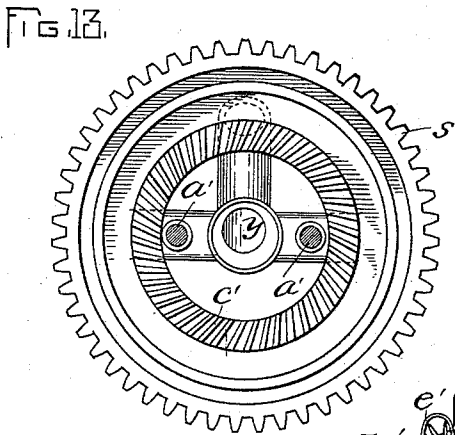
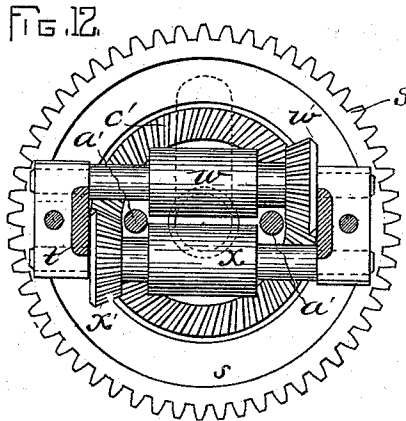
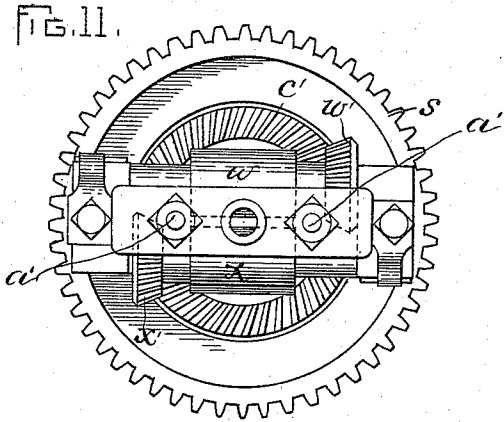
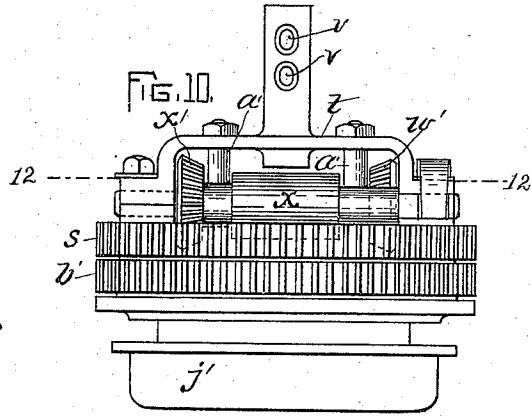
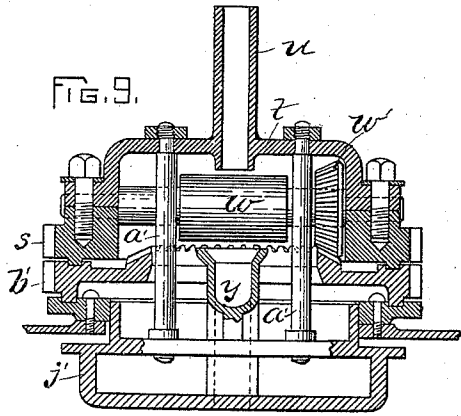
WITNESSES:
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WITNESSES:
A. D. Hanson.
Wm. M. Deod.

INVENTOR:
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UNITED STATES PATENT OFFICE.

RICHARD B. DALY, OF WOONSOCKET, RHODE ISLAND, ASSIGNOR TO THE
WOONSOCKET MACHINE AND PRESS COMPANY, OF SAME PLACE.

TWISTING-COILER AND DRAWING-FRAME.

SPECIFICATION forming part of Letters Patent No. 535,678, dated March 12, 1895.

Application filed July 7, 1893. Serial No. 479,826. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. DALY, of Woonsocket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Twisting-Coilers and Drawing-Frames, of which the following is a specification.

This invention has relation to slubbers or roving and other machinery in which slivers or rolls of fiber are drawn or attenuated and twist put therein, and the material is delivered in coils in a can or other receptacle.

It is the object of the invention to dispense with the flier, usually employed in such machines and put the twist in the material directly by the coiler.

It is also the object of the invention to provide improvements whereby the can may be secured in position so that it will rotate in proper time with the coiler and twisting means, and whereby also the machine may be "knocked off" or stopped the moment the can is released, and so that the machine cannot be started until the can is securely locked in position.

To these ends the invention consists of the several improvements which I will now proceed to describe and claim.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

In the drawings—Figure 1 is an end view of a slubber embodying my improvements. Fig. 2 is a plan view of an end portion of the machine. Fig. 3 is a vertical sectional view of the machine. Fig. 4 is a rear view of a part of the machine represented in Fig. 2. Fig. 5 is a plan view partially in section of the right hand portion of what is represented in Fig. 4, the section being taken on the line 5—5 of the last mentioned figure. Fig. 6 is a sectional and rear view of a part of the means represented in Fig. 5, the section being taken on the line 6—6 of said Fig. 5. Fig. 7 is a vertical sectional view drawn to an enlarged scale of the upper end of a coiler and its several adjuncts. Fig. 8 is a side view of the means directly concerned in the operation of the coiler and drawing down rolls. Fig. 9 is

a vertical sectional view of the coiler, drawing down rolls and trumpet, and means for operating the same. Fig. 10 is a front view of Fig. 9. Fig. 11 is a plan view of Fig. 10. Fig. 12 is a horizontal sectional view taken on the line 12—12 of Fig. 10. Fig. 13 is a horizontal sectional view on a line below the drawing down rolls and their operating mechanism. Fig. 14 is a plan view, part being broken out, of the coiler proper. Fig. 15 is an end view of the drawing down rolls and their adjuncts.

In the drawings *a* designates the frame of the machine. Motion is imparted to the machine by a pulley *b*, a loose pulley *c* being provided to receive the driving belt *d* controlled by the shipper rod *e* and connections when it is desired to stop the machine. This shipper-rod is operated in the usual way by means of a lever (*e*²). This lever (*e*²) may have its fulcrum at (*e*³) at a point between its ends and be connected to the shipper-rod at one of its ends as in Fig. 1, or it may have its fulcrum at (*e*⁴) at one of its ends and be connected to the shipper-rod at a point between its fulcrum and end, as shown in Fig. 2. The particular class of lever employed is not important.

f designates the drawing rolls on the roll stand *g*, which are operated in the usual way through the medium of gearing from the source of power.

h i designate two shafts which run lengthwise of the machine and are driven by means of gearing (not shown) from the source of power at different rates of speed.

j is a short vertical shaft to the lower end of which a miter gear *k* is secured; and *l* is a gear keyed upon the shaft *j* toward its upper end and provided with a downwardly extended sleeve *m* which is embraced by a bracket *n* connected with the frame, whereby the shaft *j* and gears *k l* are maintained in place, and whereby the said gears *k l* may be rotated in unison.

o is a gear set loosely upon the upper end of the shaft *j*, and has a miter gear *p* compounded with its hub or central portion.

q is a miter gear on shaft *h* which meshes with the gear *p* and drives it and the gear *o*; and *r* is a miter gear on the shaft *i* which

meshes with the gear k and drives it and the gear l .

s is a horizontal gear engaged and driven by the gear o ; and t is a yoke connected with the upper face of the gear s which yoke supports the trumpet u which is provided in its side with two eyelet holes $v v$, so that the sliver may pass from the drawing rolls into the top of the trumpet out through the upper eyelet hole, back through the lower hole and down between the drawing-down rolls $w x$, through the coiler y to the can z .

The coiler y is supported by means of vertical bars or rods $a' a'$ connected with the yoke t , so that the gear s , yoke, trumpet, and coiler will be rotated in unison and the drawing-down rolls will be rotated axially with them.

b' is a horizontal gear, arranged below the gear o and engaged and driven by the gear l . The said gear b' is constructed in the nature of a ring, and has a bevel skew gear c' formed on its inner upper edge which engages and drives miter gears w' and x' on the respective shafts of the drawing-down rolls $w x$.

The journals of the drawing-down rolls have their bearings in boxes supported on the gear s . One of the bearings for each of the drawing-down rolls is allowed to play laterally slightly, and a block d' rests against said bearing while a spring e' bears against the said block, so that the drawing-down rolls may bear against each other with a yielding pressure, to provide for any unevenness of the sliver passing therebetween.

The gears o and l are arranged to drive a group of three coilers and their adjuncts, said gears meshing directly with gears s and b' which latter impart motion through an intermediate gear v' as shown in dotted lines in Fig. 2. The cans z are driven by gears f' upon the bottom thereof, through intermediate gears between each can, Figs. 5 and 6, said gears being connected with the source of power by an intermediate gear h' as shown by dotted lines in Fig. 2.

In operation, as the coiler and can will be driven in the same direction it will be seen that a twist will be put in the roving, and since the can is driven at a slightly slower speed than the coiler the material will be deposited in the can in coils, as desired. The rotation of the gears l and $b' c'$ governs the speed at which the pull-down rolls $w x$ operate to draw off or pull down the material from the drawing rolls. Of course, if the gears $b' c'$ were stationary the drawing rolls would be operated, but at too great speed; hence the rotation of said gears and at a speed slower than the gear s is operated.

It has been found necessary in order to run the cans with safety and certainty at a high rate of speed to secure and steady them at the top as well as to fasten them at the bottom. This end I accomplish by constructing and arranging the turn-table g' so that it may be raised and lowered, and when raised so

that the top of the cans will surround the annular base of the coiler plate j' .

The turn-table g' is provided with a vertical rack-bar k' , which has a rib l' arranged to operate in a groove formed in a standard m' of the frame. Upon a shaft n' there is secured a pinion o' which engages the teeth of the rack-bar k' and secured to the said shaft at the end of the machine is one end of a pair of toggle levers o'' and t having a pin-and-slot joint, the opposite upper end of said toggle levers being secured to a shaft p' to which there is connected a lever q' . On the sleeve r' of the pinion o' there is connected by an arm or lever a counter-weight s' , to counter-balance the weight of the turn-table g' and material carried thereby. With this construction and arrangement of parts, by the movement of the lever q' the pinion o' may be operated to raise and lower the turn-table, and when raised will be maintained in such position by the jointed form of the toggle levers as will be understood by reference to Figs. 1 and 3.

To the shaft p' there is secured an arm t' on which there is a plate u' , constructed and arranged to barely escape the end of the shipper rod e , but when the said plate u' is moved to the slightest extent (when the cans are raised and the machine is in motion) it will come to a stop against the shipper rod so that the cans cannot be lowered until the shipper rod is moved and the machine is stopped; and when the machine is stopped by the moving of the shipper rod, the said plate may be moved past the end of the shipper rod and lock it against movement, so that the machine cannot be started until the cans are raised and the plate u' moved out of the way of the end of the shipper rod; which locks the cans in their place. This is important, since it provides against a starting of the machine under any circumstances until the cans are fully raised to operative position.

It will be observed that independent gearing is employed for operating the can, the drawing-down rolls, and the trumpet and coiler mechanism, so that it is rendered feasible to operate these parts at varying speeds, which is also an important feature of the invention.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. In a roving machine, in combination, the gear (s) and (b'), the former supported upon the latter, separate and independent gearing for driving the said gears, a rotary coiler and trumpet connected to the upper gear (s), an annular plate upon said coiler, drawing rolls supported upon the said gear (s) and provided with drawing roll gears, a skew-gear (c') on the gear wheel (b') meshing with said drawing roll gears, the can (z), independent gear-

ing for driving the same, and means for raising or lowering said can to bring its upper end into or out of contact with the said annular plate, substantially as and for the purpose described.

2. A roving machine comprising in its construction a rotary can and coiler, a vertically movable table upon which the can rests, a shipper rod, a lever and intermediate mechanism for raising and lowering the table, an arm provided with a plate actuated by the lever,

the paths of movement of said plate and shipper-rod intersecting, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 16th day of June, A. D. 1893.

RICHARD B. DALY.

Witnesses:

EDWIN ALDRICH,
MALCOLM CAMPBELL.