No. 777,696. PATENTED DEC. 20, 1904.

W. H. RHODES.

SLUBBING, INTERMEDIATE, OR ROVING FRAME.

APPLICATION FILED MAY 24, 1904.

NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.

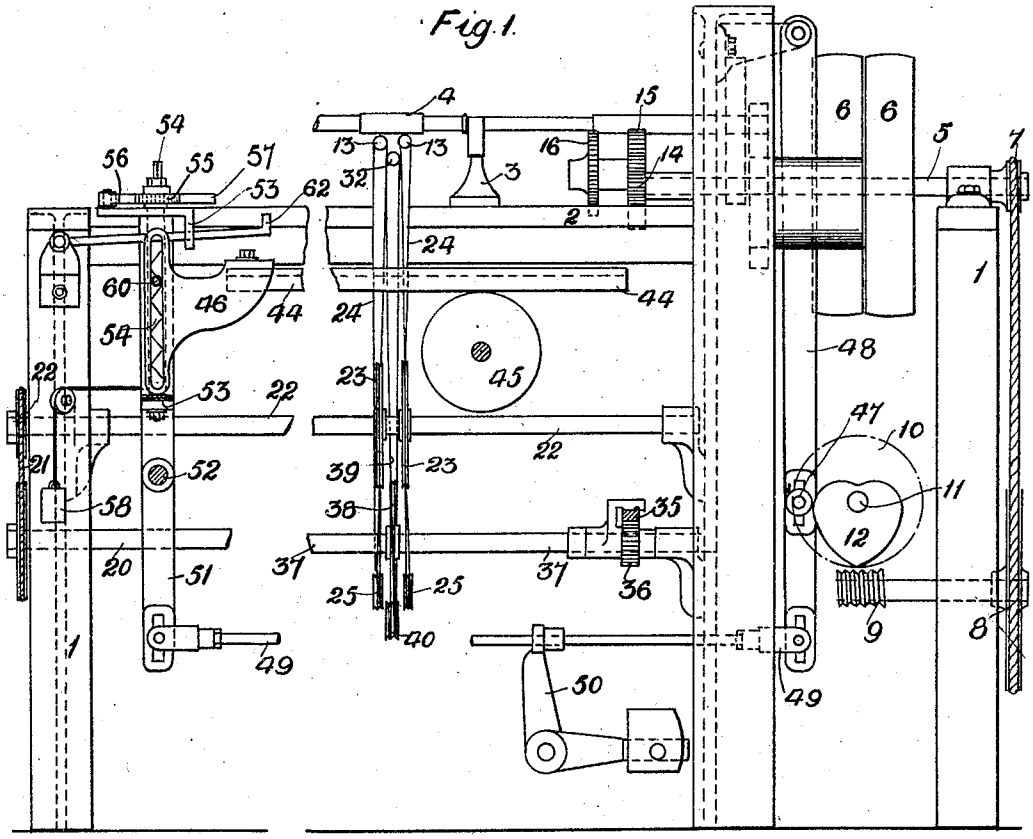


Fig. 6.

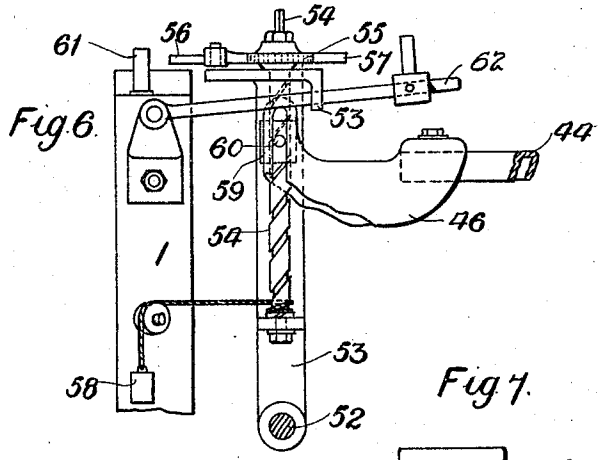
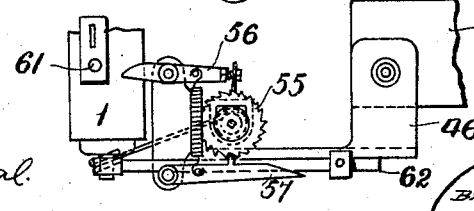


Fig. 7.



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NO MODEL. 3 SHEETS—SHEET 2.

Fig. 2.

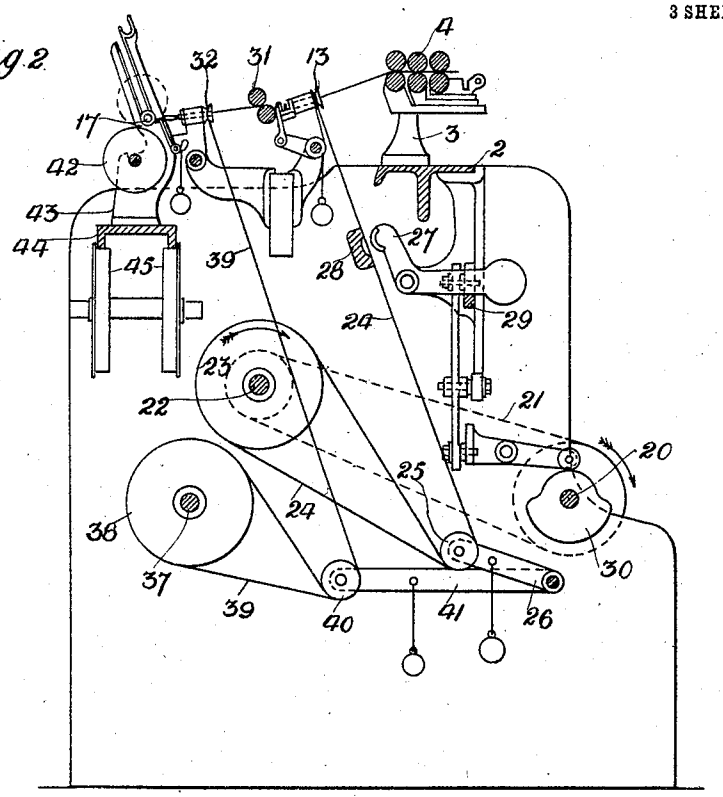


Fig. 4.

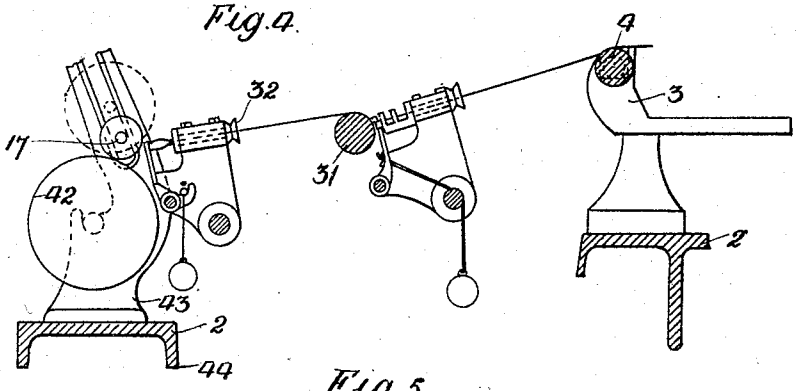
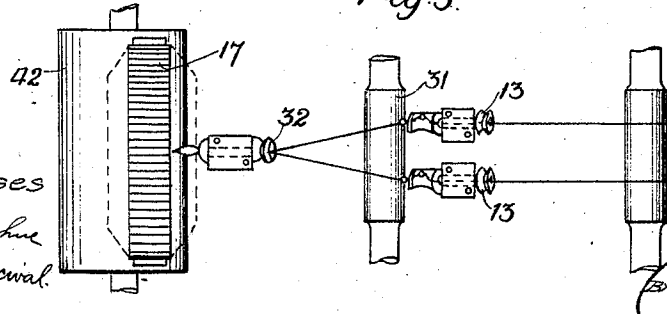


Fig. 5.



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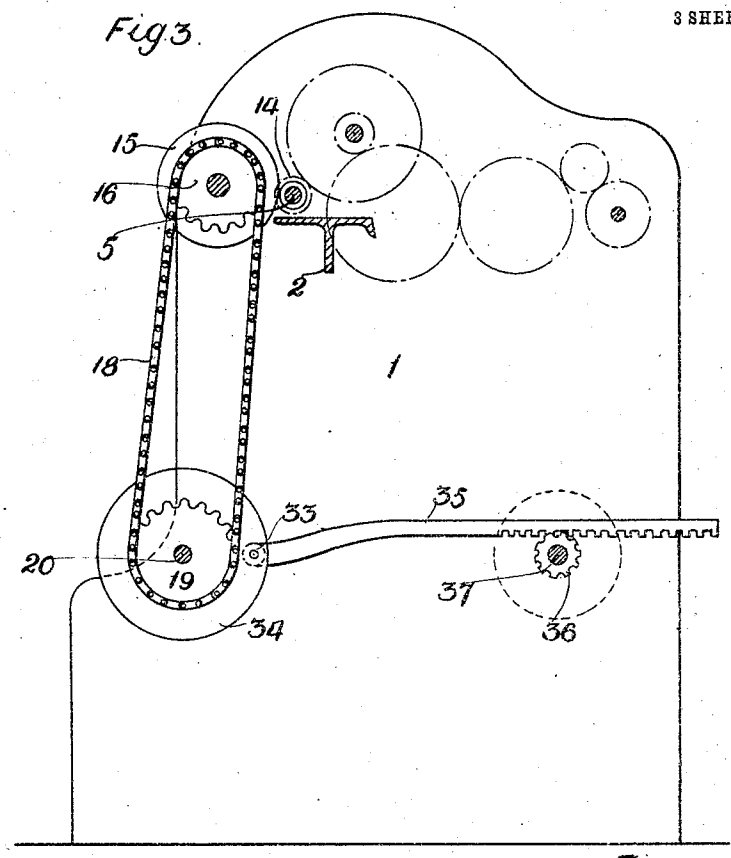
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SLUBBING, INTERMEDIATE, OR ROVING FRAME.

APPLICATION FILED MAY 24, 1904.

NO MODEL. 3 SHEETS—SHEET 3.

Fig. 3.



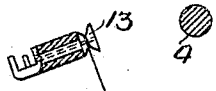


Fig. 8.

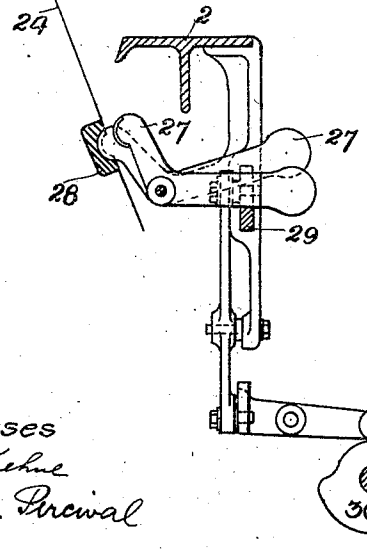


Fig. 10.

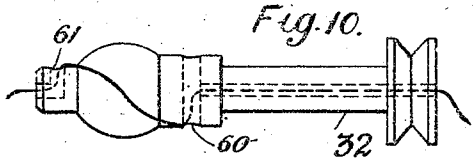
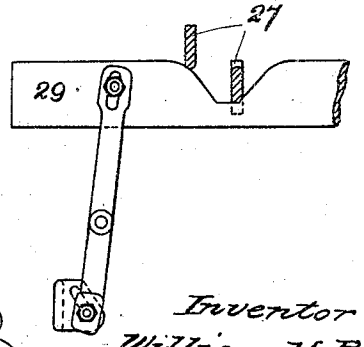


Fig. 9.



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No. 777,696. Patented December 20, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM HENRY RHODES, OF OLDHAM, ENGLAND.

SLUBBING, INTERMEDIATE, OR ROVING FRAME.

SPECIFICATION forming part of Letters Patent No. 777,696, dated December 20, 1904.

Application filed May 24, 1904. Serial No. 209,495.

To all whom it may concern:

Be it known that I, WILLIAM HENRY RHODES, engineer, of Park Mount, Frederick street, Werneth, Oldham, in the county of Lancaster, England, have invented certain new and useful Improvements in Slubbing, Intermediate, or Roving Frames, of which the following is a specification.

My invention relates to improvements in slubbing, intermediate, and roving frames; and the object of my invention is to dispense with the bands of two diameters and to improve the machine for which Letters Patent were granted to me in Great Britain on the 16th day of February, 1898, and numbered 3,844.

In my improved machine I take the slivers from the drawing-frame, in which a slight twist has been put into them, and pass the slivers in the slubbing-frame through the usual drawing-rollers, from which the two slivers to form a slubbing are each passed through a separate twisting-head. These twisting-heads are driven by bands from a tin drum or its equivalent, and suitable means are employed to stop one twisting-head and band while the other is in motion and then to change motion from one to the other alternately at the desired periods of time. In this manner when the slivers meet as they issue from the twisting-heads they are slightly twisted together and pass immediately through a pair of rollers, from which they pass into and through a twisting-head, to which a rotary motion is imparted first in one direction and then in the other, which thus adds a little more twist and makes a slubbing. This slubbing is wound into a bobbin with taper ends in the following manner: A paper tube for the slubbing is laid, as usual, upon a driving-drum, and the traverse-guides are mounted upon a rail, to which a reciprocating motion is imparted in any convenient manner, and to shorten the traverse of the rail I employ a long screw, attached to the top of which is a ratchet-wheel, into the teeth of which two pawls gear, and a projection upon the traverse-rail moves at each reciprocating movement first one pawl and then the other, and so turns the screw slightly, which automatically shortens the traverse, and so builds a bobbin with taper ends.

In the accompanying three sheets of drawings, Figure 1 is a front elevation of part of my improved roving or similar frame. Figs. 2 and 3 are two sectional end views of Fig. 1; and Figs. 4, 5, 6, 7, 8, 9, and 10 are detail views, on a larger scale, of parts of the machine.

In the drawings, 1 denotes the frame of the machine; 2, a stationary rail, upon which are mounted the stands 3 for the drawing-rollers 4. On the driving-shaft 5 are mounted a pair of fast and loose pulleys 6 and a grooved pulley 7, which drives by a band a grooved pulley 8, secured upon a shaft which carries a worm 9, in gear with a worm-wheel 10, secured upon a shaft 11, on which is also secured a heart-cam 12, which drives the building motion.

The slubbings or the like are held in a creel, and the two ends from adjoining bobbins are passed through the pairs of drawing-rollers 4, and each slubbing is then passed separately through a twisting-head 13, which receives an intermittent rotary motion, as in my aforesaid British patent, but by the following improved means: A pinion 14 upon the driving-shaft 5 gears into and drives a wheel 15, mounted upon a stud, and on the boss of this wheel is secured a chain-wheel 16, which by means of a chain 18 and wheel 19 gives motion to a shaft 20. A grooved pulley on this shaft drives by a band 21 a shaft 22, upon which is secured two grooved driving-pulleys 23, over each of which passes a cord 24. These cords 24 also pass over a pair of guide-pulleys 25, mounted upon a single stud secured upon a weighted arm 26, and then each cord passes over a wharve on one of the twisting-heads 13. Each cord 24 also passes between a pivoted lever 27 and a grooved bar 28, and a reciprocating notched bar 29 (actuated by a cam 30, mounted upon the shaft 20 and intermediate

rods and levers) acts alternately upon the ends of the levers 27 to close first one and then the other onto the grooved bar 28, as shown in Fig. 8, in which the front lever is gripping one of the driving-cords 24 against the bar 28, thereby stopping the rotation of one twisting-head 13, while the other cord 24, passing freely under the lever 27, drives the other twisting-head 13 until the next movement of the notched bar 29 takes place, when the position of the levers 27 will be reversed and the other twisting-head 13 only will be driven.

The twisting-heads 13 may be driven in the same or in reverse directions, but preferably in opposite directions, and they put a little twist into each slubbing. The slubbings then pass through a pair of rollers 31, and from there they enter together a single twisting-head 32, which is driven first in one direction and then in the other by the following means: To an eccentric stud 33, secured on a disk 34 (see Fig. 3) upon the shaft 20, is pivoted a rack 35, which gears into a pinion 36, mounted upon a shaft 37, which is thus driven alternately backward and forward. A grooved pulley 33 upon this shaft transmits motion by a cord 39, which passes over guide-pulleys 40, mounted upon a weighted arm 41, to the twisting-head 32, which is thus driven first in one direction and then in the other. This twisting-head is preferably made as shown in Fig. 10. The roving enters the twisting-head at the right-hand end, passes through it for some distance and then out at a hole 60 in the side of the twisting-head, then half-way round the outside of the twisting-head, entering the twisting-head again at 61 to the center, from which it is taken up by a winding on tube 17.

The tubes 17, upon which the rovings are to be wound, are supported upon tin drums 42, which are driven in any convenient manner, and the rovings pass from each twisting-head 32 as nearly as possible into the nip of the tube 17 and drum 42. The stands 43, which carry the drums and twisting-heads, are secured upon a reciprocating rail 44, supported upon rollers 45, and one end of the rail 44 is secured to a slotted plate 46, forming part of the building motion, which is actuated by the heart-cam 12, Fig. 1. The cam 12 lies in contact with a bowl 47 on a pivoted arm 48, and to the lower end of this arm is connected a rod 49, which is pressed back against the rotating cam by a weighted elbow-lever 50. The other end of the rod 49 is connected to an arm 51, secured to a shaft 52, on which is secured a bracket 53, that carries a screw 54, and a change ratchet-wheel 55 is mounted upon this screw. Two spring-pawls 56 57 rest normally in the teeth of this wheel and prevent a weight and cord 58 from turning the screw. Upon the screw 54 is fitted a nut 59, and a projecting stud 60 upon this nut passes through a long slot in a plate (not shown) secured to the bracket 53 and also through a slot in the plate 46. An adjustable stop-piece 61 acts upon the pawl 56 when the rail 44 is moved into its farthest position to the left hand and a second adjustable stop-piece 62 acts upon the other pawl, 57, when the rail 44 reaches its extreme position at the right hand, the ratchet-wheel 55 being thus temporarily released and the screw 54 being turned a distance corresponding to half a tooth of the ratchet-wheel at each backward or forward movement of the rail 44, the traverse of which is thus gradually and automatically diminished during the building of the taper ends of the bobbins. After a set of bobbins has been wound the screw 54 is turned back by hand to wind up the weight and cord 58 before beginning a fresh set.

The device herein shown and described for alternately stopping and releasing the cords 24 is that which I prefer to use; but I wish it to be understood that I might employ any other suitable device for the same purpose. Again, instead of the tension device (consisting of guide-pulleys or weighted arms) for the driving-cords I might employ any other suitable means for tightening the cords and maintaining them at the proper tension, and, further, I might employ any other suitable reversing motion for driving the cord 39 and tube 32 in two directions.

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

1. In a slubbing, intermediate or roving frame of the class described twisting-heads 13 means for driving said heads constantly in one direction and a gripping device alternately gripping and releasing said driving means.

2. In a slubbing, intermediate or roving frame of the type indicated, the combination with the two twisting-heads 13, means for rotating each intermittingly while the other twisting-head 13 remains stationary and the pair of rollers 31, of the twisting-head 32 which is rotated first in one direction and then, after an interval, is reversed and rotated in the opposite direction, substantially as and for the purposes herein described.

3. The combination with the twisting-head 13, the driving-cords 24 actuating the twisting-heads and means for tightening the same, of the grooved bar 28 and gripping-levers 27 acting alternately on the driving-cords, and an oscillating notched bar 29 adapted to actuate said levers, substantially as and for the purposes herein described.

4. In combination, the twisting-heads 13, the driving-cords actuating said heads, weighted arms 26, pulleys 25 attached thereto and engaging with the cords for tightening the

same and a gripping and releasing device for said cords.

5. In a device of the class described, the twisting-head 32, a cord 39 for actuating the same and means for driving said cord alternately in one direction and the other, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM HENRY RHODES.

Witnesses:
H. B. BARLOW,
GILLETT.