

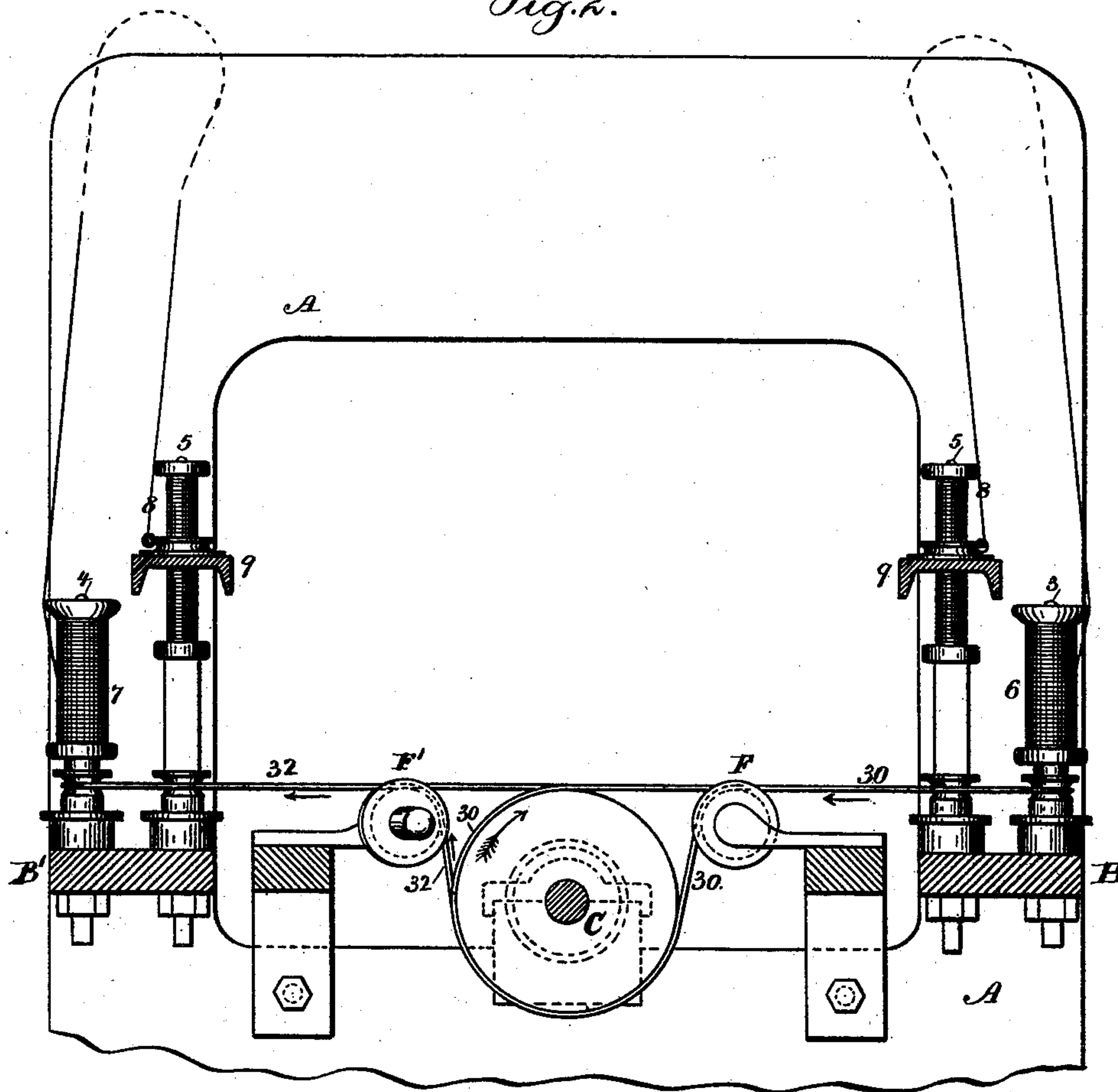
(No Model.)

J. E. TYNAN.  
SILK THROWING MACHINE.

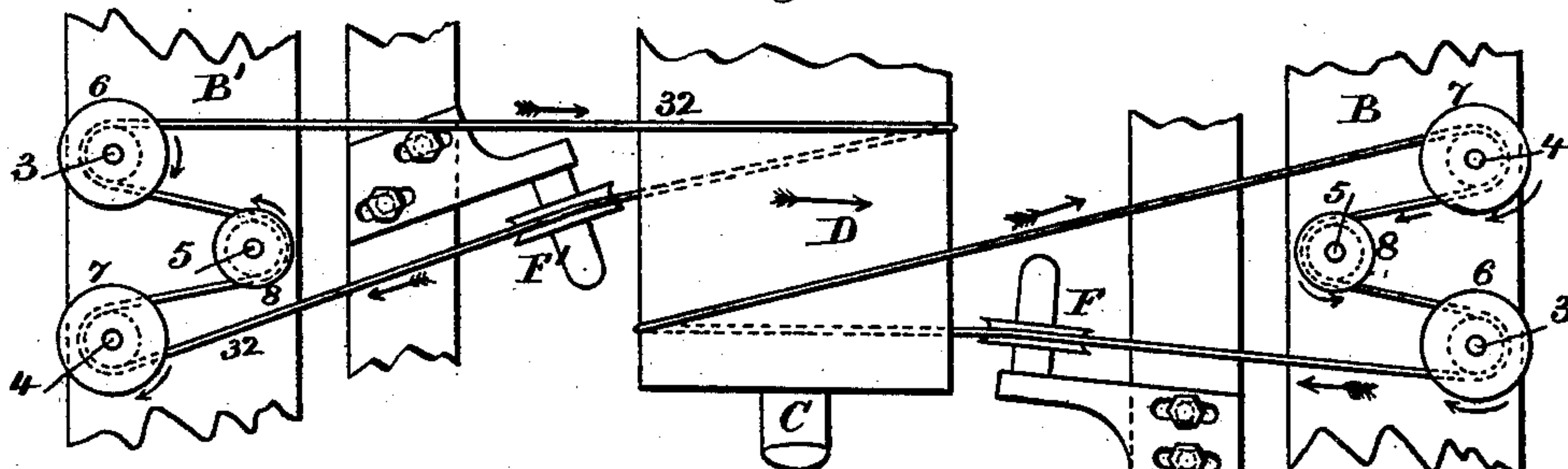
No. 364,783.

Patented June 14, 1887.

*Fig. 2.*



*Fig. 1.*



Witnesses

Chas. H. Smith  
J. H. Hail

Inventor

Joseph E. Tynan  
per Lemuel W. Gorrell atty



# UNITED STATES PATENT OFFICE.

JOSEPH E. TYNAN, OF PATERSON, NEW JERSEY.

## SILK-THROWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,783, dated June 14, 1887.

Application filed April 23, 1886. Serial No. 199,833. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH E. TYNAN, of Paterson, in the county of Passaic and State of New Jersey, have invented an Improvement  
5 in Silk-Throwing Machines, of which the following is a specification.

In the manufacture of organzine the warp is usually laid up in three operations. Two threads are passed away from two separate  
10 spools and twisted. Then these threads are brought together and twisted in the opposite direction to the twist given the single threads, and then such double thread is wound upon a spool.

15 Difficulty has heretofore been experienced in giving to the threads the proper twist, and also in twisting the two strands together to the desired extent.

In the machines that have heretofore been  
20 made, when the spindles have been driven by friction-disks or by separate bands, inequality in the twisting operation was of frequent occurrence, because some of the belts will be tighter than others, or there more or less slipping of  
25 one friction-disk upon the other.

The object of the present invention is to insure perfect uniformity in the twist by driving all three spindles by one band and with a nearly uniform tension upon the entire band,  
30 so that the risk of the band slipping upon one pulley more than another is entirely avoided. I also arrange the three spindles of each group in such a manner that the ring or traverse rail that surrounds the bobbin or spool upon which  
35 the twisted thread is wound does not interfere with the bobbins or spools that supply the threads that are to be twisted.

In the drawings, Figure 1 is a plan view of my improvement with two groups of spindles,  
40 and Fig. 2 is an elevation of said spindles and driving mechanism and a section of the frame of the machine.

The frames A support the rails B B', and also the main or driving shaft C, upon which is  
45 the drum D. The spindles 3, 4, and 5 form a group, the spindles 3 and 4 carrying the spools or bobbins 6 and 7, that supply the single threads, and these, after being twisted and laid together, are wound upon the spool or bob-  
50 bin 8.

9 is a traverse or ring rail, which is raised and lowered in any usual or convenient man-

ner for laying up the threads upon the spool or bobbin 8.

I have represented a ring-traveler for laying  
55 up the threads; but any well-known device may be employed for guiding the threads as wound from end to end upon the spool 8.

The spindles 3, 4, and 5 form one group, and they occupy triangular positions, as seen in  
60 Fig. 1, the spindles 3 and 4 being near the front edge of the rail B, and the spindle 5 near the back edge of said rail B. The belt 30 is passed around the pulleys of the spindles 3, 4, and 5 in the direction indicated in Fig. 1—  
65 that is to say, said belt 30 passes from behind around the spindle 4, then backward and around the spindle 5, then forward and around the spindle 3—in each instance the belt being in contact with about one hundred and eighty  
70 degrees of each pulley upon each spindle, so that there is about the same amount of driving-surface on each pulley in contact with the belt, and the belt being under a nearly uni-  
75 form tension throughout, there is no more tendency to slip upon one pulley than upon another. The belt 30 passes around the driving-drum D, and there is either a guide-pulley or a tightening-pulley at F, over which the belt  
80 30 passes.

In order to make the belt 30 operate properly, said belt should pass from the pulley upon the spindle 3 over the guide-pulley F, down beneath the drum D, up over the same, and  
85 thence to the pulley upon the spindle 4; and this drum D is to be rotated in the direction indicated by the arrow, so that the pull upon the belt 30 will be in a direct line as it passes down over the pulley F, and the slacker portion of the belt will be between the drum D  
90 and the pulley upon the spindle 4. In this manner the belt 30 will give to all the spindles in the group a uniformity of speed, and the risk of inequality in the twisting and laying up of the threads will be prevented.

93 By my improvement I am able to drive, by separate bands passing around the same cylinder, groups of spindles at opposite sides of the silk-throwing machine.

I have shown a second group of spindles, 3  
100 4 5, upon the rail B', driven by a second endless belt, 32; and in order to give to the organzine the proper twists and in the same direction as the groups of spindles upon the rail B,



I lead the belt 32 from the spindle 3 directly to the drum D, and pass the same over and beneath the drum, and up over the guide-pulley F', and thence to the spindle 4.

5 By the arrows marked upon the respective parts it will be seen that the spindles 5 revolve in the reverse directions from the spindles 3 and 4; but the spindles in the respective groups give to the threads as laid up the proper twists, 10 so that the organzine has a uniformity of twist and in the same direction.

The feed-rollers that act upon the threads and the stop-motion devices that arrest the rotation of the spindles when either thread that 15 is being twisted and laid up breaks may be of any desired character, and do not form a necessary part of this invention.

Where attempts have been made to drive a group of three spindles by one belt two serious 20 difficulties have arisen. The first is from the belt slipping upon the pulleys, because it did not sufficiently surround the pulley to afford the necessary frictional contact, and the second was from the ring or traverse rail surrounding 25 the supply spools or bobbins and interfering with the easy changing of the said bobbins. In my improvements these difficulties are avoided, and I am able to pass the threads directly away from the supply-spools up to the feeding-roller.

30 I claim as my invention—

1. The combination, with a horizontal driving-drum and vertical guide-pulley, of two spindles for spools from which threads are drawn off and twisted, and a third spindle for 35 the spool on which the thread is wound, occupying a triangular position to the other two, and one belt passing around the driving-drum and guide-pulley, around the pulleys of the two

spindles, from the spools of which the thread 40 is drawn, and in the reverse direction around the pulley of the winding-spindle, the belt being led, as described, so as to pass nearly half around each spindle-pulley, substantially as set forth.

2. The combination, with the horizontal 45 driving-drum, of the two groups of spindles, one group at each side of the machine, with two spindles for the spools, from which the threads are drawn, and a third spindle for the winding-spool in each group, two belts around 50 the drum passing off in opposite directions and around the pulleys of the spindles in the respective groups in the manner specified, and two guide-pulleys, one of which receives and guides one belt where it passes to the driving- 55 drum and the other of which guides the other belt where it passes away from the driving-drum, substantially as set forth.

3. In a machine for throwing silk, groups of spindles, each group being composed of 60 three spindles arranged triangularly, substantially as shown, and a traverse or ring rail that surrounds only one of the spindles, in combination with an endless belt passing around all such spindles, to give motion to two 65 of the spindles in one direction and to the third spindle in the opposite direction, and a drum for driving the said endless belt, substantially as set forth.

Signed by me this 21st day of April, A. D. 70 1886.

JOSEPH E. TYNAN.

Witnesses:

GEO. T. PINCKNEY,

WALLACE L. SERRELL.