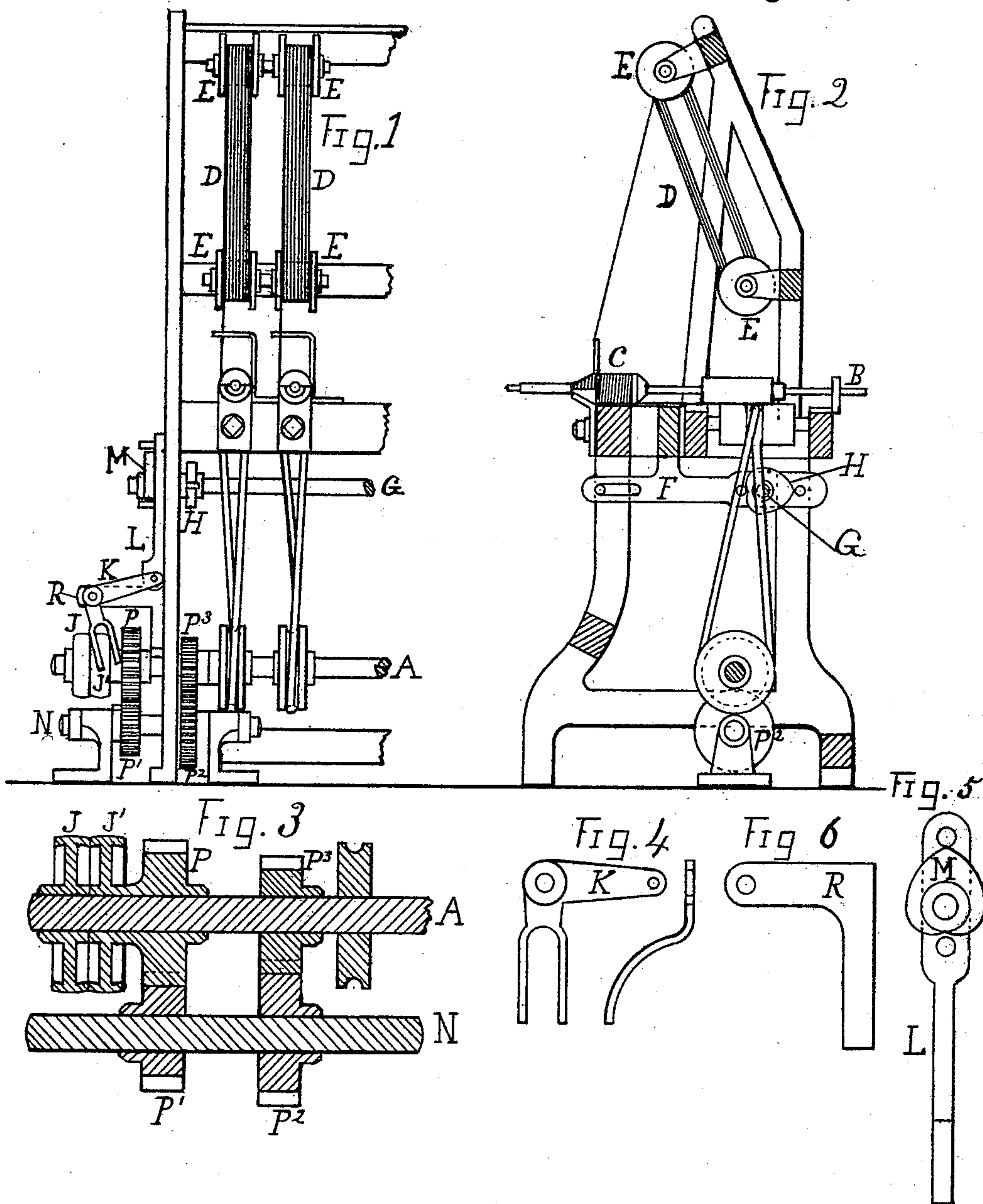


(No Model.)

J. T. BYRNE.  
BOBBIN OR COP WINDING MACHINE.

No. 457,846.

Patented Aug. 18, 1891.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

JOHN T. BYRNE, OF MANAYUNK, PENNSYLVANIA.

## BOBBIN OR COP WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,846, dated August 18, 1891.

Application filed March 26, 1891. Serial No. 386,548. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. BYRNE, a citizen of the United States, residing at Manayunk, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Bobbin or Cop Winding Machines, of which the following is a specification.

My invention relates to machines for winding weft-yarn on shuttle bobbins or cops of a class that are wound cone-shaped.

The object of my improvement is, in winding the yarn, to secure a uniform tension on the small and large part of the bobbin or cop without friction or drag on the yarn, "swift," or spool.

The invention consists in the combination and arrangement, with the traverse mechanism and an automatically-operated belt-shifter, of two driving pulleys, a counter-shaft, and four spur gear-wheels, as illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of one end of a winding-machine embodying my invention. Fig. 2 is a sectional elevation of Fig. 1. Fig. 3 is a sectional view of the driving pulleys, shafts, and gear-wheels. Fig. 4 is a view of the belt-shifter. Fig. 5 is a view of the cam and shifter-bar. Fig. 6 is a view of the belt-shifter bracket.

Similar letters refer to similar parts throughout the several views.

Figs. 1 and 2 show a section of a machine-frame of general construction for winding yarn on bobbins or cops from hanks of yarn; and as I make no claim to the general construction of the machine I will confine my description to that part which I claim as my invention and such parts as necessarily co-operate with them to produce the result specified.

A represents the drum-shaft; B, the cop spindle; C, the cop; D, the hank of yarn; E, the swifts; F, the traverse-bar; G, the traverse cam-shaft; H, the traverse-cam; J J', the driving-pulleys; K, the belt-shifter; L, the belt-shifter bar; M, the belt-shifter cam; N, the counter-shaft, and P' P<sup>2</sup> P<sup>3</sup> the gear-wheels.

The pulley J is fast on the shaft A, and pulley J' is secured on or integral with the hub of wheel P. This pulley and wheel run loose on

shaft A, said wheel gearing into wheel P' fast on shaft N, which shaft also has fast on it wheel P<sup>2</sup>. This wheel P<sup>2</sup> gears into wheel P<sup>3</sup> fast on shaft A, the wheels P and P<sup>2</sup> being of one size, the wheels P' and P<sup>3</sup> being also of one size, but smaller than the wheels P and P<sup>2</sup>. On the shaft G, I fasten a cam M. This cam may be heart-shaped, as shown in the drawings, or it may be a round eccentric-cam. The cam M operates the bar L, which bar is connected to the belt-shifter K, which belt-shifter works on a stud fixed to bracket R.

In place of a cam the bar L may be operated by a crank placed on the shaft G.

The difference in size and number of teeth in wheels P, P<sup>2</sup>, P', and P<sup>3</sup>, is about in the proportion of fifty to sixty—that is, wheels P and P<sup>2</sup> have sixty teeth, and wheels P' and P<sup>3</sup> have fifty teeth.

It is to be understood that I do not confine myself to the size and number of teeth in the wheels, as that will be governed by the size of the cone on the bobbin.

The operations of my improvement are as follows: The cam M is set on the shaft G, so that when the yarn is being wound on the small part of the cone it will have elevated the bar L, which being connected to the belt-shifter K, will shift the belt on the pulley J' when the intermediate gear-wheels will drive the drum-shaft A at an increased speed from that when driven by the pulley J. This increased speed will rotate the spindle B and cop C faster than when the yarn is being wound on the large part of the cone, and as the shaft G revolves to move the traverse the cam M will shift the belt to pulley J, and this being fastened to shaft A, will be the driver, and drive the spindles and cops slower than when the pulley J' is the driver; and the yarn will be drawn from the hank at one uniform speed, winding on the small or large part of the bobbin with the same tension and without drag or friction on the swift or spool.

The drawings show the yarn as being wound from hanks placed on swifts, but it is obvious that the yarn may be wound from spools.

Having as above fully described my invention and the best manner of using the same, what I claim as my invention is—

In a bobbin-winding frame, the combina-

tion, with a main driving-shaft, a fast and  
loose pulley thereon, a belt-shifter, a traverse  
mechanism, and connections between the said  
belt-shifter and traverse mechanism, of a  
5 speed-changing mechanism consisting of  
counter-shaft N, gear-wheels P' and P<sup>2</sup>, fixed  
thereon, and gear-wheels P and P<sup>3</sup>, engaging  
gear-wheels P' and P<sup>2</sup>, respectively, said wheel

P loosely and the wheel P<sup>3</sup> fixedly mounted  
on the main shaft, substantially as shown and 10  
described.

JOHN T. BYRNE.

Witnesses:

JOHN SHINN,  
GEO. C. BOWKER.