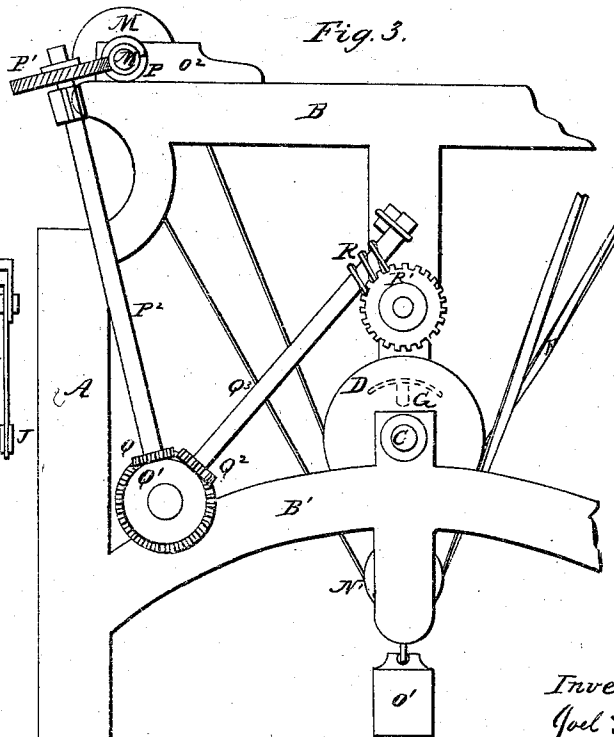
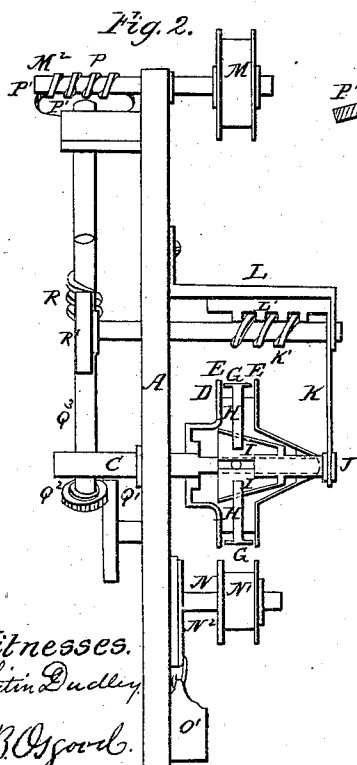
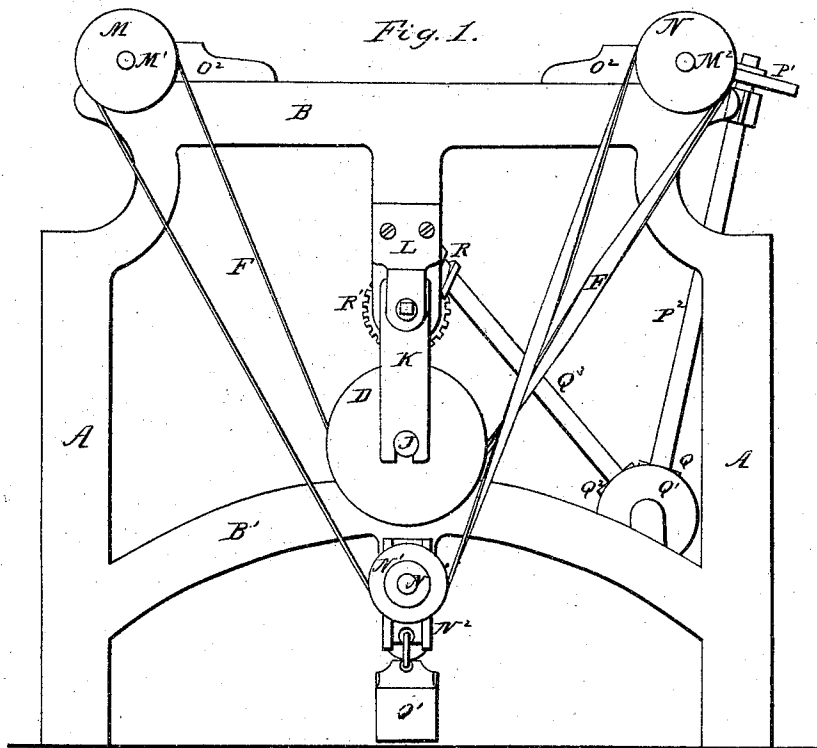


*J. Smith.*  
*Spinning Frame.*

*Nº 22,899.*

*Patented Feb. 8, 1859.*



*Witnesses.*  
*P. Whitin Dudley*  
*H. B. Osgood.*

*Inventor.*  
*Joel Smith.*

# UNITED STATES PATENT OFFICE.

JOEL SMITH, OF NORTHBRIDGE, MASSACHUSETTS.

## REGULATING THE TWIST IN THROSTLE-FRAMES.

Specification of Letters Patent No. 22,899, dated February 8, 1859.

*To all whom it may concern:*

Be it known that I, JOEL SMITH, of Northbridge, in the county of Worcester and State of Massachusetts, have invented a new and useful Improved Mode of Regulating, Graduating, or Equalizing the Twist of Yarn on Ring Traveler and other Spinning Frames; and I do hereby declare that the same is described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my improvements I will proceed to describe their construction and operation referring to the drawings in which the same letters indicate like parts in each of the figures.

Figure 1 is an elevation of one end of a spinning frame with the apparatus for regulating, graduating and equalizing the twist of the yarn, attached or applied to it. Fig. 2 is a side elevation showing the expanding pulley in section, and Fig. 3, shows the back-side of the end shown in Fig. 1.

The nature of my improved mode of regulating, graduating and equalizing the twist of yarn on ring traveler spinning frames, consists in communicating a gradually accelerated motion (proportionate to the gradually increasing diameter of the bobbins of yarn) to the delivering rollers by means of a gradually expanding pulley arranged to increase the speed of the rollers which yield the slivers to form the yarn spun.

In the accompanying drawing the end of a spinning frame is shown consisting of the side standards A, A, top bar B, and cross bar B', to which my improvements are applied.

C, is the shaft of the cylinder which carries the bands to turn the spindles. To the end of this shaft I fasten the expanding and contracting pulley, consisting of the shell D, firmly fastened to the shaft C, and made in the form shown in the drawing; that is with two flanges E, E, between which the belt F, runs on the traversing segments G, G, Fig. 2, and dotted lines in Fig. 3, which segments are provided with radial bars H, H, fitted to traverse through holes in the shell D, which bars H, have scores in their sides for the edges of the angular arms I, I, fastened to the barrel J, which traverses the arms, to move or traverse the segments in and out, to enlarge or contract that part of the pulley which carries the belt F. The barrel J, is perforated nearly through its

length and fitted to traverse on the end of the shaft C, as shown by dotted lines in Fig. 2, and has a score around its outer end to which the arm K, is fitted, that traverses it. The upper and horizontal part of the arm K, is fitted to traverse in the stand L, fastened to the top bar B, and is provided with a series of teeth L', for the screw K', to work in which traverses it. The screw K' is made square at its outer end, to receive a crank to turn it back, and contract or reduce the pulley by drawing in the segments G, G, every time a set of empty bobbins, are applied to the spindles. The belt F, runs under the pulley D, and over the pulleys M, M, on the front delivering rollers M', M', and under the tightening pulley N', on the stud N, which stud is fastened in the slide N', arranged to traverse in a stand O, from the bar B' and is pulled down by the weight O', so as to always keep the band F, tight enough to turn the rollers M', M', in the stands O<sup>2</sup> O<sup>2</sup> fastened to the top bar B. The screw P, on the front roller M', turns the gear P' and shaft P<sup>2</sup>, which is arranged to turn in proper bearings fastened to the frame and carries the gear Q, which drives the gear Q' arranged on the heart shaft: which gear Q', drives the gear Q<sup>2</sup> and shaft Q<sup>3</sup> and carries the screw R, which turns the gear R', and screw K' to traverse the arm K, and barrel J, out, to expand the pulley D, and increase the motion of the belt F, and turn the delivering rollers faster to deliver or yield more sliver, as the bobbins grow larger until they are full. The gear R', may be made to turn loose on the screw L', and provided with a ratchet and pawl so arranged that the screw may be turned back, to reduce the pulley without turning the gear R'.

With my improvements, the spindles of the spinning frames are run at a uniform speed, and the rollers which deliver the sliver to form the yarn, run slow when the bobbin is empty, to put sufficient twist in the yarn to make it of a uniform strength throughout its entire length. And as the yarn gradually fills the bobbin, the speed of the rollers which deliver the sliver to be spun is gradually increased by the expanding pulley until the bobbins are full and ready to be doffed or taken off. Besides making the yarn uniform in strength from the beginning to the end of the bobbin, my improvements by making the yarn spun strong throughout its whole length, enables the spinner to run his

frames at a higher speed, so as to do more work with less breakage, and less waste, and far less labor in attending the frames, in proportion to quantity of yarn spun; thereby enabling the spinner to make his yarn cheaper and better with my improvements, than he could do without them.

I believe I have described and represented my improvements for regulating and equalizing the twist of yarn, on ring traveler spinning frames, so as to enable any person

skilled in the art to make and use them. I will now state what I claim and desire to secure by Letters Patent.

I claim—

The expanding pulley D, arranged to operate as described for the purposes set forth in the foregoing specification.

JOEL SMITH.

Witnesses:

P. WHITTIN DUDLEY,  
HENRY B. OSGOOD.

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