

(No Model.)

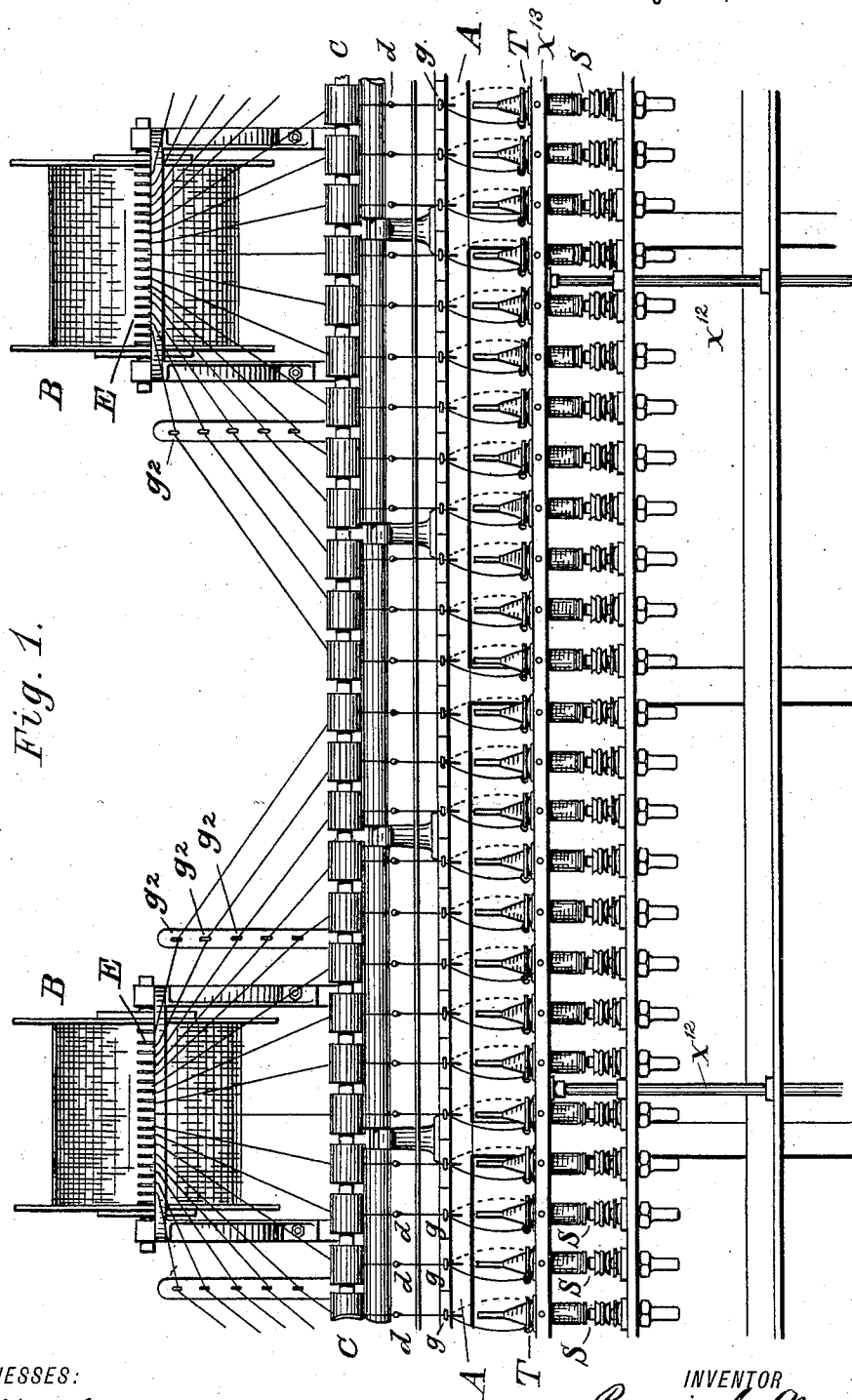
3 Sheets—Sheet 1.

R. C. NEWELL.

MACHINE FOR WINDING YARN ON SHUTTLE BOBBINS.

No. 366,238.

Patented July 12, 1887.



WITNESSES:

J. S. Minkum
F. A. Upham

INVENTOR

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(No Model.)

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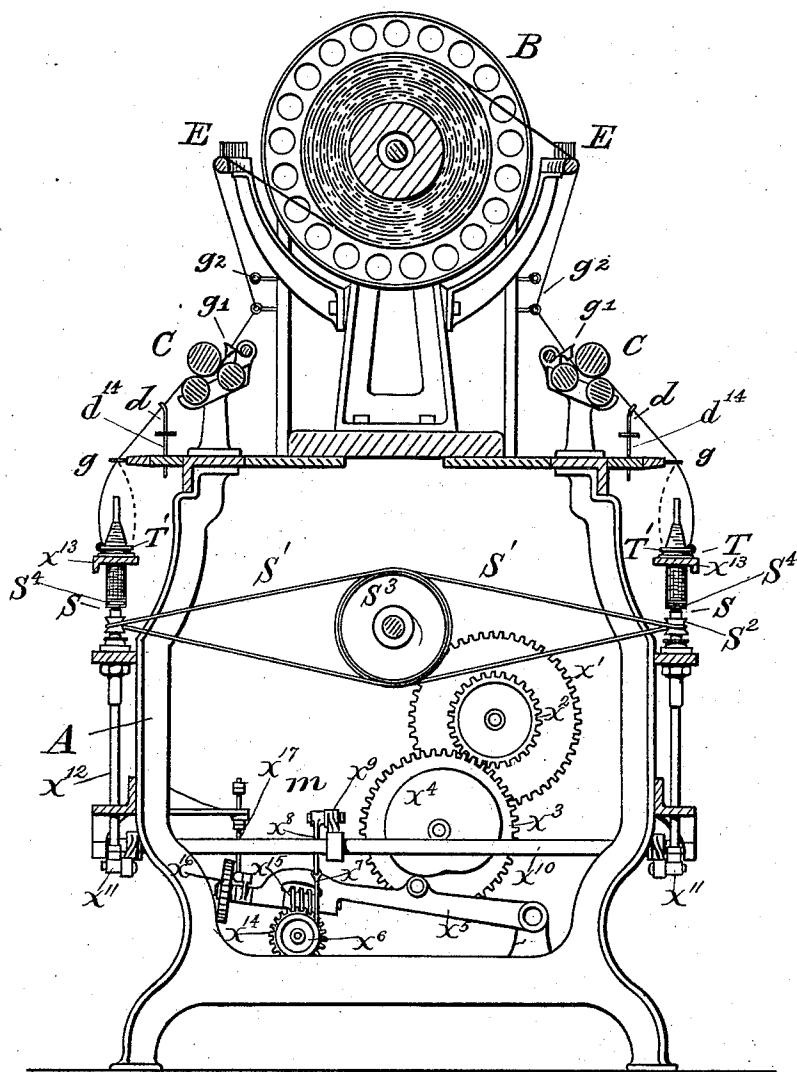
R. C. NEWELL.

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Fig. 2.



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3 Sheets—Sheet 3.

R. C. NEWELL.

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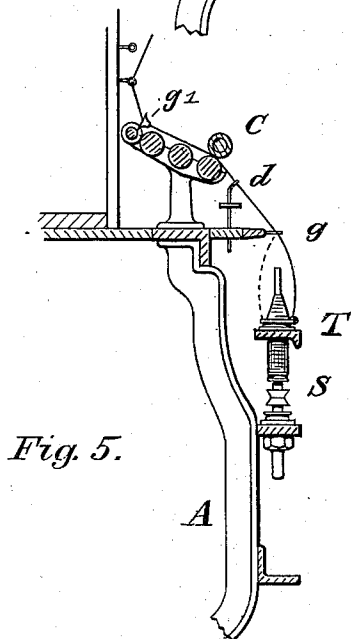
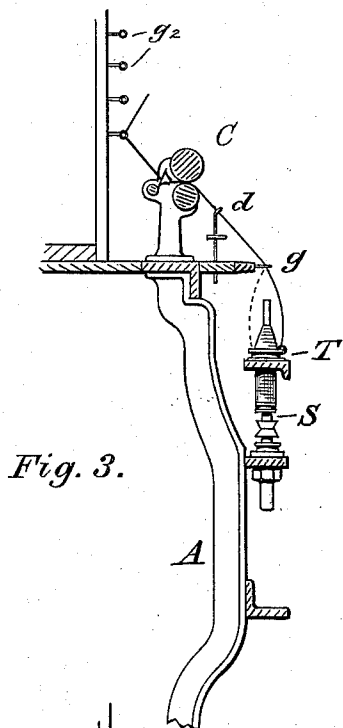


Fig. 4.

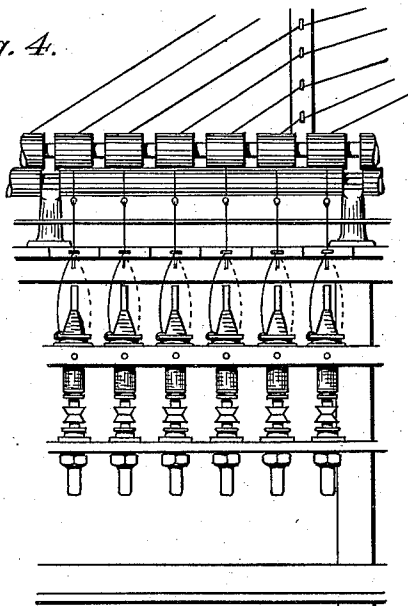
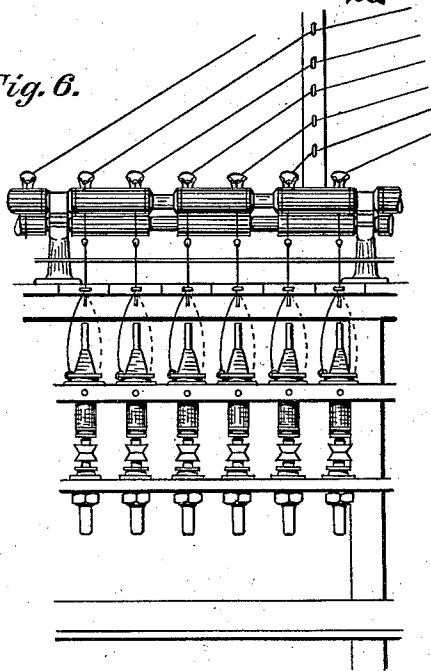


Fig. 6.



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UNITED STATES PATENT OFFICE.

ROSCIUS C. NEWELL, OF THREE RIVERS, MASSACHUSETTS.

MACHINE FOR WINDING YARN ON SHUTTLE-BOBBINS.

SPECIFICATION forming part of Letters Patent No. 366,238, dated July 12, 1887.

Application filed November 29, 1886. Serial No. 220,195. (No model.)

To all whom it may concern:

Be it known that I, ROSCIUS C. NEWELL, of Three Rivers, Palmer, Hampden county, Massachusetts, have invented Improvements in Winding Yarn, of which the following is a specification.

My invention consists, as hereinafter specified in my claims, of a twisting or spinning frame having its creel removed and its spindles adapted to receive shuttle bobbins or quills, and provided with filling-builder mechanism for properly actuating the lifting-rods and ring-rails of said frame, and a stop-motion mechanism for the purpose of stopping the machine automatically, in combination with one or more yarn-holding beams mounted thereon, substantially as hereinafter described.

Referring to the drawings, Figure 1 shows a view in elevation of a section of one side of a twisting-frame arranged according to my invention. Fig. 2 is a view in cross section of my invention. Figs. 3, 4, 5, and 6 show details of my invention.

Referring to Figs. 1 and 2, A is a twisting-frame, from which the creel has been removed and the beams of yarn B B mounted thereon between and above the lines of rolls C C, which are on opposite sides of said frame. The said frame is provided with positively-driven spindles S—i. e., spindles directly and positively rotated by means of bands S', passing around their whirls S² and around the band-cylinder S³, or in any similar manner, said spindles being adapted to receive shuttle bobbins or quills S⁴, and having stop-motion mechanism d between the rolls C and spindles S, said stop-motion being arranged and operating substantially as shown and described in Letters Patent of the United States issued to James and Thomas Walmsley, November 1, 1870, No. 108,856, and in practice having the vertically-guided faller-wires d¹⁴ of Fig. 2 of the accompanying drawings hinged to the free ends of the faller-levers c shown in the said patent. On each side and abreast of each of the beams of yarn B B is placed a curved raddle or comb, E E, through which the yarn passes to and through the rolls C, through the stop-motion mechanism d, to and through the travelers T on the rings T', to the shuttle-bobbins or quills on the spindles S, suitable guides, g², g', and g, being employed to direct

the yarn. By the use of sectional beams B B, (of which more or less than two may be used, if desired,) instead of one large beam of yarn, the chain can be made as large as desired, and the threads or ends may be divided up in beaming onto the sectional beams to correspond with any given number of spindles, so that a smaller number of spindles may be used in a frame than heretofore without any increase in the cost of the preceding processes of warping, dyeing, and beaming. Several small beams or sections can be thus beamed at once from a large chain of yarn containing seven hundred ends or more without any intermediate process of splitting the chain. The sections thus formed are more readily handled than the large unwieldy beams, and the ends or threads are led off in a better manner to the rolls; and a preferable method of conducting and guiding the ends to and through the rolls is secured, when two or more beams are employed upon one machine, the threads diverging less widely from the beam, as is obvious from an inspection of Fig. 1.

The advantages in having a small number of spindles in each frame are obvious, among which may be mentioned the increased production per spindle, due to the fact that when the mechanism is required to be stopped for piecing, doffing, or other purposes, only a small number of spindles are rendered temporarily idle and inoperative.

By having more than one raddle or comb to each sectional beam, and located on opposite sides of the machine, substantially as shown, with the threads leading to a line of rolls on each side of the frame, the ends or threads of yarn are more widely separated than would otherwise be possible in their passage from the beam to the rolls, resulting in again lessening the liability to breakage and tangling, and a consequent reduced quantity of waste, and increased production.

By the employment of a stop-motion mechanism to automatically bring the machinery of the frame to a standstill when a thread or end of yarn breaks in the operation of quilling or winding yarn onto shuttle bobbins or quills, the liability of tangling on account of breakage and the consequent loss in time and waste is reduced to a minimum.

Figs. 3 and 4 show in cross-section and front

elevation, respectively, the employment of a pair of rolls as ordinarily used in twisters. Figs. 5 and 6 show in cross-section and front elevation, respectively, the use of the rolls of a spinning-frame with all but one of the top rolls removed.

To adapt a twisting-frame for ordinary use as a quilling-machine, a proper speed should be imparted to the rolls and spindles, so that very little, if any, twist will be put into the moving yarn in the process of quilling. The tension of the yarn between the rolls C and the shuttle-bobbins carried on the positively-driven spindles S is regulated and the yarn is guided in the final act of winding by the ring-travelers T with decided advantages over other devices in the convenience that is secured in the manipulation of the twist in the process of quilling or winding yarn onto shuttle bobbins or quills, when ring-travelers are so used. The size, weight, and number of the travelers determine the degree of compactness of the yarn wound on the bobbins or quills. A convenient form of ring-traveler for this use is that known as a "vertical" traveler, (with suitable rings,) the traveler being placed vertically on the ring; or several light travelers may be used as a compound traveler by being sprung onto the beaded edge or flange of the ring in the ordinary manner. More than two beams of yarn may be mounted on the said frame, if desired.

The builder mechanism X may be of any usual construction employed in windingshuttle-bobbins.

I have shown in the accompanying drawings a convenient form in which motion is communicated from the shaft of the cylinder S³ by the gearing x', x², and x³ to the cam x⁴ which acts against a pin or roller on the lever x⁵. This lever x⁵ has mounted thereon a drum, x⁶, around which is wrapped one end of a flexible

connector, x⁷, connected at its other end by a link, x⁸, to an arm, x⁹, on a rock-shaft, x¹⁰, having at its extremities arms x¹¹, acting through lifting-rods x¹² to raise and lower the ring-rail x¹³ in the usual manner, there being, as usual, two or more rock-shafts, x¹⁰, connected by arms and rods to cause them to move simultaneously and act upon the lifting-rods x¹² at different points along the machine, all as ordinarily. The drum x⁶ has attached thereto a worm-gear, x¹⁴, engaged by a worm, x¹⁵, on a shaft carrying at its opposite end a ratchet-wheel, x¹⁶, engaged and rotated by pawl-and-ratchet devices similar to those for a like purpose shown in United States Letters Patent to G. E. Taft, No. 222,330 of December 2, 1879.

What I claim is—

1. The combination of a twisting-frame provided with spindles adapted to receive shuttle bobbins or quills and having a line of rolls on each side thereof, a stop mechanism, and a cone or filling-builder mechanism comprising a ring-rail, rings and travelers, and devices for raising and lowering the ring-rail, said rings and travelers being between said spindles and rolls, with one or more yarn-holding beams placed above said rolls, substantially as described.

2. The combination of two or more yarn-holding beams with a twisting-frame provided with raddles or combs E E, opposite lines of rolls, guides g g', g², a filling-builder mechanism having rings and travelers, stop-motion mechanism d, and bobbin-receiving spindles and means for positively driving said spindles, the whole arranged and operating substantially in the manner and for the purpose set forth.

ROSCIUS C. NEWELL.

Witnesses:

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W. E. BRAKENRIDGE.