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P. J. THOMAS

THREAD SPREADER FOR DOUBLING MACHINES

Filed March 25, 1922

Fig. 1

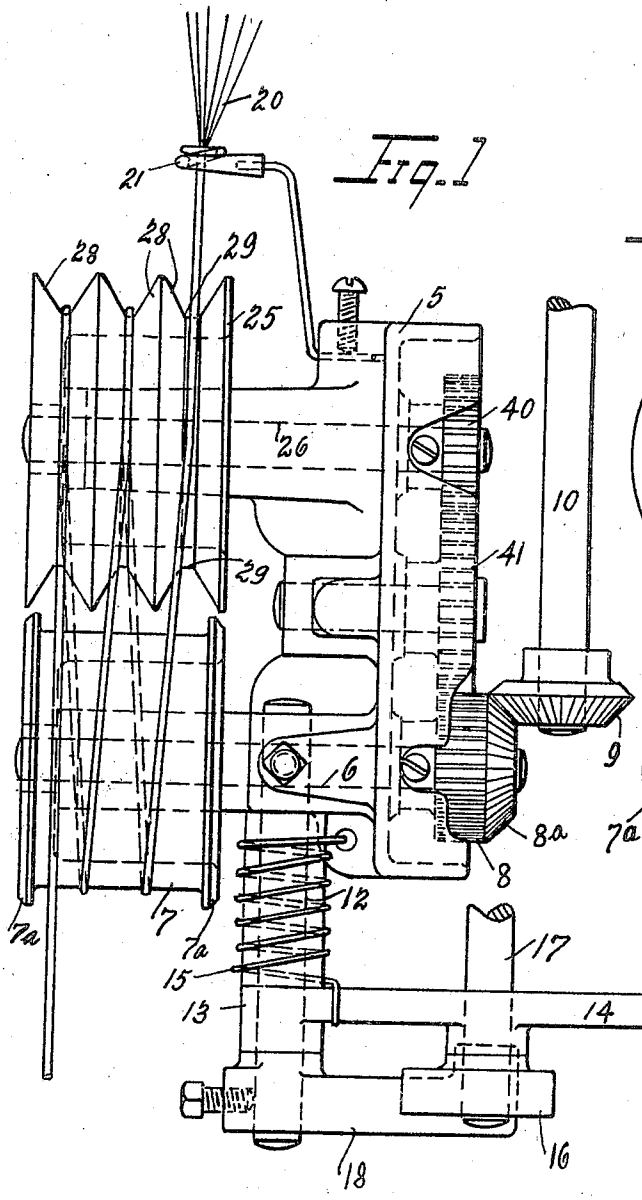
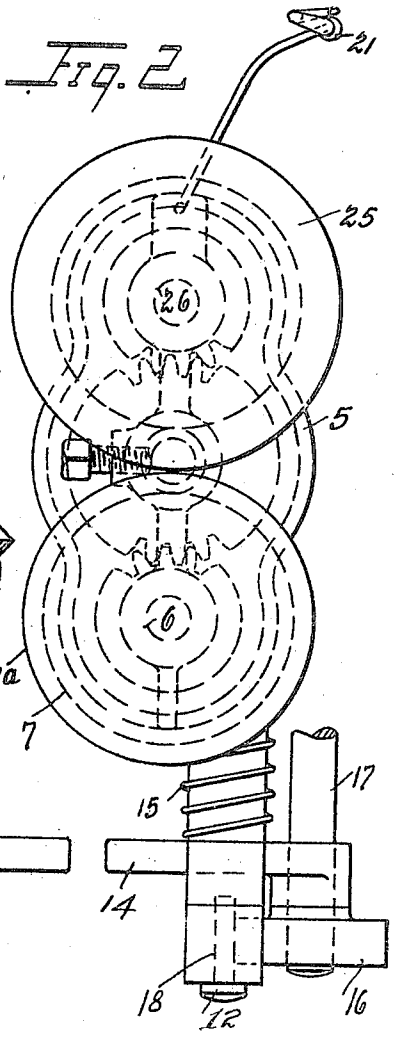


Fig. 2



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UNITED STATES PATENT OFFICE.

PACIFIC J. THOMAS, OF PITTSTON, PENNSYLVANIA.

THREAD SPREADER FOR DOUBLING MACHINES.

Application filed March 25, 1922. Serial No. 546,675.

To all whom it may concern:

Be it known that I, PACIFIC J. THOMAS, a citizen of the United States, residing at Pittston, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Thread Spreaders for Doubling Machines, of which the following is a specification.

My invention relates particularly to thread-spreading mechanism employed in connection with doubling and twisting machines of the type shown in my pending application Serial No. 532,970, filed January 31, 1922, and my present object is to provide for maintaining the definite spreading of the thread convolutions and retaining the same on the rolls during the production of either right or left hand twists and preventing slippage during speeding up of the machine. The invention is fully described in connection with the accompanying drawing and is clearly defined in the subjoined claim.

Fig. 1 is an elevation of my improved device in connection with such known cooperating mechanism as will enable a clear explanation of the invention being indicated.

Fig. 2 is a right-angled view of the same.

The construction shown in the drawings is similar to my aforesaid pending application, showing a roll-carrying frame 5 in which is mounted a horizontal shaft 6 carrying a smooth-surfaced cylindrical take-up roll 7, preferably formed in this case with end guard flanges 7^a, 7^a, and a gear 8 on its opposite end, said gear having a beveled-toothed end portion 8^a, normally in mesh with the bevel gear 9 of a drive shaft 10, except when automatically thrown out of mesh in known manner by any breakage of thread. This automatic disengagement of the driving gears 8^a and 9 is accomplished as heretofore by pivotally mounting frame post 12 in boss 13 of suitably fixed supporting arm 14, so the entire frame may be swung against action of spring 15, such movement being effected by contact of cam 16, on stop shaft 17, with arm 18 of frame post 12, whenever there is a break in one of the threads 20 running through guide eye 21 to take-up roll 7, all as heretofore known and requiring no further description to fully understand my improvements.

The threads 20 extending from the guide-eye 21 to the twisting mechanism, not shown, are as usual given several turns around the take-up roll 7, and, as in my pending application aforesaid, I interpose between said eye and roll a parallel spreading roll 25 having deep V-shaped circular grooves 28 in which the convolution of threads may be readily entered in winding and seated in the bottoms 29 of said grooves to maintain said convolutions in properly spaced position on take-up roll 7.

I have found in practice that when using threads of a wiry nature, such as artificial silk, slippage over the rolls is likely to occur producing undue strains on the threads and causing defects and unsatisfactory operation, and this slippage also occurs in operating the machine at the higher speeds desirable for certain work; also in producing heavy twists and especially left-hand twists the convolutions are likely to work across the roll 7 into uneven spacings and tendency to ride off the roll entirely in spite of the deep grooves of the spreading roll.

To overcome these difficulties and adapt the take-up for all kinds and varieties of threads I secure the spreading roll 25 to shaft 26 rotatably carried in a bearing in frame 5 and having a gear 40, and connect the latter to gear 8 by means of an idler gear 41 so as to positively rotate the rolls 25 and 7 at the same circumferential speed so as to avoid all slippage.

I preferably form the roll 25 of larger outer diameter than roll 7, but cut the grooves 28 of a depth to make the diameter at the bottom 29 thereof equal to the diameter of roll 7, and form the gears 40 and 8 with the same number of teeth so that they will rotate with equal speed.

This equal diameter of the bearing surfaces of the two rolls and their equal and positive rotation insures equal tension and feed of the thread by the take up roll, while the deep grooves 28 maintain the spread of the convolutions on the roll 7 at all times. In making left-hand twists, especially when heavy twist is desired, there is a tendency of the convolutions to work across and off the roll 7, which is prevented in my construction by the end-guard flanges 7^a, 7^a provided on the latter without causing undue friction on the thread.

While my improved rolls are simple in structure and readily applied to take-up mechanism of known design, they provide for adapting the take-up for all classes of

work, and accurately feed the thread at all speeds, permitting the use of threads of various weights and material and applicable for either right or left hand twists of all degrees.

What I claim is:

In a thread-spreading mechanism, the combination with a fixed guide and a smooth-surfaced cylindrical thread roll having end guard flanges, of an interposed parallel spreading roll having a series of V-shaped circular grooves adapted to widely spread the thread convolutions, roll driving means adapted to impart the same speed of rotation to the thread contacting surfaces of both the smooth-surfaced and grooved rolls, and means actuated by the breaking of a thread for automatically throwing said roll-driving means out of operation.

In testimony whereof I affix my signature.

PACIFIC J. THOMAS.