(No Model.)

# W. W. TAYLOR.

## MACHINE FOR DOUBLING AND TWISTING YARN.

No. 343,208. Patented June 8, 1886.

*Fig. 1.*

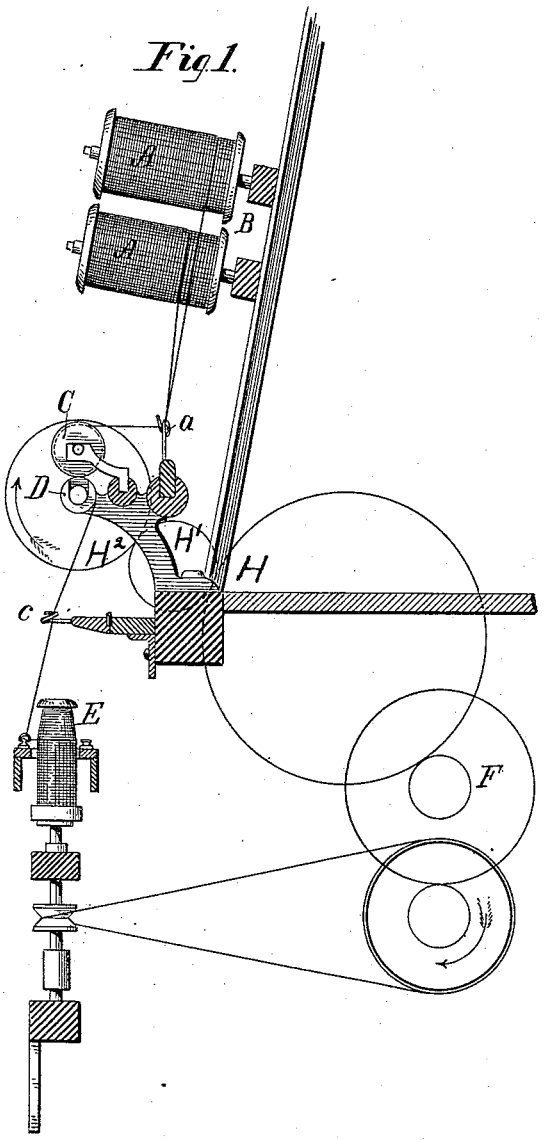
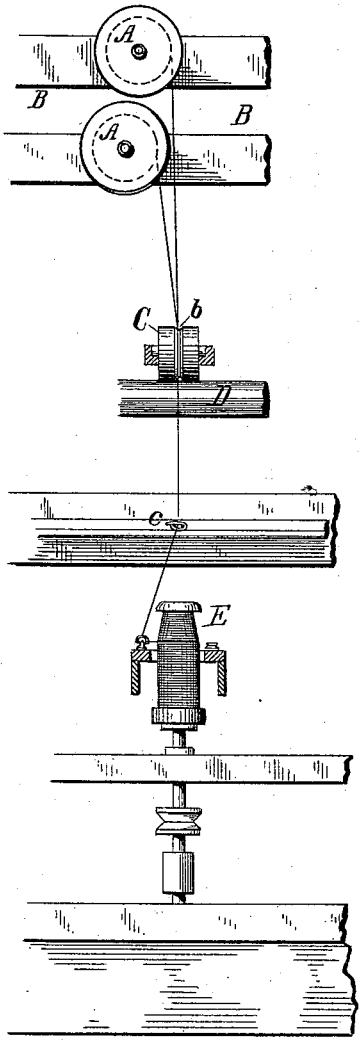



*Fig. 2.*

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# UNITED STATES PATENT OFFICE.

WILLIAM W. TAYLOR, OF GLOUCESTER, NEW JERSEY, ASSIGNOR OF ONE-HALF TO HENRY F. WEST, OF SAME PLACE.

## MACHINE FOR DOUBLING AND TWISTING YARNS.

SPECIFICATION forming part of Letters Patent No. 343,208, dated June 8, 1886.

Application filed March 6, 1884. Serial No. 123,234. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. TAYLOR, of Gloucester city, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Machines for Doubling and Twisting Yarns, of which improvements the following is a specification.

Heretofore three principal ways of doubling and twisting yarns have been resorted to, first, the placing of the spools (two or more) in a creel and carrying the several threads from the spools to a point at which they are brought together as they pass over the top roll and between it and the lower roll to the twister-spindle. A second way was to wind a large number of threads upon the warper-beam, and carry two or more of these threads over and between the rolls to the twister-spindle. In both of these cases the rolls were plane-surfaced rolls. The third way was to use the doubling-spooler, doubling upon one spool as many threads (two or more) as are to be twisted, then placing this spool on the twister and twisting the strands together, as in the other cases. The last-mentioned is the most improved of the three ways described, but it is the most expensive in cost of labor, and in common with the other two ways, though in a less degree, is subject to difficulties which it is eminently desirable to obviate, as is well understood by those using such machinery; and to obviate these difficulties is the object of my invention, which consists in carrying the threads from the several spools in a creel through an eye or guide, in which they are brought together, and from which they pass together into a narrow groove or recess in the top roll, then carrying them one and a half time or more around this narrow groove in the top roll, and then carrying them half-way around the lower roll; thence through an eye or guide to the bobbin where the threads are twisted, and the twisted yarn wound upon the bobbin in the usual well-known manner.

In the accompanying drawings, which form a part of this specification, Figure 1 is a sectional side elevation, and Fig. 2 is a front elevation, of a portion of a machine for twisting yarns with my invention applied thereto, and as will be hereinafter more fully described.

The spools A A, on which the yarn has previously been wound, are supported in the creel B, as usual, and the thread is carried from each spool through a guide, *a*, to the top roll, C. This top roll, instead of having a plane-surface, as heretofore, is provided with a narrow recess or groove, *b*, (which may be of different forms, but is preferably of a V shape,) while the lower roll, D, has a plane surface, as heretofore. It is to be understood that while the particular outline of the groove is not of especial importance, its depth must be such as to accommodate the yarns or threads (of whatever given ply) which are to be passed around the groove, as presently described. The yarns or threads, as brought together through the guide *a*, are passed one and a half time or more around the narrow groove or recess in the top roll, and thence pass half-way round the plane-surfaced lower roll, D, through a second guide, *c*, to the eye in the traveler E, through which they pass to the bobbin, and are twisted and wound upon the bobbin by the usual operation. The top roll, C, rests upon the lower roll, D, and this lower roll is driven from the main driving-shaft F by a train of wheels, H, H′, and H², as shown in Fig. 1, while the top roll, C, receives its rotatory motion from its frictional contact with the plane-surfaced driving-roll D.

The groove or recess in the top roll, C, gives greatly-improved results in the operation of this mechanism. With plane-surfaced rolls the yarn is in contact with both of them, and the tension is very irregular, so that the threads break constantly; but with the grooved or recessed top roll I am enabled to pass the threads one and a half time or more around this narrow groove without filling it so far as to bring the threads out to the plane surfaces on both sides of the groove of this top roll, so that uniformity of the tension is maintained, and hence it is not essential to resort to the double-spooling method of preparing the yarn for the twister, in which mode of preparation knots and waste are unavoidable, as well as time and labor involved. When twisting any given number of threads together, the grooved roll prevents making any other doublings than the one designed, or the intended "ply."

It picks up all long and loose ends that drop from the spooler's hands, or that otherwise occur in spooling. When the band drops off the whirl, the slack yarn confined in the narrow groove or recess is automatically picked up and wound or lapped around the top roll instead of around the lower roll, as is the case when the plane-surfaced top roll is used. Again, when starting the operation, there is less breaking down of ends than when the old-style top roll is used. With the plane-surfaced top roll, when an end breaks down and laps around the bottom roll, not only is waste occasioned, but it is necessary to remove these lappings, and this is done with pick-hooks or knives, which injure the surface of the roll. This liability to injury is entirely removed in the use of my improvement, as in such case the lapping is always automatic and invariably around the grooved top roll, and the waste itself is reduced to a minimum. Not only can more work be done in a given time, but the work is better done.

I am aware that a mere separation of two flat-surfaced rollers at the parts where the threads pass between them, other parts touching to give motion to the top roller, is not new; and I do not lay claim to any such separation of the two rollers, as my invention specially relates to the narrow groove or recess in the top or driven roller, which, while insuring uniformity of tension in the twisting of the threads, effects the important object of reducing the amount of waste from any broken thread by invariably compelling the latter, confined as it is in the narrow groove of the upper roller, to simply wind itself upon this loose roller, instead of letting the loose end of the thread drop down, as is now the common result of breakage, accumulating below until it becomes entangled with a greater or less number of neighboring threads, causing great waste in material among them, and a proportionate loss of time and labor in repairing the damage, whereas by my specific feature (the narrow groove or recess) I am enabled to confine the loss or damage to the one broken thread only, and the least accumulation of waste upon the upper roller, caused by such breakage, is readily observed by glancing along the frame of the machine, and easily removed.

Having thus described the nature and objects of my improvements, what I claim as new, and desire to secure by Letters Patent, is—

As an improvement in machines for twisting yarns, the combination, with the lower plane-surfaced driving-roll, of a top roll with a narrow groove or recess therein, substantially as and for the purposes described.

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Witnesses:

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