

(No Model.)

H. F. WEST.

MACHINE FOR DOUBLING AND TWISTING YARN.

No. 371,235.

Patented Oct. 11, 1887.

Fig. 1.

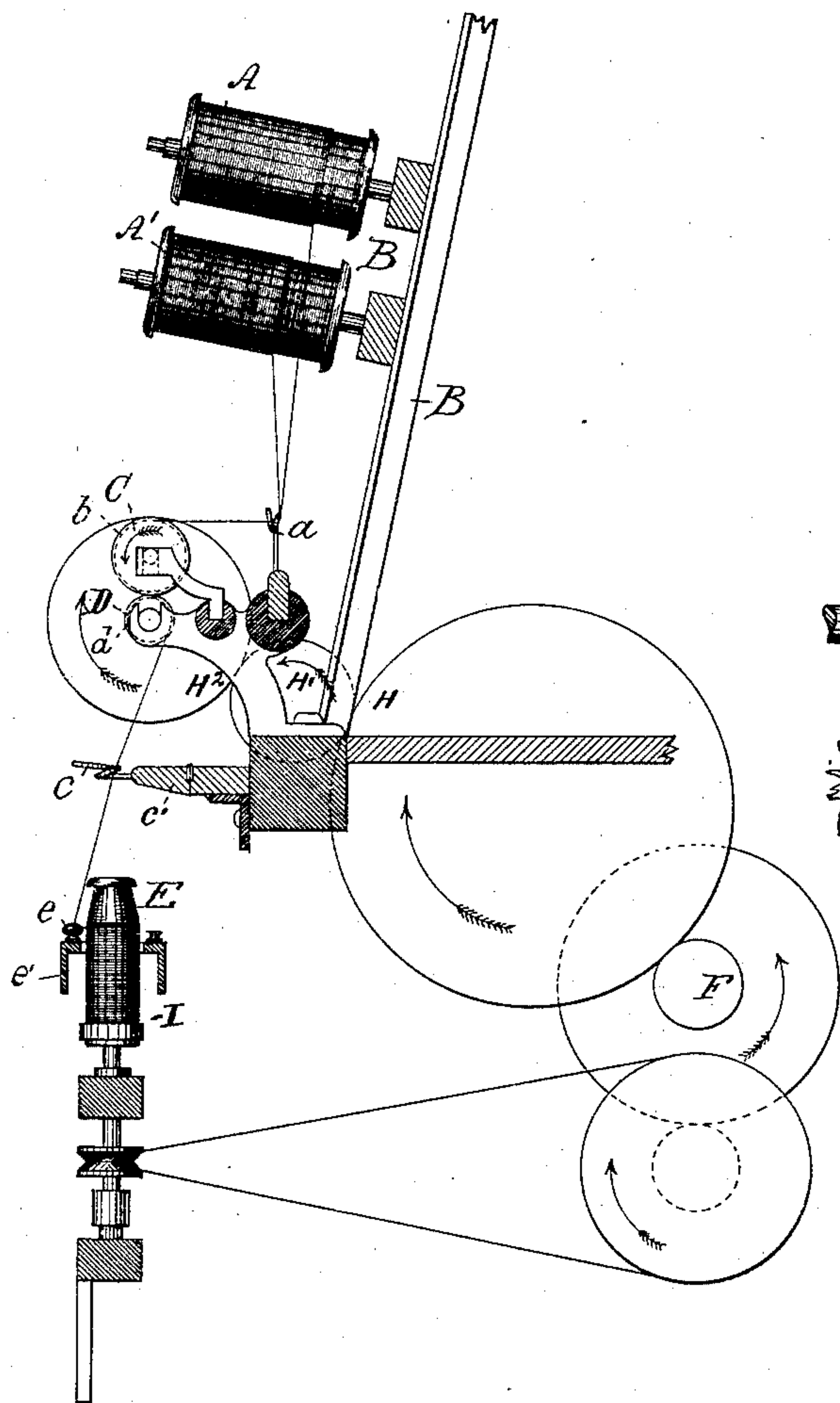
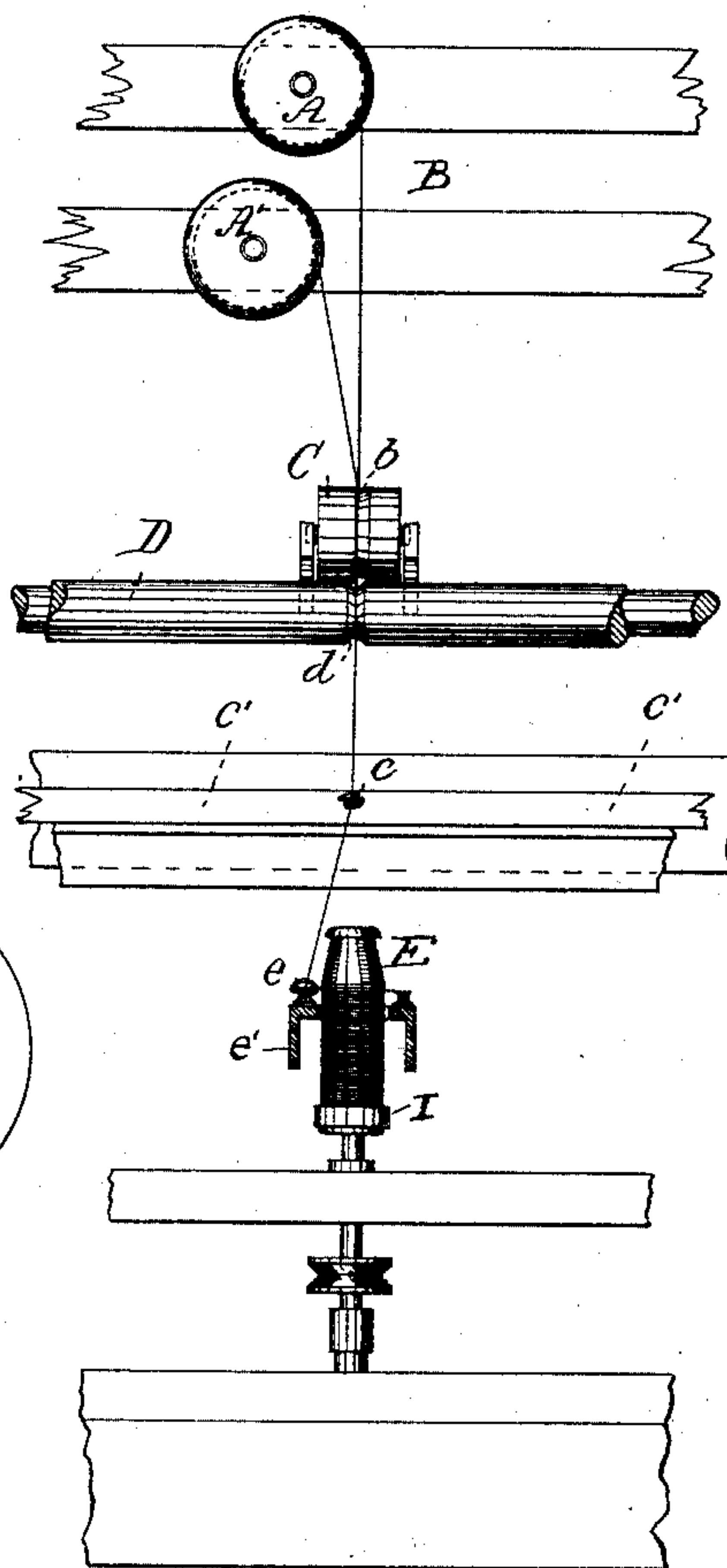


Fig. 2.



WITNESSES.

Remann Bornmann,
Thomas M. Smith.

INVENTOR.

Henry F. West,
By J. Walter Douglas,
Atty.

UNITED STATES PATENT OFFICE.

HENRY F. WEST, OF GLOUCESTER CITY, NEW JERSEY.

MACHINE FOR DOUBLING AND TWISTING YARNS.

SPECIFICATION forming part of Letters Patent No. 371,235, dated October 11, 1887.

Application filed May 27, 1887. Serial No. 239,514. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. WEST, 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.

My invention relates to certain improvements in machines for twisting yarns of the type shown and described in the Letters Patent No. 343,208, dated June 8, 1886.

The main object of my invention is to improve the twisting and doubling of yarn or other similar material—that is to say, to more thoroughly and economically twist the fibers of the yarn into the body thereof—to make a more uniform and smoother twist and a much better thread by laying the strands of yarn or other material more evenly together, whereby the value of the product will be much improved; and a further object of my invention is to obviate the catching together of the threads or the breaking down of ends while being twisted or doubled, and this is especially important at the point of delivery of the thread or yarn from the top to the bottom roller, because with the commoner yarn or material of a similar nature containing seeds and notes the tendency of it has been, while being twisted or doubled on a machine of the ordinary well-known type, for the threads to catch together, especially at the above-mentioned point, and to constantly break down, incurring considerable loss of material and expense as well as labor and time in repairing the damage, whereas it is the object and purpose of my invention to obviate these objectionable features and results and to reduce the waste to a minimum. The means by which I accomplish these ends will be described hereinafter, and the features of improvement in said machines specifically pointed out in the claims.

Previous to my invention three principal ways of doubling and twisting yarns were resorted to: first, placing the spools (two or more) in a creel and carrying the several threads from the spools to a point at which they were brought together as they passed over the top roll and between it and the lower roll to the twister-spindle; second, winding a large number of threads upon the warper-beam and carrying two or more of these threads over and

between the rolls to the twister-spindle, (in both of the above-enumerated cases the rolls were plane-surfaced rolls;) and, third, using the doubling-spooler—that is, doubling upon one spool as many threads (two or more) as were to be twisted, and then placing the spool on the twister and twisting the strands together as in the other cases, the last mentioned being the most improved of the three ways, but, however, the most expensive in cost of labor, and in common with the other two ways, though in a less degree, subject to difficulties which it has been deemed eminently desirable to obviate, as is well understood by those using such machinery, and to obviate which is the end sought to be accomplished by my invention.

My invention consists in providing the top and bottom rolls, respectively, of a machine for twisting yarns with narrow grooves or recesses, as hereinafter more particularly explained.

In the accompanying drawings I have shown my invention in a form found practically efficient, and in which 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 showing also, in section, the traveler-ring and its support.

Referring to the drawings for a further description of my invention, A and A' are the spools on which the yarn is previously wound, and which are supported in a creel, B, of the construction and in the manner heretofore well understood, and the thread is carried from each spool through a guide, *a*, to the top roll, C. This top roll, C, is provided with a saw-tooth-shaped groove or recess, *b*, while the lower roll, D, has preferably a V-shaped groove or recess, *d*. It is nevertheless to be understood that the respective depths of the grooves or recesses *b* and *d* in the top and bottom rolls, C and D, must be such as to accommodate yarn or threads, (of whatever given ply,) which are to be passed around the grooves or recesses, to be hereinafter more particularly described.

The yarns or threads, as brought together through the guide *a*, are passed one and a half time or more around the narrow saw-tooth-shaped groove or recess *b* in the top roll, C,

and thence pass one-half or more times around the narrow groove or recess d in the bottom roll, D, through a second eye, e , in the guide-board e' , to the traveler e in the traveler-ring E, mounted on its support e' , through which they pass to the bobbin I, and are twisted and wound upon the bobbin in the usual well-understood manner. 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 or driven roll, C, receives its rotatory motion from its frictional contact with the bottom or driving roll, D.

The principal advantages incident to the use of the saw-tooth and V shaped grooved or recessed top and bottom rolls are, first, that greater uniformity and regularity of tension are secured, and consequently there is less breaking down of ends; but, however, in any event the waste is reduced to a minimum, while, by practical demonstration of the invention, the saving has been in the neighborhood of ninety per cent.; second, when a thread breaks down it will not become entangled with the neighboring threads, but will simply pick itself up automatically and be wound around the narrow groove in the top roll until this groove is filled so far as to bring the yarn or thread out in a line with the plane surface on each side of this top roll, C, ultimately causing the stoppage of this roll's rotation; third, the threads pass in a straight course around the grooves in the respective rolls, and hence the wasteful results attending the use of the ordinary plane surfaced rolls for such purposes are entirely obviated, and the making of any other doubling than the one designed or the intended ply prevented, and when the band drops off the whirl the slack

yarn confined in the narrow groove is automatically picked up and wound or lapped around the same; and, fourth, the finished product is far superior to that heretofore produced, because there is greater uniformity in the twist or laying-up of the strands and long fibers, due to the character of grooved rolls used in the operation, and the finished thread is hence much better, because an opportunity is given it in the twisting and doubling operation to dispose of any motes or seeds that the yarn or other material being treated may contain, and therefore, notwithstanding the seeming simplicity of this invention, it is, as a matter of fact, of much practical importance and value in the particular art to which it belongs.

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

1. The combination of a driving-roll having a narrow groove or recess with a top roll having a groove or recess therein, substantially as and for the purposes set forth.

2. The combination, with a bottom plane-surfaced roll with a narrow groove therein, of a top roll with a saw-tooth-shaped groove therein, substantially as and for the purposes set forth.

3. The combination of a driving-roll provided with a V-shaped groove and a driven roll with a saw-tooth-shaped groove, substantially as shown and described, for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY F. WEST.

Witnesses:

THOMAS M. SMITH,
GEO. W. REED.