

T. A. BOYD.
WINDING MACHINE FOR YARN AND THREAD.
APPLICATION FILED AUG. 31, 1912.

1,062,562.

Patented May 20, 1913.

2 SHEETS-SHEET 1.

Fig. 1.

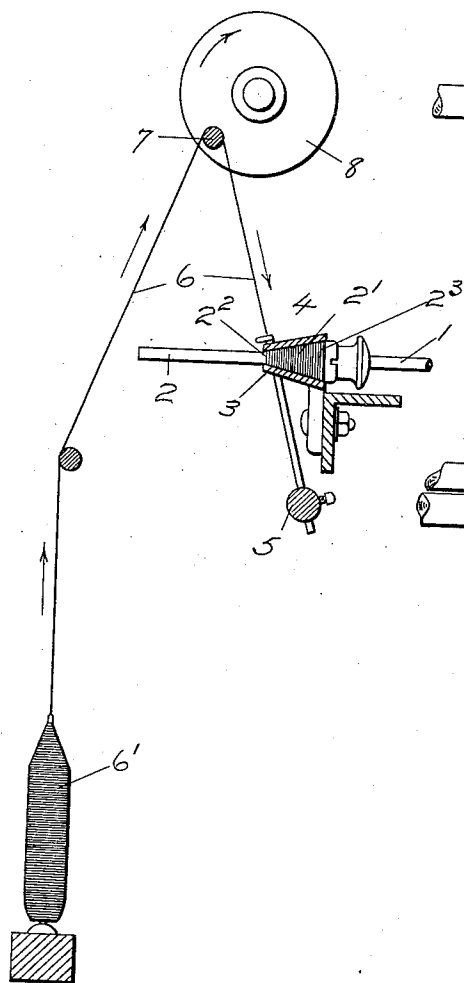
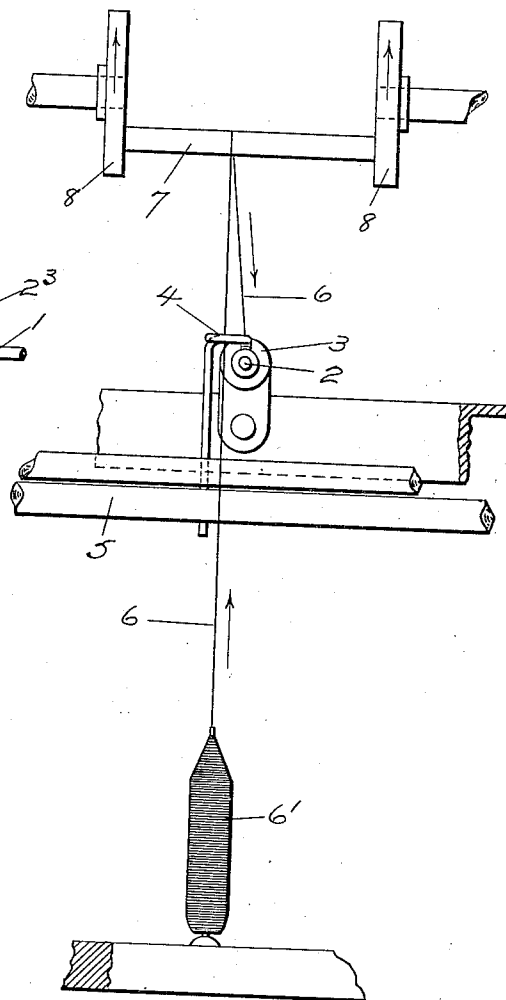


Fig. 2.



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Fig. 3.

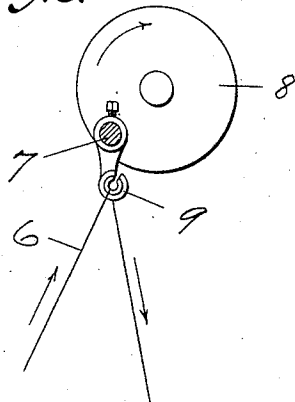


Fig. 4.

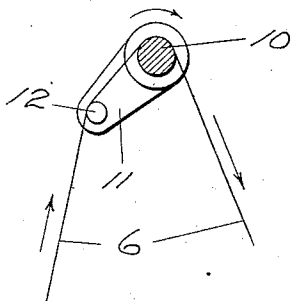


Fig. 5.

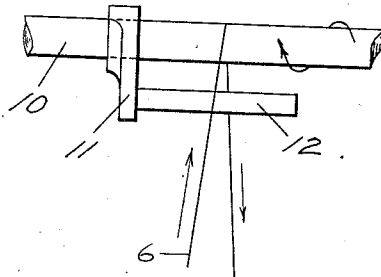


Fig. 6.

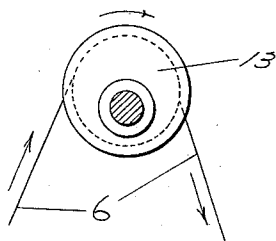
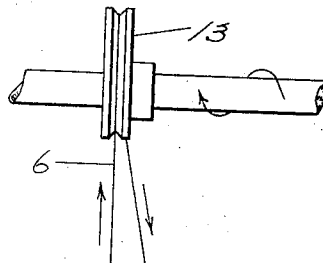


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS A. BOYD, OF GLASGOW, SCOTLAND.

WINDING-MACHINE FOR YARN AND THREAD.

1,062,562.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed August 31, 1912. Serial No. 718,154.

To all whom it may concern:

Be it known that I, THOMAS ALEXANDER BOYD, a subject of King George of Great Britain and Ireland, and residing at Shettleston Iron Works, Glasgow, Scotland, have invented certain new and useful Improvements in Winding-Machines for Yarn or Thread, of which the following is a specification.

My invention relates to winding machines and particularly to machines for winding bobbins, pirns, cops or the like, having conical ends, the object of my invention being to provide a compensating device between the pirn which is being wound and the cop from which the yarn is being drawn, so that the delivery from the latter may be at substantially constant speed in spite of the varying speeds at which the yarn is taken on at different points on the conical nose of the pirn during the drive of the latter at constant speed.

In the accompanying illustrative drawings, Figures 1 and 2 are more or less diagrammatical front elevation and vertical transverse section respectively of so much of a winding machine as is necessary to illustrate the application of my invention thereto; Fig. 3 is a side elevation of a modified form of compensator; Figs. 4 and 5 are front and side elevations of another form of compensator; and Figs. 6 and 7 are similar views of a fourth construction.

In building pirns, bobbins, cops, etc., the usual practice is to form a coned portion on which conically wound layers are superposed, the yarn being guided up and down and the coned building section gradually rising as the bobbin is formed in well understood manner. A difficulty incident to this method of winding is caused by the different peripheral speeds at different points on the coned nose of the bobbin. Thus at the apex of the cone the peripheral speed is much less, and much less yarn is drawn on the bobbin at this point on a single revolution, than at the base of the cone where the peripheral speed is greater and more yarn is consequently taken on. This results in a variable speed of delivery from the feed cop and an uneven tension on the yarn. Various devices have been proposed to meet this difficulty, but so far as I am aware these have consisted of sag bars resting on the thread by gravity or of brake devices working with varying pressure upon the feed

cops. I now provide a positively operated compensator interposed between the delivery cop and the bobbin being wound, which serves to compensate wholly or in large part for the varying speed at which the bobbin, rotating at constant speed, takes on its conical nose the yarn delivered from the feed cop, so that I now obtain a substantially constant speed of delivery of the latter, and thus a substantially uniform tension.

In Figs. 1 and 2 the arrangement shown comprises a pirn spindle, carrying a pirn 2 which passes through the slotted cup 3. The thread guide 4 is mounted on a rocker shaft 5, all as in ordinary use. Above the pirn and at right angles thereto, I arrange my compensator, here comprising a take-up wire 7 extending eccentrically between the two positively driven disks 8, 8. The drive of the latter is predetermined to make one revolution for one complete traverse to and fro of the thread guide 4. The thread 6 is carried from the feed cop 6' up over the take-up wire 7, and down through the guide 4 to the pirn 2. The position of the take-up wire 7 is so predetermined with relation to the guide 4 that the wire 7 will rise and take-up the slack in the yarn 6 during the period in which the thread guide 4 feeds from the mid-point of the conical nose of the cop to the apex of the latter and back again to said mid-point; while the wire 7 will then lower and let off the yarn, while the guide is progressing from said mid-point on the cop nose to the base of the cone and back again; and so on. It will be understood that the taking up and letting off of the yarn by the eccentric 7 compensates approximately for the progressive variation in speed at which the yarn is taken on by the pirn as the latter is wound back and forth upon the conical nose of the pirn. Obviously the distance at which the wire 7 is placed from the center of the disks 8 may be varied as required by the greater or less amount of compensation necessary to secure the drawing of the yarn from the feed cop at uniform speed.

To facilitate the threading of the yarn on the compensation, I have provided, as shown in Fig. 3, an open hook 9 hanging freely from the wire 7. In rethreading after a break, the knot may be made and the yarn then lifted and dropped into the open eye of the hook, instead of having to carry the broken end over the wire 7 before the knot

is made. Obviously the hook performs the same compensating function as the wire, the travel of which it follows.

In Figs. 4 and 5, instead of mounting the eccentric wire between two disks on separate shafts, as in Figs. 1 to 3 I provide a continuous shaft 10 on which I mount in predetermined position, clamp 11 carrying an arm eccentric to the shaft, the function of which is substantially the same as in the previously described arrangement. So in Figs. 6 and 7, I have mounted on the shaft a grooved cam 13, the take-up and let-off action of which is substantially the same as in the other constructions.

I claim as my invention:—

1. In a winding machine, a thread guide having a back and forth motion to build the conical nose of a pirn or the like and a positively driven rotary compensator engaging the thread in advance of said guide and having a positive take-up and let-off motion to maintain the speed of delivery from the feed, substantially constant irrespective of

the variation of speed at which the thread is taken up by the pirn in winding from the base to the apex and vice versa on the conical nose of the latter.

2. In a winding machine, a thread guide having a back and forth motion to build the conical nose of a pirn or the like and a positively driven eccentric engaging the thread in advance of said guide and having a positive take-up and pay-off motion to maintain the speed of delivery from the feed, substantially constant irrespective of the variation of speed at which the thread is taken up by the pirn in winding from the base to the apex and vice versa on the conical nose of the latter.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

T. A. BOYD.

Witnesses:

JAMES CUNNINGHAM,
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