J. & T. A. BOYD.

Machine for Winding Yarn.

No. 212,888. Patented Mar. 4, 1879.

FIG. 1.

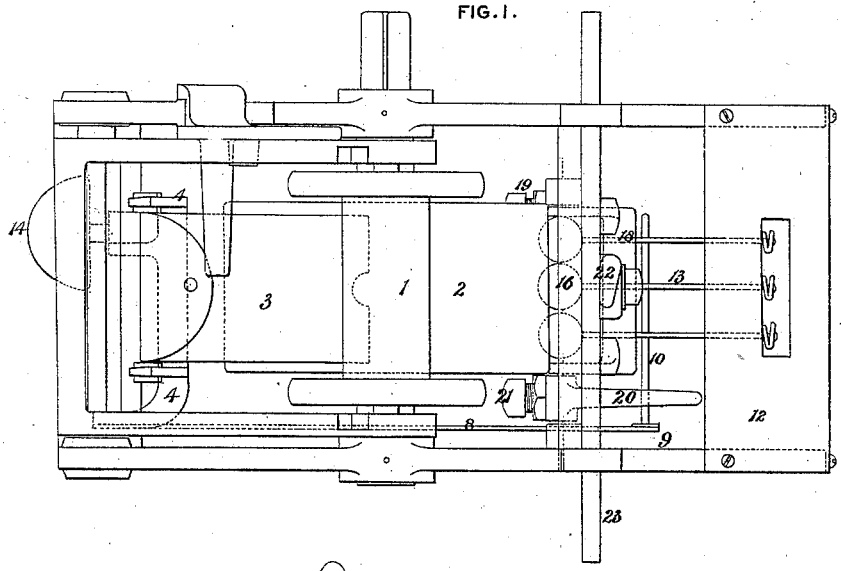
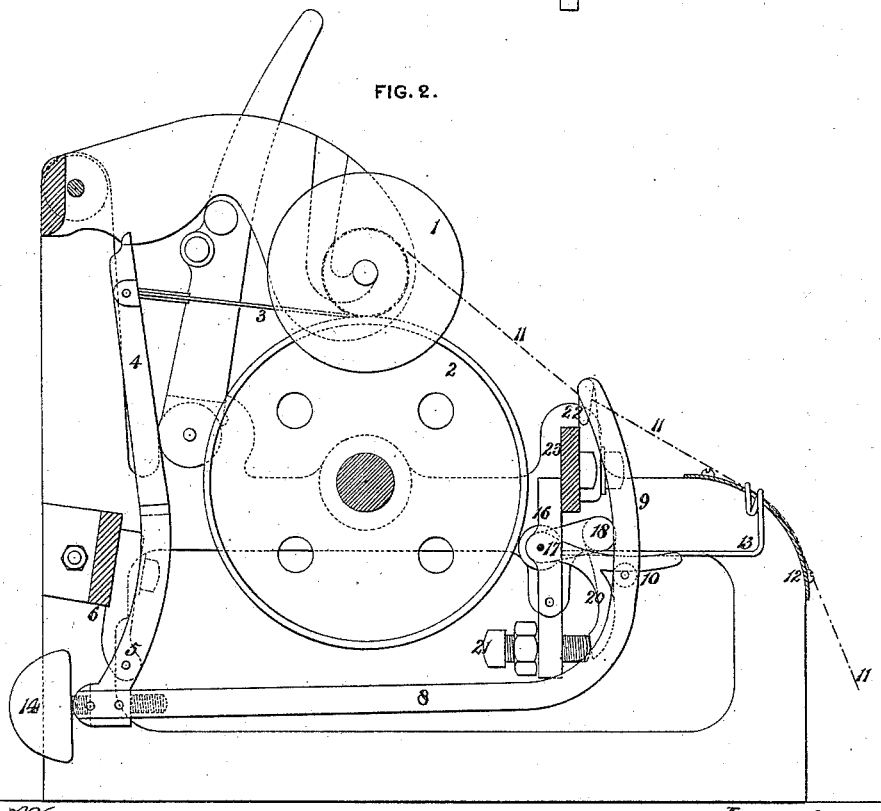


FIG. 2.



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UNITED STATES PATENT OFFICE.

JOHN BOYD AND THOMAS A. BOYD, OF GLASGOW, SCOTLAND.

IMPROVEMENT IN MACHINES FOR WINDING YARN.

Specification forming part of Letters Patent No. **212,888**, dated March 4, 1879; application filed April 29, 1878: patented in England, December 1, 1874.

To all whom it may concern:

Be it known that we, JOHN BOYD and THOMAS ALEXANDER BOYD, of Glasgow, in the county of Lanark, Scotland, have invented certain Improvements in Machines for Doubling and Winding Yarn or Thread, of which the following is a specification:

The object of our invention is to contrive a more sensitive and quickly-acting detecter arrangement for doubling winding-machines than that invented by us in which a separate interposing slip is provided for each of the set of yarn or thread ends that are being wound on the same bobbin. For this purpose we use one comparatively broad interposing slip, and provide a light detecter-lever for each separate end, the detecter-levers of the set of ends being all arranged in an improved manner in connection with the single-slip lever, so that when any one is dropped because of its yarn or thread breaking or failing, the slip-lever is made to interpose its slip between the frictional driving-drum and the bobbin.

In the accompanying drawings, Figures 1 and 2 are, respectively, a plan and a vertical section, showing one doubling winding-bobbin and the parts connected therewith.

The winding-bobbin 1 rests on a frictional driving-drum, 2, which may be one of several in the same machine, all fixed on the same horizontal shaft, the general arrangement being one very commonly adopted in machines for the same purpose. The single interposing slip 3, which by our present invention we use in connection with two or more yarn ends, (instead of having a separate slip for each end,) is jointed to the upper end of a lever, 4, which is in the form of a frame, and is centered on a horizontal wire, 5, held by a bracket or frame-piece, 6. The center or axis 5 of the lever 4 is situated behind the driving-pulley 2, and at a slightly lower level than the bottom of that pulley, and attached to the lever 4 there is a horizontal arm, 8, which extends forward and has its front end, 9, curved upward and provided with a transverse horizontal pin, 10.

The threads or yarns 11 pass over a curved guide-plate, 12, and across a slot formed in such plate, and they are entered each through a guide-hook or curl formed on the front end of a light detecter-lever, 13, the normal position of the guide-hooks or curls being in the slot of the guide-plate 12. The wire guide or detecter levers 13 are centered at their back ends, so as to be above the transverse pin 10 of the forward arm, 8 9, of the slip-lever 4.

Each yarn or thread 11 supports or partly supports its own light detecter-lever 13; but on an end breaking or failing, the corresponding detecter-lever 13 falls upon or with the transverse pin 10 of the slip-lever, and this lever 4 8 9, the action of which is suitably regulated by means of a weight, 14, adjustable by a screw, is thereby instantly made to turn, so as to put forward and enter the slip 3 in between the driving-pulley 2 and the bobbin 1. The interposing of the slip 3 in this way at once stops the motion of the bobbin 1, the action generally taking place so rapidly, with our improved arrangements, as that the broken ends do not get wound upon the bobbin farther than admits of their being quite easily got hold of for piecing.

The forward arm, 8 9, of the slip-lever is, by preference, extended up, as shown, so that the worker can conveniently take hold of it to sustain the parts in the proper positions while starting the winding action.

The light detecter-levers 13 have, by preference, spherical centers formed on them by casting, and the number for each set of yarns or threads is centered in a little bracket, 16, and on a wire, 17.

The strain put on the yarns or threads 11 by the light detecter-levers 13 may be varied without adjustable weights being applied to the levers themselves, by adjusting the counterbalance-weight 14 of the slip-lever 4 8 9, so as to bear up the light detecter-levers 13 more or less.

When the winding operation is proceeding, the light detecter-levers 13 are prevented from being raised too high or to different heights by the yarns or threads by a piece, 18, which is centered on the wire 17, and is, at one side, formed with a leg which rests against an adjusting screw-pin, 19. This piece 18, while heavy enough to bear down the light detecter-levers 13 to a position determined by the adjusting-screw 19 against the strain of the yarns or threads, yet allows the levers 13 to be lifted up for threading by means of the arm 9 8 of

the slip-lever. A second loose piece, 20, also centered on the wire 17, and formed with a leg which rests against an adjusting screw-pin, 21, is provided, to bear on the cross-pin 10 of the slip-lever arm 8 9, for the purpose of putting down that pin 10 a little below the under sides of the light detecter-levers 13, so that any one of these levers which loses the support of its yarn or thread may have a short distance to drop on the cross-pin 10.

The threads or yarns 11, after passing separately through the hooks or curls of the light wire levers 13, proceed collectively, in the usual way, through a hook or guide-eye, 22, on a horizontal bar, 23, to which the ordinary traverse motion is imparted, and thence to the bobbin 1.

We do not desire to claim, in this application, the devices for raising the spool-holder and slip-levers, or the combination of the slip-lever and spool, or the arm 20, as these features form subjects of separate applications filed by us on the same date as this application; but

We claim as our invention—

In a yarn-winding machine, the lever 4 8 9, carrying on one arm the slip 3, and on the other arm the pin 10, in combination with the pivoted detecter-levers 13, arranged, on the breaking of a thread, to strike said pin 10 and overbalance the lever 4 8 9, and thereby interpose the slip 3 between the drum and spool, substantially as described.

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THOMAS ALEXANDER BOYD.

Witnesses:
EDMUND HUNT,
LOCK MOORE.