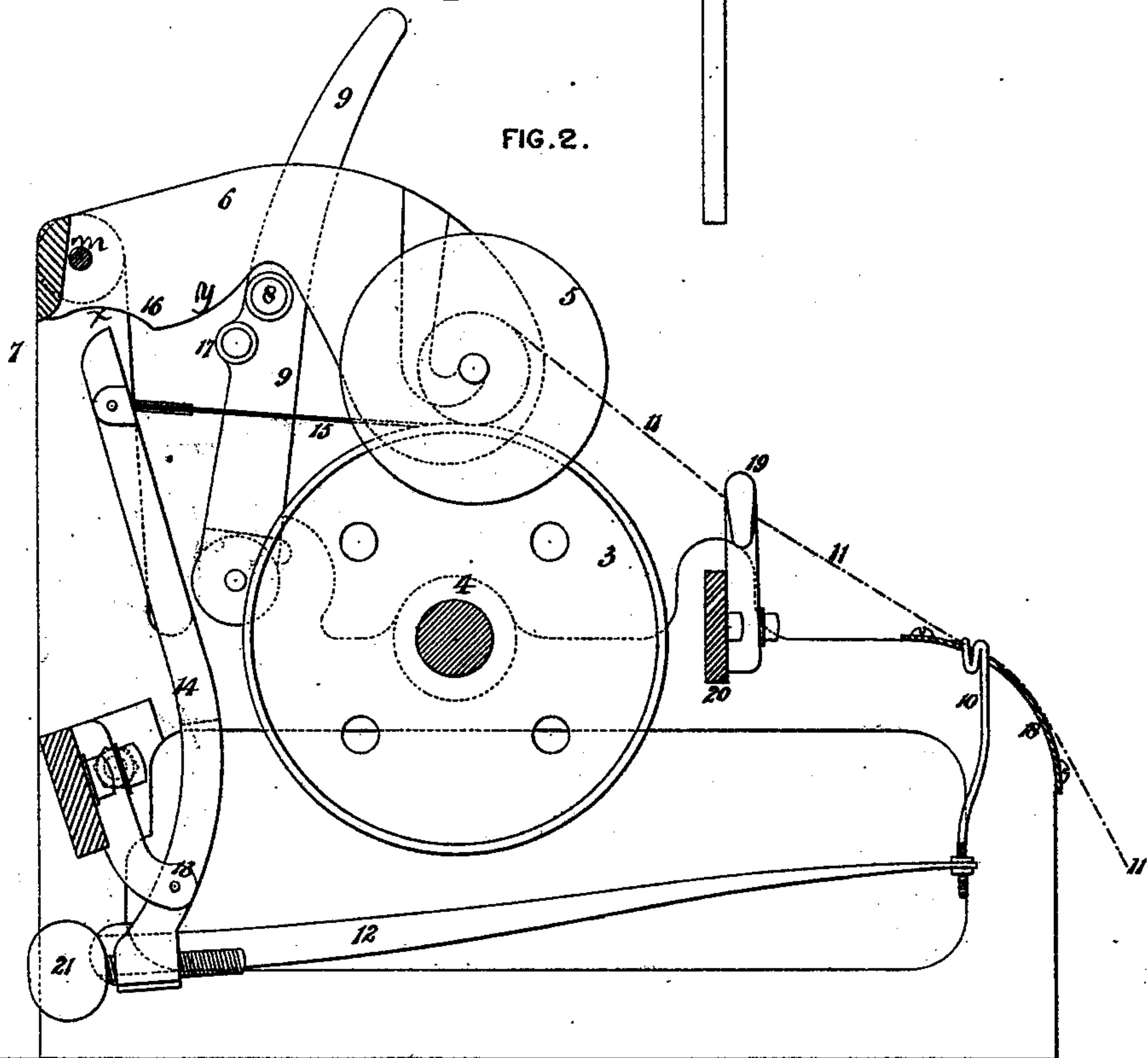
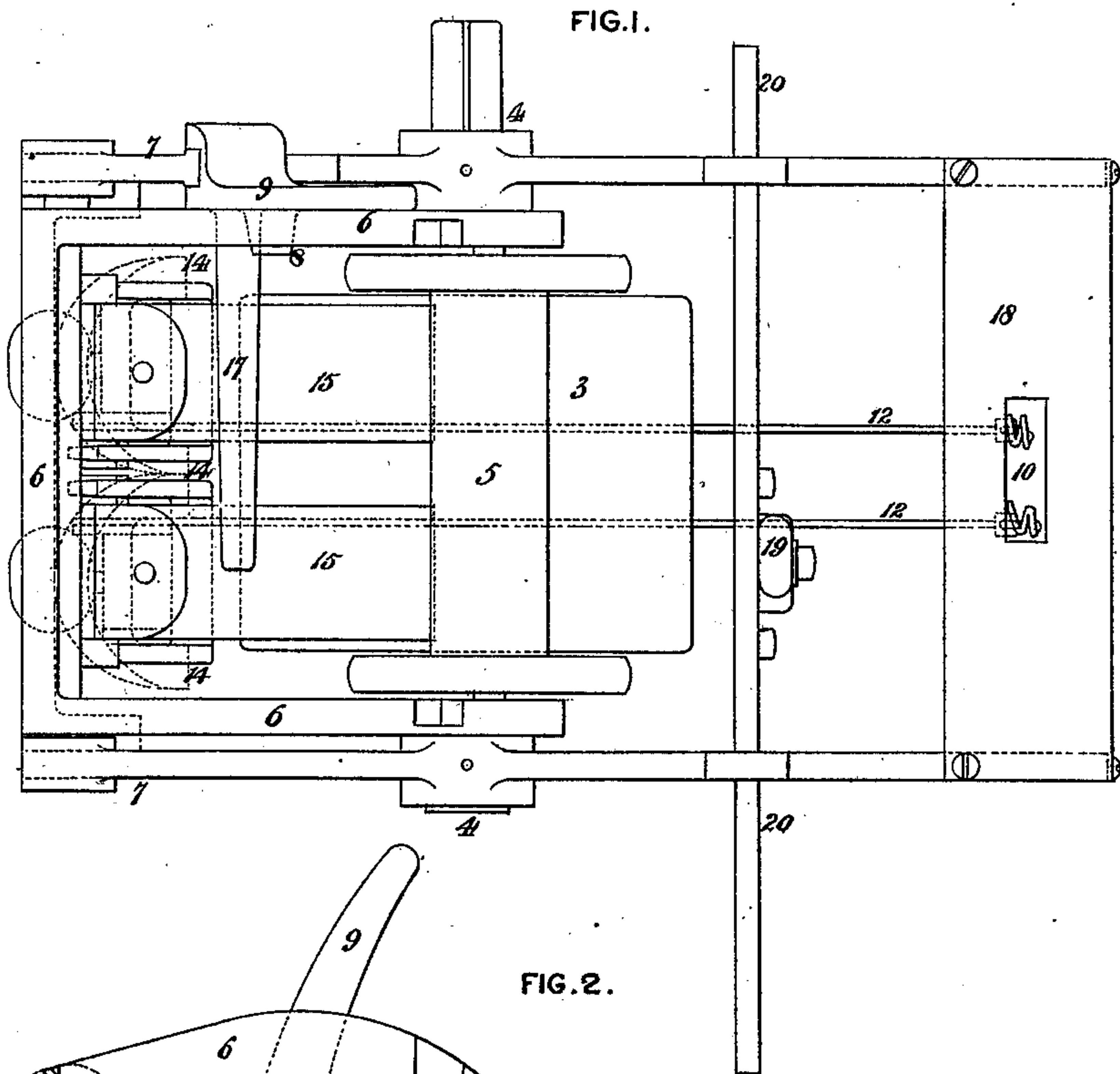


J. & T. A. BOYD.
Machine for Winding Yarn.

No. 221,772.

Patented Nov. 18, 1879.



Witnesses
Henry Housman
Harry Smith

Inventors } John Boyd
and
Thomas A. Boyd
by their Attorneys
Housman and Son

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. **221,772**, dated November 18, 1879; application filed April 29, 1878; patented in England June 27, 1873.

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.

Our invention relates to certain improvements in the construction of machines for doubling and winding yarn, in which, when any one of the ends of yarn or thread breaks, the winding action is stopped automatically by the insertion of a slip between the bobbin and the winding-drum.

The object of our invention is so to construct such a machine that when an end breaks and the bobbin is stopped the bobbin-carrier may be raised and held in position while the ends are being pieced, and at the same time that the stop-motion devices may be retained in their normal positions, and this object we attain as hereinafter described.

We apply our improvements to the well-known doubling winding arrangement in which the bobbin is carried horizontally, and driven by frictional contact with a revolving pulley or drum, and we pass each end through a detector guide-hook on a lever having a slip of thin metal or other material connected to it, the lever being arranged so as, when losing the support of the yarn or thread, to enter the slip between the driving-pulley and the bobbin, and thereby stop the winding motion.

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 driving pulley or drum 3 is secured to a horizontal shaft, 4, which is made to rotate continuously in any convenient way, and may have on it a number of similar drums with repetitions of various other parts.

Each bobbin 5 is carried above its frictional driving-drum 3 by a two-armed carrier or holder, 6, pivoted to the bracket by a pin, *m*.

A hand-lever, 9, carrying a stud, 8, is pivoted to the frame of the machine, and the under edge of one arm of the bobbin-carrier has a projection, 16, a recess, *x*, between the point

of the said projection and the pivot of the arm, and an inclination or curve, *y*, extending upward and outward from the said projection.

When the hand-lever 9 is in the position shown in Fig. 2 the bobbin-carrier is free from contact with the stud 8 of the said arm; but on moving the latter rearward the stud, acting on the incline or curve *y*, will raise the roller-carrier, and after passing the point of the projection 16 the stud will find a lodgment in the recess *x*, when the carrier will be retained in its elevated position by the lever, and the latter will be retained by the carrier.

A slight effort in moving the lever forward will dislodge the stud from the recess *x*, and the continued forward movement of the lever will result in the lowering of the bobbin-carrier without any sudden shock.

The above-described device is an improvement in mechanism heretofore used for raising, retaining, and lowering a bobbin-carrier, of which mechanism a spring for acting against the operating-lever, and a catch for determining the extent of the lever's movement, form parts.

By our improvement the spring is dispensed with, and the bobbin-carrier is retained in its elevated position by the stud on the lever 9, the carrier being recessed at *x* to receive this stud.

The detector guide hook or curl 10 for each yarn or thread end 11 is fixed to the front end of a long light lever, 12, centered at 13 below and behind the frictional driving-drum 3, and made in the same piece, with a pair of arms, 14, extending up behind the drum.

The pair of arms 14 have connected to them near their upper ends a slip, 15, of thin metal or mill-board or other suitable material, which slip 15, when the apparatus is working properly, has its front edge a little behind the line of contact between the frictional driving-drum 3, and the surface of the bobbin or of the yarn or thread already wound on the bobbin.

When a yarn or thread end, 11, breaks or fails, the corresponding detector-lever 12 14 turns by its weight, so as to enter its slip 15 in between the bobbin 5 and the frictional driving-drum 3, and the motion of the drum tends

to draw the slip farther in. This interposition of the slip 15 at once stops the rotation of the bobbin 5, and the attendant worker then pushes back the hand lever 9, and thereby raises the carrier 6, so as to lift the bobbin quite clear of the slip 15 and drum 3, the carrier remaining in its raised position, owing to the stud 8 on the hand lever getting under the recess *x*, formed on the holder, for the purpose as before described. A second stud, 17, on the hand lever 9 at the same time acts on the back arms 14 of the detector levers, so as to raise the guide hooks or curls 10 up through the slot in the curved breast-plate 18 into convenient positions for being threaded. After the ends are pieced and threaded through the detector hooks or curls 10, and also through the hook 19 on a horizontal reciprocating bar, 20, which imparts the ordinary transverse motion to the yarn or thread ends, the hand-lever 9 is drawn forward and rearranges the several parts in position for the winding operation to proceed.

Each detector-lever 12 14 is partly counter-balanced by a weight, 21, which is attached

by means of a screw-pin formed or fixed on it, so that it can be adjusted with the greatest nicety to suit the strength of the yarn or thread operated on.

We claim as our invention—

1. In a yarn-winding machine, the hand-lever 9, provided with a stud, 8, in combination with the two-armed bobbin-carrier 6, the under edge of one arm of which has the projection 16, the recess *x* on one side of the said projection, and the incline or curve *y* on the opposite side of the same, all as and for the purpose set forth.

2. The combination of the hand-lever 9 with the bobbin-carrier 6 and detector-levers 12 14, the said hand-lever having studs 8 17 for raising the detector-lever hooks when the bobbin-carrier is lifted, substantially as set forth.

JOHN BOYD.

THOMAS ALEXANDER BOYD.

Witnesses:

EDMUND HUNT,

LOCK MOORE.