

(No Model.)

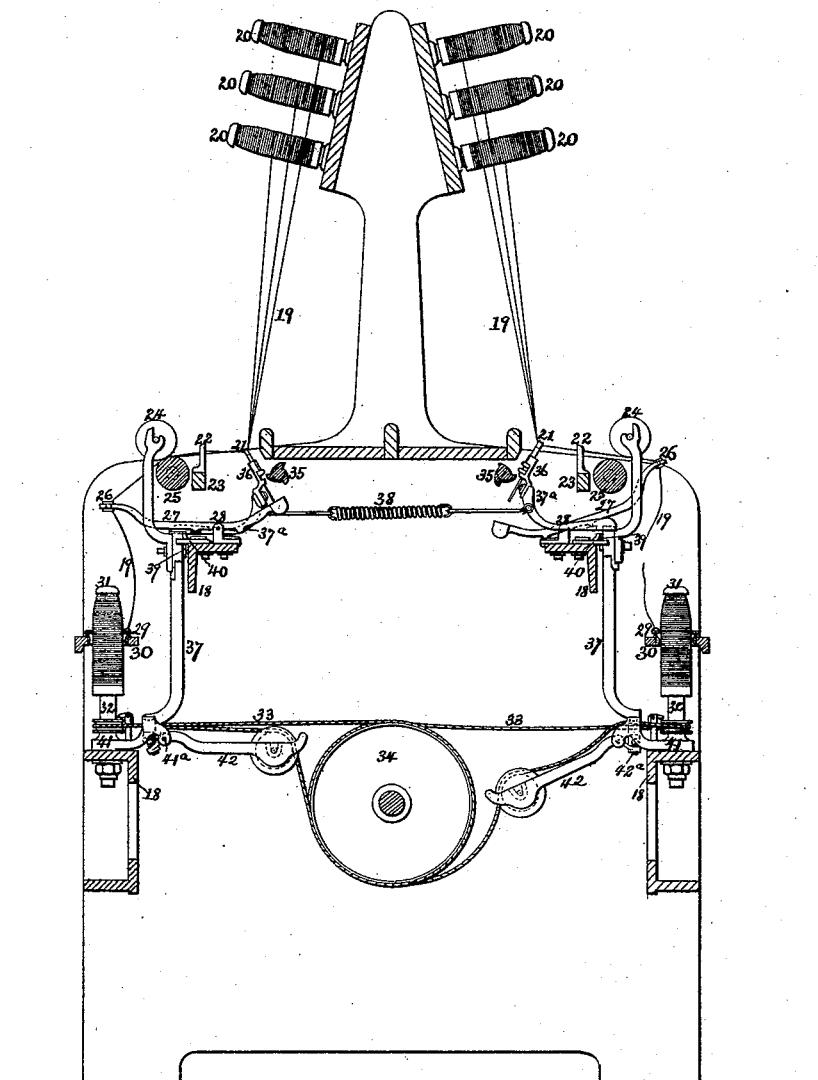
2 Sheets—Sheet 1.

J. & T. A. BOYD.
STOP MOTION FOR TWISTING, DOUBLING, WINDING, OR ANALOGOUS
MACHINES.

No. 492,603.

Patented Feb. 28, 1893.

Fig. 1.



WITNESSES:

John Revell
George Brunnau

INVENTORS

John Boyd and
Thomas A. Boyd
BY
Horner and Horner
their ATTORNEYS

(No Model.)

2 Sheets—Sheet 2.

J. & T. A. BOYD.

STOP MOTION FOR TWISTING, DOUBLING, WINDING, OR ANALOGOUS
MACHINES.

No. 492,603.

Patented Feb. 28, 1893.

Fig. 2.

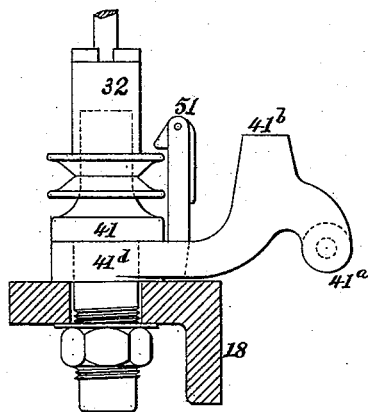


Fig. 4.

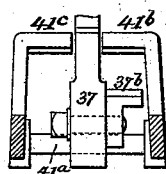


Fig. 5.

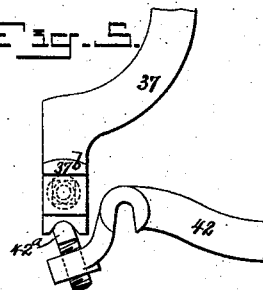


Fig. 7.



Fig. 3.

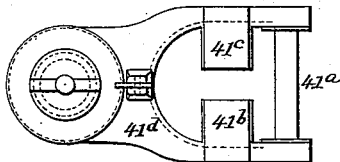
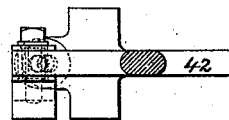


Fig. 6.



Fig. 8.



WITNESSES:

John Revell
George Baumann

INVENTORS

John Boyd and
Thomas A. Boyd
BY
Horton and Horton
their ATTORNEYS

UNITED STATES PATENT OFFICE.

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

STOP-MOTION FOR TWISTING, DOUBLING, WINDING, OR ANALOGOUS MACHINES.

SPECIFICATION forming part of Letters Patent No. 492,603, dated February 28, 1893.

Application filed November 3, 1891. Serial No. 410,811. (No model.) Patented in England December 28, 1888, No. 18,920.

To all whom it may concern:

Be it known that we, JOHN BOYD and THOMAS ALEXANDER BOYD, subjects of the Queen of Great Britain and Ireland, and residents of Glasgow, county of Lanark, Scotland, have invented certain Improvements in Stop-Motions for Twisting, Doubling, Winding, and Analogous Machines, (for which we have obtained British Patent No. 18,920, dated December 28, 1888,) of which the following is a specification.

Our invention comprises certain improvements in stop motions for twisting, winding and analogous machines and while they are designed to be applied to machines of the kind referred to in patents obtained June 7, 1881, No. 242,591, November 28, 1882, No. 268,178, August 5, 1884, No. 303,209, and September 15, 1885, No. 326,391, are also advantageously adaptable to various other kinds of automatic twisting machines.

Our present improvements are shown in two accompanying sheets of explanatory drawings and are hereinafter described with reference to said drawings.

Figure 1 is a transverse vertical section of a twisting frame or machine similar to what is described in the earlier specifications hereinbefore referred to, the stopping devices being shown as applied on both sides of the frame, the parts on the left hand side being shown as in working position, and the parts on the right hand side being shown in the positions assumed when a thread breaks.

The figures on Sheet 2 of the drawings are equally enlarged views of details, Fig. 2 being a sectional side elevation of the improved socket; Fig. 3, a plan view and Fig. 4 a sectional front elevation of part of the same. Fig. 5, is a side elevation of the lower part of the top roller lifting rod, 37, and part of the band-tightening and slackening lever 42; Fig. 6 a plan view of the same; and Figs. 7 and 8 front and top views of the adjustable screw pin.

Our improvement relates to the socket or bearing piece, 41, for the spindle, 32, (used either with ring and traveler as shown in Fig. 1, or with a flyer) and the parts are partly shown in Figs. 2, 3, 4, 5, 6, 7 and 8, (as well as in Fig. 1.)

The improvement consists as shown in Fig.

1, in forming in one piece with the socket, 41, or having rigidly fixed thereto, a fulcrum, 41^a, for the band tightening and slackening lever, 42, also two projecting lugs, 41^b, 41^c, for guiding the top roller lifting rod, 37, and either being used when required for gripping the band, 33, in conjunction with the grip, 37^b, on the lifting rod. Or as shown in Fig. 2, the bracket-like piece, 41^d, made with the parts mentioned may be separate from the socket, 41, and be gripped and fixed between a collar on the socket and the rail. The socket, 41, has also fitted to it when required a catch, 51, to prevent the spindle, 32, from being drawn out of its socket in the ordinary working of the machine. This holding-down catch, 51, has its center at a level above the spindle pulley on a small pin in a fork formed at the top of a stud or a part projecting up from the socket, 41, or from the bracket, 41^d, or from the rail, 18, and is made with a bevel by acting on which the spindle pushes it aside when being entered into the socket, while a tail formed at the back of the catch acts as a weight to return it into the catching position and serves for moving it aside by hand when required for the purpose of taking out the spindle.

In Figs. 5, 6, 7 and 8, we show an improved adjustable device to be fitted to the lever, 42, when combined with the detector stop mechanism as shown in Fig. 1. This device consists of a screw pin 42^a, screwed into the front end or short arm of the lever, 42, and made with a transversely rounded cross head to fit a gab or notch formed at the bottom of the rod, 37. The pin, 42^a, is in Figs. 7 and 8, shown detached and in Fig. 7 as at right angles to the position in which it is shown in Figs. 1 and 5. It serves to lift and guide the rod, 37, and the gab at the bottom of the rod prevents the pin from turning in the end of the lever, 42. It also serves for adjusting accurately the position of the lever, 42, when its inner end is raised. The pin is adjusted by screwing it in or out one or more half turns while held apart from the rod, 37.

The operation of the mechanism shown in Fig. 1, is much the same as in our earlier machines. The strands, 19, to be twisted together are led from bobbins, 20, or it might be from cops, through detectors, 21, thence

through a guide, 22, carried by horizontal traverse bar, 23, through between the driven and driving rollers, 24 and 25, and through an eye, 26, at the front end of the thread guide starting and detector lever, 27, fulcrumed at, 28, through the ring traveler, 29, carried and guided by ring and ring rail, 30 (or in the case of flier twisting, through the flier curl) to the bobbin, 31, whose spindle, 32, is driven by a cord, 33, passing on each side of the vertical rod, 37, over the tension pulley and round a cylinder or groove pulley, 34, on a driven shaft. When any thread breaks behind the feed rollers 24, 25 (or even in front of those rollers as shown at the right hand side of Fig. 1) its detector, 21, falls into the path of the rotating cam, 35, and the latter pushes the detector holder, 36, fixed to (as shown) or made in the same piece with the long curved arm, 37^a, and vertical rod, 37, over against the pull of the spring, 38, until the catch, 39, on the rod, 37, escapes from the catch and guiding piece, 40, fixed on the main top rail 18 as described in our above mentioned patent No. 326,391. Then the weighted inner end of the lever, 42, will raise the rod, 37, and with it its detector holder and roller holder with the driven roller, 24, clear of the driving roller, 25, also raising the detectors, 21, clear of the cam, 35, and also moving the starting lever, 27, from the position in which it is shown at the left hand side, to that in which it is shown at the right hand side of Fig. 1. At the same time the lever, 42, falling, slackens the cord 33, and its front short end rising lifts the rod, 37, and causes its gripping piece, 37^b, to grip the cord, 33, between it and the stationary grip, 41^b, on the spindle socket, 41. The parts are all afterward returned to their working positions by means of the curved lever, 27, which serves the three fold purpose of a thread guide, a starting lever, and a detector lever.

Having now particularly described and as-

certained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. The combination of the weighted lever 42 and vertical rod 37 of a stop motion mechanism for twisting, doubling, winding and analogous machines, with the rail and spindle socket and a bracket having a fulcrum for the weighted lever and guides for the said vertical rod, all substantially as described.

2. In a stop-motion mechanism for twisting, doubling, winding and analogous machines, the combination of the weighted lever 42 and vertical rod 37 carrying a gripping piece, with the rail and spindle socket and a bracket having a fulcrum for the weighted lever and band grips and guides for the rod, substantially as described.

3. In a stop motion mechanism for twisting, doubling, winding and analogous machines, the combination of the weighted lever and vertical rod 37, the rail and spindle socket with a bracket separate from the socket but clamped between the latter and the rail and carrying a pivoted catch for the spindle, a pivot for the weighted lever and guides for the rod, all substantially as described.

4. In a stop motion mechanism for twisting, doubling, winding and analogous machines, the combination of the vertical catch rod 37 having a gab-shaped bottom, with a weighted lever having an adjustable screw pin 42^a with a transversely rounded head adapted to said gab-shaped bottom, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN BOYD.

THOMAS ALEXANDER BOYD.

Witnesses:

ROBERT BERRY,

ROBERT BURNS DONALD.