

(No Model.)

2 Sheets—Sheet 1.

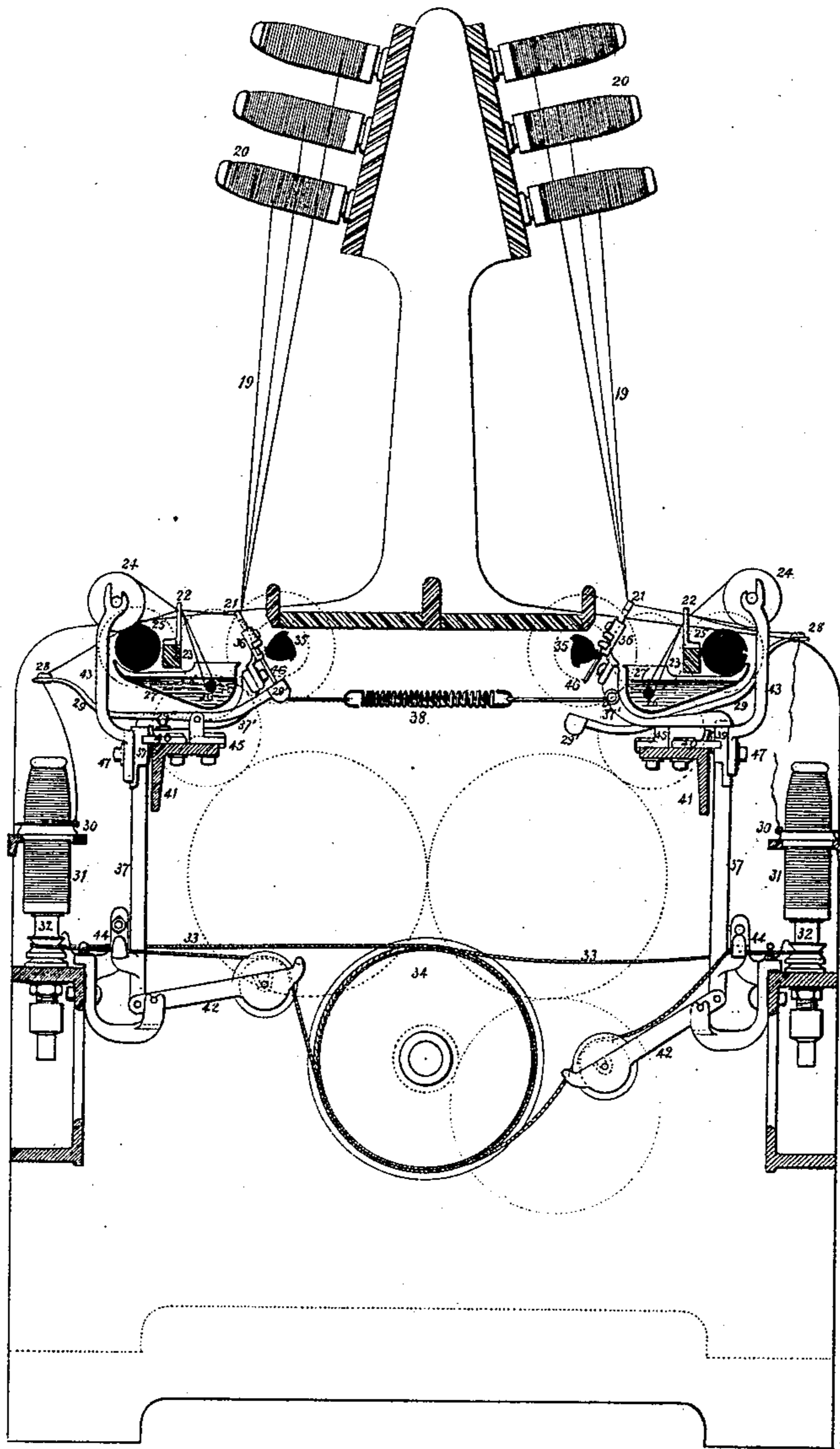
J. BOYD.

STOP MOTION MECHANISM FOR WINDING AND TWISTING MACHINES, &c.

No. 326,391.

Patented Sept. 15, 1885.

FIG. 1.



Witnesses:

John E. Parker
Henry Bossert.

Inventor:

John Boyd
by his Attorneys
Howson and Sons

(No Model.)

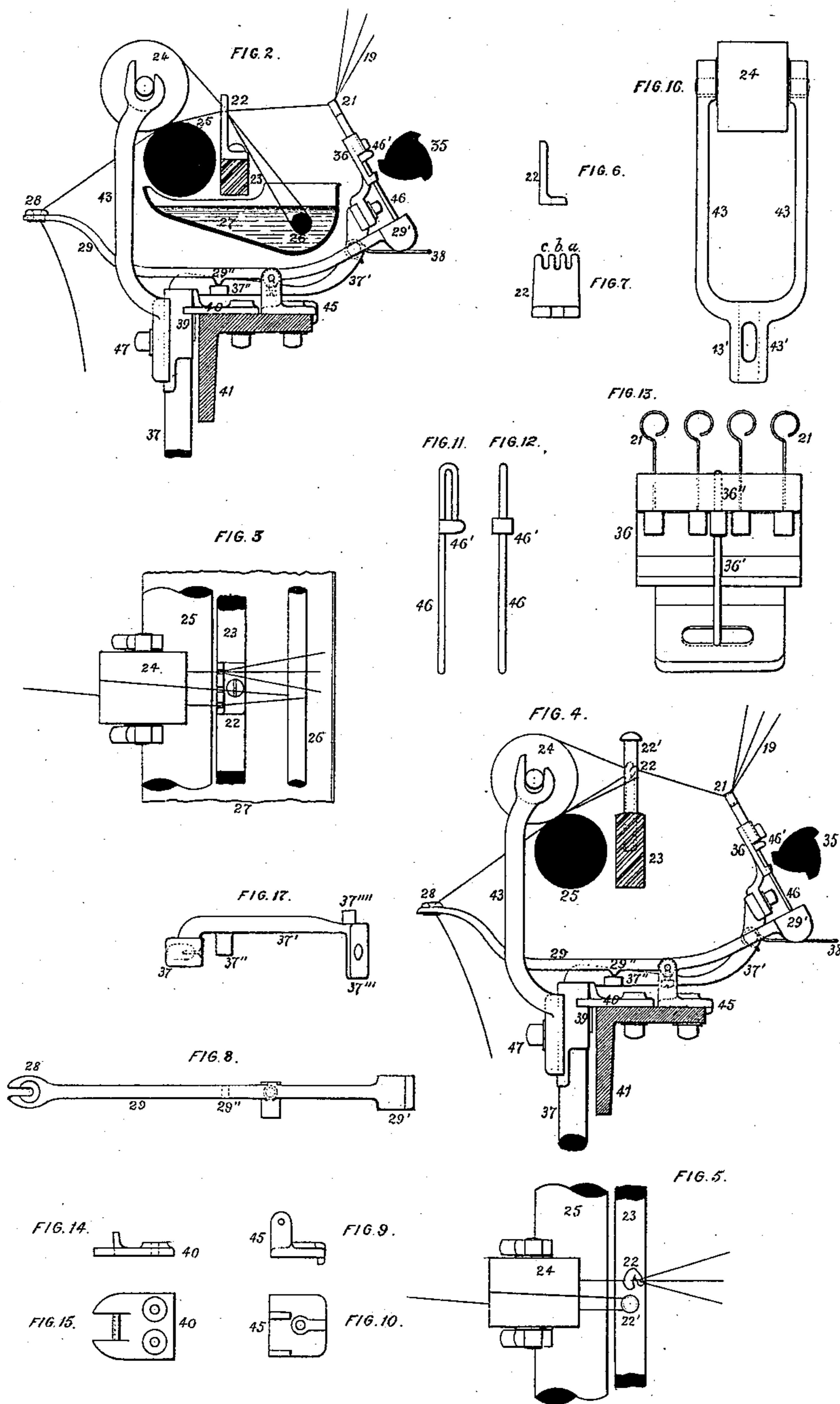
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UNITED STATES PATENT OFFICE.

JOHN BOYD, OF GLASGOW, COUNTY OF LANARK, SCOTLAND.

STOP-MOTION MECHANISM FOR WINDING AND TWISTING MACHINES, &c.

SPECIFICATION forming part of Letters Patent No. 326,391, dated September 15, 1885.

Application filed December 4, 1884. (No model.) Patented in England November 19, 1884. No. 15,171.

To all whom it may concern:

Be it known that I, JOHN BOYD, of Glasgow, county of Lanark, Scotland, in the Kingdom of Great Britain and Ireland, have
5 invented a new and useful Improvement in Stop-Motion Mechanism for Winding and Twisting Machines, &c., of which the following is a specification.

My invention consists of certain improvements in the stop-motion mechanism of winding, doubling, and twisting machines, for which Letters Patent were obtained June 7, 1881, No. 242,591, November 28, 1882, No. 268,178, and August 5, 1884, No. 303,209.

15 In the accompanying drawings, Figure 1 is a transverse vertical section of a twisting-frame similar to that described and illustrated in the letters patent above referred to, but embodying my present improvements.
20 In this figure the stopping devices are shown applied on opposite sides of the frame, the devices on the left-hand side being illustrated as when twisting is in progress, while those on the right-hand side are shown as when a
25 thread has been broken in front of the feed-rollers and the twisting is stopped. The remaining figures of the drawings are detailed illustrations of my present improvements, Figs. 2 and 3 being respectively a sectional
30 elevation and a plan view of my improved stop-motion, provided with a water trough, when wet twisting is in progress. Figs. 4 and 5 are similar views of parts of the stop-motion as adapted for ordinary dry twisting.
35 Figs. 6 and 7 are detached views of the thread-guide used for wet twisting. Fig. 8 is a plan view of the combined thread-guide and starting and detector lever. Figs. 9 and 10 are detached views of the adjustable bracket on
40 which the lever is centered. Figs. 11 and 12 are views of one form of the auxiliary detector. Fig. 13 is a front view of the detector-holder and detector. Figs. 14 and 15 are detached views of the combined catch and guide
45 plate to be fixed to the main rail 41. Fig. 16 is a front elevation of the adjustable roller-bracket; and Fig. 17 is a detached plan view of the curved arm for carrying the detector-holder.

50 Some of the principal parts of the machine

are similar in their construction and operation to those shown and described in the patents above referred to, and I will first briefly describe the main operating parts of the machine as illustrated in Fig. 1.

55 Motion is imparted to the spindles 32 on each side of the frame through the medium of an endless band, 33, passing over a pulley or cylinder, 34, on a main driving-shaft. Each of these bands passes over a grooved roller in
60 a counter-weighted lever, 42, which is pivoted in a bracket fixed to one of the lower rails of the frame of the machine, while the short arm of this counter-weighted lever is pivoted to and supports a vertical rod, 37, carrying at
65 the upper end the detector devices and the upper feed-roll, 24, as hereinafter referred to. One loop of the endless band 33 passes between the gripping devices 44, as described in the aforesaid patents.

70 At the upper end of each rod 37 is a catch-plate, 39, which engages with a guiding-piece, 40, adjustably secured to the rail 41 of the frame of the machine, as shown in Figs. 2 and 4, and to the upper end of this rod 37 is se-
75 cured a curved arm, 37', which has at its outer end an arm, 37'', to which is bolted the detector-holder, similar in construction to those described in the previous patents. Each detector-holder carries weighted detectors 21
80 through eyes on which pass the threads to be twisted. These detectors have enlarged lower ends, which, when the detectors fall, are acted on by the rotating cam 35.

85 The upper feed-roller, 24, when in its lowered position, rests on the lower feed-roller, 25, to which a constant rotary motion is imparted. This roller and the cam 35 may receive their motion from the main shaft, which carries the pulley or cylinder 34, through the
90 medium of suitable gearing, as indicated by dotted lines in Fig. 1. Immediately behind the feed-rollers is the usual traverse-bar, 23, carrying the thread-guides.

95 The parts above described do not differ essentially from the corresponding parts illustrated in the prior patents referred to, and I will now proceed to describe my present improvements.

The bracket 43, which carries the upper

roller, 24, has at its lower end overlapping flanges or ledges 43', Fig. 16, fitting the square head of the rod 37, to which the bracket is secured by a screw-bolt, 47, passing through a vertical slot in the bracket, in order that the latter may be adjusted vertically to the proper position in relation to the lower feed-roll.

On the side of each arm 37' is formed a pin, 37"', to which is connected a spring, 38, this spring serving for two devices on opposite sides of the machine and keeping the rods 37 in contact with the guide-plates 40. The spring also pulls the curved arms 37' of the vertical rods 37, to which it is connected, against the adjustable brackets 45, so that the latter, as well as the plates 40, act as guides for the vertical rods.

To the top of the rail 41 is secured a pivot-piece, 45, Figs. 9 and 10, on which is centered a lever, 29, carrying at one end a porcelain or other suitable eye, 28, through which the threads are to pass, while at the other end the lever carries an enlarged head, 29', with a smooth upper face, on which rests the auxiliary detector 46. The construction of this detector is illustrated in Figs. 11 and 12, and it is adapted to guide-slots 36' and 36'' in the detector-holder 36. It also carries enlargements 46', which, when the detector falls, lie in the path of the cam 35, as do the similar enlargements on the detectors 21, when they fall, owing to the breaking of threads.

The lever 29 is also provided with a nose or projection, 29'', which is adapted to rest on a lip, 37'', on the arm 37', carried by the rod 37.

The threads 19 to be twisted together are led from bobbins 20, or from cops, through one, two, or more of the detectors 21, which will vary in number according to the number of bobbins from which the strands are taken.

When the threads are to be twisted wet, they are, by preference, led through the slit *a* of the thread-guide 22, Figs. 6 and 7, in the traverse-bar 23, and thence between the upper and lower feed-rollers, 24 and 25, back over the upper feed-roller, then through the slit *b* of the guide 22, and down and around a glass rod, 26, in a water-trough, 27, which is secured to a fixed portion of the frame and extends below the lower feed-roller, 25, without interfering, however, with any of the operating parts of the mechanism. The threads then pass upward through a slit, *c*, of the guide 22, and between the upper and lower feed-rollers to an eye, 28, at the front end of the lever 29, which, as will be hereinafter seen, constitutes not only a thread-guide, but also a detector-lever and a starting-lever. The threads then pass to the ring-traveler 30 and twisting-bobbin 31.

In dry twisting, the threads, as illustrated in Figs. 4 and 5, are preferably led from the detectors 21, through a guide-curl, 22, in the traverse-bar, thence between the upper and

lower feed-rollers, and back over the upper feed-rollers around a glass or porcelain stud on the traverse-bar. Then the threads pass between the upper and lower feed-rollers to the eye 28 in the lever 29, and thence to the ring-traveler and bobbin. While the strands are being twisted together into one thread and remain whole, the strand of the thread keeps the front end of the lever 29 down, as shown in Figs. 2 and 4, with the projection 29'' resting against the lip 37'' on the arm of the rod 37, (and thus acting as a stop,) and the heavier back end of the lever 29 is kept elevated, so as to keep its special detector 46 in its raised position in the detector-holder 36, with the enlarged or projecting part 46' clear of the revolving cam. Should the thread 19 get broken or fail, however, the eye end of the lever 29 being released, the weighted end will fall down and permit the projecting part of its detector to fall into the path of the revolving cam 35, which, by pressing on it, throws the vertical rod 37 forward and disengages the catch-plates 39 and 40. Then the counter-weight 42 will raise the rod 37, and with it its long curved arm 37' and the adjustable roller-bracket 43, together with the upper feed-roller, 24, clear of the lower driven roller, 25, thus stopping the feed. At the same time the detector-holder 36, carried by the arm 37' on the rod 37, will be raised so as to elevate the detectors clear of the cam 35 and move the detector-lever 29 from the position shown on the left-hand side of Fig. 1 to the position shown on the right-hand side. At the same time the counter-weight 42, falling, leaves the band 33 slack and holds the same with the grips 44, so that the bobbin 32 will cease to revolve. Similarly, when the thread breaks behind the feed-rollers, and its corresponding detector 21 falls into the path of the rotating cam 35, the same stopping action will result, as above described.

To start or put the device into action again, the front end of the lever 29 is pressed down, so that the projection 29'', acting on the lip 37'', will depress the rod 37 and restore the parts to their normal working positions, as shown at the left-hand side of Fig. 1. Thus it will be seen that the lever 29 performs the threefold function of a detector-lever, a thread-guide, and the starting-lever.

I claim as my invention—

1. The combination of the detectors of a stop-motion and a stopping-rod, 37, with a lever, 29, forming at one end a thread-guide and acting on the said detectors and also on the rod 37, whereby the said lever 29 performs the threefold function of a thread-guide, detector-lever and starting-lever.

2. The combination of the frame carrying a catch-plate, 40, with a stopping-rod, 37, carrying a catch to engage therewith, and carrying also the detector-holder and detector with a cam to act on the detector, a pivoted lever, 29, having at one end a thread-guide and at the

other end supporting a detector and adapted to act on the said rod 37, all substantially as described.

5 3. The combination of the stopping-rod 37, carrying the detector-holder 36 and detectors 46 of a stop motion, with the pivoted lever 29, supporting at one end one of said detectors and carrying at the other a thread-guide, substantially as described.

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

JOHN BOYD.

Witnesses:

THOMAS MCKEAN,

ROBERT WYLIE,

*Law clerks, both of 107 West Regent Street,
Glasgow.*