No. 619,807. Patented Feb. 21, 1899.

J. E. TYNAN.

KINK PREVENTER AND SIGNAL FOR TWISTING MACHINES.

(Application filed Apr. 9, 1898.)

(No Model.)

Fig 1:

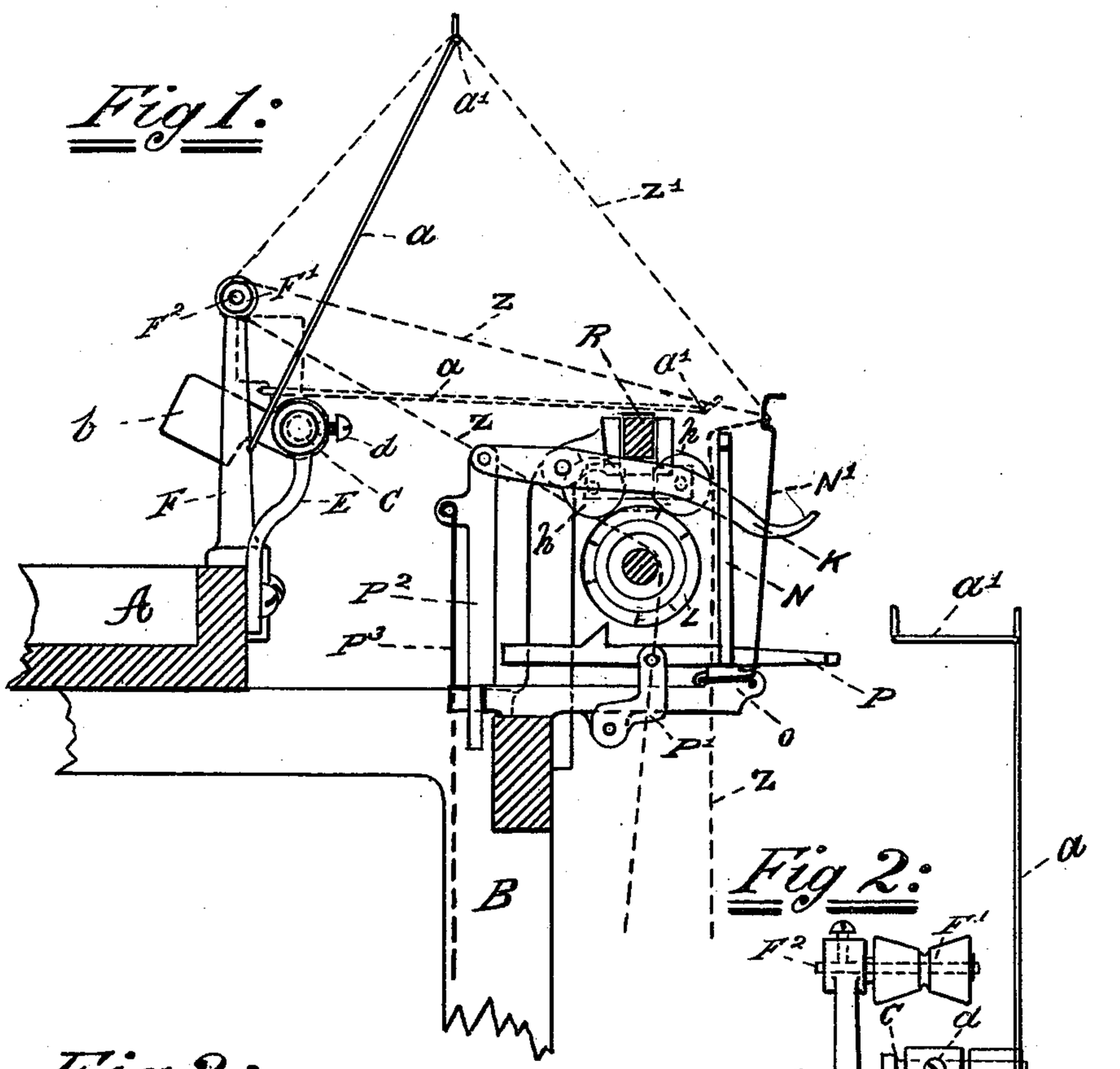


Fig 2:

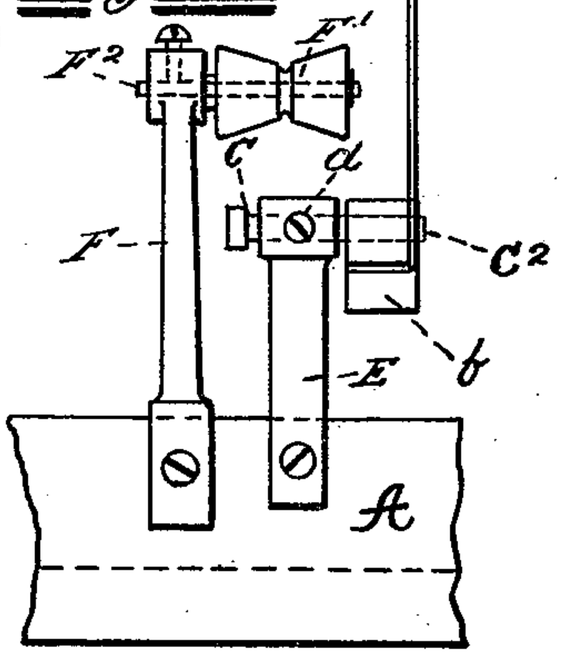
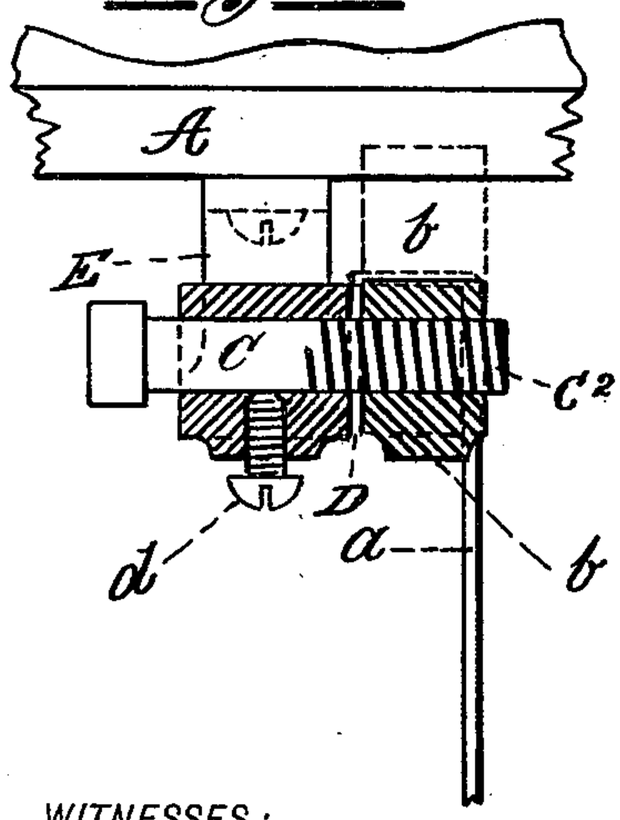


Fig 3:



WITNESSES:

Leonard J. Tynan

Richard A. Healy

INVENTOR

Joseph E. Tynan

UNITED STATES PATENT OFFICE.

JOSEPH E. TYNAN, OF PATERSON, NEW JERSEY.

KINK-PREVENTER AND SIGNAL FOR TWISTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 619,807, dated February 21, 1899.

Application filed April 9, 1898. Serial No. 677,030. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. TYNAN, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful Kink-Preventer and Signal for Twisting-Machines, of which the following is a specification.

My invention relates to machines in which threads while being twisted are led from one part of the machine to another, and is intended for use principally on machines on which threads of silk are twisted.

The objects of my invention are, in the first place, to prevent kinks from forming in the twisted threads when the mechanism is stopped, and, in the second place, to present a signal to the operator that can be seen from a considerable distance to warn him when a thread is broken or a bobbin is empty.

In the drawings, Figure 1 is a vertical cross-section of a portion of a twisting-machine, showing my kink-preventer and signal applied thereto. Fig. 2 is a vertical front view of the kink-preventer and signal secured to the frame of a machine; and Fig. 3 is a plan view in section of a portion of the kink-preventer and signal, showing the construction thereof.

Throughout the drawings similar letters indicate similar parts.

B is the frame of a twisting-machine.

A is a box secured to the frame and used for storing bobbins containing the threads to be twisted. F is a stand mounted on this box and having a guide for the threads F′, mounted thereon at F^2. E is another stand mounted on the box and having a pin C, held by the screw *d*, said pin having a screw-thread on a portion of its surface, as shown at C^2. Upon the part C^2 of the pin C is mounted the weight *b*, having a screw-threaded hole. The pin C and the weight *b* are loosely connected together by means of the screw-threads. When the weight turns upon the pin, it is caused to move laterally by means of its thread meshing in the thread on the pin. Secured to the weight *b* is the lever *a*, made, preferably, of wire, bent as shown at *a*′.

The stop-motion mechanism shown in Fig. 1 is fully explained in other patents granted to me, particularly in a patent for machines for throwing silk, dated the 19th day of February, 1889, and numbered 398,359.

I will merely state here that O is the faller-stand, and P is the rock-lever, upon which the faller N′ falls upon the breakage of a thread; that said rock-lever swings in a swing-yoke P′, mounted on the faller-stand; that L is a driving-roller having mortises to engage with the tooth on the rock-lever and operate the stop-motion on the breakage of a thread; that P^2 is a latch that is released by the operation of the parts on the breakage of a thread and falls, with the link P^3, to operate the stop mechanism; that N is an upright, mounted on the faller-stand, for the fallers to rest against when they are held up by the thread, and that K is a starting-lever, the pressing of the outer end of which will start the mechanism after the threads have been repaired. This stop-motion mechanism is no part of my present invention.

R is a cross-section of a bar carrying the feed-rollers *h h*. This bar and the rollers mounted thereon form the subject of an application for a patent made by me and serially numbered 674,877.

When the parts are in operation, the lever *a* is placed in the position shown by dotted lines in Fig. 1 and the center of gravity of the weight *b* is about over the center of the pin C. As a result the weight of the lever *a* is sufficient to keep it in the position shown by the dotted lines. The threads pass around the fallers N′, over the guides F′, and down to the feed-rollers. A thread passing in this course is shown at Z. The part *a*′ of the lever *a* rests beneath the threads at the point where they leave the fallers to travel toward the guide F′.

The lever *a* is an idler-lever, which performs no function when the parts are running, but is ready to do its work when the stop-motion acts. The lever is out of contact with the threads when the parts are in motion. For convenience I allow the forward end of this lever to rest upon the bar R, though any other convenient resting-place would do as well.

In stopping the mechanism for doffing the operator puts the stop-motion in operation by pressing down the rock-lever with his hand. When the stop-motion operates, the outer end

of the lever K rises and the bar R is thrown upward and thrusts the lever *a*, causing the weight *b* to overbalance and throw the lever *a* upward to the position shown in full lines in Fig. 1, the threads being carried upward by the wire, as shown at Z'. When a thread breaks or one of the supply-bobbins becomes empty, the stop-motion operates, and the lever *a* rises in the same manner and acts as a signal to the operator. In machines where the lever is to be used as a signal only the part *a'* on the lever can be dispensed with. When the lever *a* is out of action, it may rest upon the bar R or upon any other resting-place in which it can be conveniently acted upon by the upward movement of the outer end of the lever K. While I show the lever K acting upon the lever *a* through the medium of the bar R, yet it is obvious that as the movement of the lever K is the actuating force that brings the lever *a* into action said lever *a* could be so formed that it would rest upon and be directly actuated by the lever K without the intervention of the bar R. When the parts are in a running position, there is a space D between the weight *b* and the hub on the stand E, as shown in Fig. 3. When the weight *b* becomes overbalanced and turns on the screw-thread C^2, the weight travels laterally on the pin C until the space D no longer exists and the weight has come in contact with the hub on the stand E. By means of such contact the upward motion of the wire is arrested, while the weight wedges against the surface of the hub on the stand E in such a manner that there is no rebound when the upward stroke of the wire is ended. The width of the space D can be regulated by loosening the screw *d* and moving the pin C to such position as is desired.

In twisting threads, and especially threads of silk, in which a large amount of twist has to be put into the threads, if for any cause the twisting operation is interrupted the threads become slack, and the twist in the threads usually causes them to form into kinks, which are very difficult to remove, and which if not removed form serious imperfections in the finished thread. Through the lever *a* being thrown upward and the part *a'* carrying the threads upward, as shown, a considerable quantity of untwisted thread is drawn from the supply-bobbins. The twist in the thread is thereby allowed to spread through this untwisted thread, and the twist through spreading becomes too weak to form kinks. If the lever *a* rebounded when it had reached the end of its upward stroke, kinks would sometimes form in the threads; but through the weight *b* traveling laterally and wedging against the stand E, as I have described, this rebound is prevented, and the threads between the fallers and the part *a'* of the wire are held taut, not being allowed to become slack for an instant, and through there being no slackness kinks cannot form. The lever *a* on becoming elevated, as shown in Fig. 1, can be seen from a considerable distance, and thereby acts as a signal to the operator that a thread has broken or that a bobbin has become empty. When the threads have been repaired and the mechanism has been started, the lever *a* is placed by the operator in the position shown by dotted lines in Fig. 1, which position it retains through its own weight. In moving the wire downward the weight *b* turns and travels laterally upon the pin C, so that when the wire has reached its resting-place the space D has again been formed.

When the whole machine is stopped, the levers *a*, of which there is one to every take-up spindle on the machine, are all thrown upward to the same position any one of them is thrown to when the stop-motion operates. They then perform the same service of drawing fresh threads from the supply-bobbins and preventing kinks from forming in the threads. The manner of throwing all these wires upward together on the stoppage of a machine will form the subject of a separate application, and I therefore do not describe it in this specification.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The pivoted lever *a* provided with the part *a'*, and the bar R, in combination with a stop-motion mechanism, and means actuated by the stop-motion mechanism, to cause the bar R to rise and act upon the lever *a* to bring the part *a'* into contact with the threads and carry them upward, substantially as and for the purpose described.

2. The pivoted lever *a*, provided with the part *a'*, and resting out of contact with the threads when the mechanism is in motion, and the lever K, in combination with a stop-motion mechanism, and means, actuated by the stop-motion mechanism, to move the outer end of the lever K upward to actuate the lever *a* and bring the part *a'* into contact with the threads and carry them upward, substantially as and for the purpose described.

3. The supporting-stand E, the pin C, mounted therein, and provided with the screw-thread C^2, and the lever *a* and threaded weight *b*, said threaded weight being mounted upon, and having its screw-thread in mesh with, the screw-thread C^2 of the pin C, in combination with a stop-motion, and means whereby the operation of the stop-motion will throw the lever *a* into action, and cause the weight *b* to travel on the screw-thread C^2, and wedge against the surface of the stand E, substantially as and for the purpose described.

4. The lever *a*, provided with the part *a'*, and resting out of contact with the threads when the mechanism is in motion, in combination with the fallers N', the guide F', a stop-motion mechanism, and means, upon the operation of the stop-motion mechanism, to cause the lever *a* to rise and bring the part *a'* into contact with the threads and carry them upward, substantially as and for the purpose described.

5. The supporting-stand E, the pin C, mounted therein, and provided with the screw-thread C^2, the screw *d*, and the lever *a* and threaded weight *b*, said threaded weight being mounted upon, and having its screw-thread in mesh with, the screw-thread C^2 of the pin C, in combination with a stop-motion, and means whereby the operation of the stop-motion will throw the lever *a* into action, and cause the weight *b* to travel on the screw-thread C^2, and wedge against the surface of the stand E, substantially as and for the purpose described.

JOSEPH E. TYNAN.

Witnesses:
LEONARD J. TYNAN,
RICHARD A. HEALY.