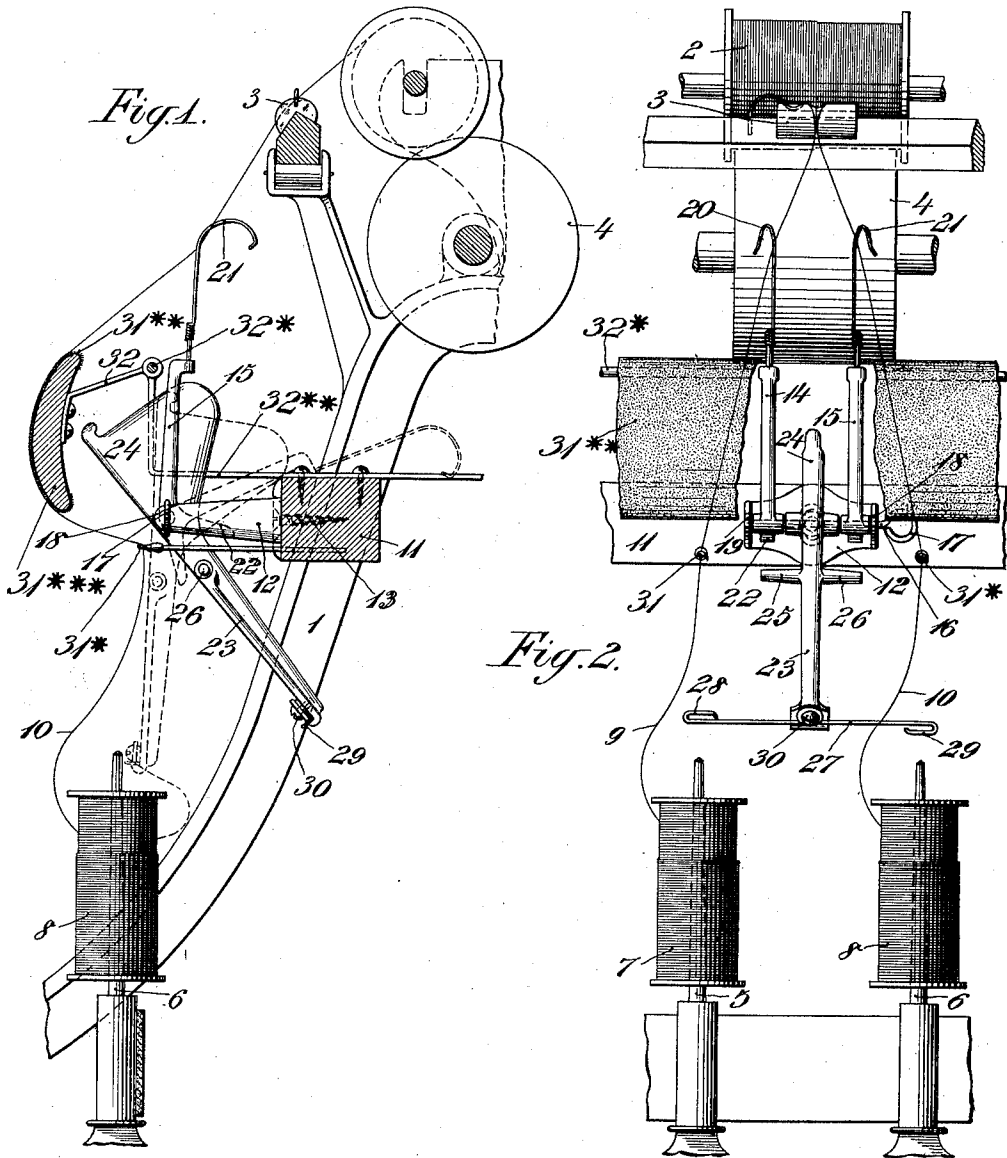


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 THREAD BREAKING DEVICE FOR SPINNING MACHINES.
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UNITED STATES PATENT OFFICE.

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THREAD-BREAKING DEVICE FOR SPINNING-MACHINES.

1,003,104.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FERDINAND Q. HARTMANN, a citizen of the United States, and resident of Danville, in the county of Montour and State of Pennsylvania, have invented a new and useful Thread-Breaking Device for Spinning-Machines, of which the following is a specification.

My invention relates to a thread breaking device for spinning machines and more particularly to a thread breaking device which may be applied to spinners for independently spinning a plurality of threads and winding the threads so spun on a single bobbin from which the threads are subsequently to be twisted into one strand on a twisting machine. It is very essential in spinning a plurality of threads at the same time and winding them together on a bobbin, that a single thread or a less number than the whole number of threads being wound, be not allowed to run on to the bobbin as this would produce a serious defect when the threads so spun are finally twisted into a strand.

My present invention is directed to a thread breaking device which may be interposed between the spindles and the take-up bobbin on which the spun threads are wound and which shall be under the control of each of the thread guide levers to perform its function of breaking a companion thread when a thread is unintentionally broken, so that the several threads may be united before any one or more of the threads has been allowed to be wound without its or their companion.

A practical embodiment of my invention is represented in the accompanying drawings, in which,

Figure 1 is a vertical transverse section through a spinning machine, showing in end elevation so much of the machine as will suffice to disclose a practical application of my invention, and Fig. 2 is a view of the same in front elevation.

The main frame of the machine at one end is denoted by 1, the take-up spool or bobbin by 2, the traverse guide for assembling the threads and laying them on the take-up spool or bobbin 2, by 3, the wheel for driving the take-up spool or bobbin 2, by 4, and a pair of spindles for spinning two independent threads, by 5 and 6.

The bobbins carrying the threads on the spindles 5 and 6, are denoted by 7 and 8. The

threads which lead from the respective bobbins 7 and 8 to the take-up spool or bobbin 2, are denoted respectively by 9 and 10.

For supporting the thread breaking mechanisms in position on the spinner, one for each group of threads to be combined on a single take up spool or bobbin, I attach a horizontal rail 11 to the end frames 1 of the spinning machine and to the front of this rail 11, the brackets 12 for supporting the thread breaking devices are secured. These brackets 12 are preferably of U-shape and secured to the rail 11 by means of a screw 13 passing through the base of the bracket into the rail 11. Between the forwardly projecting arms of the bracket 12, thread guide levers 14, 15, are pivoted, one for each spindle, by means of a pintle 16 which conveniently is formed of wire bent into shape to form a head 17 and the opposite end of the pintle is conveniently screw-threaded so that the pintle may pass freely through a hole in one arm of the bracket 12, for instance the arm 18, and screw into a threaded hole in the arm 19 of the bracket. The thread guide levers 14, 15, are drop levers and carry hook eyes 20, 21, through which the threads 9 and 10 pass before they reach the traverse guide 3. The thread guide levers 14, 15, are provided with inwardly projecting toes or feet 22, which, when the lever is permitted to fall inwardly into the position shown in dotted lines in Fig. 1 by the breaking of a thread, hit a weighted arm or lever balanced in unstable equilibrium on center and knock it off center, permitting it to swing into position to effect a breaking of the companion thread.

More specifically the thread breaker comprises an arm 23 pivoted on the spindle 16, and overbalanced by a weight 24. The arm 23 when the breaker is in its normal position for permitting the threads to pass to the take-up spool or bobbin 2 without interference, projects downwardly and inwardly as shown in full lines Fig. 1, and is balanced on center on the spindle 16 with the weight 24 extending upwardly and outwardly from the spindle. The arm 23 has lugs 25, 26, projecting laterally therefrom into the path of the toes or feet 22, of the drop levers 14, 15, carrying the thread guides 20, 21, and the said thread breaker is further provided with a cross-head 27 fixed to its lower end and terminating in hook eyes 28, 29. The cross head 27 may

conveniently consist of a piece of wire bent at its ends to form the eyes 28, 29, and may be made fast to the end of the arm 23 by means of a clamp screw 30. The threads 9, 10, as they pass upwardly from the bobbins on the spindles 5 and 6, are guided by pig-tails 31, 31* and thence extend into contact with a plush tension surface 31** on a bar 31*** supported by arms 32 attached to a rod 32* held by brackets 32**, one of which only is shown in Fig. 2, attached to the frame 1, it being understood that there is a bracket similar to the bracket 32** attached to the frame at the opposite end of the spinning machine for supporting the rod 32*.

In operation, the whirl of the spindles 5 and 6 independently twisting the threads 9 and 10, will not throw the threads into engagement with the cross head 27 as long as the latter maintains its normal position shown in full lines in Fig. 1, but when for any cause a thread breaks, its drop lever 14 or 15, will fall into the position shown in dotted lines Fig. 1, until it rests on the rail 11, and in so falling its toe or foot will engage the laterally extending lug 25 or 26 on the arm 23, throwing the thread breaker off center, tilting the weight 24 over inwardly as shown in dotted lines in Fig. 1, while the lower end of the arm 23 swings outwardly into the position shown in dotted lines and is there held by the weight, with the cross-head near the tops of the bobbins 7 and 8 on the spindles 5 and 6. This will place the cross-head 27 in position where the whirl of the spindle carrying the thread not broken will throw the thread into one

of the hook eyes at the ends of the cross-head 27, forming a loop which will promptly break the thread which was not already broken. This will enable the operator to join the broken ends of each member of the group of threads being wound on the take-up spool or bobbin 2, so that there may be at no time any distance of single thread wound on the said take-up spool or bobbin 2 and the defect which would otherwise take place in the finally twisted strand is thereby avoided.

The plush surface of the tension device serves to gently retard the thread sufficiently to take up unnecessary slack without injury to the thread however delicate its texture may be.

What I claim is:

In a spinning machine in which independent threads are spun and wound upon a single take-up spool or bobbin, thread guide levers pivoted in position to drop when a thread breaks and a weighted lever pivoted to swing by gravity into position to break a thread, the said weighted lever being normally supported on center in unstable equilibrium and under the control of a drop thread-guide lever to be tilted off center when a thread breaks.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this seventh day of May, 1909.

FERDINAND Q. HARTMANN.

Witnesses:

F. GEORGE BARRY,
HENRY THIEME.