May 12, 1925. 1,537,531

F. Q. HARTMAN ET AL

THREAD BREAKING DEVICE FOR SPINNING MACHINES

Filed Dec. 20, 1924

Fig. 1.

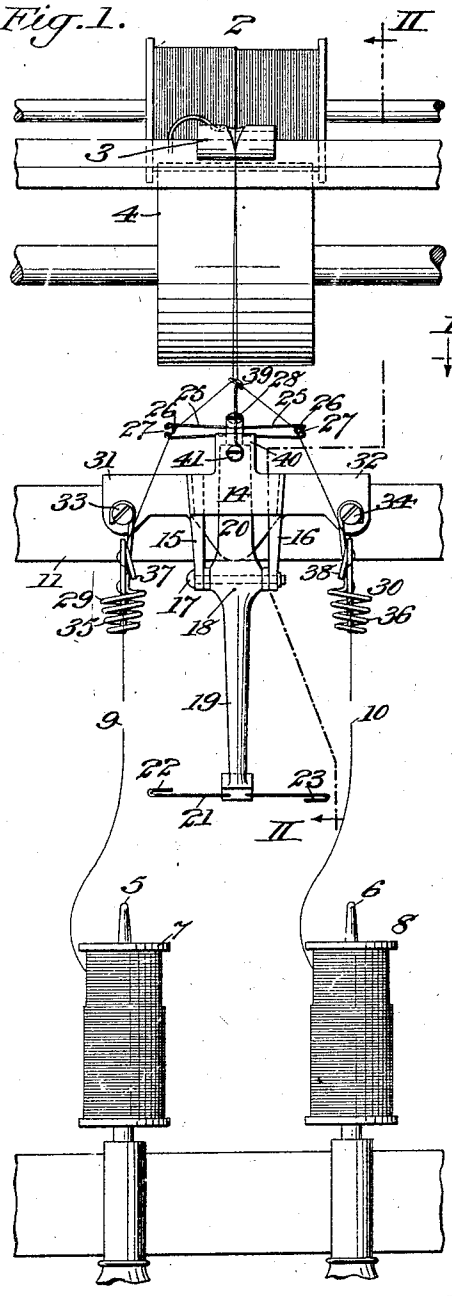


Fig. 2.

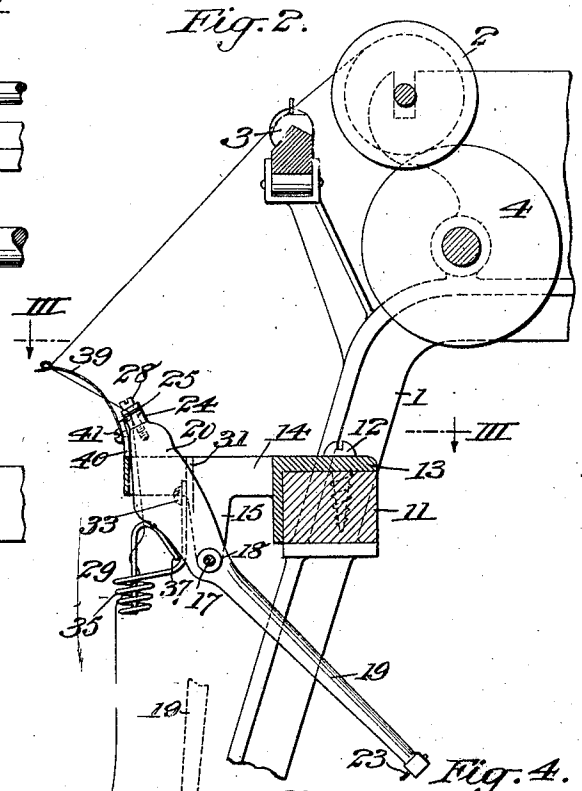


Fig. 4.

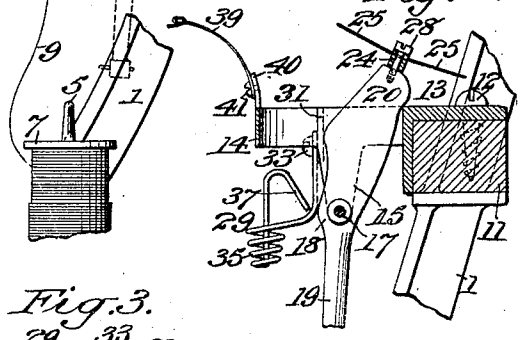
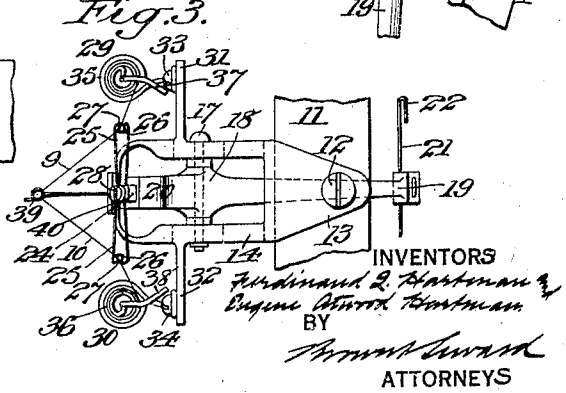


Fig. 3.



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UNITED STATES PATENT OFFICE.

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THREAD-BREAKING DEVICE FOR SPINNING MACHINES.

Application filed December 20, 1924. Serial No. 757,202.

To all whom it may concern:

Be it known that we, FERDINAND Q. HARTMAN and EUGENE ATWOOD HARTMAN, citizens of the United States, and residents of Danville, in the county of Montour and State of Pennsylvania, have invented a new and useful Improvement in Thread-Breaking Devices for Spinning Machines, of which the following is a specification.

This 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 spool, from which latter the threads are subsequently to be twisted into one strand on a twisting machine. It is quite essential in an operation of this kind, that a single thread be not allowed to run onto the spool, as this would produce a serious defect when the threads so spun are finally twisted into a strand.

Our present invention is directed to a thread breaking device which may be interposed between the spindles and the take up spool on which the spun threads are wound, and which shall be under the control of thread guiding means, carried by the breaker, to perform this function of breaking a companion thread when another thread is unintentionally broken, so that the several threads may be united before any one or more of the threads has or have been allowed to be wound upon the take up spool without its or their companion thread or threads.

The object of the invention is to provide a device of this character which is inexpensive, simple in construction, efficient and positive in operation.

Another object consists in providing such a device which has thread guiding means pivotally mounted on a thread breaker which is located in position to be thrown off center by the movement of the guide means, which movement is actuated by the breaking of a thread.

Another object consists in providing certain improvements in the form, construction and arrangement of the several parts whereby the above named and other object may be effectively attained.

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

Fig. 1 represents a front elevation of the device in operative position, so much of the spinning machine being shown as will suffice to disclose a practical application of our invention.

Fig. 2 represents a vertical section taken in the plane of the line II—II of Fig. 1, looking in the direction of the arrows.

Fig. 3 represents a horizontal section taken in the plane of the line III—III of Fig. 2, looking in the direction of the arrows, and

Fig. 4 represents a detail section of the parts shown in another position from that shown in Figs. 1 to 3 inclusive.

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

The bobbins which carry the threads are mounted on the spindles 5, 6, in the usual manner and are indicated by 7, 8. The threads which lead from the respective bobbins 7 and 8 are denoted by 9 and 10.

For the purpose of supporting the thread breaking mechanism in proper position on the spinning machine so that there shall be one for each group of threads to be combined on a single take up spool, we secure a horizontal rail 11, to the end frame 1 of the spinning machine. This rail may be composed of wood so as to receive a screw 12 for attaching the brackets 13 of the thread breaking mechanism in position. Each bracket 13 is provided with a loop shaped frame 14 having depending lugs 15, 16 arranged to receive a pintle 17 upon which is mounted a thread breaker 18. The thread breaking mechanism proper consists of an arm 19 which is pivoted on the pintle 17 between the lugs 15, 16 and which has a weighted portion 20 for overbalancing it so as to cause it to assume a substantially vertical position when in the act of breaking a thread. The lower end of the arm 19 is provided with a cross head 21, which terminates in hook eyes 22, 23. Upon the upper end of the weighted portion 20 there

is mounted a thread guiding device, which comprises, in the present instance, a rectangular block 24 having arms 25, which arms extend laterally in opposite directions. The outer end of each of the arms 25 is formed into an inwardly disposed eye 26 which is contracted at 27 and arranged to guide and hold the thread against unintentional displacement. These arms 25 with their eyes 26 may appropriately be formed of wire, bent into shape and secured to the block 24 in any well known or approved manner. The block 24 is secured in position to rotate on a screw 28 having a threaded engagement with the weighted portion 20.

Combined guide and tension elements 29, 30 are secured to wings 31, 32 of the frame 14 by means of screws 33, 34. These guide and tension elements have coiled body portions 35, 36 and upwardly extending hook shaped stems 37, 38. These combined guide and tension elements may appropriately be composed of coiled wire and bent into shape and it is intended that the thread shall be passed through one or more of the coils of the body portions 35, 36 and then wound upon the stems 37, 38 one or more times in order to give the desired tension.

The threads are also guided in their upward movement by a pigtail 39 which is secured to an uprising curved abutment 40 by means of a screw 41. This curved abutment 40 is formed integral with the frame 14 of the bracket 13.

In operation, the threads which come from the bobbins 7, 8 are passed through the coils 35, 36, wound around the stems 37, 38 of the combined guide and tension elements, thence through the eyes 26 of the arms 25, thence outwardly through the pigtail 39 where they are combined, thence over the traverse guide 3 and onto the spool 2. It will be seen that by passing the threads from the guide and tension elements through the eyes 26 to the pigtail 39, the arms 25, and the counterbalanced arm 19 will be held by the thread in the position shown in Figs. 1 to 3 inclusive. If, during the operation of the machine, one of the threads 9, 10 accidentally breaks, the tension on one of the arms 25 will be relieved and the drag of the unbroken thread on the other arm will cause the block 24 to swing arcuately on its pivot 28. As the retaining tension of the thread on the arms is removed, the arm 19 by the action of the weighted portion 20 will be overbalanced, and caused to swing downwardly into the position shown in Fig. 4, and in dotted outline in Fig. 2. In this position, the crosshead 21 will be placed so, that the whirl of the spindle carrying the unbroken thread will throw the thread into one of the hook eyes 22, 23, form a loop which will promptly break the unbroken thread. 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 2, so that there may be, at no time, any distance of single thread wound on the said take up spool 2 and the defect which would otherwise take place in the finally twisted strand is thereby avoided.

It will be understood that various changes may be resorted to in the form, construction and arrangement of the several parts without departing from the spirit and scope of our invention; and hence, we do not intend to be limited to the details herein shown and described, except as they may be included in the claims.

What we claim is:—

1. A thread breaking device for spinning machines in which a plurality of threads are independently spun and wound on a single take up spool comprising, a counterbalanced thread breaker pivoted to swing into position to break the threads, and a device carried by said breaker for guiding the threads, said device being movable on the breaker, the device and breaker being released by the breaking of a thread to permit the breaker to swing into the path of the unbroken thread.

2. A thread breaking device for spinning machines in which a plurality of threads are independently spun and wound on a single take up spool comprising, a counterbalanced thread breaker pivoted to swing into position to break the threads, and a device pivotally mounted thereon for guiding the threads, said device and breaker being released by the breaking of a thread to permit the breaker to swing into the path of the unbroken thread.

3. A thread breaking device for spinning machines in which a plurality of threads are independently spun and wound on a single take up spool comprising, a counterbalanced thread breaker pivoted to swing into position to break the threads, and a device pivotally mounted thereon and having guides for the threads, said device and breaker being released by the breaking of a thread to permit the breaker to swing into the path of the unbroken thread.

4. A thread breaking device for spinning machines in which a plurality of threads are independently spun and wound on a single take up spool comprising, a counterbalanced thread breaker pivoted to swing into position to break the threads, and a device pivotally mounted thereon and having laterally extending guides for the threads, said device and breaker being released by the breaking of a thread to permit the breaker to swing into the path of the unbroken thread.

5. A thread breaking device for spinning machines in which a plurality of threads

are independently spun and wound on a single take up spool comprising, a counterbalanced thread breaker pivoted to swing into position to break the threads, and a device pivotally mounted thereon and having guides extending laterally in opposite directions therefrom for the threads, said device and breaker being released by the breaking of a thread to permit the breaker to swing into the path of the unbroken thread.

In testimony, that we claim the foregoing as our joint invention, we have signed our names this 18th day of December 1924.

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EUGENE ATWOOD HARTMAN.