Oct. 31, 1950 J. C. BOYD 2,528,297

MEANS FOR PREVENTING SINGLING IN SPINNING OPERATIONS

Filed April 27, 1949

Fig. 1

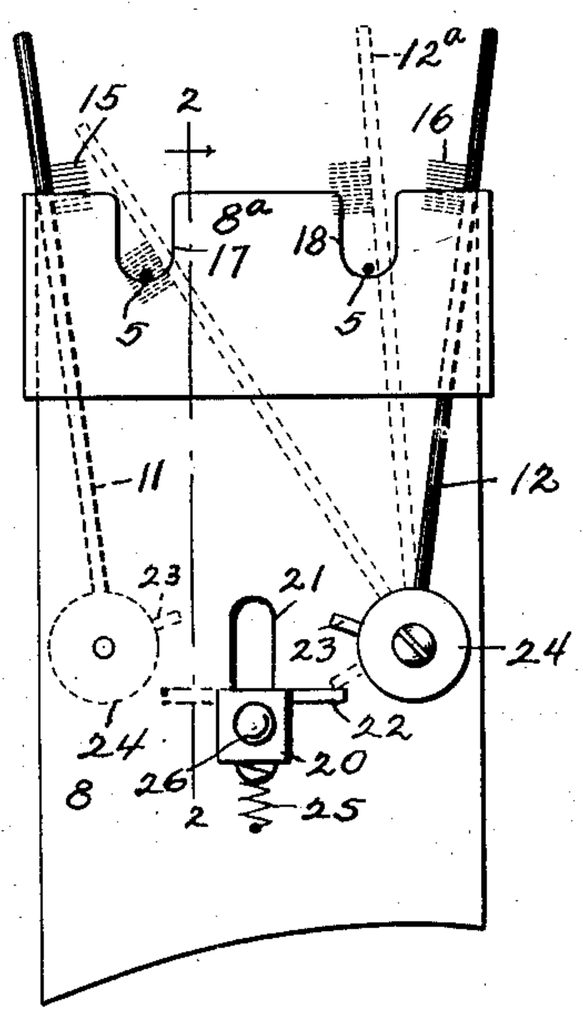


Fig. 2

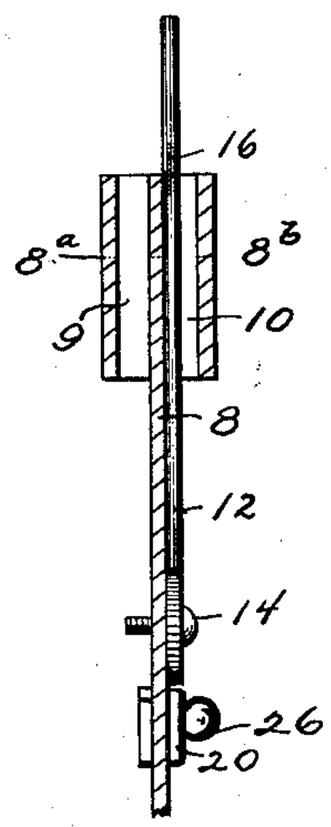


Fig. 3

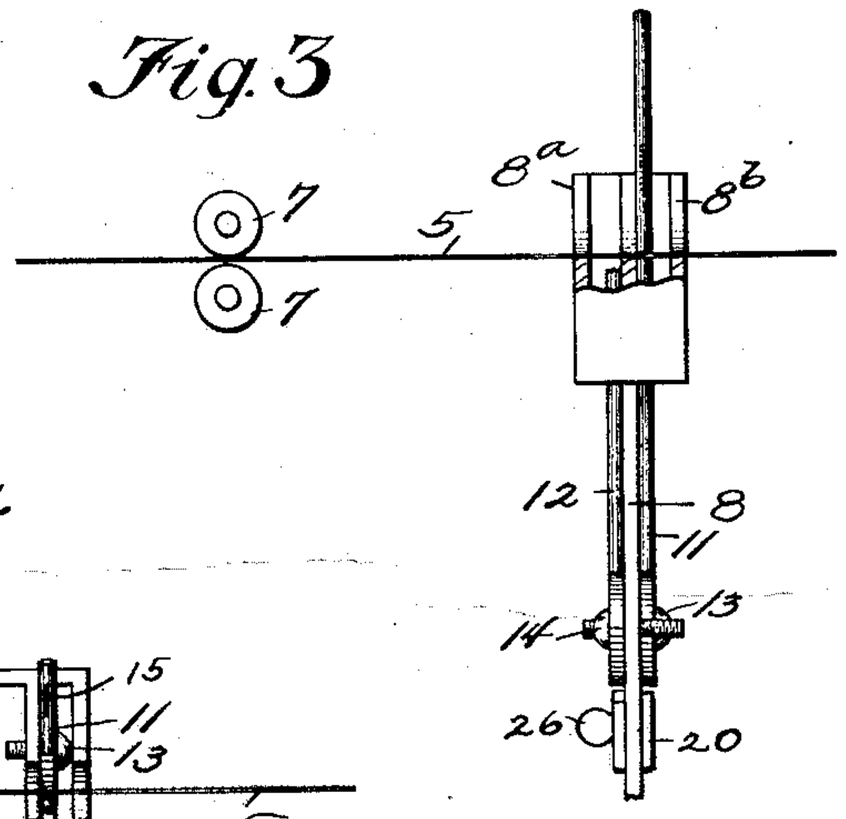
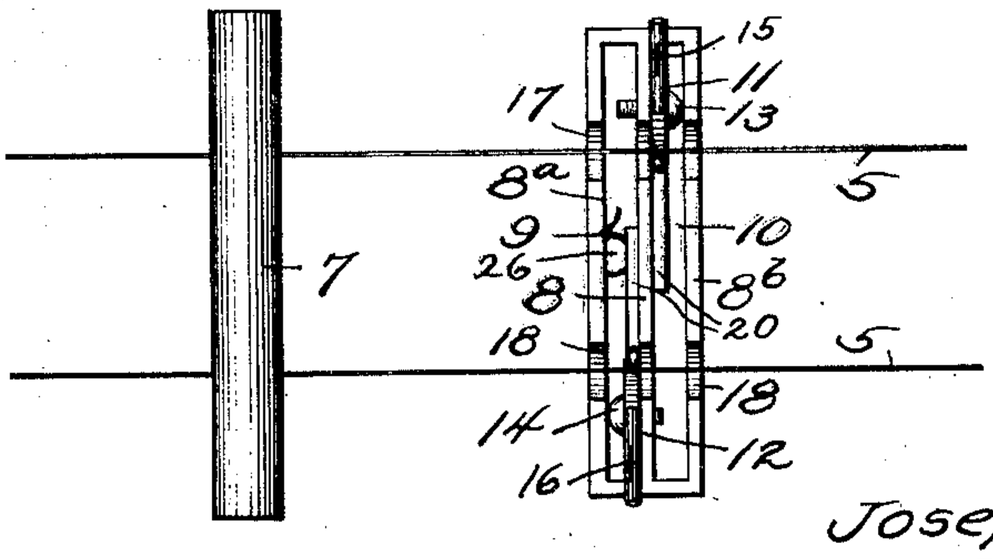


Fig. 4



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Patented Oct. 31, 1950 2,528,297

UNITED STATES PATENT OFFICE

2,528,297

MEANS FOR PREVENTING SINGLING IN SPINNING OPERATIONS

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Application April 27, 1949, Serial No. 89,988

6 Claims. (Cl. 57—86)

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This invention relates to an attachment for spinning frames of the type wherein two or more strands of yarn are carried along parallel paths to a point where they are brought together and twisted to form a finished thread and the object of the invention is to provide means for preventing singling in the manufacture of the thread.

It is a primary object of the invention to provide means for automatically severing the second strand of yarn if the first strand accidentally breaks and to do this through the medium of instrumentalities which are so sensitive in operation that they will carry out their functions without, themselves imposing any such additional strain on the yarns as would tend to cause them to break.

The principles of the invention will be understood by reference to the accompanying drawing wherein:

Fig. 1 is a front elevation of the device of the invention;

Fig. 2 is a fragmentary vertical sectional view upon line 2—2 of Fig. 1;

Fig. 3 is a side elevation of the device with the head thereof partly broken away; and

Fig. 4 is a plan view illustrating the structure of the invention associated with the adjacent rollers by which the threads are engaged and fed.

Like numerals designate corresponding parts throughout the several figures of the drawing.

In the drawing, 5 designates the two strands of yarn which are to be twisted together. Disposed in the path of movement of these strands of yarn is the device of my invention which comprises a base plate 8 which together with walls 8*a* and 8*b* comprise a pair of elongated loops 9 and 10. Relatively slender elongated rods 11 and 12 are pivotally mounted at 13 and 14 upon the opposite faces of the plate 8. These rods carry inwardly facing sharp, fine, teeth 15 and 16. Guide channels 17 and 18 for the strands of yarn are formed complementally in the three plates, 8, 8*a* and 8*b*. This is best illustrated in Figs. 1 and 4. The pivotal mounting of the lower ends of the rods 11 and 12 adapt these rods to swing across the elongated loops 9 and 10 from the full line position illustrated in Fig. 1 to the dotted line positions there indicated, these dotted line positions illustrating the movements of the rod 12, it being understood that the movement of the rod 11 corresponds thereto but in the opposite direction.

When the rod is in the dotted line position illustrated at 12*a* in Fig. 1, said rod rests against the strand of yarn 5 and is held against further movement toward the left. However, if that

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strand should break, then the rod will fall by gravity toward the left until the fine sharp comb-like teeth engage the other strand 5 and cause its breakage. The sensitivity of the device and the small amount of strain which is imposed upon the yarn flows primarily from the fact that the point of pivoting 13 and 14 of the rods is such that when said rods are in the full line position in Fig. 1 they lie outwardly of a vertical line drawn through the point of pivoting but when they are in the position illustrated at 12*a* they lie inwardly of a vertical line drawn through the point of pivoting and thus tend to fall by gravity in a direction to cause them to swing through the loops 9 and 10 and across the line of travel of the strands of yarn. Thus very little strain is imposed upon the yarn. The yarn does not have to support the weight of the rods but merely has to keep these rods from tipping until a strand breaks. However, the length of the rods and the distance between the guideways is such that when a strand breaks, the rods fall far enough for the teeth to acquire considerable momentum, with the result that the teeth are plunged firmly into the unbroken strand of yarn and in a manner to hold and sever the same. Thus while the engagement of the rods with the strands of yarn is very light and delicate until the time of action arrives, yet when such time arrives the action is very positive and effective.

I am aware of the fact that it has heretofore been proposed to provide pivoted tooth members riding upon strands of yarn and acting when one of said strands breaks to permit a tooth member to engage the other strand for the purpose of breaking the same and thus to prevent singling. However, all of the devices with which I am familiar are so constructed that the yarn strands which are, themselves, none too strong have had to support the weight of the tooth elements in a way wholly different from that which is proposed under the present construction. Not only are the elements which go to make up the device of the present invention extremely simple and inexpensive but they act more effectively and with less strain upon the yarn than with any known device with which I am familiar.

While it is an easy matter to move the rods 11 and 12 to the full line positions illustrated in Fig. 1 by merely grasping the upper ends of the rods, I may, if desired, provide means for simultaneously moving these rods to the full line positions illustrated. One way of accomplishing this has been illustrated, consisting of a slide 20 mounted

to move in a slot 21. This slide has extensions 22 adapted to underlie and engage projecting pins 23 upon the hubs 24 of the rods 11 and 12. A spring 25 may be employed to draw the slide downwardly. When the slide is thrust upwardly by grasping its knob 26 its extensions engage the pins and swing the rods outwardly.

I wish it to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention what I claim is:

1. A device for preventing singling comprising a support, a pair of elongated upstanding members, pivoted at their lower ends to said support, yarn engaging and breaking teeth projecting inwardly from said members adjacent the upper portions thereof, and a pair of yarn guideways lying between said members, the point of pivoting of said members being such that the upstanding members engage the sides of runs of yarn traveling through said guideways with said upstanding members tipped slightly past center inwardly toward said guides.

2. A device for preventing singling comprising a support, a pair of elongated upstanding members, pivoted at their lower ends to said support, yarn engaging and breaking teeth projecting inwardly from said members adjacent the upper portions thereof, and a pair of yarn guideways lying between said members, the point of pivoting of said members being such that the upstanding members engage the sides of runs of yarn traveling through said guideways with said upstanding members tipped slightly past center inwardly toward said guides, the length of said elongated members and the distance between said guideways being such that when one strand of yarn breaks, its engaged elongated member will swing inwardly and downwardly to thrust its teeth into the yet unbroken run of yarn.

3. A device for preventing singling comprising a support, a pair of elongated rods pivoted at their lower portions upon opposite faces of said

support and upon opposite sides of the vertical center thereof, a pair of spaced yarn guideways extending across the top of said support, said guideways lying between said rods, a row of inwardly facing, fine, sharp teeth carried by each of said rods at a height to lie above the run of yarn which engages the inner side faces of their supporting rod and at such height that when a rod swings inwardly and downwardly upon its pivot said teeth will be plunged under the swinging movement of said rod into the yet unbroken run of yarn to break the same, the point of pivoting of said rods being such with relation to said guideways that said rods will be tipped only slightly inwardly beyond the vertical when said rods are engaged with the sides of runs of yarn traveling through said guideways.

4. A structure as recited in claim 1 in combination with means for simultaneously moving said members upon their pivots to throw said members outwardly beyond the vertical.

5. A structure as recited in claim 3 in combination with means for simultaneously moving said rods upon their pivots to throw said rods outwardly beyond the vertical, said means comprising a slide mounted for vertical movement upon said support and members carried by the rod structures which project into the path of vertical movement of the slide.

6. A structure of the character described comprising a plate like central support and a pair of plates which with said plate form a pair of elongated loops at the top of said support, a pair of elongated rods the lower ends of which are pivoted upon the opposite faces of said central support adjacent the opposite side edges thereof and the opposite ends of which swing through said loops and across said support, a pair of yarn guiding recesses formed across the tops of said loops between said rods, and comb like sets of fine, short teeth projecting inwardly from said rods adjacent the upper ends thereof.

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No references cited.