SPINNING AND TWISTING FRAME AND THE LIKE

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Inventor

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By Patent Attorney
To all whom it may concern:

Be it known that I, John P. Garey, a citizen of the United States, residing at Elmira Heights, county of Chemung, and State of New York, have invented certain new and useful Improvements in Spinning and Twisting Frames and the like, of which the following is a specification.

My invention relates to spinning frames, twisting machines and the like and the object thereof is to provide simple and efficient means for stopping the feeding of rovings through the drawing rolls after the thread or yarn has been broken. In connection with such stop means I provide other improvements including an improved roving guide and means for locking a series of the stop means or devices, the advantages of which will be understood from the description hereinafter given.

In the drawing Fig. 1 is a vertical section through a portion of a spinning frame embodying my invention; Fig. 2 a sectional plan on the line 2-2 of Fig. 1; Fig. 3 a section on the line 3-3 of Fig. 1; Fig. 4 a cross section through the train of rolls with the roving guide in section and the stop means in elevation; Fig. 5 an elevation of that part of the stop means adjacent the roving; Fig. 6 a perspective of the severing or clamping member or plate and trigger alone; Fig. 7 an elevation of the roving guide; Fig. 8 an elevation of a modified form of roving guide; Fig. 9 a section of a portion of the twisting machine showing my invention applied thereto; Fig. 10 an elevation thereof; and Fig. 11 an elevation of the clamping device alone.

In the present instance I have shown my invention as applied to a spinning frame and will therefore describe the invention in connection therewith without restricting myself to that particular character of machine inasmuch as my invention is also applicable to what is known as a twisting machine.

The spinning frame may be and is shown as of the ordinary type, the same comprising suitable frame members including a board or table 1 on which are arranged a large number of spinning units in the usual manner. The spinning mechanism proper includes more particularly the usual drawing rolls, the same located between the supply bobbin 2 and the spool 3. These rolls comprise three pairs of rolls 4, 5 and 6, revolving at progressively increasing speeds. The usual scavenger roll 7 cooperates with the rolls 0-6. One or more of the supply bobbins 2 may be used in connection with each set of rolls, although in the present instance I have shown a single bobbin for the set of rolls.

The roving 8 is carried from the supply bobbin through the stop means hereinafter described, through a guide 9, through the drawing rolls, and thence through the eye or guide 10 located in the forward end of an arm forming a part of my stop means, and finally to the spool 3.

The stop means comprises the stop proper and controlling devices therefor. The stop itself comprises a block 11 which is secured in suitable manner as by means of the bolt 12 to the horizontal bar 13. The severing or clamping device is made in the form shown in Fig. 6 according to which the plate proper marked 14 has a horizontal shaft 15 which bears in a horizontal opening in the block 11 with the result that the plate may be caused to move from its substantially vertical position and upon the roving and to engage and sever the roving by means of the opening 16 formed with converging and sharpened edges, to thereby grip the roving. This plate 14 is actuated by means of a trigger comprising a lever 17 pivoted at 18 in a vertical slot formed in the block 11 and having a forwardly extending end adapted to engage the central or cut-away portion of the shaft 15. When the lower arm of this trigger is moved to the left (Fig. 4) the plate 14 is rotated towards the right and then falls by its own gravity upon the roving as shown by the dotted lines in Fig. 4. It will be understood that this roving passes through a guide opening 19 in the upper end of the block 11.

Referring to the controlling devices for the stop proper, above described, the same comprises a series of arms and levers which are made adjustable with respect to each other and in sections so that one may pivot upon the other. As shown an arm 20 which carries the guide 10 at its outer end is detachably and adjustable secured in the outer end of a substantially horizontal but irregular shaped lever 21. This lever is pivoted at 22 at the upper end of a stationary bracket 23 and the forward end thereof is made in two sections which are pivoted upon each other at 24, so that the forward section and
guide 10 may be moved upwardly without disturbing the remainder of the controlling devices. The lever 21 carries at its rear end an adjustable weight 25 for proper counter-
5 balancing purposes. Near such rearward end of the lever 21 there is mounted, adjust-
ably thereon, a vertical lever 26 having at its upper end a horizontal finger 27 at right angles thereto in whose path of movement 10 the lower end of the trigger 17 extends.

Describing the operation of the stop means, and starting with the parts in their normal position shown in Fig. 1, the roving is now feeding from the supply bobbin to the spool. In the event that the thread or roving should break, the tension of the thread upon the guide 10 as it passes there-
15 through is relieved with the result that the controlling levers are oscillated to the doted line position shown in Fig. 1, these levers being so counterbalanced that they will move to this position when such thread tension is removed. As a result, the finger 27 will operate the trigger 17 which in turn will operate the plate 14 and cause it to fall and clamp the roving whereupon the pull of the drawing rolls will sever the roving, so that no more roving can be supplied to the drawing rolls upon which it would otherwise accumulate with destructive effect thereto. In retreading, the plate 14 is manually replaced to normal position, the severed roving is then threaded through the guide and rolls and through the guide 10 and then spliced to the broken end of the thread on the spool or bobbin. The tension of the thread in the guide 10 will carry the controlling devices to their normal op-
20 erative position. The construction of the trigger 17 is such that when these controlling levers are returned to normal position, such trigger will yield without disturbing or upsetting the clamping means or plate 14.

Instead of the usual trumpet guide in the rear of the rolls I prefer to employ the special form of guide shown in detail in Fig. 7, the same comprising a plate 28 secured to the usual longitudinal reciprocating bar 29 and having a guide slot 9. The advantage of this form of guide is that it avoids the necessity of threading through a small opening as is the case with the usual trumpet guide. In Fig. 8 I have shown a modified construction according to which a slot 30 is formed in the upper side of the bar 29.

In connection with my stop means I employ means for simultaneously locking a series of my stop means to prevent their operation. As shown, a series of locking plates 21 are located in position to be shifted longitudinally below the levers 21 at a point behind pivots 22 and the same are secured to a longitudinal bar 32 which may be moved by hand by means of the handle 33. The bar 32 is also connected to a down-
wardly extending rod 34 connected to a shifting rod 35 which is in turn connected to the belt shifter (not shown) of the machine. By actuating the arm 35 by a handle (not shown) a driving belt will be shifted from the loose pulley to the tight pulley or vice versa. In this operation the lever 34 will be shifted and the locking device will be moved into position to prevent the operation of the controlling levers thereby preventing the thread guides from becoming overbal-
35 anced when the spinning frame is at rest. In order to unlock the devices 31 when the spinning frame is in operation, the rod 32 is manually shifted so as to move such de-
40 vices from beneath the controlling levers.

In Figs. 9, 10 and 11, I have shown my invention applied to a twisting machine. The parts corresponding to those herein-
45 before described are similarly numbered. In this particular construction, the thread 8 passes through the inclined slot 36 of the block 11 and over the usual rolls 37 and 38 and thence to the twister not shown. The thread extends over the grooved roll 39 which is attached to the depending arm of the lever 40, pivoted at 41. This lever car-
50 ries at its inner end an adjustable weight 42, to whose upper end is adjustably secured an arm 43, movable in the path of the lower end of the trigger 17 of the clamping device. The operation is the same as in the foregoing instance, that is, the clamping device will be operated when the thread breaks and the lever 40 and arm 43 and also the clamp 14 take the position shown in dotted lines in Fig. 9.

I claim:

1. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a member pivoted on the block on an axis at right angles to the roving and having a gripping portion for such roving, and a trigger cooperating with such member to first partially rotate and then cause it to drop by gravity and thereby grip the roving.

2. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a member pivoted on the block on an axis at right angles to the roving and having a gripping portion for such roving, and a trigger also pivoted in said block and cooperating with such member to first partially rotate and then cause it to drop by gravity and thereby grip the roving.

3. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having a shaft pivoted in the block, such plate being adapted to osc-
55 illate and thereby engage the roving, and a trigger cooperating with the shaft to first
partially rotate such shaft and plate and cause the latter to drop by gravity and thereby grip the roving.

4. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having a shaft pivoted in the block, such plate being adapted to oscillate and thereby engage the roving, said block having a slot, and a trigger pivoted in said slot and having its inner end in cooperation with the shaft to first partially rotate such shaft and plate and cause the latter to drop by gravity and thereby grip the roving.

5. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having roving catch means normally above the roving and provided with a shaft pivoted in the block and arranged below and at right angles to the roving, and a trigger cooperating with the shaft to actuate the plate.

6. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having roving catch means normally above the roving and provided with a shaft pivoted in the block and arranged below and at right angles to the roving, and a trigger pivoted in said block and having an arm cooperating with the shaft to first partially rotate the plate and then cause it to drop by gravity upon the roving.

7. A stop device arranged in the path of a roving, and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate arranged above the roving and having roving catch-means on its lower edge, a shaft pivoted in the block and arranged below and at right angles to the roving, said plate being connected at one end to the shaft, and a trigger cooperating with the shaft to actuate the plate.

8. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having a shaft pivoted in the block, such plate being adapted to oscillate and thereby engage the roving, said shaft having an intermediate cut-away portion, and a trigger having a part in position to cooperate with said shaft portion to trip the member to engage the roving.

9. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a plate having a shaft pivoted in the block, such plate being adapted to oscillate and thereby engage the roving, said shaft having an intermediate cut-away portion, and a trigger pivoted inter-

10. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a member pivoted on the block on an axis at right angles to the roving and having a gripping portion for such roving, and a trigger cooperating with such member for tripping it and causing it to oscillate and grip the roving, said member being a plate having an opening with inwardly directed converging sides to engage the roving.

11. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, a member pivoted on the block on an axis below and at right angles to the roving and having a gripping portion located above such roving, and a trigger cooperating with such member for tripping it and causing it to oscillate and grip the roving, said block having a guide opening for the roving which passes through said member.

12. A stop device arranged in the path of a roving and adapted to catch it when its continuity is interrupted, said device comprising a block, through which the roving passes, a member pivoted on the block on an axis below and at right angles to the roving and having a gripping portion located above such roving, and a trigger cooperating with such member for tripping it and causing it to oscillate and grip the roving, in combination with controlling devices including a lever having at one end a guide through which the thread passes, and at the other end an arm cooperating with said trigger.

13. A series of stop devices for rovings adapted to catch them when their continuity is interrupted, and a series of controlling levers for actuating said devices, in combination with means for simultaneously locking the levers in normal position, said means also controlling the starting and stopping of the machine.

14. A series of stop devices for rovings adapted to catch them when their continuity is interrupted, and a series of controlling levers for actuating said devices, in combination with means for simultaneously locking the levers in normal position, said means including a longitudinally movable bar, a series of members mounted thereon and adapted to be moved into and out of the paths of movement of the levers, and a connection between the bar and the starting mechanism of the machine.

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