Nov. 2, 1948. J. DAVIDSON 2,452,910

AUTOMATIC KNOCKOFF DEVICE FOR RING TWISTING AND SPINNING MACHINES

Filed Dec. 6, 1946 2 Sheets-Sheet 1

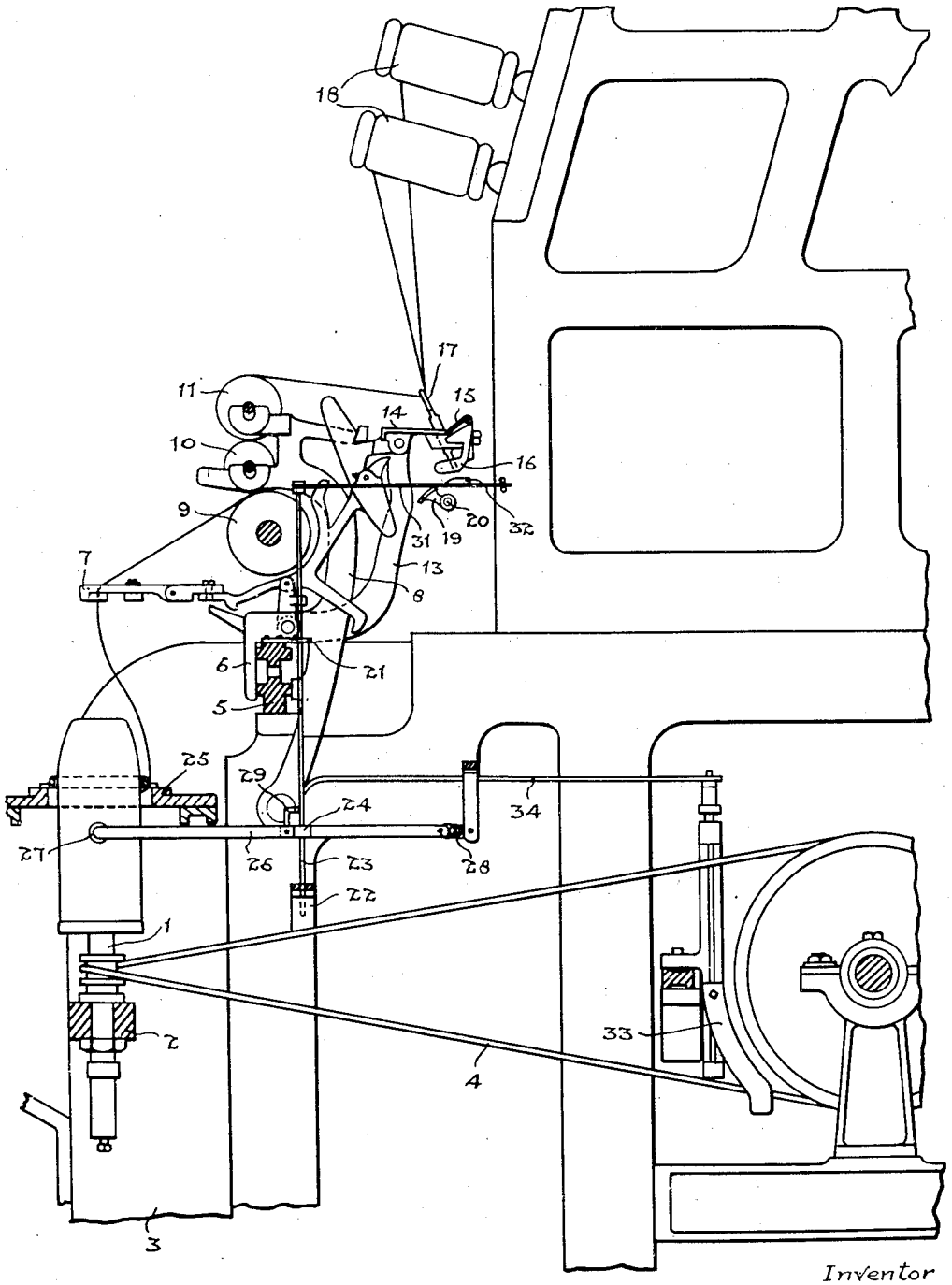


Fig. 1.

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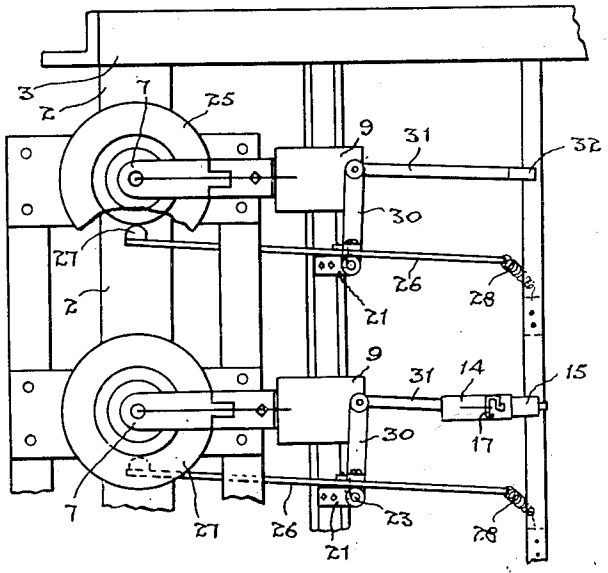


Fig. 3.

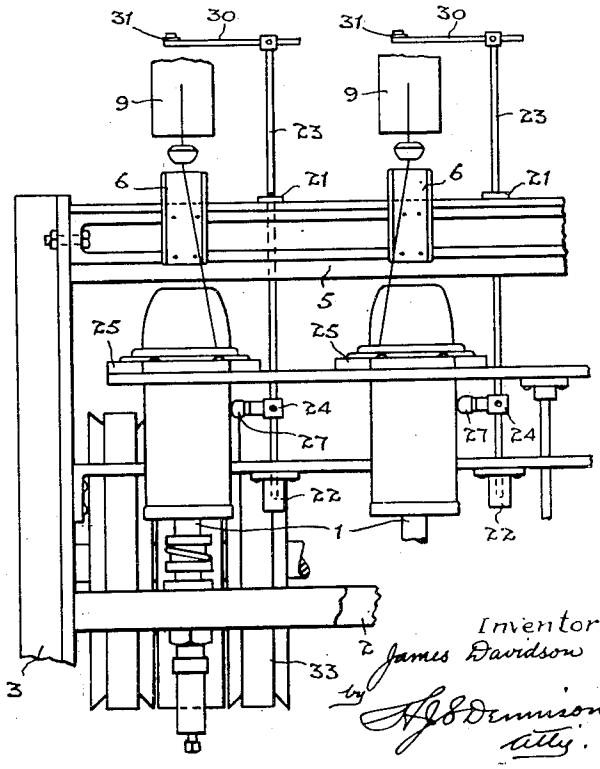


Fig. 2.

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UNITED STATES PATENT OFFICE

2,452,910

AUTOMATIC KNOCKOFF DEVICE FOR RING TWISTING AND SPINNING MACHINES

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6 Claims. (Cl. 57—78)

1

This invention relates to improvements in the stop motion of the spool winding mechanism of ring twisting and spinning machines used in the manufacture of yarn and the principal object of the invention is to obviate the loss of labor and yarn through being soiled by contact with the spinner guide rings which accumulate grease and dirt.

A further object is to provide a simple and inexpensive mechanism which may be readily applied to standard machines and which will automatically arrest the yarn feed to the bobbin and stop the rotation of the bobbin when the diameter of the yarn wound on the bobbin reaches the maximum desired so that it will not contact the spinner guide ring which surrounds the bobbin spindle.

The principal feature of the invention consists in the novel arrangement of a swingable arm to contact the periphery of the yarn wound on the bobbin and connecting with said arm a member extending between the regulation "feeler knock-off" and a reciprocating cam, which interposed member is provided with an obstruction adapted, when moved between said "feeler knock-off" and said cam, to operate the "knock-off" to arrest the yarn feed and stop the spindle.

In the accompanying drawings Fig. 1 is a sectional elevational view of a portion of a stop motion ring twisting frame showing the application of my invention thereto.

Fig. 2 is a front elevational view of two of the twisting spindles showing the relative arrangement of my invention therewith.

Figure 3 is a plan view of the spindle and my improved automatic stop mechanism.

In the stop-motion twisting frame mechanism herein shown and to which my invention is applied a row of bobbin spindles 1 are mounted on a longitudinal bar 2 of the frame 3 and driven by cord drives 4.

A longitudinal bar 5 of the frame has mounted thereon opposite each spindle a bracket 6 which supports the yarn guide 7 which extends over the spindle and it also forms the pivot support for the upwardly extending curved arm 8 which supports the contacting rollers 9, 10 and 11 around which the yarn is carried.

An upwardly curved arm 13 also supported on the bracket 6 and extending back of the arm 8 carries the "knock-off" device 14 which is provided with a pivotal latch member 15 which extends downwardly and is provided with a bottom shoe 16 to which the "detector" hook 17 is connected, the yarn Y from the upper bobbins 18

2

passing through said hook to the delivery rolls 11, 10 and 9.

Arranged beneath the shoe 16 of the latch 15 is a reciprocating cam 19 mounted on the wiper shaft 20, which cam operates normally without contacting the latch shoe 16.

A bracket 21 here shown mounted on the longitudinal bar 5 is spaced out of alignment, i. e. to one side of the spindle and normal stop motion mechanism, briefly described above, and rotatably mounted in said bracket 21 and a lower fixed bearing support 22, suitably mounted on the machine frame, is a vertical shaft 23.

A block 24 is adjustably secured on the shaft 23 at a point in a horizontal plane intersecting the bobbin spindle 1 slightly below the ring rail 25 carrying the twister rings, when said rail is in its uppermost position.

Pivotally mounted on the block 24 to swing in a vertical plane is an arm 26 which has a rounded button 27 on one end adapted to contact the yarn wound on the bobbin at a point in a vertical plane extending through the spindle axis parallel to the main frame so that as the diameter of the yarn on the bobbin increases the arm 26 will be caused to swing horizontally, thereby rotating the vertical shaft 23 in its bearings.

The arm 26 is counter-balanced or held by a coiled tension spring 28 so that it will swing freely in a downward direction when contacted by the descending ring rail 25, but will follow said rail upwardly and resume contact with the periphery of the yarn wound on the spindle. A stop finger 29 is arranged on the arm 26 to engage the shaft 23 and limit the upward swing of the arm 26. Rigidly mounted on the upper end of the shaft 23 is a horizontally disposed arm 30 which extends substantially parallel with the frame bar 5 but is disposed in a plane extending horizontally from the bottom of the latch shoe 16.

A thin metal strip 31 is connected to the outward swinging end of the arm 30 and it extends horizontally between the latch shoe 16 and the reciprocating cam 19 and is slidable freely therebetween and held in place by suitable guides.

Mounted on the free end of the strip 31 extending beyond the shoe and cam is a bevelled block 32 which, when the arm 30 is swung in a direction away from said shoe and cam, is drawn in between the cam and shoe so that the reciprocating movement of the cam will force the block against the shoe and tilt the latch on its pivot to disengage the knock-off member 14 and simultaneously lift the detector hook 17 to re-

lease the tension on the yarn passing thereunder.

The releasing of the member 10 also sets in motion the regulation stop motion mechanism of which it forms a part and which is not described in detail herein as such mechanism is well known. The stop motion mechanism actuates to arrest the spindle 1 through the pivotal movement of the curved arm 8 operatively connected with the brake 33 through the rod 36 of the spindle drive.

The strip 31 carrying the block 32 will be easily adjusted by adjusting the block 20 on the vertical shaft 23 so that the block 32 will come into operating engagement between the latch and the cam when the diameter of yarn on the spindle reaches the desired maximum and before such yarn will contact the twister ring and become fouled.

As the ring rail moves up and down in winding the yarn the arm 26 is swung downwardly but returns with the upward movement of the rail and contacts the outer diameter of the wound yarn when such diameter approaches the maximum, thus keeping an accurate gauge of the yarn as it is wound until it reaches the desired maximum when it operates the "knock-off" as described.

The mechanism described is extremely simple and may be incorporated in the structure of a machine or may be readily applied to existing twisting or spinning machines without interfering with the operation of the usual mechanism and functions of the machine.

What I claim as my invention is:

1. In a ring type yarn twisting or spinning machine, the combination of the "feeler knock-off mechanism," the reciprocating cam and the bobbin being wound, of a member extending between the aforesaid cam and "feeler knock-off mechanism" and having an obstructing member to transmit the movement of the cam to the "knock-off" device, and means connected with said obstruction carrying member engaging the perimeter of the yarn wound on the bobbin to move the obstruction between the cam and the "knock-off."

2. In a ring type yarn twisting or spinning machine, the combination of the "feeler knock-off mechanism," the reciprocating cam and the bobbin being wound, of a rotatable shaft, an arm mounted on said shaft having one end engageable with the yarn wound on the bobbin to rotate the shaft, an arm rigidly secured to said shaft, a member connected to the latter arm and extending between the "knock-off" mechanism and the cam, and an obstructing member carried by the latter member to be interposed between said cam and "knock-off mechanism" on the swinging of the arm connected thereto.

3. A device as claimed in claim 2 in which the yarn contacting arm is mounted on said shaft to swing in a vertical plane.

4. A device as claimed in claim 2 in which the yarn engaging arm is adjustably secured on said shaft to regulate the movement of the obstructing member.

5. A device as claimed in claim 2 in which the yarn engaging arm is mounted to swing in a vertical plane, and means is connected to said arm to return it to a horizontal position after being displaced by other parts of the mechanism.

6. A device as claimed in claim 2 in which the yarn engaging arm is mounted intermediate of its length to swing in a vertical plane, and counterbalancing means is connected to the end remote from the bobbin to return it to a horizontal position following displacement by other parts of the mechanism.

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REFERENCES CITED

The following references are of record in the file of this patent:

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