

Feb. 6, 1962

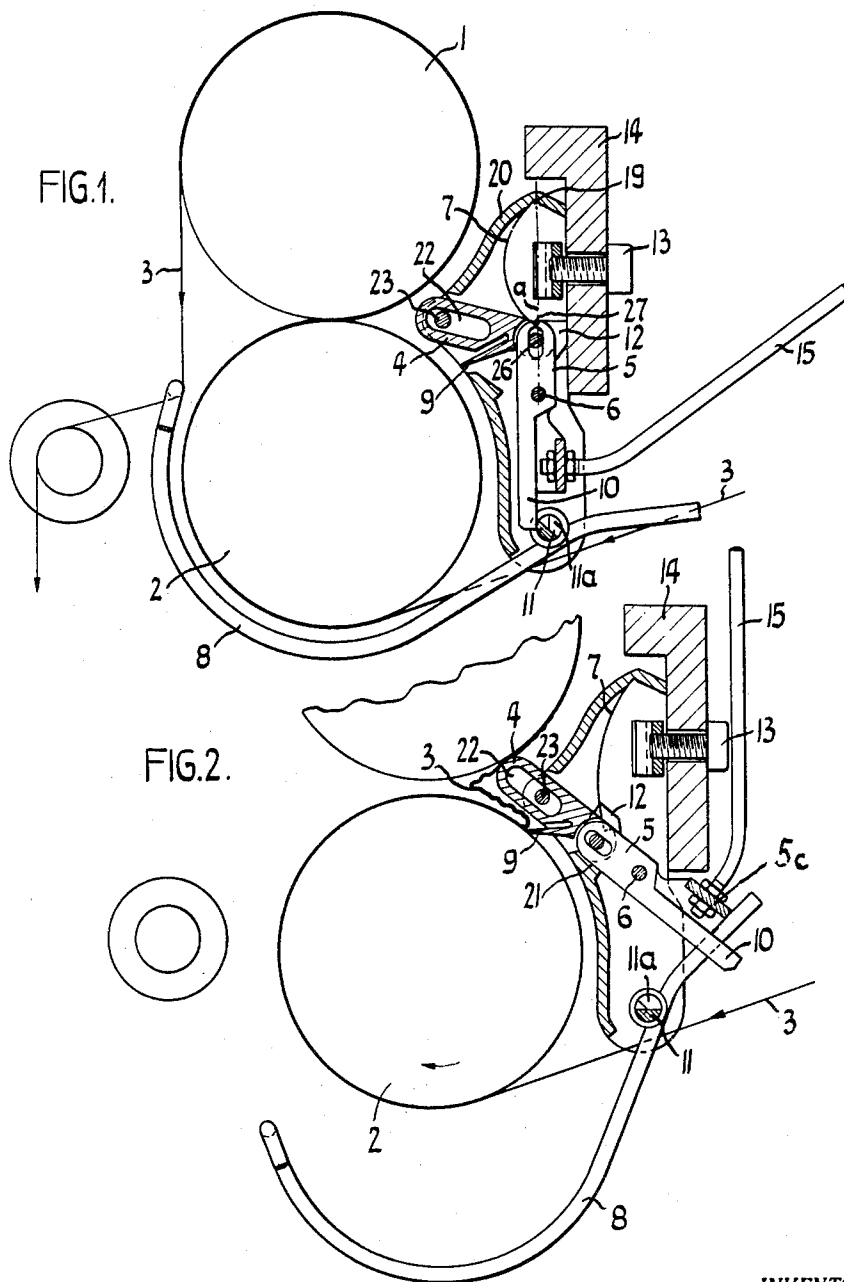
R. WEISS

3,019,587

AUTOMATIC KNOCK-OFF DEVICE FOR TEXTILE SPINNING MACHINES

Filed April 6, 1960

5 Sheets-Sheet 1



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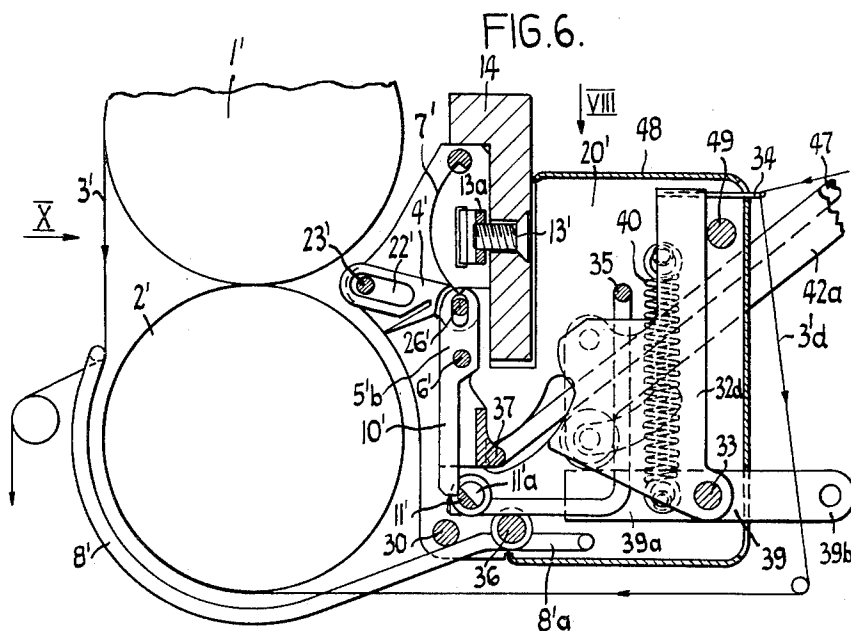
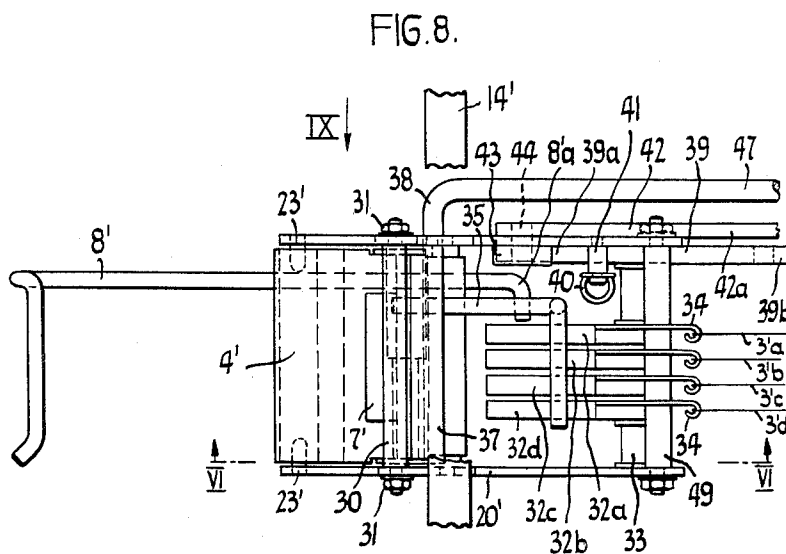
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AUTOMATIC KNOCK-OFF DEVICE FOR TEXTILE SPINNING MACHINES

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5 Sheets-Sheet 3



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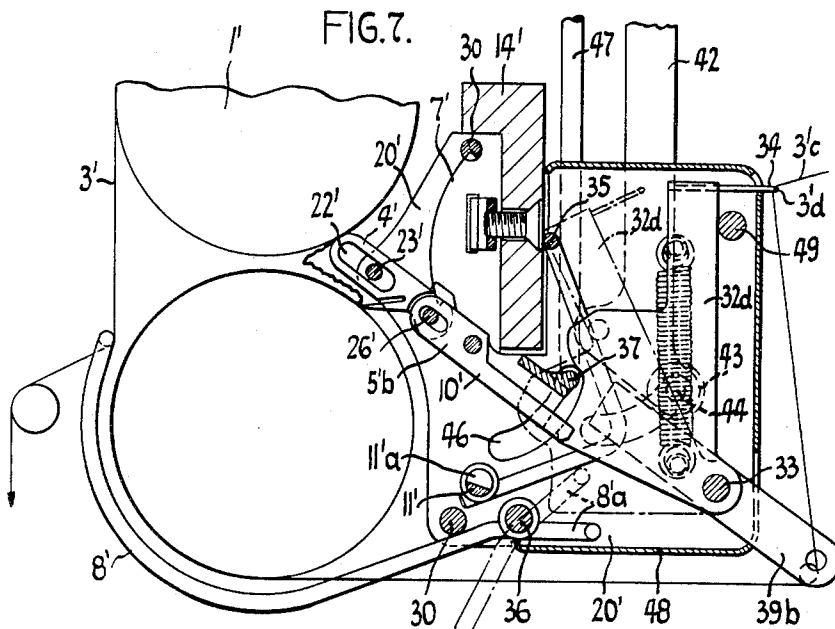
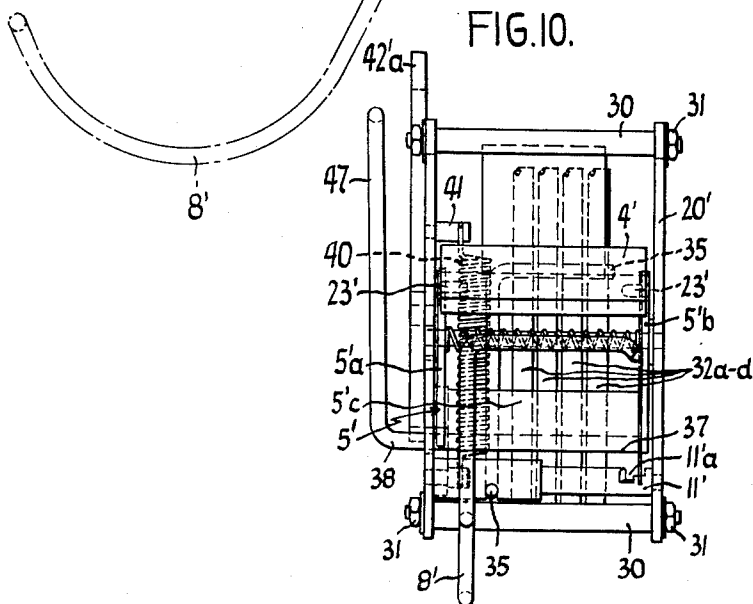
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5 Sheets-Sheet 4



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5 Sheets-Sheet 5

FIG. 9.

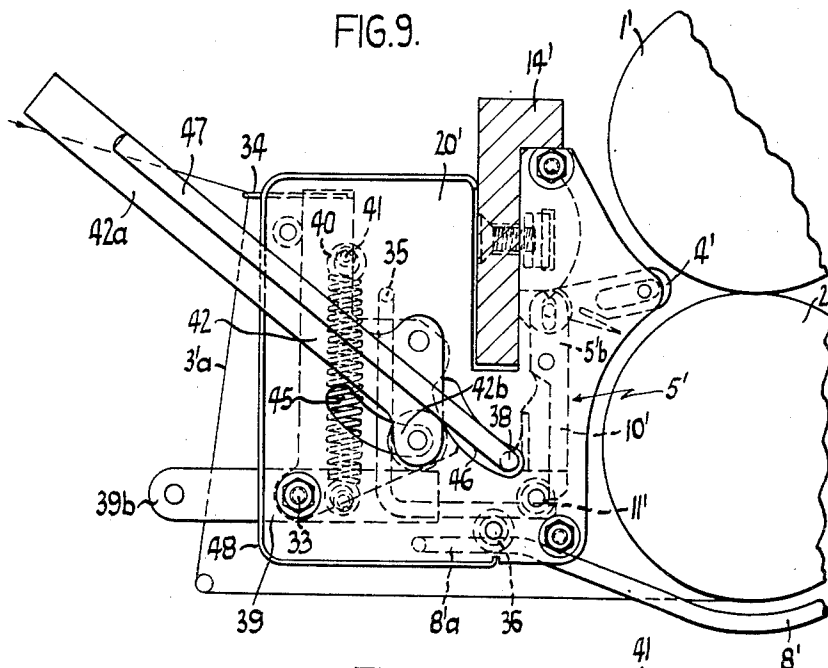
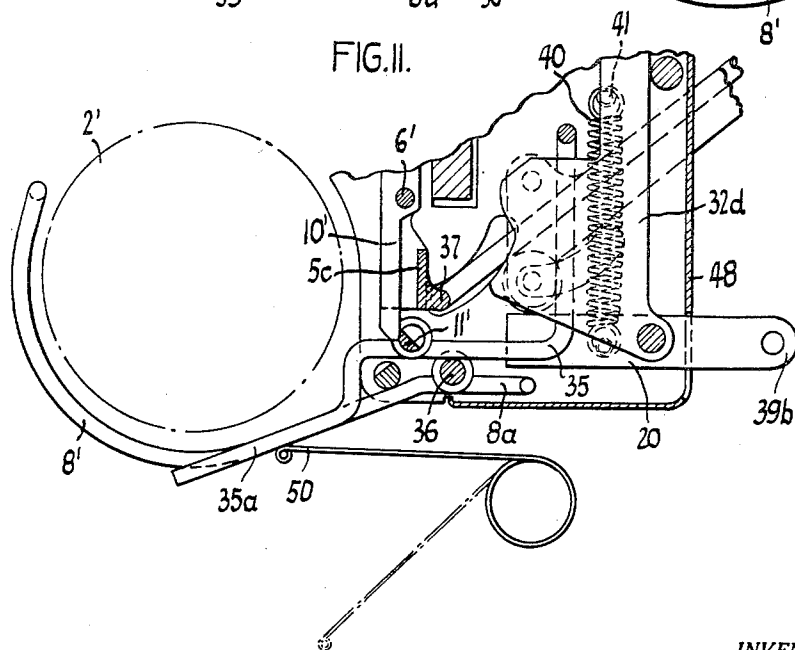


FIG. 11.



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3,019,587

AUTOMATIC KNOCK-OFF DEVICE FOR TEXTILE SPINNING MACHINES

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12 Claims. (Cl. 57—84)

The invention is concerned with an automatic knock-off device for yarn spinning machines or the like.

With a known device of this type displacement of the press roller of the feed assembly of yarn spinning machines is effected in that it is diverted on to an inclined track by friction from the driven roller. On this track the press roller rolls away from the driven roller. This device is too ineffective, especially with wet yarn spinning machines or the like, where as a result of the humidity there is only slight friction between the driven roller and the press roller. A further disadvantage of this known device is that the displacement is suited to only one direction of movement of the driven roller. Moreover the effectiveness of this knock-off device becomes doubtful with a high speed of rotation of the driven roller, that is to say, it is reliable only when the rotation is relatively slow. Other known knock-off devices, frequently operated by levers, are also too ineffective and moreover do not allow ready access to the supply of yarn for retying and the like.

These disadvantages are removed by the invention in that to lift the press roller off, a prop lever linked with another movable lever in the casing forms a knee joint; supported on to this knee joint a spring is provided; a drop pin controls the lever system in such a way that when the thread snaps, the spring is released and its energy so moves the prop lever that the press roller is displaced and at the same time the thread is retained.

A special advantage of the invention lies in that in addition to the lifting off of the press roller the thread is simultaneously wedged secure, and that it is possible to prevent the thread from winding itself on to the driven roller by attaching a lip on to the prop lever, which when the turning off movement occurs, engages the driven roller. The device of the invention is independent of the direction of rotation of the driven roller and functions perfectly reliably for every speed of rotation.

Towards the same ends, furthermore, especially for use in spinning machines, the following device is designed: for controlling the individual threads which enter the feed assembly, a corresponding number of weights held by the threads are held in position so that they may swing off and tip over when the thread snaps or when the end of a thread is reached. As a result, the lever system disengages itself independently of the drop pin, so that the spring may release its energy to swing aside the prop lever. The device with this additional arrangement thus considers not only the thread, when in its twisting form as it leaves the feed assembly, but also the separate threads which enter this assembly, the device being turned off as soon as a thread snaps or comes to an end.

The invention will now be described further, by way of example only, with reference to the accompanying drawings in which:

FIG. 1 is a vertical section through an embodiment of the invention, the device being in an operative position;

FIG. 2 is a vertical section of the device in position when a thread has snapped;

FIG. 3 is a front view of the device shown in FIG. 2, but with the rollers omitted.

FIG. 4 shows, to an enlarged scale, a view of the rotating spindle of the drop pin in operative position.

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FIG. 5 shows a similar device with thread disposed thereupon in a manner different from that illustrated in the previous figures;

FIG. 6 shows a section, along line VI—VI of FIG. 8, adapted by the provision of means for controlling the entry of threads to the spinning machine;

FIG. 7 is a view similar to that in FIG. 6, the thread having snapped;

FIG. 8 is a top view of the device as in FIG. 6, in the direction of arrow VIII, with the rollers of the feed assembly omitted;

FIG. 9 is a side view of the device in the direction of arrow IX in FIG. 8;

FIG. 10 is a front view of the device in direction of the arrow X in FIG. 6, the rollers being omitted;

FIG. 11 is a vertical section similar to that shown in FIG. 6, the device being in an operative position, there being an additional arrangement to stop the knock-off device when the machine is not in use.

Referring now to the drawings, in FIGS. 1 and 2, a press roller is indicated as 1 and a driven roller of a feed assembly of a spinning machine as 2. A thread 3 is led from the feed assembly to the ring spindle or the like. When the thread 3 snaps, the press roller 1 is to be lifted away from the driven roller 2, so that the supply of yarn is halted. With the device of the invention a prop lever 4 is provided for the lifting of the press roller 1. The prop lever 4 is pivotally connected by a joint pin 26 to a lever 5, the lever 5 being pivotally supported upon a peg 6 within a casing 20, the lever 4 and lever 5 together forming a knuckle joint. The lever 5, as may be seen particularly from FIG. 3, consists of side parts 5a and 5b, linked to each other by a transverse part 5c. The prop lever 4 is disposed with its rear end between the side parts 5a and 5b and extends over the whole width of lever 5. The displacement of the press roller of the feed assembly is hence effected along substantially the whole of its width. A leaf spring 7 supports itself on the knuckle joint at 27. The other end of the spring 7 is supported at 19 against the casing 20.

A drop pin 8, supported in an upper position by the thread 3, locks the lever system 4, 5, in such a way that when the pin falls after the thread has snapped, the spring 7 causing the prop lever 4 to be moved to displace the press roller 1 and simultaneously the thread 3 is wedged secure. The prop lever 4 has provided thereon a lip 9, said lip being so positioned as to abut the driven roller 2 upon the movement of the lever 4 to displace the press roller 1, the effect of such abutment being to prevent the winding of the thread 3 on the driven roller 2 upon the continued rotation of roller 2.

On the side opposite the knuckle joint the lever 5 has an arm 10, which lies against the rotation spindle 11 of the drop pin 8, so that the lever system is locked. A notch 11a in the rotation spindle 11 frees the lever arm 10 upon pivotal motion of the drop pin 8 about the spindle, thus under the pressure of the spring 7 the lever arm may swing away.

The point of contact 27 of the spring 7 has been so selected that the force urging the lever arm, when in the normal working position of the device, against the rotation spindle 11 of the drop pin 8 is only small. A projection 12 prevents this force being reduced completely to zero or its direction being reversed. Thus the projection 12 prevents the lever 5, when the device comes under tension, from turning too far in a clockwise direction (see FIG. 1) and thus causing the point of contact 27 of the spring 7 to move past the line a. If the said contact 27 moves past the line a then the force of the spring 7 would turn the lever 5 further in a clockwise direction, so that the latter would move out of contact with the rotation spindle 11 and come to

rest at some point on the casing. The complete straightening of the knuckle joint through the spring 7 would not be possible. By virtue of the slight pressure between the lever arm 10 and spindle 11 the frictional retardation therebetween is low and thus the drop-pin 8 may readily fall. The lever arm 10, for reasons more fully explained below, consists preferably of a leaf spring. This lies against the lever 5 and is pressed against it by a screw spring 29 (FIG. 3) attached on to the rotation spindle. The casing which holds the device 20 is secured by screws 13 and a bar 13a placed across the casing to a rail 14, which rail 14 forms part of the machine frame.

The device functions as follows:

By swinging a hand lever 15 fastened on the transverse section 5c between the two side parts 5a and 5b of the lever 5, the device is put under tension around the rotation point 6 against the spring 7, and so put into an operative position. The drop pin 8 is lifted into working position by the thread 3. The lever arm 10, by means of the hand lever 15 is caused to pass through a notch 16 in the rotation spindle 11 of the drop pin 8, said notch being of rectangular cross section and being shown in FIGS. 3 and 4. When the drop pin 8 is raised, the lever arm comes to lie more or less in the middle of the rotation spindle 11 of the drop pin 8 against an inclined surface 17 formed by a further notch 18, such further notch being inclined to the surface area of the first notch 16 and to the rotation spindle 11. The notches 16 and 18 together form the notch 11a mentioned above. Since the lever arm 10 is in the form of a leaf spring it can slide sideways past the surface 17 and so be brought completely through the rotation spindle 11, so that after leaving the inclined surface 17 it comes to rest behind the rotation spindle 11, as in FIGS. 1 and 4. The edge of the lever arm 10 remote from the region of contact is radiused so as to facilitate the passing through the notch 16. When the lever arm is engaged the lever system is under tension. The point of attachment 27 of the spring 7 on the knuckle joint lies at a very short distance from the line a, said line passing through the peg 6 of the lever 5 and the point 19 at which the spring 7 lies on the casing 20 of the device. In this way there is a constant rotational moment against the lever 5, which thus has the tendency to turn in an anti-clockwise direction.

When the thread snaps the drop pin falls downwards. The rotation spindle 11 turns to liberate (by virtue of the position of the notch 16) the lever arm 10 of the lever 5, so that the latter is swung to the right (see FIG. 2) under the influence of the rotational moment. The spring 7 presses the knuckle joint until the lever 5 comes to rest against the projection 21 of the casing 20. As a consequence of such motion the lever 4, under the influence of a pin 23 engaging an elongated hole 22 in said lever, is displaced, the lever 4 in turn displacing the press roller 1, and simultaneously wedging the thread 3 thereagainst. Because the lever system is in the form of a knuckle joint the force exerted by the leaf spring is magnified in the direction of the prop lever 4. Since the joint is to a large extent depressed at the moment when the prop lever 4, after passing the gap between its support edge and the press roller, comes to rest against the press roller 1, the power of the leaf spring 7 suffices to lift off the press roller 1 temporarily. During the action of turning off, the lever 4 lays its lip 9 against the driven roller 2 and prevents the thread 3 from being wound on to it.

Upon clockwise movement of the hand lever 15 (see FIG. 2) the device is again brought into operative condition, the drop pin 8 being again supported by thread 3.

In FIG. 5 an alternative threading is shown. In the first case the thread only goes around the press roller 1, while in the alternative it is guided over a metal bar 24, and after it has run over part of the circumference of the press roller 1, it is displaced sideways by a further bar 25 running obliquely of the axis of the press roller.

With this lead of the thread the hand lever used for putting the device under tension is made in the form of an angle lever 15a, which is positioned on a rotational spindle 28. In order to put the device under tension the lever is turned in an anti-clockwise direction (see FIG. 5) about the rotation spindle 28 and thereby with its angle arm 15b causes the lever arm 10 to settle behind the rotation spindle 11 of the drop pin 8. In other respects the device is as described with reference to the previous model.

The knock off device of the invention works instantaneously when the thread snaps. Its threefold function, i.e. the displacement of the press roller, the retaining of the thread and the prevention of the thread winding itself on to the driven roller, are put into effect at once, the moment the drop pin, after the snapping of the thread, has travelled only a little of its angled path. The device is completely reliable in operation and independent of the speed of rotation and direction of rotation of the driven roller.

According to FIGS. 1 to 5 the device turns off the press roller of the feed assembly only when the thread snaps between the feed assembly and the twist spindle. The emergent yarn consists of several threads in the process of being twisted together. The individual threads run next to each other from the taking off spool to the feed assembly. If an individual thread snaps between the taking off spool and the feed assembly, then the remaining emergent yarn, consisting of individual threads, keeps the drop pin raised and the feed assembly is not turned off. Even if one of the taking off spools is exhausted, and hence the requisite number of individual threads is not being twisted together, the feed assembly of the device according to FIGS. 1 to 5 continues to run and delivers the remaining individual threads to the twist spindle, so that a faulty yarn is produced.

To prevent this and to ensure that the feed assembly is turned off upon the breakage of a single thread, or upon the exhausting of a taking off spool, the arrangement illustrated in FIGS. 6 to 11 is applied. In such alternative arrangement the individual threads enter the feed assembly by a series of droppable weights corresponding in number to the number of the individual threads which carry them; when the thread snaps or when the thread comes to an end each one of these weights is capable of tipping over and unlocking the lever system independently of the drop pin, so that the power of the spring is released and the prop lever is pushed aside.

The device according to FIGS. 6 to 11 interrupts the supply of yarn to the twisting spindle, both when the thread snaps between the feed assembly and the spindle, and when it snaps or comes to an end between the taking off spool and the feed assembly. Uneven quality of yarn because one or more individual threads are missing can no longer occur. In so far as the parts of the device according to FIGS. 1 to 5 correspond to those of FIGS. 6 to 11, they are indicated by like symbols; such like symbols however being indicated by a prime, thus the part 5 in FIGS. 1 to 5 is shown as 5' in FIGS. 6 to 11.

In FIGS. 6 to 11, 1' denotes a press roller and 2' a driven roller of the feed assembly of a spinning machine. The feed assembly feeds a yarn 3' consisting of four individual threads 3'a, 3'b, 3'c, and 3'd (FIG. 8) to the twisting spindle. To displace the press roller 1' when the thread snaps a prop lever 4' is provided, such lever forming a knuckle joint with a swing lever 5', the combination being mounted in a casing 20' for pivotal motion, about peg 6'. Essentially the casing 20' consists of two parallel side walls linked by spaced bolts 30, the bolts 30 having nuts 31 applied thereto. Above the joint pin 23' of the knuckle joint is disposed a leaf spring 7'. The lever system 4', 5' is locked in such a way that when the thread snaps the energy of the spring is released and the prop lever 4' so pushed aside as to lift the press roller 1' and at the same time wedge the thread 3'. So far, the

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device of FIGS. 6 to 11 corresponds to that of FIGS. 1 to 5. A further small difference exists only in that the pin 23' working in conjunction with the slit 22' consists of two pegs fastened to the side of the casing.

With the model shown the lever system 4', 5' is locked by a blocking spindle 11', which corresponds to the rotation spindle 11 of the drop pin as in FIGS. 1 to 5. The blocking spindle 11' also shows a notch 11'a, through which the lever arm 10' of the swing lever 5', lying against the blocking axle, may penetrate when the blocking axle is rotated, thus to release the power of the spring 7'.

According to FIGS. 6 to 11 droppable weights 32a to 32d are provided to control the individual threads 3'a to 3'd entering the feed assembly. These are held by the individual threads and are positioned so that they may drop sideways around an axle 33 joined to the casing 20'. For this purpose they show eyes 34 for the threads through which the individual threads 3'a to 3'd are guided as shown. When an individual thread snaps or comes to an end, the corresponding drop weight tips over and disengages the lever system 4', 5', so that the supply roller is displaced through release of the power of spring 7' and the pushing aside of prop lever 4'. This disengagement occurs independently of a drop pin 8', which controls the emerging yarn 3' and itself disengages the lever system when the yarn snaps.

With the preferred model shown in FIGS. 6 to 11, a bar 35 is fastened to the blocking spindle 11', which extends into the region into which the drop weights 32a to 32d tip. When the drop weights tip over, following the snapping of an individual thread, they engage the bar 35 and twist the blocking spindle 11' in such a way that the lever arm 10' can pass through the notch 11'a and hence disengage the lever system. In FIG. 7 a dotted line represents the position of tipped drop weight 32d as the result of the snapping of an individual thread 3'd. As the drawing shows the weight 32d has contacted the bar 35 and has turned the blocking spindle 11' in an anti-clockwise direction. The lever system 4', 5', is disengaged and the prop lever 4', under the influence of the spring 7', has already lifted off the press roller 1'. At this moment for reasons further explained below the drop weight 32d already finds itself in working position again.

The drop pin 8' controlling the emerging thread 3' is placed on its own rotation spindle 36 in such a way, that when the thread snaps 3' it also puts the blocking spindle 11' into a position ready for release. In FIG. 7 the drop pin 8' is shown, by a dotted line in the position which it assumes upon snapping of the thread, and also when in the position assumed when supported by the emerging thread 3'. Thus the drop pin 8' may be held up by the emerging thread 3' and yet the feed assembly stopped through the breakage of an individual thread.

Appropriately the drop pin 8' continues past the rotation spindle 36. The resulting extension 8'a is arranged in such a way within the compass of the bar 35, that when the drop pin 8' falls, it engages the bar and turns the blocking spindle 11' into a position ready for release. The swing lever 5' preferably has a lip 37. When the lip 37 moves from the position shown in FIG. 6 to that shown in FIG. 7 it engages the weight 32d and returns same to the working position. Thus the drop weight 32d, after effecting the required actuation of the mechanism returns to an operative position, ready for re-threading of the eye 34.

It is required that when the feed assembly has been turned off, the spindle too is slowed down. For this purpose the device as in FIGS. 6 to 11 is provided with a spindle brake, such brake being released by means of an attachment 38 to the swing lever 5' upon the displacement of the prop lever 4'. The arrangement for the operation of the spindle brake includes a two armed brake lever 39. A screwlike tension spring 40 is securely anchored at one end to a peg 41 linked to the casing 20', the other end being fastened to the inner arm 39a of the brake

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lever. The brake lever 39 is placed so that it can be turned around the axle 33 and is linked to the spindle brake by rods or the like which grip its outer lever arm 39b. On the side walls of the casing 20' is pivotally mounted an angle lever 42 of uneven arms. The longer lever arm 42a of the angle lever 42 is shaped as a handle. Its short lever arm 42b with advantage operates the inner lever arm 39a of the brake lever through the intervention of a roll 43. By swinging away the angle lever 42 in anti-clockwise direction as in FIG. 9 the brake lever 39 is turned clockwise against the pulling power of the spring 40; thus the spindle brake is released. The pin linking the roll 43 with the lever arm 42b, is moved by the swinging movement into a slit 45 in the side wall of the casing. The roll 43 now turns away so far from the rotation spindle 33 on the inner arm 39a of the brake lever, that the critical position is passed by a very small amount. By pivoting the lever into the position shown in FIG. 9, the spindle brake is released and the brake lever stopped.

The attachment 38 to the swing lever 5' on the model shown, extends through a side slit 46 of the wall of the casing. Angle lever 42 and attachment 38, the latter of which is appropriately in part shaped as a handle 47 for putting the lever system 4', 5' into tension, are arranged together in such a way, that towards the end of the swing movement the attachment 38 pushes against the short lever arm 42b of the angle lever 42. This can be seen particularly clearly in FIG. 9. This impact releases the stopping of the brake lever 39, because the roll 43 is pushed out of its position beyond the critical point, and with that the power of spring 40 is released. The brake lever 39 is then turned on by the power of the spring 40 in the anti-clockwise direction and operates the spindle brake. To enable the arrangement for the operation of the spindle brake, as well as the lever system 4', 5' to be put rapidly under tension, the handle lever 47 and the angle lever 42 are arranged so that they can be moved at the same time with one hand.

The complete device is covered with a hood.

The way in which the device of FIGS. 6 to 11 works is again briefly summarised.

The device is shown in working position in FIG. 6, i.e. the swing lever 4' is pulled back and the lever system 4', 5' is locked through the blocking spindle 11'. The individual threads 3'a to 3'd entering the feed assembly are controlled by the drop weights 32a to 32d, and the emerging thread 3' by the drop pin 8'. If now the emerging thread snaps, the drop pin falls downwards into the position shown by dotted lines in FIG. 7. With its continuation 8'a it swings away the bar 35 in a way which turns the blocking axle into position ready for release. The prop lever 4' is, by virtue of the spring 7', pushed or swung away, so that it displaces the press roller 1' and at the same time secures the thread.

If it is not the emerging thread 3' which tears, but one or more of the individual threads 3'a to 3'd which enter into the feed assembly, then the corresponding drop weight or weights tip over by their own weight and turn themselves about the rotation axle 33 in anti-clockwise direction as in FIG. 6. The weight or weights then engage the bar 35 and take it with them when they tip over. By this means as well the blocking spindle is turned into position ready for release and the press roller consequently displaced. The position now attained is shown in FIG. 7. While the press roller is being lifted off, the lip 37 of the swing lever 5' presses back into working position all the weights which have tipped over, thus facilitating the threading in of all broken and finished threads. The drop weights thereby come to rest against an impact rod 49.

It is immaterial whether the disengagement of the lever system 4', 5' is carried out by the drop pin 8', or by the drop weights 32a to 32d. In either case, the attachment 38 knocks against the short lever arm 42b of the angle lever 42 and so operates the spindle brake. So as to put

the device again into tension and to release the spindle brake after removing the snapped thread or attaching a new individual thread to the one that has run out, the two handles 42a and 47 are pushed from the position shown in FIG. 7 into that of FIG. 6 or 9.

FIG. 11 shows a model of the invented device provided with advantage with an extra electro-mechanically controlled device to hold the drop pin 8' of the machine in working position, when the spinning machine is stopped. If such an extra device is not provided, then all drop pins 10 fall down by their own weight and all press rollers are lifted off when the whole machine is stopped. In this case before the restarting of a spinning operation, each of the press rollers and each of the drop pins would have to be brought into working position by hand. Thus, to prevent the drop weights 32a to 32d from dropping out of a normal operating position when the machine is stopped, a prop arm 35a is applied to the bar 35 for the purpose of holding said bar 35 in its normal operating position as shown in FIGURES 9 and 11. In this manner, the bar 35 holds said weights 32a to 32d against dropping when the machine is stopped. The prop arm 35a is supported on and by a leaf spring 50, which occupies the position shown in FIG. 11 when the machine has been stopped. When the machine begins to run the spring takes up the position shown by dotted line. The leaf spring 50 thus supports the bar 35 as well as the drop pin 8', and prevents by this means the swinging away of the drop weights 32a to 32d as well as the dropping of the pin 8' when the machine is stopped. The leaf spring 50 is by electro-magnetic means brought into the extended position shown in the drawing when the machine is stopped.

I claim:

1. An automatic knock-off device for textile spinning machines in sensing the breakage or running out of a thread used therein, comprising in combination:

- a frame structure;
- a press roller and a driven roller, the driven roller mounted rotatably with respect to said frame structure and the press roller mounted for both rotational movement and radial movement with respect to said frame structure;

a prop lever and a trigger lever pivoted to each other to form a knuckle joint, said trigger lever being also pivoted to said frame structure and said prop lever being guidingly related to said frame structure for substantially longitudinal movement toward and away from said press roller upon pivotal movement of said trigger lever about its point of pivotal support;

resilient means constantly urging said knuckle joint in a direction to move said prop lever toward said press roller and a trigger which in a first position prevents such movement and in a second position permits such movement;

means supported by said thread for holding said trigger in said first position;

means constantly urging said trigger into said second position;

whereby upon breakage of said thread, said trigger will immediately assume said second position and thereby permit said resilient means to act through said knuckle joint and move said prop lever against said press roller.

2. The device defined in claim 1 wherein said prop lever is of breadth substantially equal to the axial width of said press roller whereby when said prop lever contacts said press roller it will wedge a thread wrapped around said press roller snugly thereagainst.

3. The device defined in claim 1 including means on said prop lever extending toward said driven roller and engageable therewith upon movement of said knuckle joint in response to said resilient means whereby upon the snapping of a thread said means will bear against said

driven roller and prevent said thread from being wound thereon.

4. The device defined in claim 1 wherein said trigger includes a rotatable rod having a notch therein, said notch being so positioned that in said first position of said trigger said rod prevents movement of said trigger lever in response to said resilient means and in said second position, said notch permits movement of said trigger lever through said rod in response to said resilient means.

5. The device defined in claim 1 wherein said resilient means consists of a curved leaf spring anchored fixedly with respect to the frame structure at one end and has its other end arranged to provide pressure against said knuckle joint in such a direction that a major component of said force extends lengthwise of said trigger lever and through the point by which it is pivoted to said frame structure; whereby while said trigger is in its first position the pressure urging said levers constituting said knuckle joint against said trigger is relatively minor.

6. The device defined in claim 1 wherein said trigger includes a rod rotatably mounted on and with respect to said frame structure and said means supported by said thread for holding said trigger in said first position comprises a drop pin affixed rigidly to said rod extending to one side thereof and having means through which said thread can pass, whereby the weight of said pin normally urges said rod in one direction and the thread when unbroken will hold said rod against movement in said one direction, the trigger lever constituting an elastic leaf spring arranged substantially perpendicular to the axis of said rod, and said rod having a notch therein having an angularly located surface whereby as said rod is rotated in one direction said elastic leaf spring can be caused to slide therethrough following the angularly located surface of said notch, and when said elastic leaf spring has passed said notch it will resume its normal position perpendicular to the axis of the rod and bear against an unnotched portion of said rod on one side thereof and whereby further when said rod rotates in the opposite direction a portion of said notch is brought into alignment with said elastic leaf spring and same is permitted to pass therethrough to occupy another position on the other side of the rod.

7. In a multi-thread textile spinning machine, an automatic knock-off device for the supervision of individual threads acting with said apparatus, the combination comprising:

a frame structure;

a press roller and a driven roller, the driven roller mounted rotatably with respect to said frame structure and the press roller mounted for both rotational movement and radial movement with respect to said frame structure;

a prop lever and a trigger lever pivoted to each other to form a knuckle joint, said trigger lever being also pivoted to said frame structure and said prop lever being guidingly related to said frame structure for substantially longitudinal movement toward and away from said press roller upon pivotal movement of said trigger lever about its point of pivotal support;

resilient means constantly urging said knuckle joint in a direction to move said prop lever toward said press roller;

a trigger which in a first position prevents such movement and in a second position permits such movement;

a trigger actuating means for occupying first and second trigger controlling positions, said first trigger controlling position holding said trigger in its first position and said second trigger controlling position holding said trigger in its second position;

a plurality of supervisory devices each including a weight normally adapted for acting under gravity to

urge said trigger actuating means into its second position, and means engaging said threads for holding said weights against such acting for so long as said respective threads are present and unbroken whereby upon breakage of said thread said trigger will immediately assume said second position and thereby permit said resilient means to act through said knuckle joint and move said prop lever against said press roller.

8. In a multi-thread textile spinning machine, an automatic knock-off device for the supervision of individual threads acting with said apparatus, the combination comprising:

a frame structure;
a press roller and a driven roller, the driven roller mounted rotatably with respect to said frame structure and the press roller mounted for both rotational movement and radial movement with respect to said frame structure;

a prop lever and a trigger lever pivoted to each other to form a knuckle joint, said trigger lever being also pivoted to said frame structure and said prop lever being guidingly related to said frame structure for substantially longitudinal movement toward and away from said press roller upon pivotal movement of said trigger lever about its point of pivotal support;

resilient means constantly urging said knuckle joint in a direction to move said prop lever toward said press roller;

a trigger which in a first position prevents such movement and in a second position permits such movement;

a first trigger actuating means normally urging said trigger into said second position, said first trigger actuating means being supportable by said thread at one portion of said spinning machine for holding same out of trigger urging position;

a second trigger actuating means for occupying first and second trigger controlling positions, said first trigger controlling position holding said trigger in its first position and said second trigger controlling position holding said trigger in its second position; a plurality of supervisory devices each including a weight normally adapted for acting under gravity to urge said second trigger actuating means into its

second position, and means engaging said threads at another portion of said machine for holding said weights against such acting for so long as said respective threads are present and unbroken whereby upon breakage of said thread at either of said portions of said machine, said trigger will immediately assume said second position and thereby permit said resilient means to act through said knuckle joint and move said prop lever against said press roller.

9. The device defined in claim 7 wherein said trigger actuating means includes a weight lever movable into a first position adjacent said weights when said trigger is in its first position and movable into a second position away from the normal position of said weights when said trigger is in its second position, and means on said weight lever engageable with all of said weights whereby the dropping of any one of said weights will move said weight lever into its said second position thereby moving said trigger into its second position.

10. The device defined in claim 9 including manually actuatable means for moving said weight lever from its second position back to its first position whereby to move said weights into their cocked positions.

11. The device defined in claim 9 including resilient means occupying one position when said machine is operating and in a second position when said machine is stopped:

said resilient means in said second position urging said weight lever against said weights for holding same in their cocked position and in said one position not so urging said weight lever.

12. The device defined in claim 1 including also means for operating a spindle brake, said means including a brake lever constantly urged in one direction and held against said urging by means associated with said trigger lever for so long as said trigger lever is in first position, and when said trigger lever moves out of said first position, said brake lever is released and effects engagement of said spindle brake.

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