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O. WILLIAMS.

TWISTING FRAME STOP MOTION.

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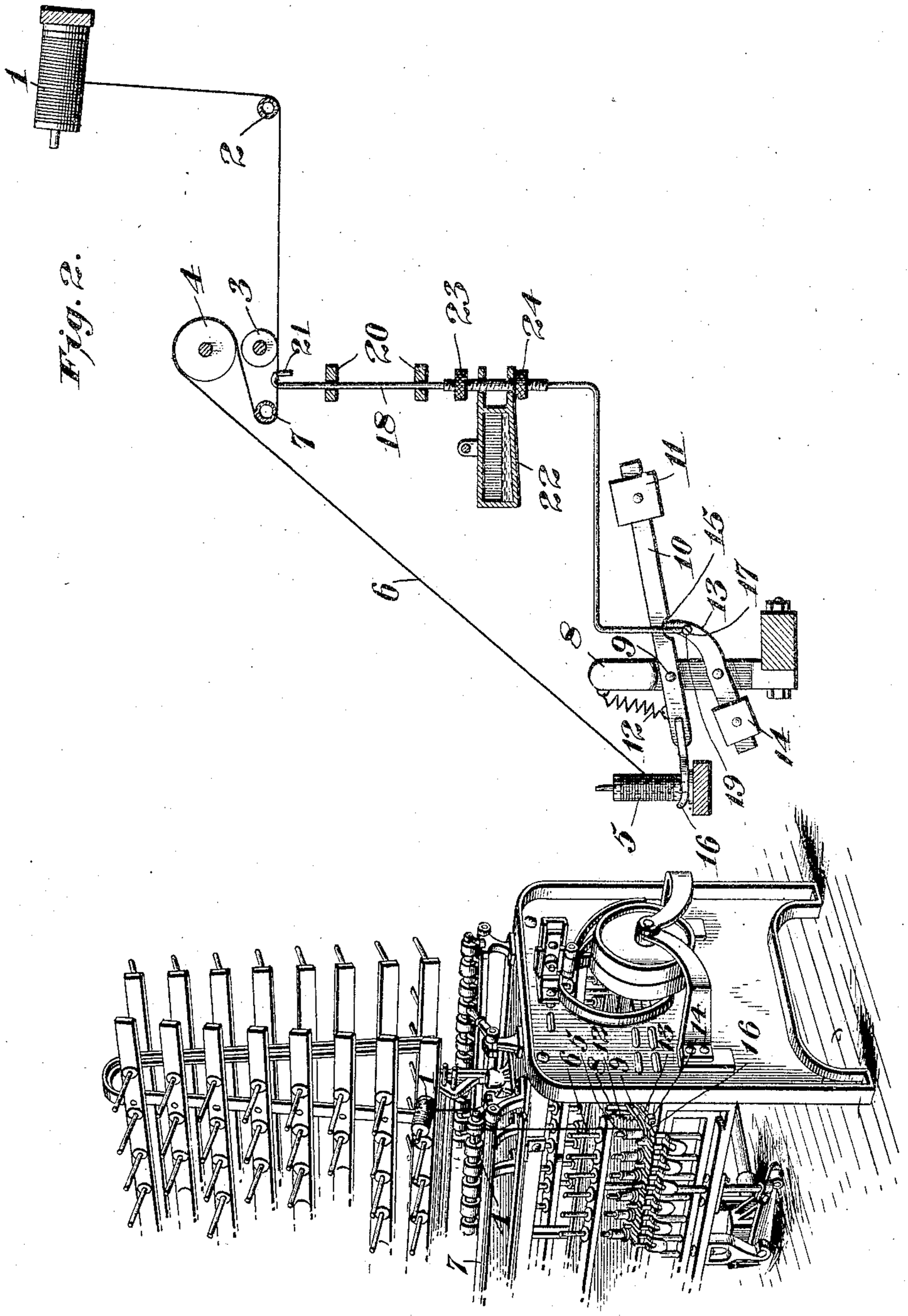

Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

OWEN WILLIAMS, OF FALL RIVER, MASSACHUSETTS.

TWISTING-FRAME STOP-MOTION.

SPECIFICATION forming part of Letters Patent No. 789,777, dated May 16, 1905.

Application filed August 22, 1904. Serial No. 221,647.

To all whom it may concern:

Be it known that I, OWEN WILLIAMS, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented new and useful Improvements in Twisting-Frames Used in Textile Manufacture, of which the following is a specification.

My invention relates to twisting-frames used in textile manufacture, and more particularly to means for stopping the bobbin when the thread breaks.

In twisting-frames used in textile manufacture as at present generally known to the trade when one of the threads breaks the bobbin to which the thread led continues to revolve, and the free end of the yarn strikes upon the frame, and the oil and dirt of the machine impregnate it, and then as it whips upon the other bobbins it makes black spots thereon, causing what is known as "black yarn," and when the broken thread is repaired these black spots on the other bobbins must be taken out, thereby causing great waste of time and material.

The object of the present invention is the provision of improved and novel devices coöperating with the various threads of the twisting-frame, whereby when a thread breaks, the mechanisms operating therewith automatically stop the bobbin and hold it until the thread can be repaired, thereby obviating whipping of the thread about in different directions and preventing the production of black yarn.

The invention consists of certain novel mechanisms coöperating with the threads in an improved manner whereby immediately upon breaking of the thread the bobbin is automatically raised and stopped, and the details of the invention will be set forth fully hereinafter, while the novel features are recited in the appended claims.

In the accompanying drawings, Figure 1 is a perspective view of the end of the machine, and Fig. 2 a diagrammatic view.

The ordinary twisting-frame is provided with the large spools 1, which hold the various threads, the glass rollers 2, 3, and 4, a set being provided for each thread, and the bobbins 5, one for each thread. The thread 6 runs from the spool 1 underneath the roller 2, thence to roller 3, and thence to roller 4 and direct to the bobbin; but in carrying out my invention I find it necessary to employ an additional roller 7 adjacent the roller 3, but separated therefrom, the thread 6 instead of passing direct from roller 3 to roller 4 passing around the roller 7 after leaving the roller 3. Without my improvements and assuming the roller 7 to be omitted, if the thread 6 should break the continued revolution of the bobbin 5 causes the free end of the broken thread from said bobbin to whip about in various directions, and striking against the frame of the machine it gathers up the dirt and oil and by contact with the other bobbins spots them, making what is known as "black yarn," which necessitates the removal of the spots at a great loss of time and labor.

The mechanisms hereinafter described, a set of which are provided for each thread, afford means for immediately stopping the revolution of the bobbin and obviating the whipping action and spotting effect heretofore set forth. I affix to the frame of the machine an upright 8, to which is pivoted at 9 a lever 10, having a weight 11 on its longer arm and a coil-spring 12 connecting its shorter arm to the upright 8. Either the spring or the weight could be dispensed with; but I prefer to employ both to insure quickness and accuracy of action. Pivoted to the upright 8 is a pawl 13, having a weighted portion 14, tending to throw the toe of the pawl into engagement with the notch 15 in the lever 10, and when the parts are thus engaged the long arm of the lever is raised. The short arm of the lever is provided with a fork 16, engageable with the bobbin, so that when the pawl is released from the lever the latter will carry the bobbin 5 part way up its spindle, and the two ends of the fork are so arranged that when it is thrown in that position they strike the yarn on the bobbin with sufficient force to prevent the bobbin from turning, but without injuring the cloth upon it. The pawl 13 is provided with an eye 17.

The numeral 18 designates a drop-rod of general angular formation having a set-screw

19, adapted to pass into the eye 17 when the rod falls, and thereby depress the pawl 13 and release the lever 10. The drop-rod 18 slides vertically in bearings 20 on the machine-frame, and it is provided with a hook 21 at its upper end, which straddles the thread between the rollers 3 and 7. The thread normally holds the drop-rod raised, and the lever 10 is normally latched by the pawl.

The numeral 22 designates a pivoted quicksilver-receptacle which is delicately balanced in a general horizontal position, so that the quicksilver remains at the end of the receptacle farthest from the vertical portion of the drop-rod; but only a slight depression of the receptacle is sufficient to cause the quicksilver to shift to the end of the receptacle nearer the vertical portion of the drop-rod. The drop-rod carries two adjustable collars or nuts 23 and 24, the former being adapted to strike the quicksilver-receptacle and tilt it when the drop-rod falls on the breaking of the thread and the latter, 24, by its engagement with the receptacle raising the same when the drop-rod is hooked over the thread 6.

Under normal conditions the lever 10 is latched by the pawl 13 and the drop-rod is hooked over the thread between the rollers 3 and 7. The thread then runs freely over the various rollers from the spool 1 to the bobbins 5. Should the thread break, the drop-rod loses its support and falling by gravity depresses the pawl 13 and releases lever 10, whereupon the weight on the lever and the spring cause the fork 16 to raise the bobbin on its spindle and afterward engage with the yarn on the bobbin with sufficient force to prevent the bobbin from turning. The fall of the drop-rod causes collar 23 to engage the quicksilver-receptacle 22, and the tilting of the latter causes the quicksilver to gravitate toward the drop-rod and add its weight by striking on the collar 24 to cause a heavier and more positive blow to be given to the pawl 13. After the thread is repaired the drop-rod is hooked over the thread, as before, and the lever and pawl reset and the bobbin lowered.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bobbin-stop for twisting-frames, the combination with feeder means and a bobbin fed therefrom, of a lever coöperating with the bobbin and adapted to raise the same on its spindle and at the same time act as a brake to stop it positively, a latch engaging with said lever, and a drop-rod normally sustained by the thread and engaging with said latch, whereby it is adapted to force said latch out of engagement with the lever when the thread breaks and the rod drops.

2. In a bobbin-stop for twisting-frames, the combination with feeder means and a bobbin fed therefrom, of means adapted to raise and stop the bobbin when actuated, a drop-rod in operative and permanent engagement with said bobbin raising and stopping means, said drop-rod being normally sustained by the thread, and a tilting member having a traveling weight, said tilting member coöperating with the drop-rod and being tilted thereby when the thread breaks and being adapted to supplement the action of the drop-rod.

3. In a bobbin-stop for twisting-frames, the combination with feeder means and a bobbin fed therefrom, of a lever for raising and stopping the bobbin, a latch for holding said lever inoperative, a drop-rod in operative and permanent engagement with said latch, and normally sustained by the thread, a tiltable receptacle having a traveling weight, and collars on said rod above and below said receptacle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OWEN WILLIAMS.

Witnesses:
GEORGE M. HOOD,
FRANK S. LAKE.