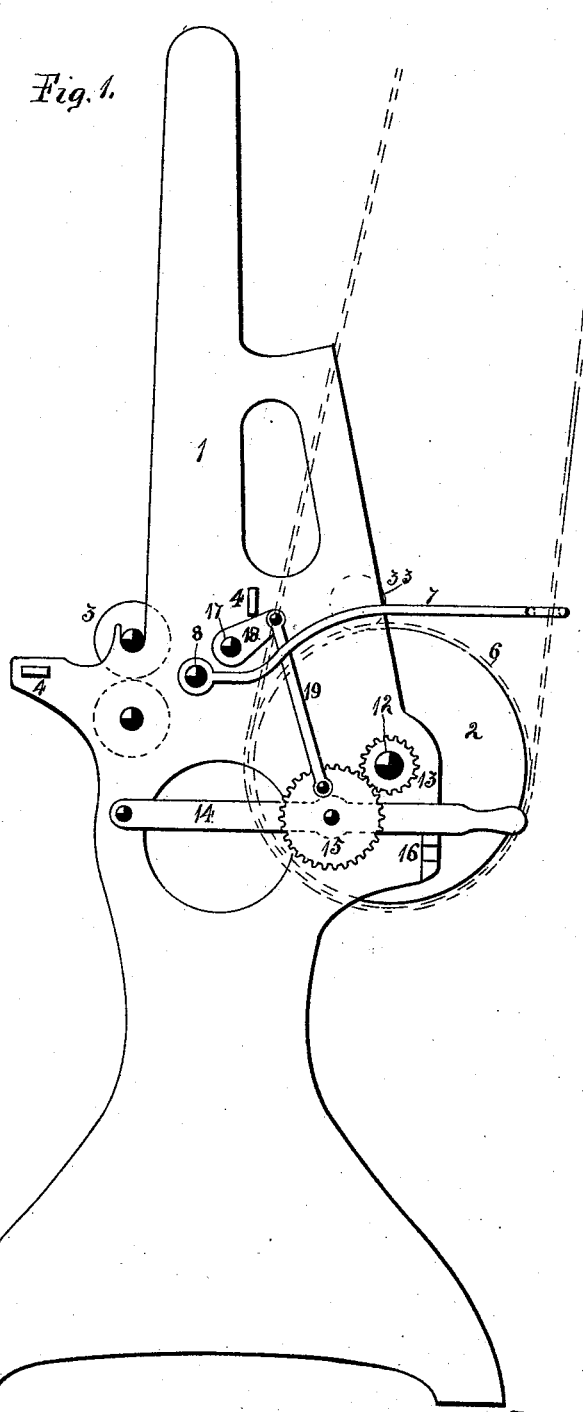
(No Model.) 3 Sheets—Sheet 1.

C. O. LIGHTNER & F. W. FRANSWAY

STOP MOTION FOR SPOOLING MACHINES.

No. 494,298. Patented Mar. 28, 1893.

Fig. 1.



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(No Model.) 3 Sheets—Sheet 2.

C. O. LIGHTNER & F. W. FRANSWAY.

STOP MOTION FOR SPOOLING MACHINES.

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Fig. 2.

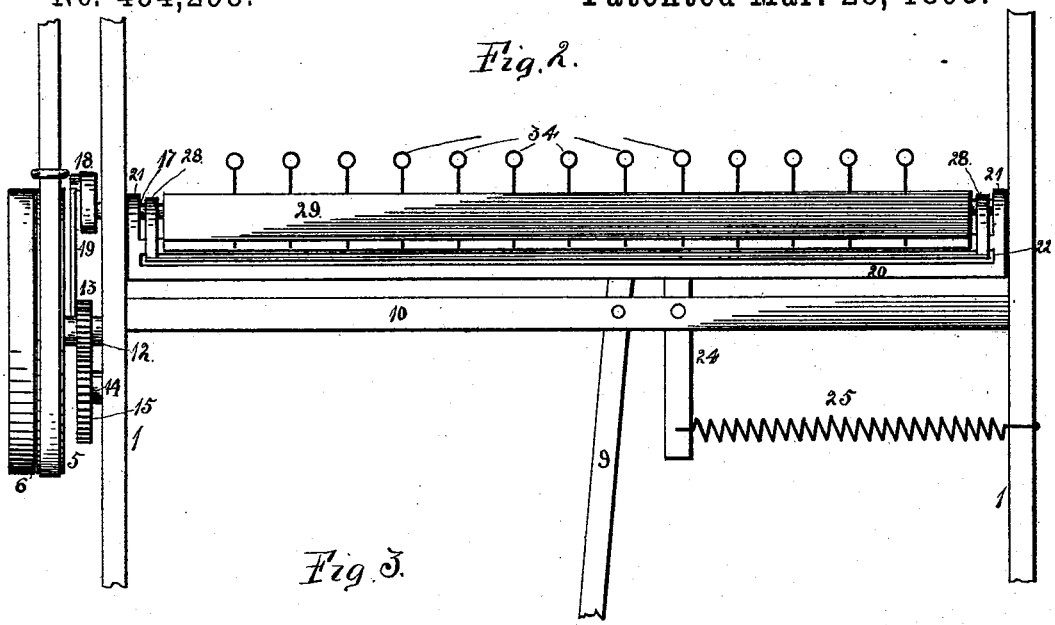


Fig. 3.

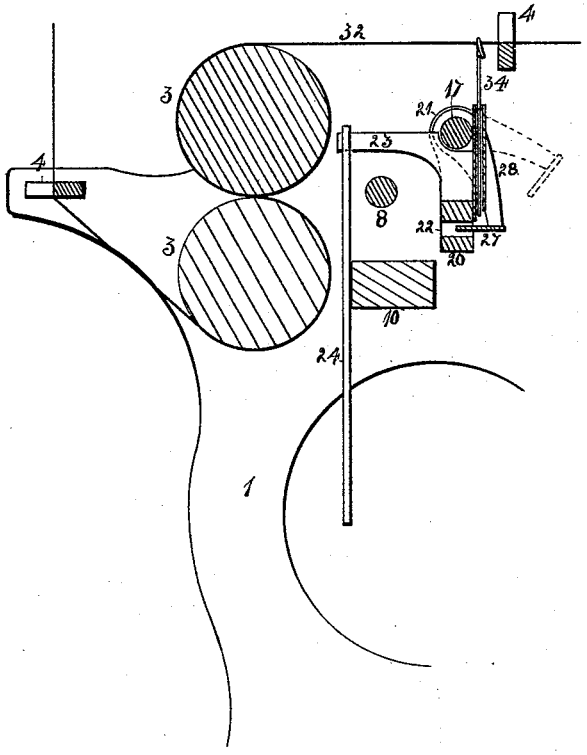
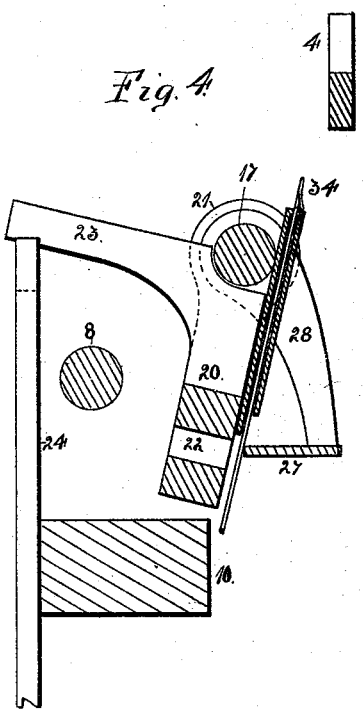


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

C. O. LIGHTNER & F. W. FRANSWAY.

STOP MOTION FOR SPOOLING MACHINES.

No. 494,298. Patented Mar. 28, 1893.

Fig. 5.

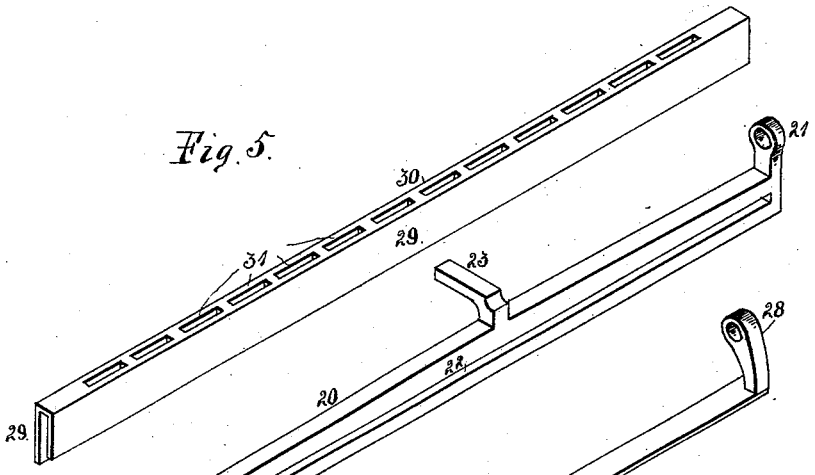


Fig. 6.

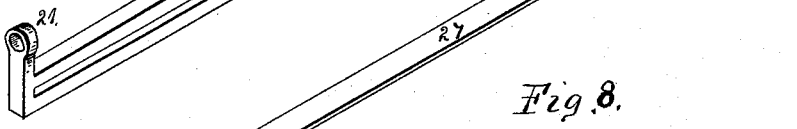


Fig. 7.

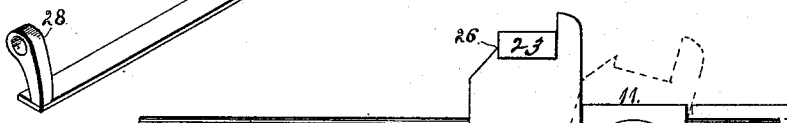
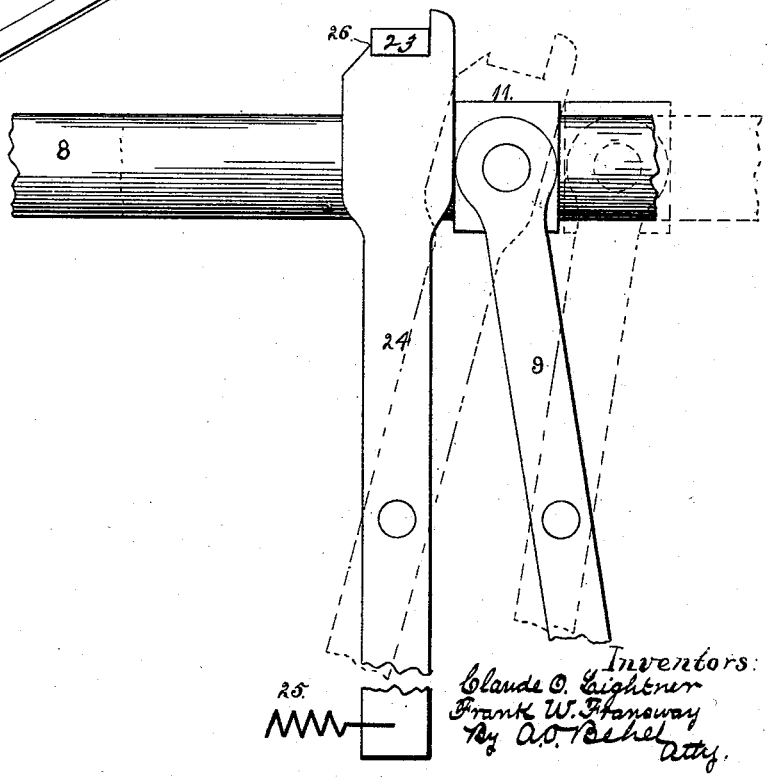


Fig. 8.



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UNITED STATES PATENT OFFICE.

CLAUDE O. LIGHTNER AND FRANK W. FRANSWAY, OF BARABOO, WISCONSIN.

STOP-MOTION FOR SPOOLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 494,298, dated March 28, 1893.

Application filed August 29, 1892. Serial No. 444,427. (No model.)

To all whom it may concern:

Be it known that we, CLAUDE O. LIGHTNER and FRANK W. FRANSWAY, citizens of the United States, residing at Baraboo, county of Sauk, and State of Wisconsin, have invented certain new and useful Improvements in Stop-Motions for Spooling-Machines, of which the following is a specification.

The object of this invention is to construct a stop motion to be applied to spooling or other machines operating upon yarn.

In the accompanying drawings, Figure 1, is a side elevation of a spooling machine to which our improved stop motion has been applied, and in which the driving and loose pulleys are removed to more clearly show the operative parts. Fig. 2, is a rear elevation of the stop motion, the other parts of the machine being removed. Fig. 3, is a vertical section through the parts of the machine with which our improvements have a connection, the stop motion machine being in its normal position. Fig. 4, shows the stop motion mechanism enlarged and in the position it occupies when a yarn is broken. Fig. 5, is an isometrical representation of the shield which forms guideways for the drop wires supported by the yarn. Fig. 6, is an isometrical representation of the latch supporting frame. Fig. 7, is an isometrical representation of the moving blade. Fig. 8, is a face elevation of the spring actuated arm for moving the shifting lever when released from its engagement with the latch, also the lever for moving the shifting lever independent of the stop motion.

In the drawings we have only shown such parts of a spooling machine with which our improvements have a connection and the old parts of the machine consist of a supporting frame 1, supporting the measuring roll 2, feeding rollers 3, guide bars 4, fast pulley 5, loose pulley 6, shifting lever 7, connected to the rod 8, foot lever 9, for operating the shifting lever and a central cross brace or bar 10. The foot lever 9, has a pivotal connection with the cross brace 10, and its upper end a connection with the rod 8, by means of the collar 11, so that the shifting lever can be operated to stop and start the machine independent of the stop motion mechanism.

Upon the shaft 12, of the measuring roll outside of the frame is located a toothed wheel 13. A lever 14, has a pivotal connection with the frame having its outer end in handle form. Upon this lever is mounted a toothed wheel 15, which engages the teeth of the wheel 13, a series of notches 16, upon which the outer end of the lever rests, permitting the throwing of wheel 15 in and out of mesh with the wheel 13.

A shaft or rod 17, has a bearing in the side frames of the machine and upon one end outside of the frame is secured a crank arm 18, having a connection by a link 19, with the toothed wheel 15, so that the shaft is oscillated upon its bearings by the rotary movement of the toothed wheel. Upon this shaft is suspended a frame 20, by ears 21. This frame has a lengthwise slot 22, and an uprising overhanging latch 23. A lever 24, has a pivotal connection with the cross brace 10, its lower end having a spring 25, connecting it with a suitable support, and its upper end formed with a notch 26. This lever is so located with reference to the lever 9 that its upper end will engage the collar 11. The latch 23, enters the notch 26, which holds the lever in an upright position against its spring action, gravity holding the latch in the notch, and in order to release the lever 24 the latch must be raised. The mechanism for automatically raising the latch in order that the machine may be stopped, consists of a blade 27, having ears 28, through which the shaft 17 passes. These ears are secured to the shaft so that the oscillatory movement imparted to the shaft will be communicated to the blade. To the frame 20 is secured a shield composed of sides 29 and an upper surface 30 formed with a series of perforations 31.

The yarn 32, passes through the outer guide bar 4, under the lower roller 3, between the rollers 3, over the upper roller 3, through the inner guide bar 4, onto the receiving roller. Upon each yarn between the roller 3, and guide bar 4, is located a drop-wire 34, having its upper end in open eye form. This pin extends downward through the elongated openings 31, on the shield and so long as the yarn remains intact between the meeting faces of the roller 3, and its engagement with the receiving roller, the drop wires are held elevated but as soon as the yarn becomes broken between these parts or the yarn runs out there

will be no support for the drop-wires, consequently they will drop.

The operation of our stop motion is as follows. Upon each of the yarns employed is located a drop-wire 34, as before described. The machine is set in motion and the toothed wheel 15, is thrown in mesh with the toothed wheel 13, the rotary movement of the toothed wheel 15, will impart an oscillatory movement to the blade 27, secured to the shaft 17. This oscillatory movement will cause the forward end of the blade to enter the opening 22, in the latch frame 20, at the end of each oscillation as shown in Fig. 3. This movement will continue as long as the drop wires 34, are held supported by the yarns, should any one of the yarns run out or break the drop-wire supported by that yarn would drop and place itself across the opening 22, so that at the next oscillation of the blade the forward end of the blade would come in contact with the drop-wire, and the continued movement of the blade would cause the frame 20, to oscillate on its pivotal support thereby raising the latch 23, from its engagement with the upper end of the arm 24. The arm 24, is then free to move on its pivot and the spring 25, will carry its upper end against the collar 11 which is secured to the shaft 8, thereby moving the shaft endwise which will also move the shifting arm 7, throwing the belt from the tight pulley upon the loose pulley and stopping the machine. By uniting the broken thread and adjusting the drop wire it will then be supported out of the way of the blade, and by moving the lever 9, the lever 24, will be moved to its original position at which point the latch will seat itself in the notch in its upper end, also shifting the belt from the loose pulley onto the tight pulley and again be ready to stop the machine.

The stop motion mechanism may be held out of action by disengaging the toothed wheels 13 and 15, and the belt can be shifted by means of the lever 9, without interfering with the stop motion mechanism.

We claim as our invention—

1. In a stop motion, the combination of a swinging frame provided with an elongated opening and latch, an oscillatory blade, drop wires capable of being placed across the elongated opening in the swinging frame and across the path of the blade, the frame provided with a shield which guides and limits the drop wires in their downward movement, said guide provided with an elongated opening or openings and means for imparting an oscillatory movement to the blade.

2. In a stop motion, the combination of a swinging frame, an oscillatory blade, drop wires capable of being placed between the frame and blade, a crank arm having a connection with the blade, a shaft, a gear wheel on the shaft, a pivotal lever upon which is mounted a driven gear wheel which meshes with the teeth of the gear wheel, mounted on the shaft and capable of being disengaged therefrom and a link connection between the driven gear wheel and the crank arm.

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