(No Model.) 2 Sheets—Sheet 1.

W. LUND.

STOP MOTION DEVICE FOR SPINNING AND TWISTING MACHINES.

No. 400,864. Patented Apr. 2, 1889.

FIG. 1.

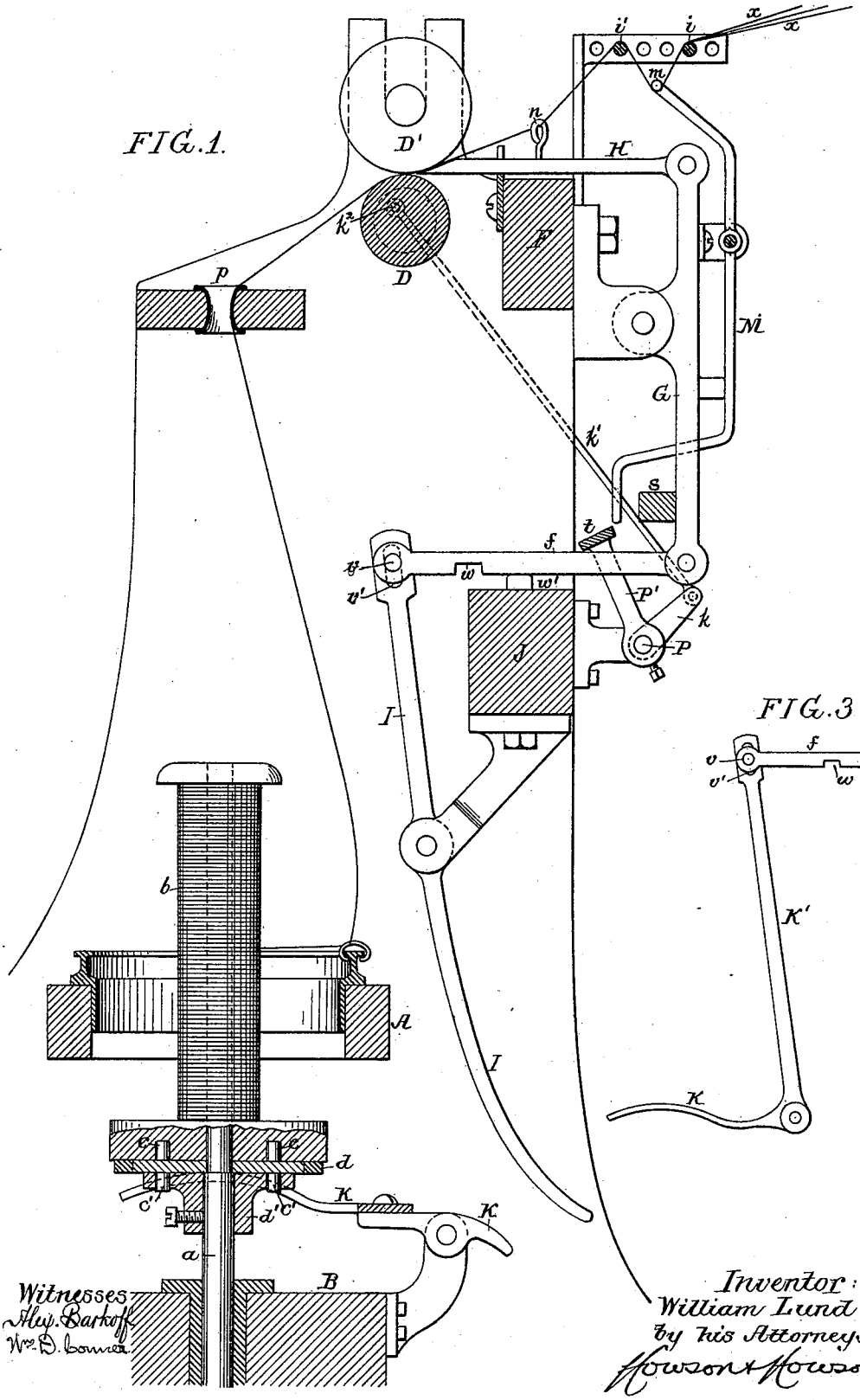


FIG. 3.

Witnesses
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N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 2.

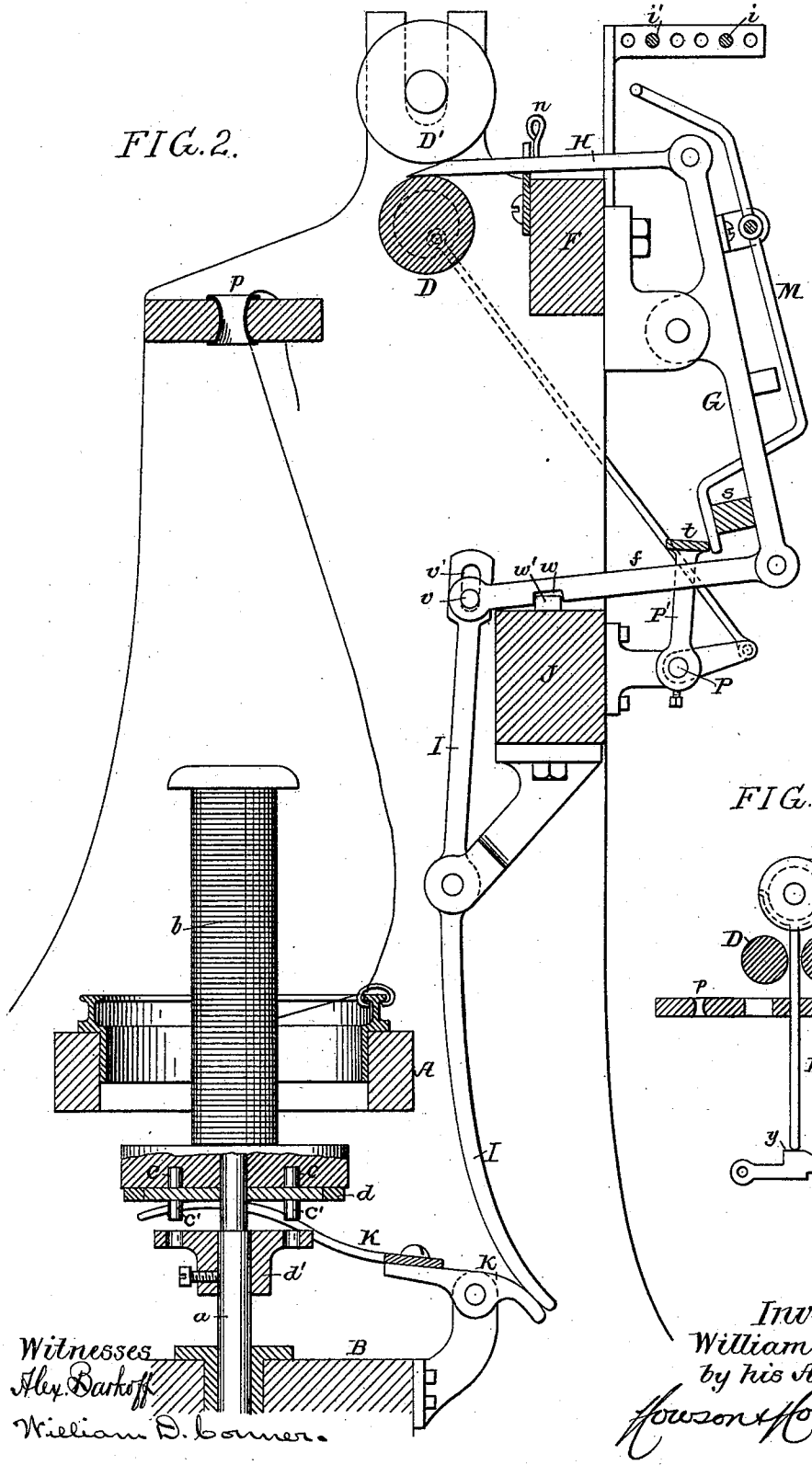


FIG. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM LUND, OF PHILADELPHIA, PENNSYLVANIA.

STOP-MOTION DEVICE FOR SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 400,864, dated April 2, 1889.

Application filed December 20, 1888. Serial No. 294,136. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LUND, a subject of the Queen Great Britain and Ireland, residing at Philadelphia, Pennsylvania, have invented certain Improvements in Stop-Motion Devices for Spinning and Twisting Machines, of which the following is a specification.

My invention relates to that class of stop-motion devices for spinning and twisting frames in which the stop-motion is rendered operative on the breaking of one of the threads or strands which are being spun or twisted, the object of my invention being to provide simple, cheap, and effective means whereby on the breaking of either of said strands there will be a stoppage both of the feeding devices and of the bobbin. This object I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section, partly in elevation, of sufficient of a spinning or twisting frame to illustrate my invention. Fig. 2 is a similar view showing some of the parts in a different position and Figs. 3 and 4 are views illustrating certain modifications of the invention.

The invention is shown as applied to a ring spinning or twisting frame; but it should be understood that it is applicable to cap-spinning or other frames as well.

A represents the ring-rail of the frame; B, the bearing-rail; *a*, the spindle, and *b* the bobbin, the latter engaging with pins *c* on a drive-disk, *d*, which in turn has pins *c'* engaging with a driving-flange, *d'*, on the spindle.

In the upper portion of the frame are bearings for the feed-rolls D D', the lower roll, D, being adapted to fixed bearings and being rotated at the desired speed, while the upper roll, D', is free to move vertically in its bearings, but when the machine is in operation rests upon the lower roll, and is driven by contact therewith, so as to effect the feeding of the strands *x* passing between the two rolls.

It will be understood that in the complete machine the lower feed-roll, D, extends the entire length of the machine, and there is an upper feed-roll, D', for each spindle, so that the feeding of strands to any one bobbin may be arrested without interfering with the operation of the rest of the machine.

To a rail, F, at the back of the machine are hung a series of levers, G, which I term the "stop-levers," there being one of these levers for each spindle and each set of feeding devices in the machine.

To the upper end of each stop-lever G is hung a bar, H, which I term the "separator-bar," the front end of said bar being tapered or wedge-shaped, and, under normal conditions of working of the machine, terminating just in the rear of the contact-point of the feed-rolls D D'. The lower end of each stop-lever G is connected by a link, *f*, to a lever, I, hung to a suitable bracket on a rail, J, of the machine, and terminating at its lower end near the inner arm of a lever, K, fulcrumed in a bracket on the rail B, the outer arm of this lever being forked, so as to project beneath the drive-disk *d* for the bobbin, one limb being on one side and the other limb on the opposite side of the flange *d'*. The lever K, I term a "lifting-lever," and the lever I an "intermediate lever."

Hung to each of the levers G are a series of detector-levers, M, one for each of the strands or threads, *x*, which are being spun or twisted, each of these strands passing first over a guide-rod, *i*, then under a flange, *m*, on one of the detector-levers, and then over a guide-rod, *i'*, the series of threads or strands then passing through a guide-eye, *n*, on the bar H, thence between the feed-rolls D D', and thence through the guide-eye *p* above the spindle. The lower arms of the detector-levers M pass through openings in the lever G, and are bent down in front of a bar, *s*, on said lever.

To suitable bearings on the fixed frame of the machine is adapted a rock-shaft, P, having arms P', which carry a projecting strike-bar, *t*, which extends throughout the length of the machine. An arm, *k*, on one end of the shaft P, is connected by a rod, *k'*, to a crank-pin, k^2, on the shaft of the feed-roll D, so that as the latter rotates the shaft P will be rocked and the strike-bar *t* will vibrate in a plane immediately under the bars *s* of the

levers G. When the machine is running normally, the parts are in the position shown in Fig. 1, the bar H being retracted, the detector-levers M supported by the strands *x*, so that their lower ends are held out of the path of the strike-bar *t*, and the outer or long arm of the lifter-lever K being depressed, so as to be free from contact with the driving-disk *d* of the spindle. When, however, one of the strands or threads breaks, the detector-lever M, controlled by said strand or thread, is permitted to swing, so that its lower end drops down in front of the bar *s* of the lever G and into the path of the strike-bar *t*. The consequence is, that this projecting portion of the detector-lever is struck and moved rearward, thus imparting a corresponding movement to the lower end of the lever G, as shown in Fig. 2. The wedge-like front end of the separator-bar H is thus thrust between the feed-rolls D D′, so as to raise the upper roll out of contact with the lower roll and stop the feeding of the strands, and at the same time the lever I is so operated through the medium of the link *f* that its lower end will act upon the short arm of the lifting-lever K to depress the same and lift the front or long arm of the lever, thus effecting the raising of the driving-disk *d* of the spindle out of engagement with the driving-flange *d′* thereon, thereby causing the stoppage of rotation of the bobbin.

In the link which connects the stop-lever G and intermediate lever, I, is a notch, *w*, and the front end of the link has a pin, *v*, adapted to a slot, *v′*, in the upper arm of the lever I, so that when the link is retracted its front end is free to fall and permits the engagement of a bar, *w′*, with the notch *w* in the link, the latter being thereby held in the retracted position and the repeated striking of the lower end of the detector-lever M by the strike-bar *t* in its vibration being prevented. (See Fig. 2.) When the broken end or strand has been pieced, it is simply necessary to lift the front end of the link and draw the same forward, in order to restore the parts to the position shown in Fig. 1, and resume the operation.

In some cases the intermediate lever, I, may be dispensed with, the lifting-lever being made in the form of a bell-crank, K′, to the upper end of which the link *f* is connected, as shown, for instance, in Fig. 3.

In machines where there are two feed-rolls, D, below, and an upper and intermediate feed-roll, D′, the latter may be acted upon by a separator-bar, H′, operated by a cam, *y*, or equivalent device, on the link *f* as the latter is retracted. (See Fig. 4.)

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

1. The combination, in a spinning or twisting machine, of the feed-rolls and the drive-disk on the spindle with a separator-bar for the feed-rolls, a lifting-lever for the drive-disk, a stop-lever, connections between the same and the separator-bar and lifting-lever, detector-levers carried by the stop-lever and controlled by the strands or threads, and a vibrating striker for acting on either of said detector-levers when it is released by the breaking of a strand, substantially as specified.

2. The combination of the feed-rolls and the drive-disk on the spindle, the stop-lever, its detector-levers, the feed-roll separator-bar, the vibrating striker for acting on the detector-levers, a lifting-lever for acting on the drive-disk, an intermediate lever acting on said lifting-lever, and connections between the stop-lever and intermediate lever and between the stop-lever and separator-bar, substantially as specified.

3. The combination of the feed-rolls, the drive-disk on the spindle, the stop-lever, its detector-levers, the feed-roll separator-bar, the lifting-lever for the drive-disk, the vibrating striker-bar for acting on the detector-levers, a connection between the stop-lever and separator-bar, and a connection between said stop-lever and the lifting-bar, said connection having a notched link for engaging with a retainer-bar when the link is in its retracted position, substantially as specified.

4. The combination of the feed-rolls, the drive-disk on the spindle, the stop-lever, its detector-levers, the vibrating striker for the latter, a lifting-lever for the drive-disk, connections between the stop-lever and lifting-lever, and a wedge-shaped feed-roll separator-bar hung to the stop-lever, all substantially as specified.

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

WILLIAM LUND.

Witnesses:
WILLIAM D. CONNER,
HARRY SMITH.