No. 756,303. PATENTED APR. 5, 1904.

S. W. WARDWELL.

STOP MOTION DEVICE.

APPLICATION FILED OCT. 13, 1902.

NO MODEL.

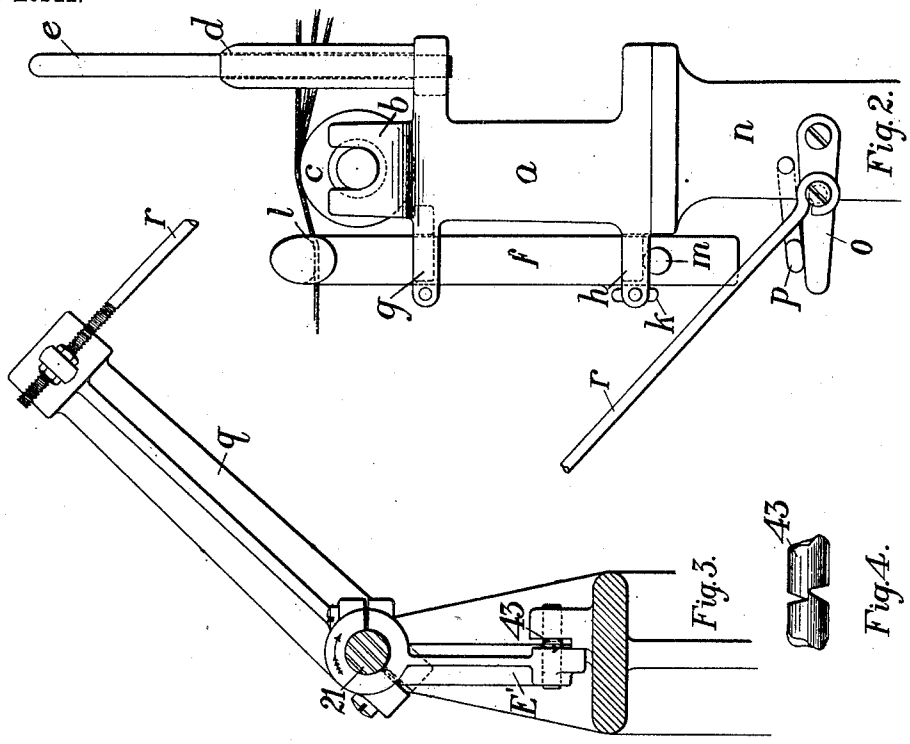


Fig. 2.

Fig. 3.

Fig. 4.

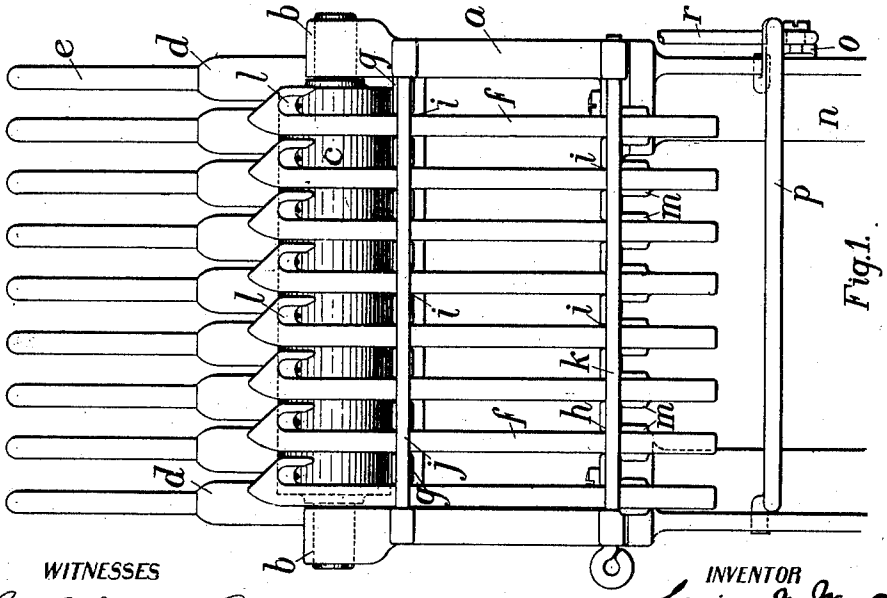


Fig. 1.

WITNESSES

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No. 756,303. Patented April 5, 1904.

UNITED STATES PATENT OFFICE.

SIMON W. WARDWELL, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO UNIVERSAL WINDING COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

STOP-MOTION DEVICE.

SPECIFICATION forming part of Letters Patent No. 756,303, dated April 5, 1904.

Application filed October 13, 1902. Serial No. 127,167. (No model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, residing at Providence, county of Providence, and State of Rhode Island, have invented new and useful Improvements in Stop-Motion Devices, of which the following is a specification.

My invention relates to stop-motion mechanism for machines for winding thread, cord, yarn, &c., and is especially adapted for use with heavy materials.

The object of my improvement is to provide a device which shall be positive in its action and of a structure able to resist the strain and wear incident to winding heavy materials.

The following is a complete specification of my invention illustrated by the accompanying drawings, in which—

Figure 1 is a front elevation of the mechanism; Fig. 2, an end elevation; Fig. 3, an illustration of the manner of connecting the device with a winding-machine; Fig. 4, a detail of the controlling mechanism.

Referring to the drawings, *a* is a frame or support for the device, having bearings *b b* for a horizontal guide-roll *c*, over which the cords from the supply are led. At the rear of the guide-roll is a series of vertical guides *d d*, &c., in this instance nine being shown to adapt the device for eight strands, each strand running between two guides. The guides *d d*, &c., consist of rolls mounted on spindles *e e*, &c., which project above the rolls to direct the cords between them. A series of drop-bars *f f*, &c., are provided, one for each strand, supported at the front of the frame *a*. As here shown, the frame *a* is formed with two overhanging ledges *g* and *h*, one above the other and each provided with a sufficient number of slots *i i*, &c., to receive the drop-bars *f f*, &c. To retain the bars in their slots, two rods *j* and *k* extend across the front of the latter, being held in lugs projecting from either end of the ledges *g* and *h*. The lower rod *k* is removable from its bearings and has formed at one end a ring or handle for facilitating said removal. The drop-bars *f f* are formed at their upper ends with hooks *l l*, &c., to engage the strands leading over the roll *c*. The top of each drop-bar is formed much like the point of a crochet-needle, with its sides so inclined that each cord readily finds its way to its hook, and the latter is formed with a curved face and rounded edges to prevent abrasion of the material. The hooks further serve to limit the downward movement of the bars by engaging with the ledge *g*. At the lower end of each bar are projections or lugs *m*, adapted to engage the ledge *h* to limit the upward movement of the bar.

The frame *a* is adapted to be supported at the appropriate height on a standard *n*, and to the latter I have shown attached the devices for engaging the stopping mechanism of the associated machine. These consist of a tripping-lever *o*, pivoted to the side of the standard *n*, and a bail *p*, engaging said lever and actuated by the drop-bars. The bail *p* is preferably formed of wire hinged by its ends engaging holes in the legs of the standard *n*. The outer bar of the bail extends below the drop-bars and projects in a loop over the top of the lever *o*.

In operative connection with the device I have preferred to show the stopping mechanism of a winding-machine such as is described and illustrated in my Patent No. 670,122, granted March 19, 1901, the same being particularly adapted for heavy materials. The operation of the machine is controlled through a sliding rod 21 and a lever E′ engaging a catch 43, which parts are illustrated in the accompanying drawings by Figs. 3 and 4. Fastened on the rod 21 is shown a lever *q*, connected to the lever *o* by the rod *r*. The rod *r* is formed with an eye at the lower end, through which a stud extends into the tripping-lever *o*. The opposite end is threaded and passes through an eyebolt in the lever *q*. Suitable check-nuts engage the threaded end of the rod and are screwed against the eyebolt. By adjusting said nuts the relation of the lever *q* to the lever *o* may be varied to regulate their conjunctive action. In Fig. 4 I have shown the manner of engagement of the catch 43 with the detent on the lever E′.

The operation of the device is as follows:

Any number of strands up to eight may be applied to the device, and each one is led from the supply between the guides *d d*, &c., and over the roll *c*. Thence it is passed under the hook on the appropriate drop-bar and led to the winding-machine. The tension on the cords maintains the drop-bars in their upper position out of engagement with the bail *p*. When a less number of strands than the number of drop-bars provided is used, such of the bars as are not required are supported out of operative position by removing the rod *k*, tilting the bar out from its lower guiding-slot, then lifting it until the lugs rest on the ledge *h*. When an end breaks or is exhausted, the release of tension allows the bar supported by that particular end to drop. The weight of the bar is sufficient to actuate the lever *o*, moving it downward through pressure on the bail *p*. Through the rod *r* and the lever *q* the rod 21 is rocked in the direction indicated by the arrow in Fig. 3 to release the detent on the lever E′ from the catch 43. The releasing of the detent permits the rod 21, acted upon by a spring or other suitable means, to be shifted longitudinally in its bearings, and the longitudinal movement of the rod causes the arrestment of the machine by shifting its driving-belt or by other similar operation.

The stop-motion above described is peculiarly adapted for use with heavy materials, the action of its members and their connections being simple and direct, devoid of complication, and the relation of the various members being such as to permit them to be sufficiently strong and rigid to withstand the strain and shock inevitably incident to winding and otherwise operating upon heavy materials.

Most stop-motion mechanisms depend for their operative efficiency upon the coöperation of some moving portion or member of the machine, which is caused by the stop-motion to act to stop the machine. In my improved structure the falling drop-bar acts directly upon the stopping devices of the machine, the force of the impact of the drop-bar being sufficient to effect the action of the stopping devices. My device possesses the further advantage that as its action is practially independent of the machine with which it is used it may be located at almost any point relative to and distant from the machine.

Without limiting myself to the precise form and arrangement of structure herein shown and described, I claim as my invention—

1. The combination with the frame *a* having ledges *g* and *h*, of drop-bars *f f* sliding in guideways in the ledges, a rod *j* fixedly supported at the front of the ledge *g*, a second rod *k* supported at the front of the ledge *h* and mounted to secure the drop-bars in either operative or non-operative position, substantially as and for the purpose described.

2. The combination with the frame *a* having ledges *g* and *h*, of drop-bars *f f* sliding in guideways in the ledges, a rod *j* fixedly supported at the front of the ledge *g*, a second rod *k* supported at the front of the ledge *h* to secure the drop-bars in either operative or non-operative position, and removable to permit the bars to be shifted into either operative or non-operative position, and projections on the bars to engage the ledges and limit the movement of the bars, substantially as and for the purpose described.

3. The combination in a stop-motion device with a horizontal guide-roll, vertical guide-rolls, spindles extending above the latter on which said guide-rolls rotate, a bracket supporting the rolls and having ledges with guide-slots, a plurality of drop-bars engaging the slots and means actuated directly by the gravity of the bars to effect the stopping of the machine.

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

SIMON W. WARDWELL. [L. S.]

Witnesses:

CHARLES A. EDDY,

ARTHUR A. ARMINGTON.