

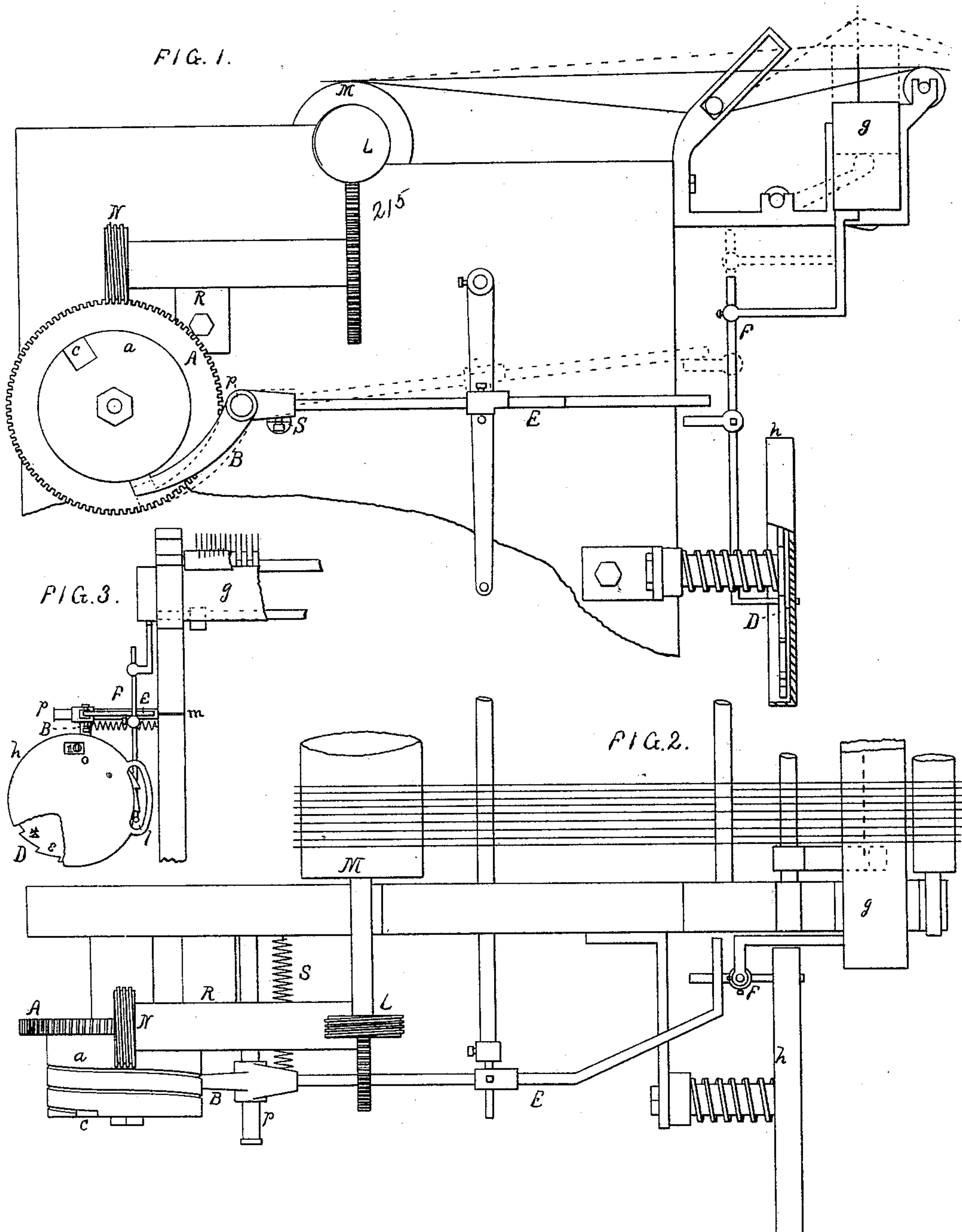
(No Model.)

W. A. PATRICK & A. HASTY.

AUTOMATIC LEASH INDICATOR FOR WARPING FRAMES.

No. 414,243.

Patented Nov. 5, 1889.



WITNESSES:

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WILLIAM A. PATRICK AND ALONZO HASTY, OF SACO, MAINE.

AUTOMATIC LEASH-INDICATOR FOR WARPING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 414,243, dated November 5, 1889.

Application filed May 29, 1889. Serial No. 312,610. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM A. PATRICK and ALONZO HASTY, citizens of the United States, residing at Saco, in the county of York and State of Maine, have invented a new and useful Improvement in Automatic Leash-Indicators for Warping-Frames, of which the following is a specification, reference being had to the drawings accompanying and forming a part thereof.

The object of our invention is to provide an attachment for use on a warping-frame, which shall automatically indicate the completion of the winding of a leash, as well as the completion of the winding of any predetermined number of leashes, both indicators being constructed and arranged so that they shall be readily noted by the operator from in front of the frame, thus avoiding the waste of time and labor attending the present method of ascertaining these conditions.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation with a part of the dial-case broken away, showing by the dotted lines the movement of parts at the time of taking a leash. Fig. 2 is a top view or plan. Fig. 3 is a front elevation with a part of the dial-case broken away and with the omission of the rear parts.

Similar letters indicate similar parts.

A is a gear having a spirally-grooved hub *a*, in which hub is a stop-slot *c*.

B is a finger-bar or finger moving in the spiral slot of the hub and pivoted upon and moving laterally on a stud *p*, projecting from the frame end.

E is an indicator-rod attached to or forming an integral part of the finger-bar.

F is a lifting-rod attached to and operated by the reed-bar *g*.

h is a dial-case having an opening *o* on its face.

D is a toothed disk or dial.

S is a spring attached to the finger-bar or indicator-rod and the frame end.

m is a mark or stud on the front of the frame end.

l indicates the cut-away part of the dial-case.

The gear A and hub *a* are mounted upon a stud projecting from the frame end. Motion is communicated to the gear from a worm L

on the end of a shaft or roll M, over which the threads pass. The worm L meshes with a worm-wheel M⁵ on a shaft mounted in the bracket R, and carries a worm N, meshing with the gear A. The tension or friction of the threads in their passage through the warper communicates the necessary motion to the roll M. This mode of gearing and driving is common and is not claimed as our invention.

The construction and operation of our improved leash-indicator are substantially as hereinafter set forth.

The indicator-rod E is secured to or forms an integral part of the finger-bar B, and is bent at an angle, so that its end shall project over in front of the warping-frame. On the front of this frame is a stud *m*, which is covered by the end of the rod E when the finger is in the spiral slot of the hub *a*. This its normal position is retained until by the motion of the hub the finger traverses the worm and drops into the stop-slot *c*, when the end of the indicator-rod drops below the mark *m*, indicating the completion of a leash and also the cause of the stopping of the machine. When a stop-motion is used to indicate the breaking of a thread, this arrangement of the leash-indicator enables the operator to determine at a glance the cause of the stoppage, whether from a broken thread or the completion of a leash. Attached to the reed-bar by a stud or any known device is a lifting-rod F, which has one end bent to project beneath the indicator-rod, the other end being formed to engage with the teeth of the dial D. On lifting the reed-bar *g* preparatory to taking the leash the leash-indicator rod is raised by the bent end of the lifting-rod and the finger is withdrawn from the stop-slot *c*, and by means of the spring S the indicator-rod is drawn inward and the finger placed in the spiral slot preparatory to warping another leash. Simultaneously by the same movement of the reed-bar and lifting-rod the dial is moved a single point and indicates the number of leashes completed. The spring S, attached to the frame and the finger-bar, acts to replace the finger after the completion of a leash and secures the automatic action of the indicator. Heretofore the operator has been obliged after taking a leash to walk around the machine and lift the fin-

ger from the stop-slot to the worm-slot, thus consuming much time.

The dial consists of a toothed disk D, inclosed in a case *h*, a part of which is cut away, 5 as shown at *l*, to allow the lifting-rod to engage with the teeth of the disk, as and for the purpose hereinbefore set forth. This dial is usually formed with sixteen (16) teeth, numbered from one (1) to sixteen, (16.) An aper- 10 ture in the front of the case exposes a single number, the number sixteen (16) being the initial number or starting-point. This dial is attached to the front or end of the frame by any known means and is easily and quickly 15 adjusted to the initial point when the desired number of leashes are taken. This dial may be varied in form and number of teeth to indicate any desired number of leashes.

Our improvement is not confined to any spe- 20 cial style of warping-frame. Although a single style of frame is used in the illustration, it is obvious that by slight changes of form, requiring only ordinary mechanical skill, our improvements may be adapted to a variety of 25 styles of warping-frames, to operate as and for the purposes set forth.

We do not claim as our invention either the gear, slotted hub, finger-bar, or reed-bar as 30 such, they being well-known devices in connection with a warping-frame.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the spring S, finger-bar B, and indicator-rod E, with the spirally-slotted hub *a*, having the stop-slot *c*, substan- 35 tially as and for the purpose specified.

2. The indicator-rod E, lifting-rod F, and stud *m*, finger-bar B, spring *s*, reed-bar *g*, and spirally-slotted hub *a*, having stop-slot *c*, in combination, as and for the purpose specified. 40

3. The combination of the spirally-slotted hub *a*, having the stop-slot *c*, reed-bar *g*, finger-bar B, indicator-rod E, spring *s*, lifting-rod F, and dial D, substantially as and for the purpose specified. 45

4. In leash-indicators, the combination of the dial, lifting-rod, indicator-rod, finger-bar, spring, reed-bar, and slotted hub having a stop-slot, to operate as herein set forth, for the purpose of indicating the completion of a 50 leash and the number of leashes taken, substantially as specified.

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