

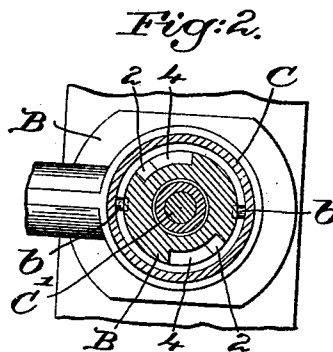
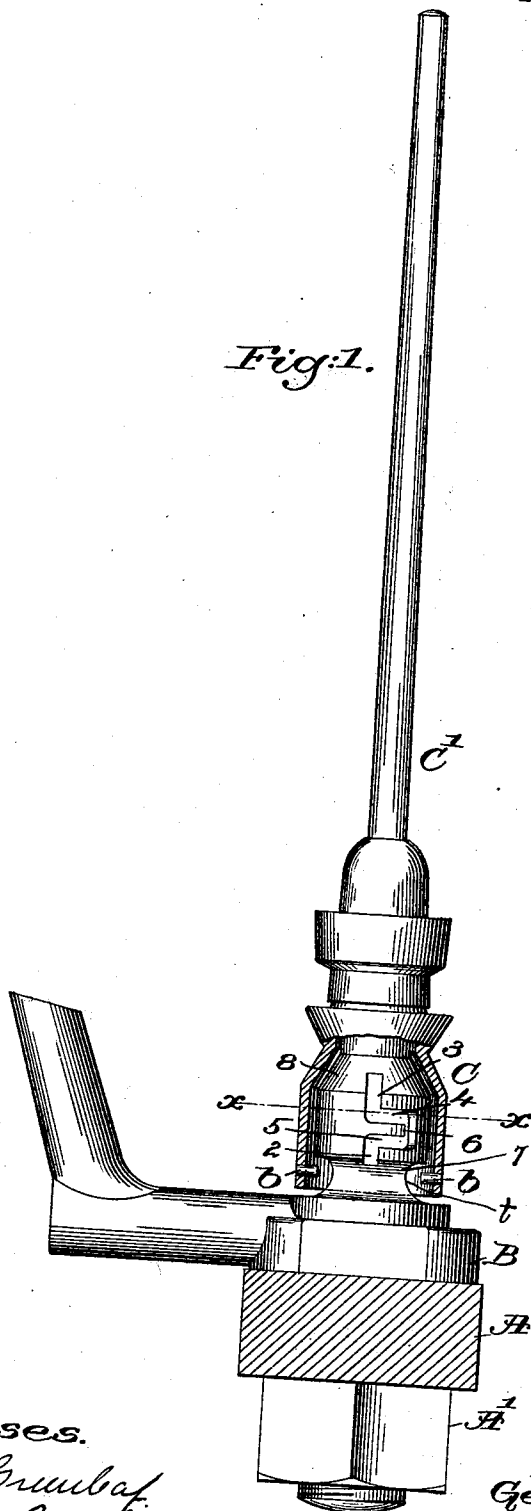
(No Model.)

G. A. DRAPER.
SPINDLE RETAINING DEVICE.

No. 513,898.

Patented Jan. 30, 1894.

Fig:1.



Witnesses.

Frederick S. Grumbat
Louis N. Howell

Inventor:
George A. Draper
by Crosby & Gregory
attys.

UNITED STATES PATENT OFFICE.

GEORGE A. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

SPINDLE-RETAINING DEVICE.

SPECIFICATION forming part of Letters Patent No. 513,898, dated January 30, 1894.

Application filed May 12, 1893. Serial No. 473,973. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. DRAPER, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Spindle-Retaining Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In the use of spindles in spinning frames, it is necessary to provide means to prevent the spindle from being lifted from its bearing while doffing or piecing up ends. Various plans have been adopted for this purpose among which may be mentioned that a flange or curb erected on the supporting case has had at its upper part an inturned lip or flange which has been provided with a notch so that a pin or projection carried by an extension of the whirl might pass through said notch below said lip or flange, the lip serving to keep the spindle down unless it happened that the pin or projection was just below the notch when the operator lifted the spindle by grasping the bobbin for doffing. In accordance with my invention I have devised a cut of such shape that the pin or projection co-operating with it cannot possibly in any movements given to the spindle in the operation of doffing or piecing up ends, be made to pass through the cut. The cut devised by me and herein represented, has two substantially vertical passages connected at their inner ends by a loop so that to remove the spindle it is necessary to first lift it partially, then turn it partially, and then again turn it in the opposite direction and also lift it. When the bobbin is removed from the spindle while the latter is revolving, the motion of the spindle tends to make the pins engage the slots. As spindles are revolved in both directions I prefer to make my slot of such shape that the pins cannot escape through the slot no matter which way the spindle is rotating.

45 Figure 1, in elevation, shows a spindle and supporting case embodying my invention, the whirl of the spindle being partially broken out; Fig. 2, a section in the line *x*, Fig. 1.

The rail A has secured to it by nut A', a supporting case B, the upright portion of said case within the sleeve whirl C of the

spindle C', being cut away to leave an annular space *t* in which enters pins *b* of the whirl when the spindle is running, said upright portion at a point above said space *t* being provided with a groove *s* shaped as to present a substantially upright portion 2 and a second substantially upright portion 3, said portions 2 and 3 being connected by a loop-like portion composed preferably of two branches 4, 5, joined at 6. I prefer to have a like groove at each side the said supporting case, said groove being in a shelf or swell on the supporting case, so as to leave a shoulder above and below into which a pin or projection *b* may enter when pulled up against the shoulder 7, or dropped down on the shoulder or incline 8. The pin *b* may happen to be directly under the groove 2, when the operative seizes a bobbin to doff the same, and if so, the pin will enter groove 2 and strike the upper wall of the branch 5, and should the spindle be running, the pin might follow along the groove 5, but it cannot get out of that groove and the spindle be lifted from the bearing without a continued lift accompanied by a backward rotation opposite the direction of the strain which caused the pin to travel along groove 5.

My improved device operates alike whatever direction the spindle may be driven, and there is no possibility of the spindle being lifted out either by any working strain, or by any usual or unusual doffing pulls, and whether the spindle rotates in one or the other direction. The grooves referred to, by being made on the exterior of the upright portion of the supporting case within the whirl, may be more easily and cheaply formed than if made at the inner side of a cylindrical body, such as the whirl or a curb outside the whirl.

It will be noticed that the groove 2 leading from the annular space *t* is terminated by a stop formed below the grooves 3 and 4, and the spindle when lifted into groove 2 cannot be taken out of its bearing without reversing its motion, which would not be the case if the groove 2 was an inclined groove or if the stop part referred to were omitted.

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

1. The supporting case having a groove

composed of a substantially vertical passage, a lateral or horizontal extension, and a reverse upwardly directed extension, combined with a sleeve whirl spindle having a pin or
5 projection, substantially as described.

2. A supporting case, and a sleeve whirl spindle having appliances to prevent the spindle from being lifted accidentally when doffing, said appliances being a groove on one
10 having two substantially vertical or upwardly inclined parts connected by a loop-like part, and a pin or projection on the other, substantially as described.

3. A sleeve whirl spindle having a pin or

projection, combined with a supporting case 15
having an annular groove in which said pin or projection may travel as the whirl is rotated, and above said space a groove, the upper extremity or end of which is bridged, the upper end of said groove communicating with
20 an irregular groove, substantially as described.

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

GEO. A. DRAPER.

Witnesses:

C. E. LONGFELLOW,
S. F. SMITH.