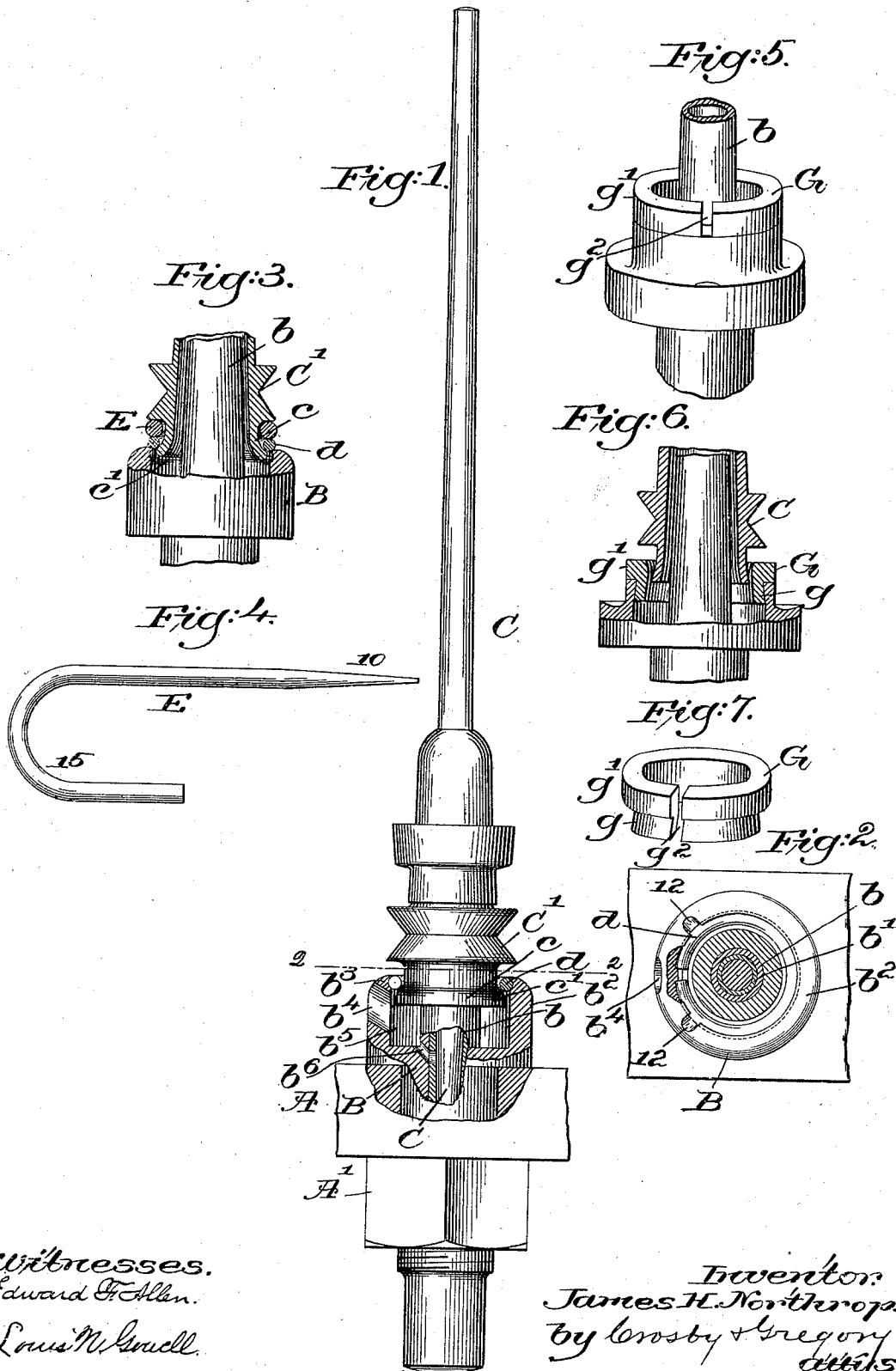


(No Model.)

J. H. NORTHROP.
SPINDLE RETAINING DEVICE.

No. 505,721.

Patented Sept. 26, 1893.



Witnesses.
Edward F. Allen.
Louis M. Lowell.

Inventor.
James H. Northrop.
by Crosby & Gregory
attys.

UNITED STATES PATENT OFFICE.

JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO
GEORGE DRAPER & SONS, OF SAME PLACE.

SPINDLE-RETAINING DEVICE.

SPECIFICATION forming part of Letters Patent No. 505,721, dated September 26, 1893.

Application filed May 29, 1893. Serial No. 475,885. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NORTHROP, 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.

It is customary in connection with sleeve whirl spindles to employ a holding device to prevent the spindle from being lifted from its bearings accidentally, as when doffing. Usually for this purpose an Γ -shaped pin or wire has been attached to the spindle bore, the short arm of the pin overlapping the upper side of the band-receiving portion of the whirl. In a holder such as described, as the spindle is lifted in doffing the upper end of the whirl strikes the holder, and the holder, by the frequent pulls against it, gets bent or broken. I have aimed to construct a spindle retainer which will act uniformly on all parts of the sleeve whirl as the latter is lifted with the spindle in doffing, and I have so constructed the retainer that it nearly surrounds an extension of the whirl, said extension being flared outwardly, and before the spindle can be removed the ring-like retainer has to be changed as to its diameter. The retainer shown by me is made in the form of a split ring. I have also provided the supporting-case with a curb extended upwardly about the extension of the sleeve whirl, and said extension has been made to project into said curb, and the curb has been provided with an oil hole by which to introduce oil into the supporting-case to oil the spindle bearings, such construction enabling the usual oiling legs to be dispensed with leaving the spindle rail unobstructed and the bands free from abrasion on a leg as sometimes happens by careless adjustment of the supporting-case. I prefer to so construct my ring-like retainer that it can be changed in diameter only by the use of a special tool, so that the attendants at the spinning frame cannot remove a spindle without calling the tool into use, and in practice the tool may be carried by the "fixer." The arrangement of curb and ring or collar of less diameter than the flange on the whirl acts to

retain such oil as may run down on the inside of the whirl and be thrown off by centrifugal action.

Figure 1, in elevation shows a spindle bearing embodying my invention, the curb and ring-like retainer being broken out to better show them. Fig. 2, is a section on the dotted line 2—2 of Fig. 1 looking down. Fig. 3 is a sectional detail showing the retainer outside the case and as about to be forced into the case to retain the spindles. Fig. 4, represents the special tool employed to take the spindle out and to put it into its bearing. Fig. 5, shows a modification; Fig. 6, a partial section thereof; and Fig. 7 shows the retainer of Figs. 5 and 6 detached.

The rail A has attached to it by a nut A', the supporting-case B, it having a tubular central stem b of usual construction to receive any usual or customary bolster or lateral bearing b' , into which is extended the pintle of the spindle C having a sleeve whirl C'. The supporting-case B has erected upon it a curb b^2 having an inturned lip b^3 , and the curb has an oil hole at b^4 and an oil space b^5 which has leading from it an oil duct b^6 , see Fig. 1, which leads oil to the spindle bearing. The sleeve of the whirl has an extension c which has an outwardly flared portion or collar c' which is embraced by my improved retainer d , shown in Figs. 1 and 2 as a split ring composed of wire, the interior diameter of the ring-like retainer being smaller than the external diameter of the sleeve extension, while the external diameter of the ring-like retainer is such as to engage the curb below its inturned lip b^3 . The split ring constituting the retainer will preferably be made from strong spring wire which is quite stiff, and when the spindle is in place in its bearing, the said retainer, sprung into the upper end of the curb and surrounding the whirl extension, will be kept from rising, and as the spindle is raised the enlarged portion c' of the extension by contact with the retainer serves to expand the same, and as the enlarged lower end of the whirl cannot rise through the retainer, it follows that the retainer keeps the spindle from being lifted out of its bearings. Now if it is desired to remove the spindle, the "fixer" or whoever has the tool E, inserts its

end 10 into one of the notches 12, 12, and using said end as a lever, pushes against the retainer, causing it to yield or contract as it may do owing to the open space between its ends, and to slip out of its position in the curb, thus permitting the spindle to be lifted, the spindle carrying with it the retainer, as shown in Fig. 3. Now to insert the spindle into its bearings, the "fixer" will hook the end 15 of the tool about the extension of the whirl and above the retainer, as shown in Fig. 3, and put the spindle in place so that the retainer will rest on the top of the curb, and will push down on the spindle. As the spindle is pushed down, the under side of the band-carrying portion of the spindle acting on the tool causes it to push on the retainer in such manner as to spring the same into its place in the curb. From the foregoing it will be seen that any upward pull on the spindle acts to expand the retainer and cause it to be seated more firmly in the curb, but by the tool the retainer may be contracted, and then it can leave the curb.

In the modifications Figs. 5 to 7 I have shown a retainer G, it having a shank g , a head g' and a space g^2 , the shank being so shaped as to engage a portion of the interior of the curb and maintain its engagement until the retainer has been contracted, the slot g^2 permitting this. The retainer G will surround the extension of the whirl as described of the retainer in Figs. 1 and 2, but the retainer in Figs. 5 and 7, may, by reason of its exposed upper end g' be grasped by hand and be contracted without the use of a tool, but such a retainer is more expensive to make and is not as desirable as the one composed of wire.

This invention is not limited to the exact shape shown for the retainer, the gist of this invention as to the retainer being that it surrounds more or less a wedge-like extension at the lower end of the whirl, that it shall hold the spindle more firmly as the spindle is lifted, but that the retainer may have its diameter changed prior to lifting the spindle, such change of diameter of the retainer leaving the spindle free to be lifted without obstruction or impediment.

The curb shown is attached to and forms a part of the supporting-case, but it is obvious that the action of the curb with relation to the retainer would be the same whatever the part to which the curb was attached.

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

1. A sleeve whirl spindle having a flanged extension, and a surrounding supporting case having a curb, combined with a spindle retainer interposed between the said extension and curb and adapted to be expanded to hold the curb more closely by reason of upward pull on the spindle, substantially as described.

2. A supporting-case having spindle bearings and provided with a curb, a yielding ring-like spindle-retainer adapted to be contracted and expanded with relation to the said curb, combined with a spindle having a sleeve whirl provided with an extension embraced by said retainer, to operate, substantially as described.

3. A spindle having a sleeve whirl provided with an outwardly turned extension, and a spindle bearing supporting-case provided with a curb to be entered by the said whirl extension, combined with a ring or annulus mounted on the said curb to constitute a detachable inturned lip of less diameter than the outturned extension of the spindle, substantially as described.

4. A spindle having a sleeve whirl provided with an extension, a split ring-like retainer surrounding the said extension loosely and adapted to remain on said extension, combined with a supporting case having a curb provided with an inturned lip adapted to engage the retainer at a point above the lower end of said whirl extension when the spindle is in place, substantially as described.

5. A spindle having a sleeve whirl provided with an extension below the band-receiving portion, a supporting case having a curb surrounding the said extension when the spindle is in place, said curb being provided with a notch, combined with an intermediate ring-like spindle-retainer adapted to be reached by a tool through said notch and to be contracted to thus disengage the retainer from the curb and let the spindle be lifted from the curb and take the retainer with it, substantially as described.

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

JAMES H. NORTHROP.

Witnesses:

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