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Patented Nov. 4, 1902.

R. HILL.

COP HOLDER FOR WINDING MACHINES.

(Application filed Apr. 10, 1902.)

(No Model.)

Fig. 1.

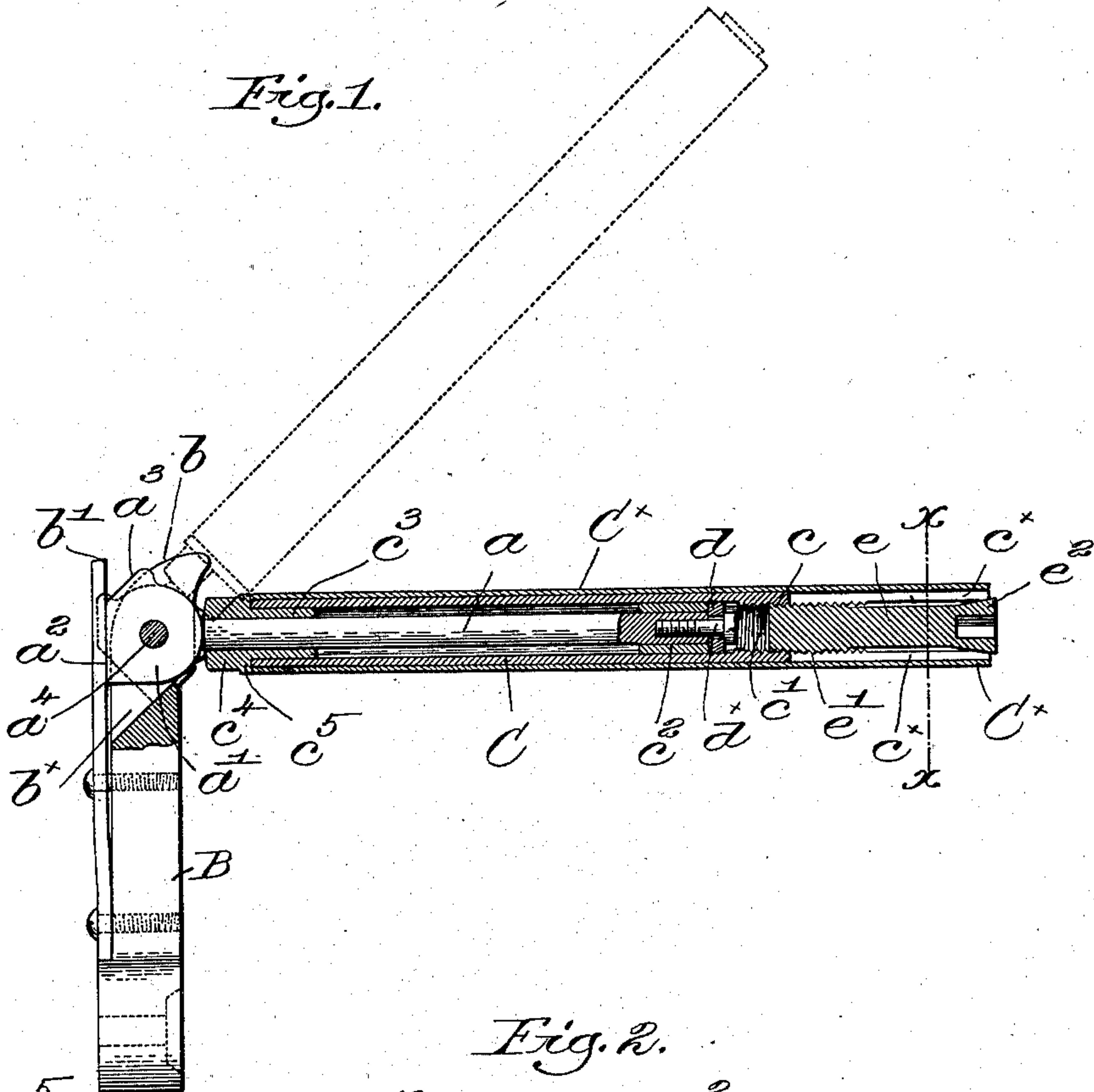


Fig. 2.

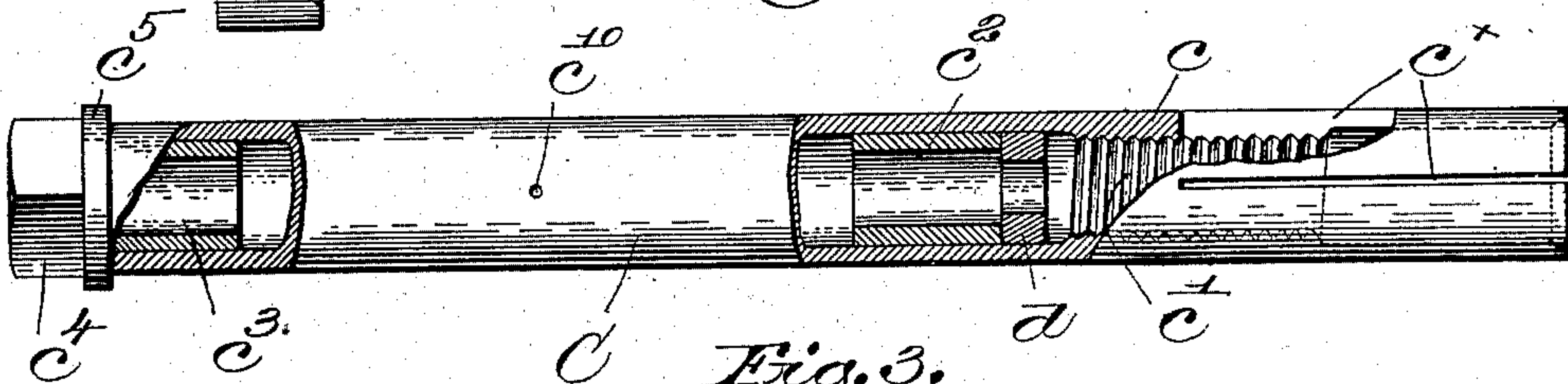
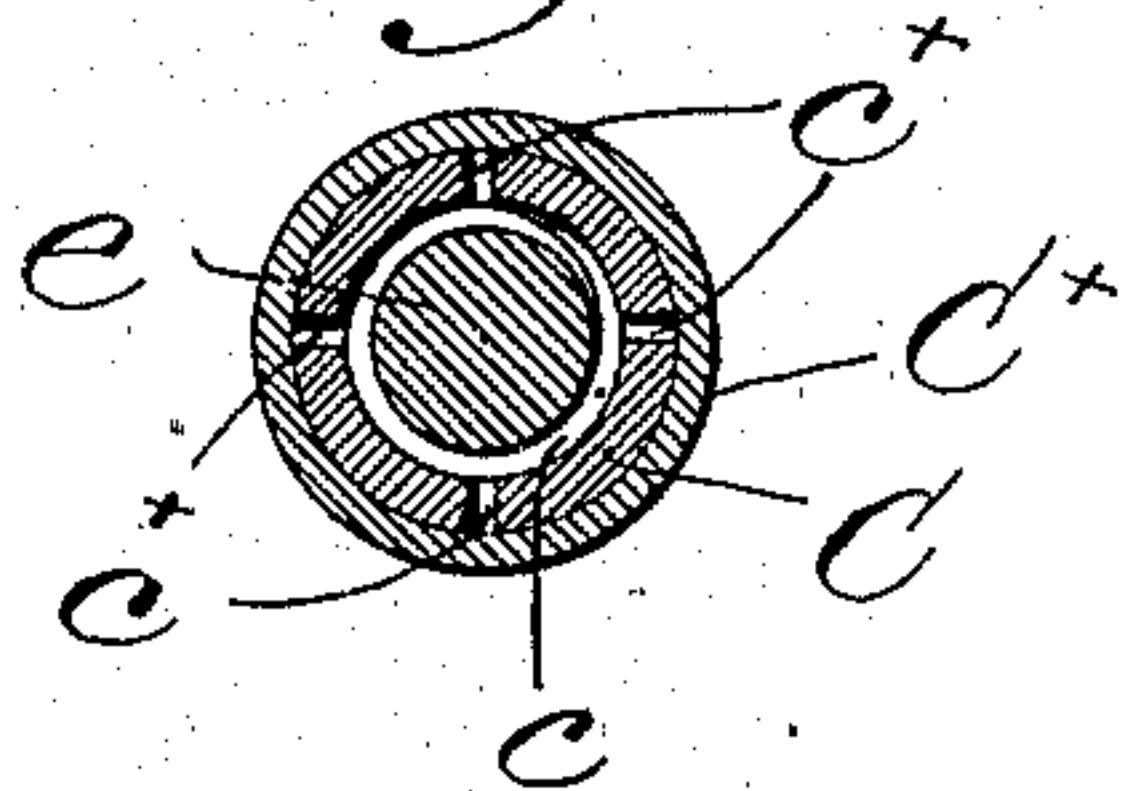


Fig. 3.



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UNITED STATES PATENT OFFICE.

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COP-HOLDER FOR WINDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 712,536, dated November 4, 1902.

Application filed April 10, 1902. Serial No. 102,325. (No model.)

To all whom it may concern:

Be it known that I, ROBERT HILL, a citizen of the United States, and a resident of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Cop Holders or Supports for Winding-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to that class of machines for winding yarn, thread, or similar material upon tubular cops by surface contact of the cop with an actuating-drum, the positive rotation of the latter acting by frictional contact with the cop and the gradually increasing thread or yarn mass thereupon to rotate the same and effect the winding. In such machines the cop is mounted upon a rotatable holder or support to be rotated therewith, the cops being made of paper, pasteboard, or similar material, forced upon the holder by the attendant when the winding is about to begin and removed when the yarn or thread has been wound thereupon to the desired extent.

My present invention relates more particularly to the cop holder or support; and it has for its object the production of a novel cop-holder, the construction and arrangement being such that the cop can be easily and quickly applied to and firmly held upon the cop-holder without any twisting or forcing action on the part of the operative.

The various novel features of my invention will be hereinafter described, and particularly pointed out in the following claims.

Figure 1 is a view, partly in elevation and partly in longitudinal section, of a cop-holder embodying one form of my invention, the support for the dead-spindle being shown. Fig. 2 is an enlarged side elevation, broken out and partly in section, of the cop-carrier detached; and Fig. 3 is a transverse section, enlarged, on the line $x-x$, Fig. 1.

Referring to Fig. 1, a dead-spindle a is provided with an enlarged flattened head a' , having a portion of its perimeter flattened to present two faces a^2 a^3 , the head being fulcrumed on a pin a^4 between two parallel ears b , only one being shown, forming part of an arm or support B, of a construction well known to

those skilled in the art. The outer end of the support is slotted or cut away at the base of and between the ears, as at b^x , and a flat spring b' , secured to the arm, bears at its free end on the flat face a^2 of the spindle-head when the spindle is in full-line operative position, retaining the spindle in such position. When the spindle is swung up into dotted-line position to apply or doff a cop, the spring engages the face a^3 , the support B being mounted on a part of the frame of a winding-machine adjacent the driving drum or cylinder. (Not shown.)

The parts thus far described are not of my invention and are referred to only that the mode of use and application of the particular features involved in my invention may be clearly understood.

In accordance with my invention the cop-carrier consists of a metallic tube C, of a length suitable for the cops to be used therewith, the tube being longitudinally slotted at one end, as at c^x , to render it radially expandible thereat. I have shown the wall of the tube as somewhat thicker adjacent the expandible end, as at c , Figs. 1 and 2, and this thickened portion is interiorly screw-threaded at c' to form an annular seat for a purpose to be described. A sleeve or bushing c^2 is forced into the tube from its opposite end to a point near the inner end of the seat, and it forms an intermediate bearing for and through which the dead-spindle a extends.

An end bearing, shown as a short sleeve or bushing c^3 , is forced into the unslotted end of the cop-carrier C, forming an end bearing therefor, said end bearing having, preferably, a square external head c^4 and an annular flange c^5 , the latter projecting beyond the exterior of the cop-carrier, while the head c^4 practically butts against the circular portion of the spindle-head a' , as in Fig. 1. The free end of the spindle is provided with a longitudinal threaded hole to receive the shank of a headed screw d^x , Fig. 1, and a washer d loosely surrounds the shank of the screw between its head and the spindle and projects laterally over the outer end of the intermediate bearing c^2 . The washer is inserted in the cop-carrier before the bearings are driven into place, and after the spindle has been passed through the bearings the screw d^x is

inserted through the slotted end of the cop-carrier and screwed into place, preventing longitudinal movement of the cop-carrier on the spindle or its accidental withdrawal therefrom.

An expander, shown as a shank e , Fig. 1, having a threaded portion e' and a tapering head e^2 , is screwed into the threaded seat c , and is thereby supported directly by and upon the cop-carrier, the tapered head e^2 entering the expansible or slotted end of the cop-carrier. By screwing the expander in its tapered head engages the interior of the slotted end of the cop-carrier and expands it, the amount of expansion depending upon the inward movement of the expander, outward movement of the latter permitting the end of the cop-carrier to resume its normal diameter.

The cop-carrier C is well supported on the spindle a by or through the bearings c^2 c^3 and is freely rotatable when the spindle is in operative position; but when the latter is swung into dotted-line position, Fig. 1, the head c^4 enters between the parallel ears b and locks the cop-carrier from rotation.

A cop C^x is shown in Fig. 1 in position on the cop-carrier, the flange c^5 forming an end stop for the cop, while the expansion of the outer end of the cop-carrier securely and firmly holds the cop in place to rotate in unison with the cop-carrier.

Any suitable device may be employed to readily turn the expander to effect the securing or release of a cop, and I have shown in Fig. 1 a hole e^x , polygonal in cross-section, in the end of the head e^2 to receive a similarly-shaped key, (not shown,) with which the operative can manipulate the expander.

To apply a cop, it is slipped onto the cop-carrier C , and a slight turn of the expander locks the cop securely in place. When doffing, the expander is turned to permit contraction of the expansible end of the cop-carrier, and the cop can be easily drawn off.

The device herein shown obviates any forcing or crowding of the cop into place and does away with points, prongs, or other devices adapted to enter the cop to maintain it in position. The length of the cop may be greater than that of the cop-carrier, so long as convenient access may be had to the expander to operate the same. By mounting the expander directly upon the cop-carrier the construction is simplified, strengthened, and cheaper to make.

Lubricant can be introduced to the bearings by a small hole c^{10} , Fig. 2, in the cop carrier, and as the bearings are so inclosed and protected from the effect of dust and dirt but little lubrication is required.

My invention is not restricted to the precise construction shown and described, as it may be modified in different particulars without departing from the spirit and scope of my invention.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class described, a dead-spindle, a tubular cop-carrier rotatably mounted thereon and radially expansible at one end, and an expander mounted directly on the inner wall of the cop-carrier and adapted to interiorly engage and expand the expansible end thereof.

2. In a device of the class described, a dead-spindle, a tubular cop-carrier rotatably mounted thereon and longitudinally slotted at its outer end, and an expander mounted directly on the inner wall of the cop-carrier within and adapted to engage and expand the slotted end thereof.

3. In a device of the class described, a dead-spindle, a tubular cop-carrier rotatably mounted thereon and longitudinally slotted at its outer end, a threaded internal seat on the inner wall of the cop-carrier, and an expander mounted in said seat and adapted to interiorly engage and expand the slotted end of the cop-carrier.

4. In a device of the class described, a dead-spindle, a tubular cop-carrier rotatably mounted thereon and radially expansible at one end, means to prevent longitudinal movement of the cop-carrier on the spindle, and an expander mounted directly upon the inner wall of the cop-carrier and adapted to expand the expansible end thereof.

5. In a device of the class described, a dead-spindle, a cop-carrier rotatably mounted thereon and longitudinally slotted at its outer end, an intermediate bearing and a bearing at the opposite end of the cop-carrier, to receive the spindle, and an expander mounted directly upon the cop-carrier independently of said bearings to interiorly engage and expand its slotted end.

6. In a device of the class described, a dead-spindle, a cop-carrier rotatably mounted thereon and longitudinally slotted at its outer end, an intermediate bearing and a bearing at the opposite end of the cop-carrier, to receive the spindle, a device on the spindle and cooperating with the intermediate bearing, to prevent longitudinal movement of the cop-carrier, and an expander mounted directly upon the latter beyond said intermediate bearing and adapted to interiorly engage and expand the slotted end of the cop-carrier.

7. In a device of the class described, a dead-spindle, a tubular cop-carrier rotatably mounted thereon and longitudinally slotted at its outer end, a threaded internal seat integral with and on the inner wall of the cop-carrier near its slotted end, and an expander having a threaded shank to engage and be supported by the seat and having a tapering head to interiorly engage and expand the slotted end of the cop-carrier.

8. In a device of the class described, a dead-spindle, a support therefor having ears between which the spindle is pivotally mount-

ed, a cop-carrier rotatably mounted on the spindle and having its outer end longitudinally slotted, a bearing for the spindle, secured to the inner end of the cop-carrier and
5 having an external locking-head, to enter between the ears of the spindle-support and prevent rotation of the cop-carrier when the spindle is turned into inoperative position, and an expander mounted directly upon the

cop-carrier and adapted to interiorly engage to and expand its slotted end.

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

ROBERT HILL.

Witnesses:

ALFRED SAGAR,
HENRY TYSON LEA.