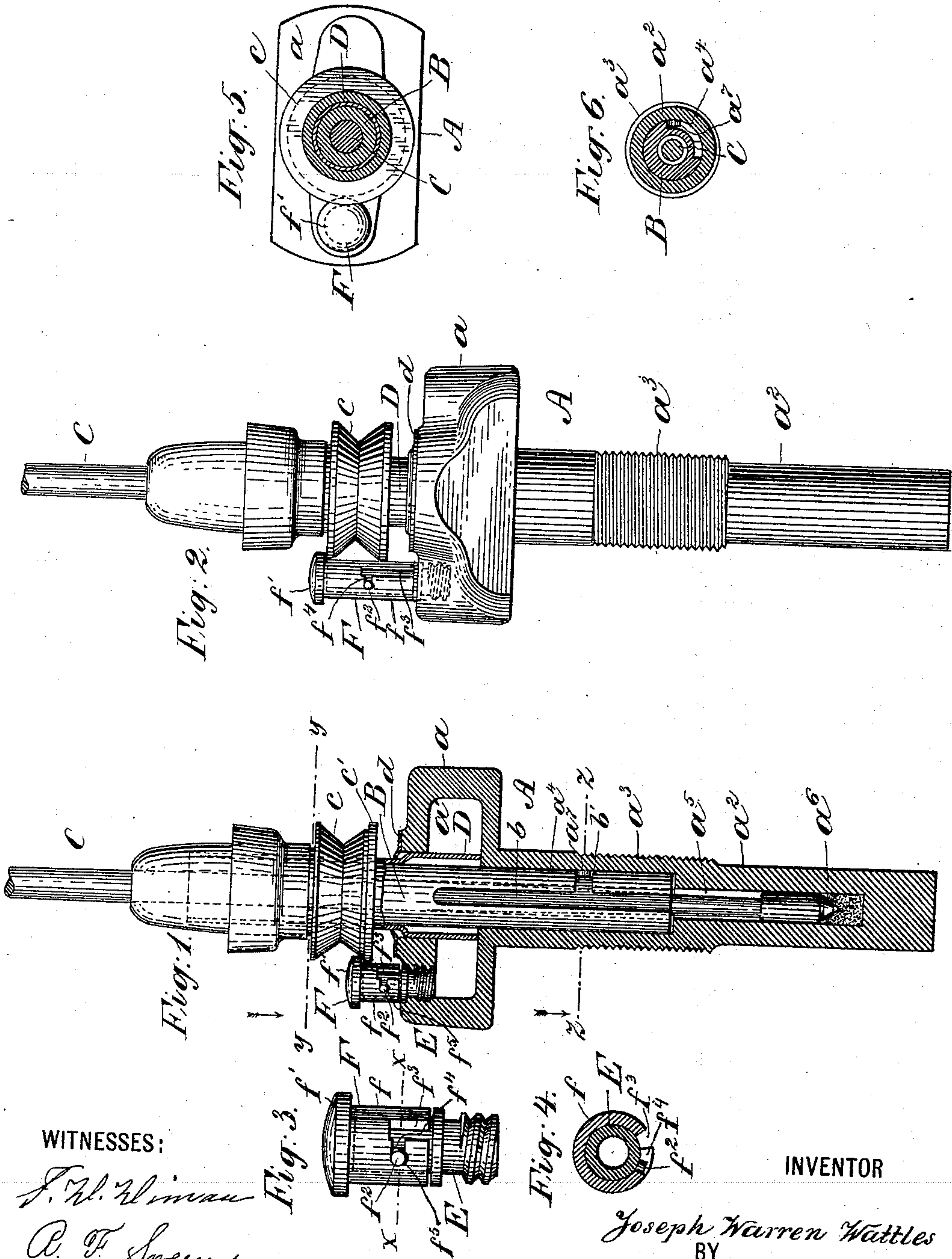


(No Model.)

J. W. WATTLES.  
DOFFER GUARD AND STOPPER FOR LUBRICATING TUBES FOR SPINDLES.  
No. 604,446.  
Patented May 24, 1898.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH WARREN WATTLES, OF CANTON, MASSACHUSETTS.

DOFFER-GUARD AND STOPPER FOR LUBRICATING-TUBES FOR SPINDLES.

SPECIFICATION forming part of Letters Patent No. 604,446, dated May 24, 1898.

Application filed October 12, 1897. Serial No. 654,943. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH WARREN WATTLES, a citizen of the United States, and a resident of Canton, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Doffer-Guards and Stoppers for Lubricating-Tubes for Spindles, of which the following is a specification.

10 In United States Letters Patent No. 244,778, which were granted to me July 26, 1881, I have shown and described a doffer-guard and stopper for a lubricating-tube in which a screw engages with a thread in the interior  
15 of the lubricating-tube and is provided at its upper end with an enlarged head that extends outwardly over a circumferential flange formed around the lower edge of the whirl, and thereby, when in place, not only serves  
20 to close the upper end of the tube, but to prevent the withdrawal of the spindle from its bearings when the doffing of the bobbin therefrom is effected. This construction, while efficient as a doffer-guard and stopper  
25 for the lubricating-tube, has been found more or less objectionable in practice, principally because of the amount of time that is required to unscrew it from and to screw it back into the lubricating-tube when the removal of the spindle from and its replacement in its bearings are desired.

To obviate the objection above noted and at the same time produce an efficient doffer-guard and stopper for the lubricating-tube  
35 which shall have all the advantages of that disclosed in the said Letters Patent are the objects of my invention.

To these ends the invention consists in the peculiarities of construction of the guard and  
40 stopper itself and in the means whereby it is detachably secured to the lubricating-tube, all as will hereinafter more fully appear.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation of a spindle, its bearings, and the holder therefor, with a doffer-guard and stopper for the lubricating-tube  
45 constructed in accordance with my invention applied in connection therewith, the upper end of the spindle being broken away for convenience of illustration, and the bolster-holder and the sleeve and cap surrounding

the upper end of the bolster being shown in longitudinal axial section; Fig. 2, a side elevation of a spindle, its bearings, and the  
55 holder therefor, with a doffer-guard and stopper for the lubricating-tube of a slightly-modified construction applied in connection therewith, the upper end of the spindle being similarly broken away; Fig. 3, a side  
60 elevation of a lubricating-tube detached, with a doffer-guard and stopper for such tube constructed in accordance with my invention applied thereto; Fig. 4, a transverse section of  
65 the doffer-guard and stopper and of the lubricating-tube to which it is applied, taken in the plane  $x x$  of Fig. 3; Fig. 5, a transverse sectional plan of the spindle and of its bearings and appurtenances, with a doffer-guard and stopper for the lubricating-tube,  
70 taken in the plane  $y y$  of Fig. 1; and Fig. 6, a transverse sectional plan of the spindle and of its bearings and their holder, taken in the plane  $z z$  of Fig. 1.

In all the figures like letters of reference are  
75 employed to designate corresponding parts.

A indicates a holder by means of which the spindle and its bearings may be secured to and supported upon a spindle or other rail. In the form selected by me for illustration of  
80 my invention this holder consists of the head or body portion  $a$ , having the lubricant-reservoir  $a'$  therein, and of the shank-like portion  $a^2$ , which is adapted to enter a suitable orifice formed in the spindle or other rail and be  
85 held therein by a suitable nut (not shown) engaging with the screw-thread  $a^3$ , formed upon its periphery. As thus constructed this holder is provided with a cylindrical chamber  $a^4$ ,  
90 which, extending downward from its upper end axially of the same through the lubricant-reservoir  $a'$ , has its lower portion  $a^5$  contracted in size and equipped at its lower extremity with a step-bearing  $a^6$ , that may be  
95 either rigid or yielding, as may be preferred.

B indicates a bolster-tube which is arranged within the chamber  $a^4$ , with its upper end extending some distance above the top of the head or body portion of the holder A, and is provided in its periphery with a longitudinal  
100 groove  $b$  and a horizontal groove  $b'$ . The groove  $b$  forms a channel or passage-way for the lubricant from the reservoir  $a'$  downward to the step-bearing  $a^6$ , and with the horizontal



groove  $b'$  it also forms a bayonet-joint, whereby to permit of the engagement of the bolster-tube with and its disengagement from a pin  $a^7$ , that extends inward from the holder A for the purpose of locking said tube into the holder and preventing it from rotating therein.

Located within the bolster-tube B and the chamber  $a^4$   $a^5$  is the spindle C, which in the example shown in the drawings is provided with a sleeve-whirl  $c$  and rests at its lower end on the step  $a^6$ . As thus arranged the spindle is supported and held in the proper position for operation, while yet left to rotate therein, and is automatically lubricated from the reservoir  $a'$  by the lubricant flowing downward therefrom through the groove  $b$  to the step  $a^6$ , thence up along the spindle to the upper end of the bolster-tube, and thence over the top and down along the outside of the latter to the reservoir in a continuous circuit, and in order to protect it from dirt and lint as it flows down the outside of the bolster-tube I make use of the sleeve D, which surrounds such tube and rests at its lower end in the reservoir, which in like manner is protected from the ingress of lint and other foreign substances by the annular cover  $d$ , that closely surrounds the tube D and rests upon the upper end of the holder A.

The parts as thus far described relate more particularly to the spindle and to the means whereby it is supported and lubricated and form no part of my present invention, but are or may be the same as those heretofore employed and require no further description herein.

Extending downward into the lubricant-chamber  $a'$  in close relationship to the spindle C is a tube E, through which the lubricant may be supplied to such chamber when required. This tube may be constructed either integral with or detachable from the holder A. I prefer, however, to construct it as a detachable part and to secure it in the proper position in the holder by a screw-thread, as shown. As thus constructed in separate form it is adapted for use in connection with any of the forms of holder that are provided with a reservoir for lubricant in its upper end.

Arranged in connection with the tube E is the doffer-guard and stopper F, to which my invention more particularly relates. This doffer-guard and stopper consists of a sleeve-like cylindrical portion  $f$ , which is adapted to fit and slide down over the upper end of the tube E and is provided at its upper end with a head  $f'$ , that extends across its top and outward circumferentially some distance beyond the same as a flange for engagement with the whirl  $c$  to hold the spindle from withdrawal from its bearings when the bobbin is being doffed. In some cases I find it desirable to so dispose this head  $f'$  of the guard or stopper as to make it engage with the lower portion of the whirl  $c$ , in which event it will be convenient to provide the

whirl with a flange  $c'$ , that extends outward circumferentially from its lower edge, as shown in Fig. 1. In other instances it may be found preferable to have it engage with the upper side of the whirl, and in those cases either the tube E or the sleeve portion  $f$  of the guard and stopper, or both, will be made of the proper height or length to permit of the head  $f'$  engaging with the upper edge of the whirl, as shown in Fig. 2, and either of these forms may be adopted, as preferred, and the device operated with equal efficiency.

For locking the doffer-guard and stopper to the lubricating-tube E, while yet permitting of its ready attachment therefrom when desired, I equip the tube E with a pin or projection  $f^2$  and provide the sleeve-like portion of the guard and stopper F with the intersecting vertical and horizontal grooves or slots  $f^3$  and  $f^4$ , the latter of which is constructed with the small circular depression  $f^5$  at its inner end for reception of the pin  $f^2$ . As thus constructed and arranged, when the doffer-guard and stopper F is applied to the tube E and turned thereon until the pin  $f^2$  rests in the depression  $f^5$ , as shown in the drawings, it will be locked thereupon, and the withdrawal of the spindle from its bearings when the doffing of the bobbin is effected or otherwise will be prevented, while such spindle is yet left free to be revolved therein. When, on the other hand, this guard and stopper is turned in the opposite direction until the vertical groove  $f^3$  is brought in line with the pin  $f^2$ , then the guard and stopper can be readily removed from the tube E by simply raising it thereon and the spindle withdrawn from its bearings. It will thus be seen that the locking of the guard and stopper to the tube E when applied thereto and its unlocking therefrom are effected by simply turning it slightly in one or the other direction, as its locking or unlocking may require, and in order to prevent the turning of the guard and stopper on the tube E into a position to unlock the same therefrom by the spindle when in rotation I so dispose the groove  $f^4$  with respect to the latter that the tendency of the spindle is to turn the guard and stopper in the direction to lock it upon the lubricating-tube when brought into contact therewith.

I am thus enabled to produce a doffer-guard and a stopper for the tube through which the lubricant is supplied to the lubricant-reservoir in the upper end of the bolster-holder which is not only simple in construction and efficient in operation, but likewise obviates the use of screw-threads, and employs in lieu thereof an arrangement of parts that is much more easy and rapid in its operation.

Although in the foregoing I have described my invention as applied in connection with the tube through which the lubricant is supplied to the reservoir, which is the arrangement I prefer when this tube is employed, as



thereby it acts both as a doffer-guard for the spindle and as a stopper for the tube, yet when used simply as a doffer-guard it is obvious that it may be applied to a pin or stud arranged in proper relation to the spindle, and in some cases I intend to so apply it.

Having now described my invention and explained how it is or may be carried into effect, I claim and desire to secure by Letters Patent of the United States—

1. The combination, with a bolster-holder, a spindle, and a cylindrical body extending upward from the holder and provided with a projection on its side, of a sleeve-like member adapted to fit and slide upon said cylindrical body, and provided with both a projecting flange at its upper end and a vertical and a horizontal slot in its side for engagement with said projection, whereby the spindle may be either held within the holder, or its withdrawal therefrom permitted, as may be desired, substantially as described.

2. The combination, with the spindle C pro-

vided with the whirl  $c$  having the circumferential flange  $c'$  at its lower edge, the bolster-holder A, and the tube E provided with the pin or projection  $f^2$  extending outward from its side, of the doffer-guard fitted to such tube and provided at its upper end with a flange,  $f'$ , for engagement with the flange  $c'$  on said whirl  $c$ , and with vertical and horizontal intersecting slots  $f^3$  and  $f^4$  in its lower portion for engagement with said pin or projection, the latter of which slots is so disposed with respect to the former slot that the action of the spindle upon the doffer-guard, when the spindle is in rotation, tends to hold such guard in a locked position upon its locking pin or projection; substantially as described.

In testimony whereof I have hereunto set my hand this 8th day of October, 1897.

JOSEPH WARREN WATTLES.

Witnesses:

N. W. DUNBAR,  
WALTER AMES.