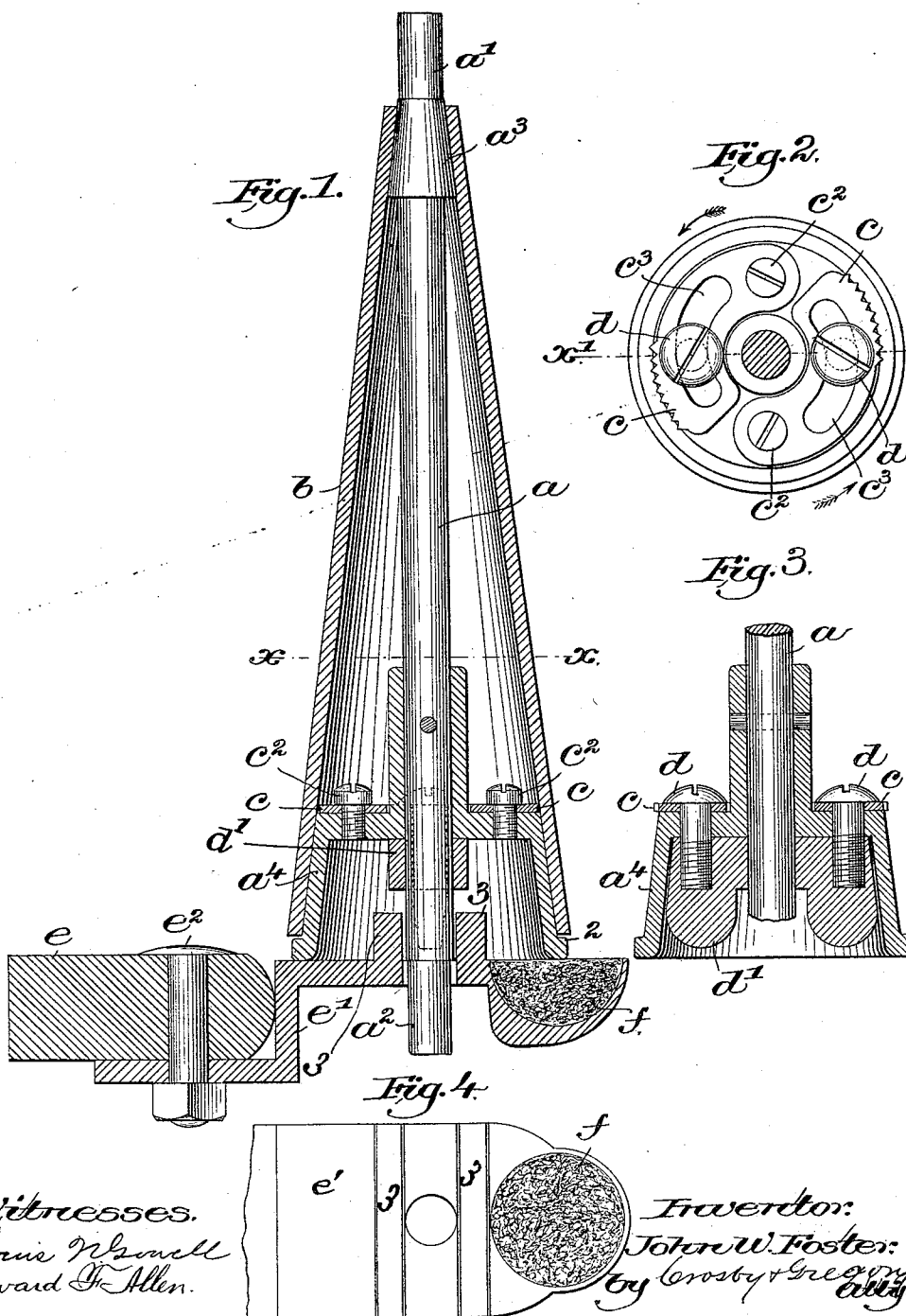


(No Model.)

J. W. FOSTER.
TUBE HOLDER FOR SPOOLING MACHINES.

No. 499,667.

Patented June 13, 1893.



UNITED STATES PATENT OFFICE.

JOHN W. FOSTER, OF WESTFIELD, MASSACHUSETTS, ASSIGNOR TO THE
FOSTER MACHINE COMPANY, OF SAME PLACE.

TUBE-HOLDER FOR SPOOLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 499,667, dated June 13, 1893.

Application filed November 7, 1892. Serial No. 451,210. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FOSTER, of Westfield, county of Hampden, State of Massachusetts, have invented an Improvement in
5 Tube-Holders for Spooling-Machines, 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 This invention has for its object to improve spindles used in spooling machines, especially the class of spindles adapted to hold conical tubes of paper such as used in the machine described in United States Patent No. 459,040,
15 granted September 8, 1891.

My improved spindle has, as a part of it, a dog or dogs to engage the interior of the tubes, and a device to operate the dogs.

20 Prior to this invention, to be herein described, a wooden cone has been provided with springs having points to enter the paper tube, and so also a conical body has had several springs with points to enter the cone, the
25 springs in both instances being operated singly by the fingers of the operator, the removal of a tube from the spindle requiring both hands, one to hold the tube or the mass of yarn wound thereon, and the other to engage the free ends of the springs.

30 Figure 1, in longitudinal section and elevation, shows my improved spindle with a conical tube thereon. Fig. 2 is a section below the line *x*, Fig. 1. Fig. 3 is a section of the cone *a*⁴ in a line at right angles to the section
35 shown in Fig. 1; and Fig. 4 is a plan view of the spindle wrench.

The spindle *a* has journals *a*¹, *a*², and between the journals a small cone bearing *a*³ and a large cone bearing *a*⁴. The cone *a*⁴ has
40 a shoulder 2 against which to abut the large end of the tube *b* so as to put it in just the proper position on the spindle. The inner end of the large cone bearing *a*⁴ has mounted upon it, as herein shown, two dogs *c*, *c*¹, provided preferably with teeth at their edges to
45 grasp the paper at the interior of the tube. These dogs are shown as pivoted on stud screws *c*², and as slotted, as at *c*³, to receive lugs *d*, shown also as screws, carried by the
50 dog actuator *d*¹, represented as a block mounted loosely on the spindle, the heads of

the screws, in this instance of my invention, preventing the dog actuator from dropping out of the larger cone bearing *a*⁴. The cone bearing *a*⁴ is made as a hollow shell, and has
55 its inner end slotted for the passage through it of the projections or screws *d*.

In the drawings, *e* represents a rail supposed to run from end to end of the spooling frame above the spool winding devices. The operators
60 usually lay wound spools, empty spindles, &c., on this rail for sake of convenience. On this rail I have mounted what I call a "spindle wrench," in the absence of a better term. This spindle wrench is composed of a
55 plate *e*¹ secured in place by a bolt *e*². This wrench, of cast metal, has two projections 3, 3, with a space between for the reception of the dog actuator *d*¹, as in Fig. 1, during the operation of applying a tube or removing a
70 tube filled with yarn or thread.

In my invention the operator does not have to handle the spindle directly and her fingers need not become soiled, as is frequently the
75 case when trying to manipulate the springs referred to, as the fingers of the operator have to surround the end of the spindle which contains oil.

For convenience I have provided the wrench referred to with a pocket to receive cotton
80 waste, as at *f*, or other lubricant.

The operator when she desires to apply a spindle in its bearings in the spooling machine, may, with her hand grasping the tube
85 *b*, insert one and then the other end of the spindle into the lubricant and oil the journals.

In operation let it be supposed that there is a wrench for each spindle or each pair. The machine, let it be supposed, has been in operation and a tube *b* has been fully wound.
90 The operator will engage the wound mass of yarn, will lift it and the spindle within it from its regular bearings of the machine, and will insert the journal *a*² down through the hole in the wrench and put the actuator *d*¹ into
95 the slot between the projections 3, 3 thereof. The operator with her hand yet on the wound mass of yarn will turn the same so as to cause its rotation in the direction of the arrow in Fig. 2, which will cause the dogs *c* to be moved
100 on the projections *d*, and the shape of the slots in the dogs are such as to insure the re-

traction of the dogs from engagement with the interior of the tube *b*, and thereafter the tube filled with yarn may be removed from the spindle leaving the latter standing in the wrench.

5 After this the operator grasps an empty tube, presses it down over the bare spindle to the shoulder 2, and while the spindle is held as stated turns the tube and spindle in a direction opposite the arrow in Fig 2, and, the actuator being held fast, the dogs *c* are forced

10 outwardly and made to engage the interior of the tube firmly, after which the operator, without disengaging her hand from the tube, may lift it and the spindle from the wrench and

15 put the spindle, provided, as described, with a tube, in its proper bearings in the spooler frame, so that the tube may be filled with yarn or thread.

This invention is not limited to the exact shape shown for the dogs, or to the number of dogs; nor to the exact shape shown for the actuator and its projections.

It is obvious that the actuator might be grasped and held by hand, but the use of the

25 wrench is of very considerable advantage, as it saves time, and tends to neatness, and obviates soiling of yarn.

The shape of the cone bearings *a*³, *a*⁴ will, of course, correspond with the shape of the

30 interior of the tube or shell.

Having described my invention, what I

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

1. A tube holder consisting of a spindle, bearings thereon for a tube or shell, a dog to 35 engage the interior of the tube or shell and a dog actuator to operate the same to engage and disengage the tube, substantially as described.

2. The spindle, its cone bearings for the ends of the tube, and a pivoted dog having a 40 cam surface, combined with a dog actuator to move the dog to engage the tube, substantially as described.

3. The spindle, its cone bearings for the ends of the tube, and a pivoted dog having a 45 cam surface, combined with a dog actuator to move the dog to engage the tube, and with a wrench device to hold the dog actuator, substantially as described.

4. The spindle, its cone bearing *a*³, and the 50 conical bearing *a*⁴ slotted at its inner end, combined with a pivoted cam shaped dog, and a dog actuator having a projection to extend through said slot and adapted to move the dog, substantially as described.

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

JOHN W. FOSTER.

Witnesses:

A. F. LILLEY,
R. H. CARRIER.