(No Model.)

J. A. PAINE.

DOOR KNOB ATTACHMENT.

No. 332,359. Patented Dec. 15, 1885.

Fig. 1.

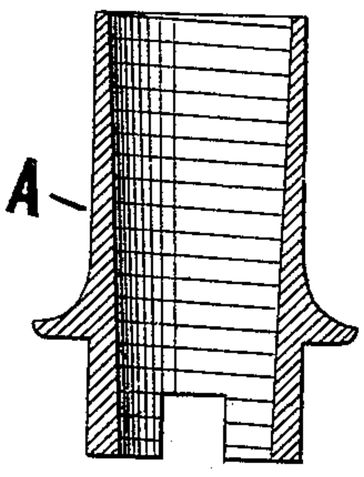


Fig. 2.

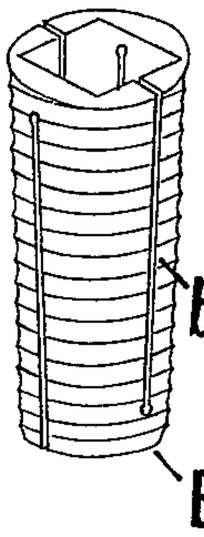


Fig. 3.

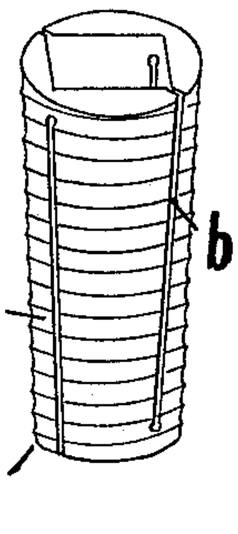


Fig. 4.

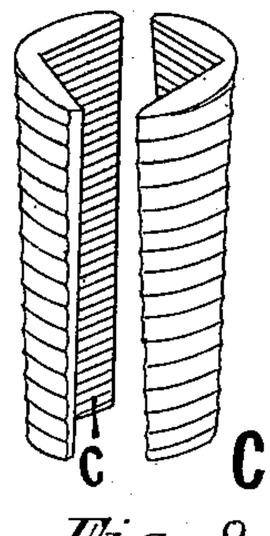


Fig. 5.

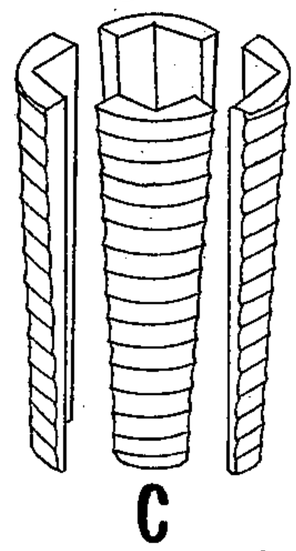


Fig. 6.

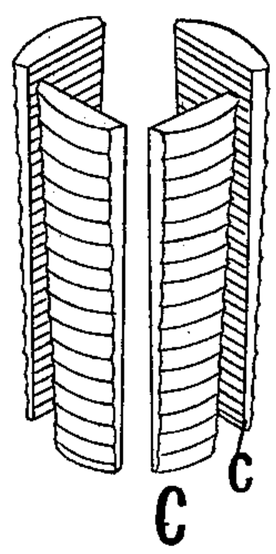


Fig. 7.

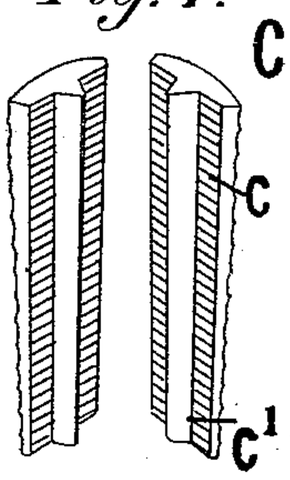


Fig. 8.

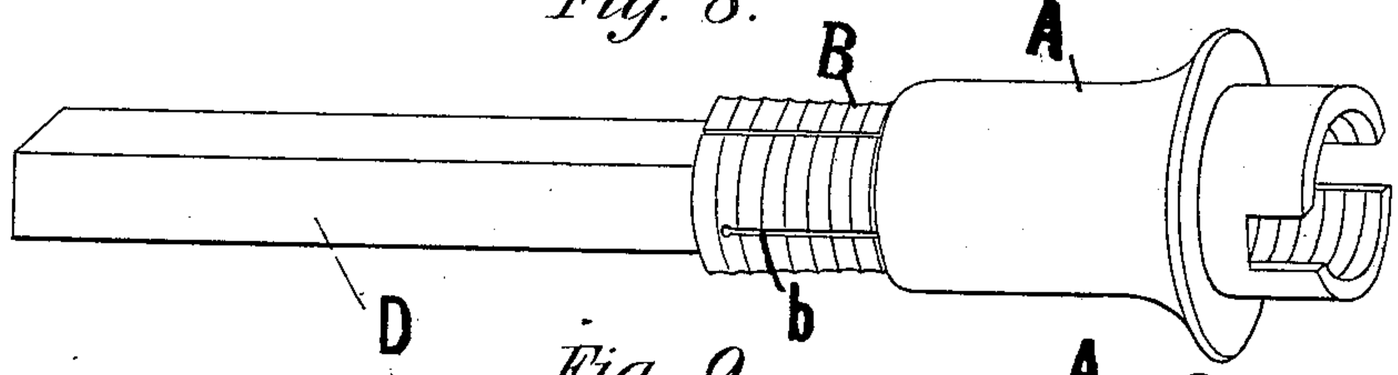


Fig. 9.

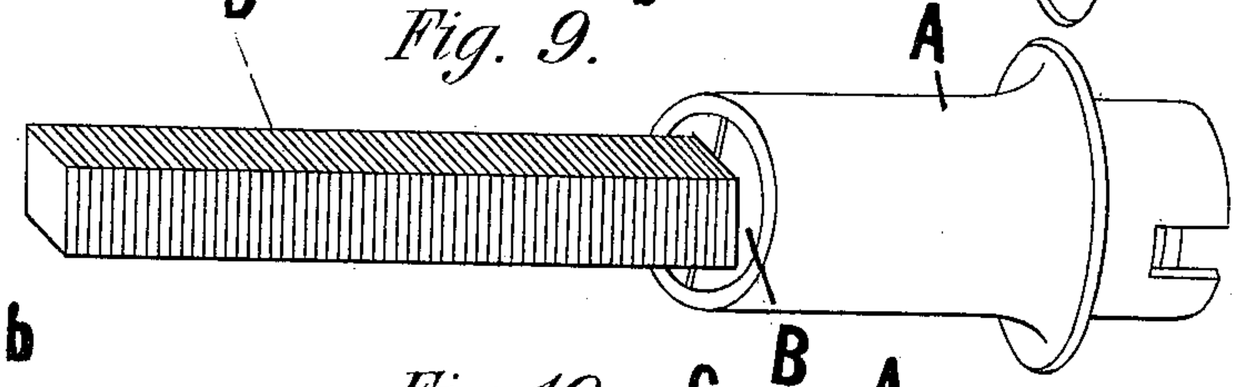


Fig. 11.

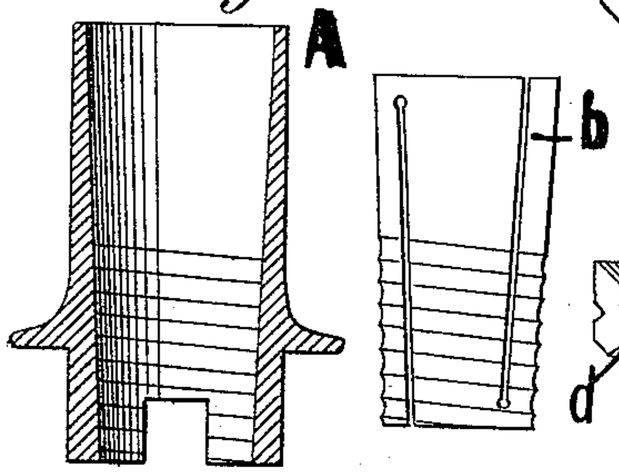


Fig. 10.

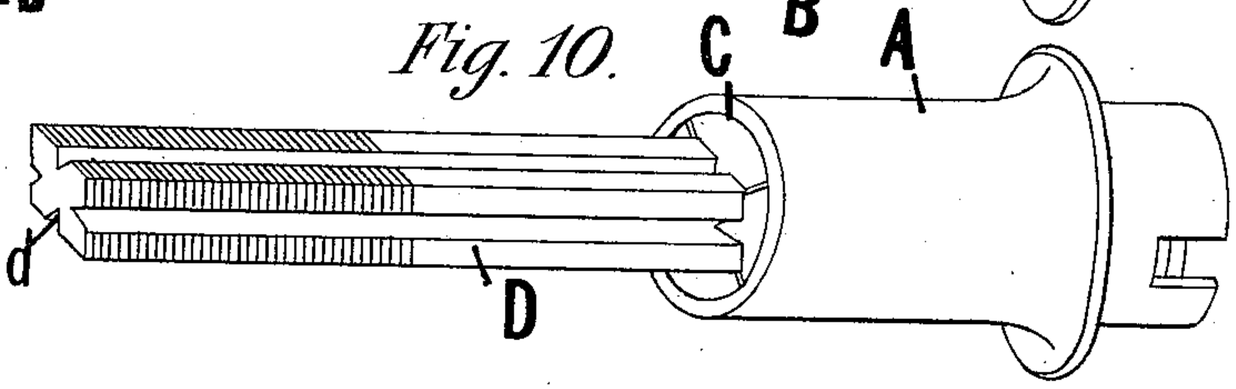


Fig. 12.

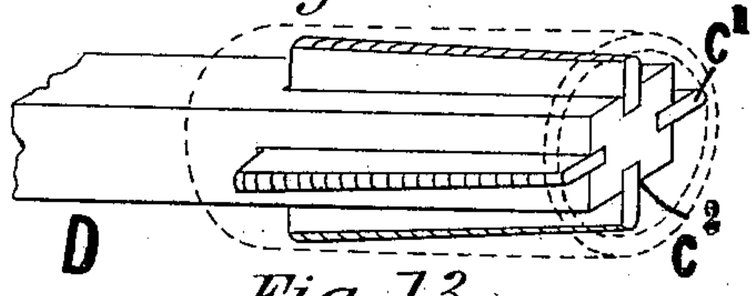
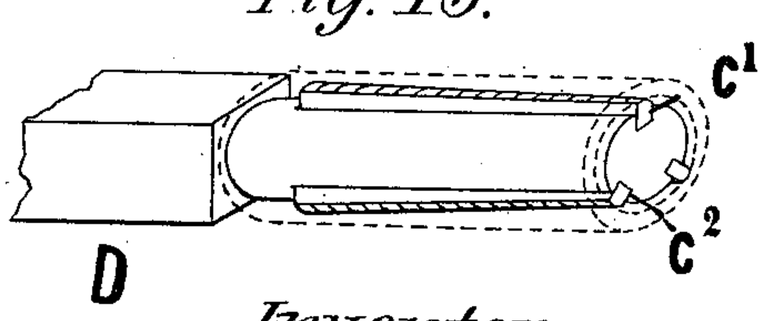


Fig. 13.



Witnesses:

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Max. V. Wittendorfer.

Inventor:

John A. Paine

UNITED STATES PATENT OFFICE.

JOHN A. PAINE, OF TARRYTOWN, NEW YORK.

DOOR-KNOB ATTACHMENT.

SPECIFICATION forming part of Letters Patent No 332,359, dated December 15, 1885.

Application filed February 10, 1885. Serial No. 155,555. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. PAINE, a citizen of the United States, residing at Tarrytown, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Door-Knob Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

This invention consists, broadly, in the combination of the following elements: a door-knob spindle having plain or milled bearing-surfaces; a door-knob shank having internal tapering and threaded surfaces, and bearing-pieces located between the spindle and the shank, having parallel surfaces next the spindle and tapering threaded bearing-surfaces next the shank, with a capacity for parallel movement to and from the spindle throughout its entire length, as will be hereinafter fully described.

In the drawings, Figure 1 represents a longitudinal section of the shank; Fig. 2, a perspective view of an intermediate bearing-piece in the form of a sleeve which is slitted on longitudinal lines opposite the faces of the spindle-shaft, if the same were in place, these slits extending alternately from each end of the sleeve nearly, but not quite, the entire length of the same; Fig. 3, a similar view with the exception that the slits are cut on lines opposite the corners of the spindle-shaft, if the same were in place; Fig. 4, a perspective view of an intermediate bearing-piece in the form of a sleeve which is divided into two equal parts, the inner surfaces of which are milled, as shown; Fig. 5, a perspective view of a sleeve divided into four parts upon longitudinal lines opposite the faces of the spindle-shaft; Fig. 6, a similar view of a sleeve divided upon longitudinal lines opposite the corners of the shaft; Fig. 7, a sleeve divided in four parts, two only being shown on longitudinal lines opposite the corners of the spindle-shaft, the inner faces of the parts being provided with a longitudinal central rib having on each side milled surfaces, as shown; Fig. 8, a perspective view of a slitted sleeve, as shown in Fig. 2, in position on the end of the spindle and introduced within the shank to the point of engagement with the screw-threads of the same; Fig. 9, a perspective view showing the position of the parts when the shank is screwed up over the sleeve upon the spindle to its proper position, the spindle in this view being provided with milled surfaces; Fig. 10, a similar view with the exception that the spindle has each face provided with a longitudinal central groove and milled surfaces, and the adjacent faces of each division of the sleeve with a longitudinal central rib and milled surfaces, adapted to engage with the corresponding parts of the spindle, as shown; Fig. 11, a sectional view of a modified form of shank and a side view of a sleeve modified to correspond therewith, these being provided with screw-threads for a portion of their lengths only; Figs. 12 and 13, perspective views showing intermediate bearing-faces in the form of bars C′, which are held by proper grooves C^2 in the spindle D, as shown.

To enable others skilled in the art to understand my invention and to properly make the same, I will proceed to describe fully its construction and manner of operation.

A, Fig. 1, represents the shank, which is internally round at the knob end and a trifle larger in diameter than the diameter of the spindle from corner to corner. It is provided within with a uniform taper, which is largest at the rosette end. It is provided also with an internal screw-thread, preferably extending the entire length of the shank, as shown in Fig. 1, but which may extend, if desired, only part way, as shown in Fig. 11.

B, Figs. 2 and 3, represent an intermediate bearing-piece in the form of a sleeve, which is externally round, and provided upon the outside with a taper corresponding with the taper of the shank, but enlarging in the opposite direction. It is provided, also, with an external screw-thread, preferably extending the entire length, as shown in Figs. 2 and 3, but which may extend, if desired, only part way, as shown in Fig. 11.

b b represent slits cut in the sleeve on longi-

tudinal lines, which extend nearly, but not quite, the entire length of the sleeve, a small uncut portion being left at one end, as shown. The uncut portions of the slit are arranged alternately at opposite ends, as shown. Each end of the sleeve, being thus provided with a cut portion, is adapted to yield readily under compression.

C C, Figs. 4, 5, 6, and 7, represent sleeves, which consist of separate and distinct parts of different forms, as has been described in the description of the drawings.

c c represent milled surfaces upon the inner faces of the divisions of the sleeve, which may be employed or omitted, as may be desired.

c', Fig. 7, represents a rib or projection upon the inner face of the sleeve, which may be employed, if desired, in connection with a corresponding recess in the spindle, Fig. 10, as shown.

D represents a spindle of any proper construction. It may be provided with a smooth bearing-surface, as shown in Fig. 8, or a milled surface, as shown in Fig. 9. It may also, if desired, be provided with longitudinal recesses *d*, as shown in Fig. 10, adapted to engage with the corresponding ribs upon the divisions of the sleeve.

The manner of uniting the parts will be readily understood. The sleeve is slipped upon the spindle and located thereon at the proper point. The shank is then slipped upon the spindle from the opposite end and moved into contact with the sleeve, as shown in Fig. 8. The shank then is screwed over the sleeve until the parts are properly united, as shown in Fig. 9. By the revolution of the knob the shank tapering inwardly toward the knob end is caused by means of its screw-threads to engage with the screw-threads of the divisions of the sleeve and clamp the same forcibly upon the spindle. The contraction necessarily being extremely small, the parts when adjusted are ready to tighten under the slightest turn, and the inclination necessary for the contraction being extended the whole length of the sleeve and shank, a maximum of clamping force and effect is obtained under a minimum of exertion. Moreover, the leverage obtained by the radius of the knob enables the operator to exert great power in tightening up the shank upon the sleeve and spindle. The spindle is thus bound so tightly as to become a unit with the shank, and cannot in any way be separated therefrom without reversing this operation.

No difference in principle exists between the slitted sleeve and the divided sleeve, or the bearing-bars shown in Figs. 12 and 13. In either case a perfectly-parallel movement of the bearing-surfaces of the bearing-pieces to and from the spindle is obtained when the parts are adjusted. All the adjusting parts, it will be observed, are contained within the shank, and consequently any proper form or kind of knob may be applied thereto.

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

1. The combination of the following elements: a door-knob spindle having plain or milled bearing-surfaces, a door-knob shank having internal tapering and threaded surfaces, and bearing-pieces located between the spindle and the shank, having parallel bearing-surfaces next the spindle and tapering and threaded bearing-surfaces next the shank, with a capacity for parallel movement to and from the spindle through its entire length, substantially as described.

2. The combination of the spindle and the threaded and tapering shank with the threaded and tapering sleeve slitted alternately from each end, as described.

JOHN A. PAINE.

Witnesses:
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J. W. MABEE.