(No Model.) 2 Sheets—Sheet 1.

H. V. SMITH.

KNOB ATTACHMENT.

No. 419,894. Patented Jan. 21, 1890.

Fig. 1.

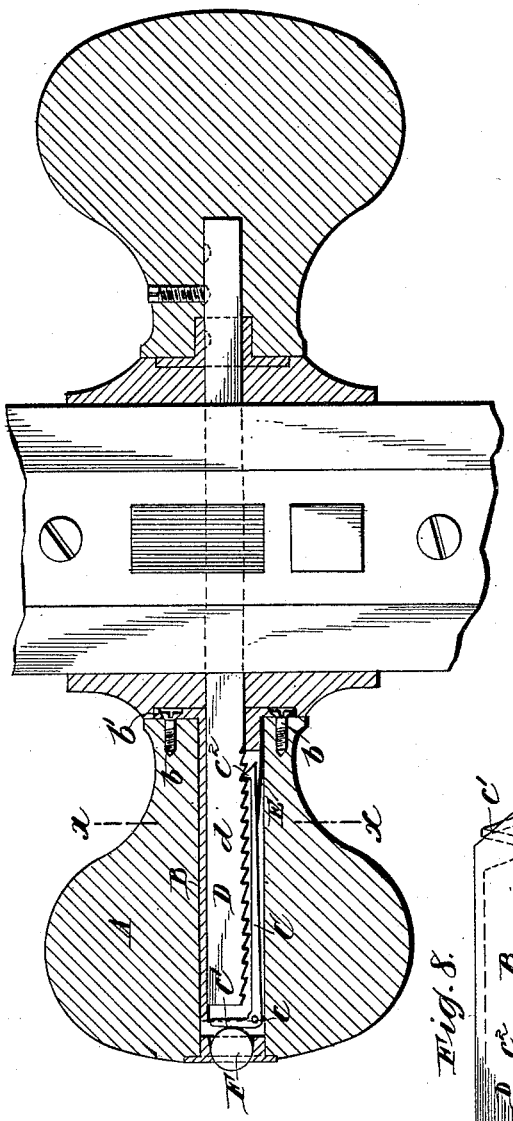


Fig. 2.

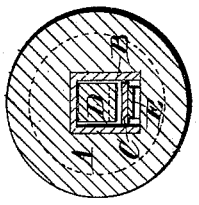
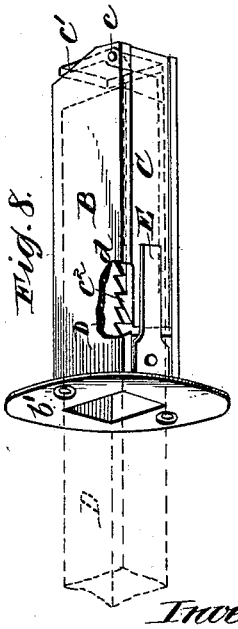


Fig. 3.



Witnesses.
J. Thomson Cross
H. V. Weaver.

Inventor:
Henry Vincent Smith.
per Henry C. Hazard
Attorney.

(No Model.) 2 Sheets—Sheet 2.

H. V. SMITH.

KNOB ATTACHMENT.

No. 419,894. Patented Jan. 21, 1890.

Fig. 6.

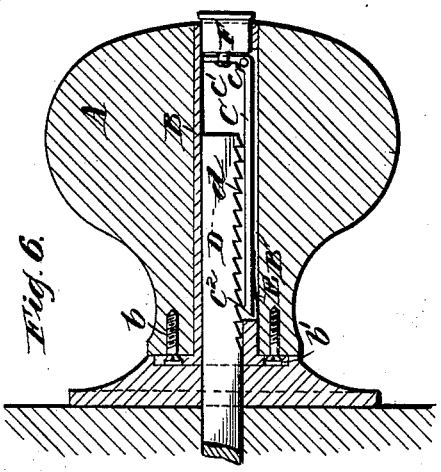


Fig. 7.

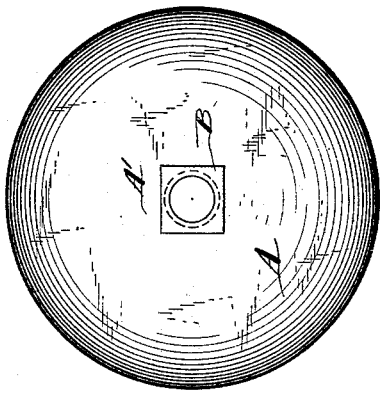


Fig. 5.

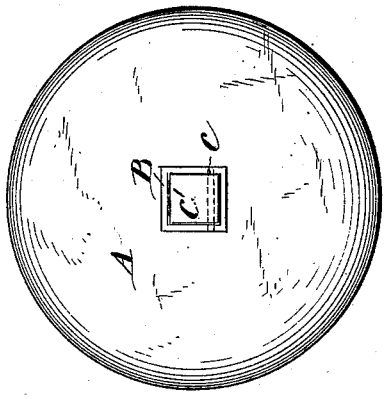


Fig. 3.

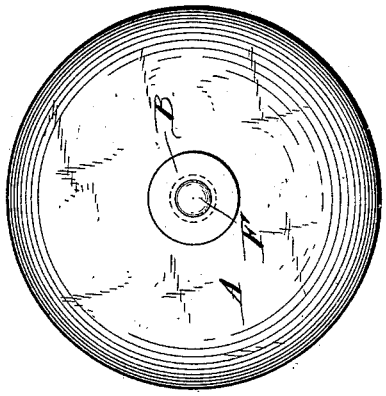
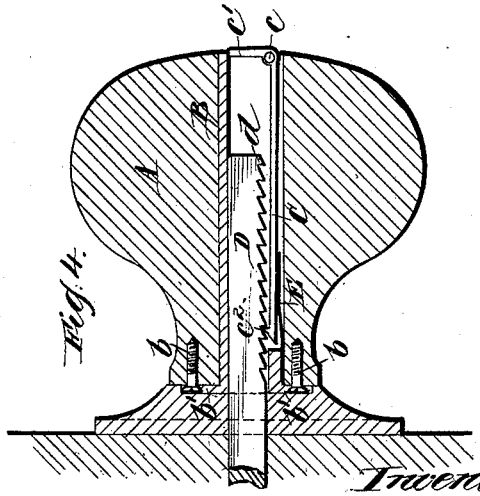


Fig. 4.



Witnesses.
J. Thomson Cross.
H. W. Weaver.

Inventor.
Henry Vincent Smith
per
Attorney.

UNITED STATES PATENT OFFICE.

HENRY V. SMITH, OF MELBOURNE, VICTORIA.

KNOB ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 419,894, dated January 21, 1890.

Application filed September 19, 1889. Serial No. 324,421. (No model.) Patented in England February 29, 1888, No. 3,085.

To all whom it may concern:

Be it known that I, HENRY VINCENT SMITH, gentleman, a subject of the Queen of Great Britain, residing at No. 1 Cunningham Street, South Yarra, Melbourne, in the British Colony of Victoria, have invented certain new and useful Improvements in Means for Fastening Door-Knobs or Handles on their Spindles, (for which I have obtained a patent in Great Britain, dated the 29th day of February, 1888, and numbered 3,085;) 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a longitudinal section of a pair of door-knobs, one of which is secured upon the spindle according to my invention, while the other is secured in any suitable and convenient manner. Fig. 2 is a vertical transverse section on line *x x*, Fig. 1. Fig. 3 is an end view of a door-knob fastened on its spindle, as shown in Fig. 1. Fig. 4 is a longitudinal section of a modification of my invention. Fig. 5 is an end elevation of the same. Figs. 6 and 7 are similar views to Figs. 4 and 5, but illustrating another modification. Fig. 8 is a detached perspective view of the socket or ferrule and spring-catch or bell-crank hereinbefore mentioned.

The invention relates to the construction of door knobs or handles, and it has for its object to provide a simple and efficient means for locking the knobs or handles to their said spindles.

The invention has for its further object to provide means whereby said knobs or handles may be adjusted on their spindles, so as to adapt them for use with doors of varying thickness, and so that when they become loose by reason of shrinkage of a door they may be readily tightened up.

To these ends the invention consists in the combination, with a door knob or handle provided with a locking dog or catch and means for operating the same, of a spindle provided with a locking tooth or notch with which the dog or catch on the knob engages, and in the combination, with the knob or handle provided with a locking tooth or catch and means for operating the same, of a spindle provided with a plurality of locking teeth or notches with which the dog or catch is adapted to engage.

The invention consists, finally, in structural features and combinations of parts, substantially as hereinafter described and as claimed.

In the above-described drawings, A indicates the door knob or handle; and D the spindle.

The knob or handle A may be of any desired general plain or ornamental form in cross-section to prevent its rotation within the knob or handle A.

The aforesaid knob or handle is provided with an axial opening, either cylindrical or square in cross-section, for the reception of a corresponding sleeve or ferrule B, that has a flange *b'* abutting against the inner face of the knob A, to which it is secured by means of screws *b*. The flange may, however, be dispensed with and the spindle-sleeve secured within the knob by expanding one or both ends thereof after having been inserted by means of a punch or other suitable expanding-tool. The length of the sleeve or ferrule will depend upon the means employed for unlocking the knob from its spindle, and these means may be greatly varied, as will hereinafter appear.

The sleeve B, as shown in Fig. 1, does not quite extend to the outer end of the knob or handle A, so as to leave a space for the device by means of which the locking-dog is operated, and, as shown in said Fig. 1, this device consists of a small sphere or ball F, which may be of the same material as the knob A, or of a different material, according to the taste of the manufacturer. For instance, a glass sphere of any desired color may be employed in combination with a metallic or wooden or earthenware knob, or a metallic sphere or a sphere of any other desired material may be employed. The spindle-sleeve has a longitudinal slot in which lies a locking dog or latch C, that has the form of a bell-crank lever having its fulcrum *c* at the outer end of the spindle-sleeve B, the right-angled short arm *c'* of said locking-dog extending over the outer end of the sleeve, and, as shown

in Figs. 1, 4, 6, and 8, the locking-dog D is pressed inwardly by a spring E.

In practice, when the attachment is constructed as described and shown in Fig. 1, I employ a locking-dog of a width equal to the width of the spindle, or substantially so, its short arm c' then forming a closure for the outer end of the sleeve B, as more plainly shown in Fig. 5. On said short arm c' of dog C lies the ball or sphere F, held in place by a slotted cap f, through which a portion of the sphere projects. It is obvious that on pressing the sphere inwardly the dog is moved outwardly against the stress of its spring E. The spindle D is provided with a locking notch or tooth with which engages the locking-dog F.

In order to provide means for adjusting the knob on the spindle the latter is provided with a plurality of locking-notches, or, preferably, locking-teeth d, as shown, so as to adapt the knob for use on doors of varying thickness.

When it is simply desired to apply the invention as a means for readily detaching a door-knob from its spindle, the latter has but a single locking-notch, and in this case a very short locking-dog may be employed.

I have hereinbefore stated that the means employed for operating the locking-dog may be greatly varied, and for this reason I do not desire to limit myself to any particular or specific means for operating the dog. For instance, as shown in Figs. 4 and 5, the dog may be operated by direct pressure upon its arm c', in which case the sleeve B extends quite through the knob, or, as shown in Figs. 6 and 7, a cylindrical plug F′ may be used, and this plug may be secured to the arm c' or placed loosely within the upper end of the sleeve or in the recess at the outer end of said sleeve B when the latter is made shorter than the knob. When the plug F′ is placed loosely upon the arm c', I form said plug with an attenuated outer end and hold the same in position by means of a slotted disk or plate or escutcheon A′.

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

1. The combination, with a knob-spindle having one or more locking-notches, of a door-knob provided with an axial passage, a push-piece seated in the outer end of said passage, and a locking-dog arranged to engage the notch or notches in the spindle and to be operated by the push-piece, substantially as and for the purposes specified.

2. The combination, with a knob-spindle having one or more locking-notches, of a door-knob provided with an axial passage, a spring-actuated locking-dog arranged within said passage and having an arm extending across such passage, and a spherical push-piece seated in the end of the passage and adapted to bear against the arm of the dog, for the purposes specified.

3. The combination, with a knob-spindle provided with one or more locking notches or teeth, of a door-knob provided with an axial passage, a sleeve fitted within said passage, a locking-dog having substantially the form of a bell-crank lever fulcrumed to and lying within a slot in said sleeve and adapted to engage the spindle notch or notches, said locking-dog being arranged so that the angle-arms thereof will project across one end of the sleeve, and a spring to hold said dog in engagement with the spindle, whereby when pressure is applied to the short arm of the dog the said dog is disengaged from the spindle, substantially as and for the purposes specified.

4. The combination, with a knob-spindle provided with one or more locking notches or teeth, of a door-knob having an axial passage for the reception of the spindle, a locking-dog of substantially the form of a bell-crank lever arranged within the knob so that its locking-nose will engage the spindle-notch or notches and its angle-arm extend across the axial passage for said spindle, and a push-piece, one end of which bears against the angle-arm, the other end of said push-piece being exposed so that pressure may be applied thereto, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, at the city of Washington, District of Columbia, the 19th day of September, 1889.

H. V. SMITH.

Witnesses:
HENRY ORTH,
J. THOMSON CROSS.