

(No Model.)

2 Sheets—Sheet 1.

E. S. WINCHESTER.
KNOB ATTACHMENT.

No. 578,381.

Patented Mar. 9, 1897.

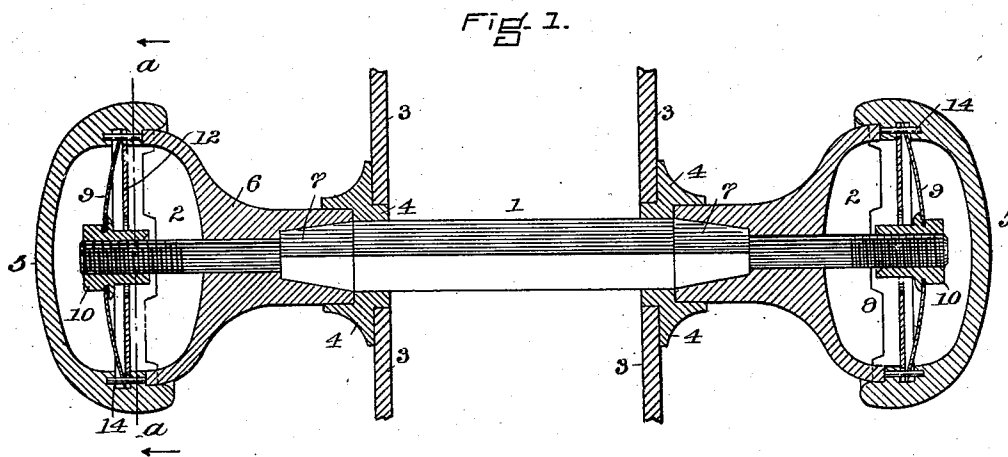


Fig. 5.

Fig. 2.

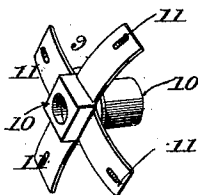
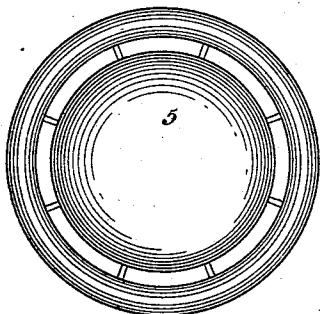


Fig. 3.

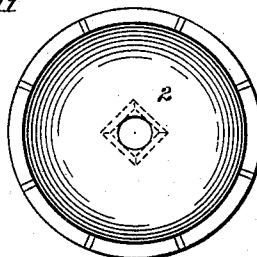
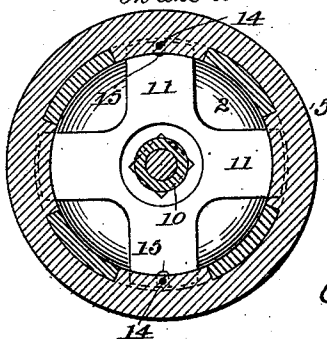


Fig. 4.
on line-a-a



WITNESSES.

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Philip T. Noyes
atty.

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Fig. 6.

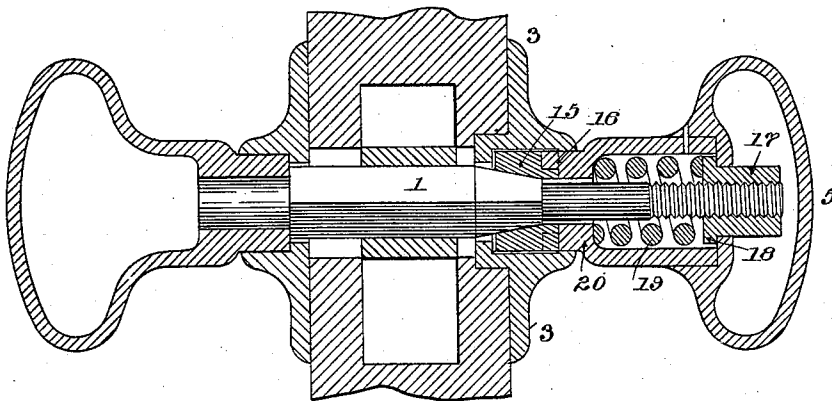
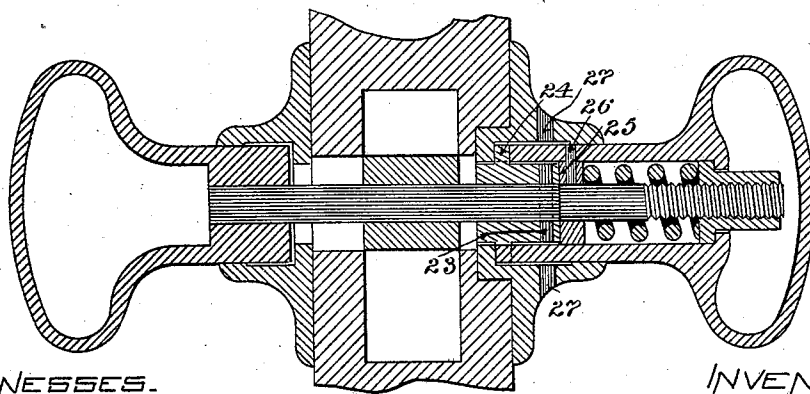
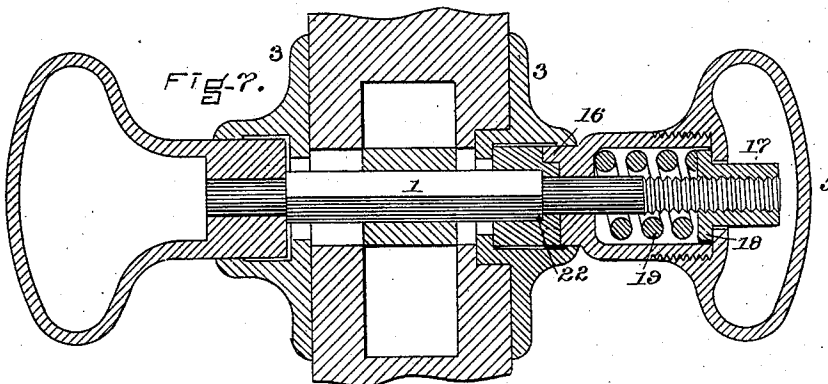


Fig. 7.



WITNESSES.

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Fig. 8.

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UNITED STATES PATENT OFFICE.

EDWARD S. WINCHESTER, OF BOSTON, MASSACHUSETTS.

KNOB ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 578,381, dated March 9, 1897.

Application filed March 11, 1896. Serial No. 582,742. (No model.)

To all whom it may concern:

Be it known that I, EDWARD S. WINCHESTER, of Boston, (Dorchester,) county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Fasteners for Knobs, of which the following is a specification.

The object of my invention is to provide a simple and secure means for attaching door-knobs to their spindles, which will permit of their ready connection and disconnection, which may be adjusted to take up for wear, and which will effectually under all conditions prevent rattling of the parts.

With these ends in view my invention consists of the combination, with a spindle, of a sleeve applied to the same to turn therewith, a knob removably interlocked with the sleeve and movable endwise with relation to the spindle, and a confining-spring acting, respectively, on the spindle and the knob and tending to hold the knob and sleeve yieldingly in engagement and the knob yieldingly against endwise movement.

The invention also consists in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal central section through two connected knobs and their spindles having my invention embodied therein in its preferred form. Fig. 2 is an elevation of the inner face of the outer member of the knob. Fig. 3 is an elevation of the outer face of the inner member of the knob or sleeve. Fig. 4 is a transverse sectional elevation on the line *a a* of Fig. 1 as viewed in the direction indicated by the arrows. Fig. 5 is a perspective view of the nut or stop and the confining-spring attached thereto. Figs. 6, 7, and 8 are sectional views of modifications of my invention.

Referring to the drawings, particularly to Figs. 1, 2, 3, and 4, which represent the preferred form of my invention, 1 represents a spindle having applied to its ends knobs 2. The spindle extends through the walls of the latch-casing 3, being encircled by roses or collars 4, having a bearing in the casing and formed in their outer faces with sockets, in which the inner members or shanks

of the knobs are seated, as plainly shown in Fig. 1.

The knob is formed of two separable parts or members, an outer one or knob proper, 5, and an inner one or sleeve 6, constituting the shank of the knob, the latter being provided with a central opening, through which extends the end of the spindle when the knob is in place thereon. The inner end of the sleeve is formed with a squared and tapered socket, which fits on the correspondingly, formed portion of the spindle, as at 7. The outer member or knob proper is provided adjacent to its peripheral edge with an internal flange or shoulder, formed with alternating lugs and recesses, which are adapted to interlock with corresponding lugs and recesses formed in the peripheral outer edge of the inner member 6, this construction and arrangement admitting of the longitudinal separation of the two parts and causing them to turn together.

The parts of the knob are held yieldingly together and on the spindle by means of a spring-plate 9, connected at its center to a hub or nut 10, screwed onto the outer threaded end of the spindle. The spring-plate is provided with radial arms 11, bearing at their outer ends in sockets formed in the inner face of the knob proper, 5, as shown in Fig. 1. The spring-arms of the plate are bowed outward at the center, where they are connected to the nut and tend to force the knob inward in engagement with the inner member and hold the same yieldingly interlocked therewith. Under this construction it will be seen that by pulling on the outer member it may be separated from the sleeve and turned to screw the nut farther on the spindle, thereby compressing the spring and increasing the force which it exerts in holding the parts of the knob together and the inner member on the spindle. As a result the knob is held tightly and firmly on the spindle without the aid of washers and the rattling of the parts is prevented, any wear being taken up by simply separating the outer member of the knob and in screwing the nut farther onto the spindle.

In order to prevent the nut from being screwed too far on the spindle and thereby breaking or otherwise injuring the spring, I

provide a stop-plate 12, comprising a comparatively unyielding plate of the form of the spring-plate and containing at its center an opening through which the nut can play. The ends of the arms of this plate bear against the knob proper beneath the spring-arms. Owing to the hole in the plate through which the nut extends the outer member will be permitted to be separated from the inner member or sleeve to permit of the nut being turned, and the plate will act as a stop to prevent the nut being screwed too far onto the spindle. Were it not for the provision of this stop-plate 12 the continued turning of the outer member of the knob when disengaged would cause the nut to advance inward along the spindle to an undue extent and would fracture or bend the spring. The stop-plate, being comparatively unyielding, would be encountered by the nut, which is too large to pass through the opening therein, and in this way would prevent the nut from being moved farther along the spindle than is desired. When the limit of the movement is reached, the outer member of the knob being released, the spring will return it into engagement with the inner member.

In order to cause the spring-plate to turn with the knob when the nut is screwed on the spindle, I provide the knob where the ends of the arms bear with pins 14, and I slot the ends of the arms, as at 15, to receive these pins.

In applying the knob to the spindle in assembling the parts the inner member or sleeve is first placed upon the spindle, and the outer member or knob proper carrying the spring-plate or nut is then applied to the threaded end of the spindle and the nut screwed thereon until the peripheral edge of the knob contacts with the edge of the sleeve. The outer member is then pulled against the force of the spring and the latter compressed until the edges of the two members are disengaged. The outer member is then turned, thereby screwing the nut farther on the spindle, and this is continued until the proper tension of the spring is attained, when on releasing the knob the spring will force the same inward and cause the interlocking of the lugs and recesses of the two members.

In Figs. 6, 7, and 8 I have illustrated modifications of my invention, all, however, embodying the same principle. In Fig. 6 a sleeve 15 is applied to the tapered end of the spindle, as in the case just described, and is provided with lugs and recesses, which interlock with corresponding lugs and recesses on the inner end of the knob-shank 16. At its outer end where the shank is connected to the knob the latter is formed with an opening, in which is mounted so as to be movable endwise a nut 17, adapted to be turned with the knob and screwed on the threaded end of the spindle. The nut is formed on its inner end with a shoulder 18 to limit its outward endwise motion. The spindle is encircled by a spiral spring 19, situated in the shank, with its outer end bearing against the shoulder on the nut

and its inner end bearing against a shoulder 20, projecting inward from the shank at its inner end. In this case it will be noted that the same principle is present as in the first case, namely, a sleeve applied to the spindle, a knob interlocked therewith, and a spring acting to maintain the engagement of the parts.

In Fig. 7 the parts and their functions are similar to those just described, with the single exception that the spindle is not tapered, but formed with a shoulder 22, against which the shoulder on the sleeve abuts.

In Fig. 8 the sleeve is secured to the spindle by a through-pin 23 and is provided with a series of laterally-projecting shoulders 24, with which the end of the knob-shank is adapted to engage. The inner end of the spring in this case bears against a shoulder in the form of a ring 25, secured to the interior of the shank by pins 26. In assembling the parts in this case the sleeve is first slipped onto the spindle and secured by its pin, which is introduced through an opening 27 in the rosette. The knob with its spring and nut are then applied to the spindle, the nut being screwed on, as in the first case described.

It will be noted that in all the cases described there is a difference as to details, but they all embody the same essential features of construction by which the wear of the parts may be compensated for and by which the sleeve and knob are held yieldingly interlocked.

Having thus described my invention, I claim—

1. The combination with the spindle, of the sleeve applied to the same to turn therewith, a knob removably interlocked with said sleeve and movable endwise with relation to the spindle, and a confining-spring acting respectively on the spindle and the knob and tending to hold the knob and sleeve yieldingly in engagement and the knob yieldingly against endwise movement; whereby the knob may be disengaged from the sleeve by its endwise movement against the influence of the spring.

2. The combination with the spindle of the sleeve applied thereto to turn therewith, a knob removably interlocked with the sleeve and movable endwise with relation to the spindle, a nut or stop screwed on the end of the spindle, and a spring acting on the knob and the nut and serving to hold the same yieldingly interlocked; whereby the knob and sleeve may be disengaged by the endwise movement of the former, after which the knob may be turned to screw the nut on the spindle and vary the tension of the confining-spring.

3. The combination with the spindle, of the sleeve applied thereto, the nut screwed on the spindle, the knob interlocked with the sleeve and the spring-plate fixed to the nut and bearing against the knob.

4. The combination with the spindle, of the knob comprising the inner and outer separa-

ble members applied to the spindle, the nut screwed on the spindle, and the spring bearing on the nut, and the outer member of the knob and acting to maintain yieldingly the engagement of the two parts of the knob.

5 5. The combination with the spindle, of the sleeve applied thereto, the knob interlocked with the sleeve, the nut on the spindle, the spring acting on the nut and the knob, and
10 the stop for the spring.

6. The combination with the spindle, of the sleeve applied thereto, the knob interlocked with the sleeve, the nut on the spindle, the spring-plate fixed to the nut and provided
15 with the arms bearing on the knob.

7. The combination with the spindle, of the sleeve applied thereto, the knob interlocked with the sleeve, the nut on the spindle the spring-plate fixed to the nut and bearing
20 against the knob and the stop-plate carried by the knob and formed with an opening through which the nut may play.

8. The combination with the spindle fixed

against endwise movement, of a knob comprising an inner member applied to the spindle and formed with lugs and recesses and an
25 endwise-movable outer member formed with lugs and recesses interlocked with those on the inner member and a spring located between said parts and acting to yieldingly
30 maintain their connection.

9. The combination with the spindle, of the knob comprising an inner member applied to the spindle, and an outer separable member, said parts being formed with interlocking
35 lugs and recesses, a nut applied to the spindle, and a spring-plate fixed to the nut and bearing against the knob.

In testimony whereof I hereunto set my hand, this 2d day of March, 1896, in the presence of two attesting witnesses.

EDWARD S. WINCHESTER.

Witnesses:

M. T. WINCHESTER,
E. R. WINCHESTER.