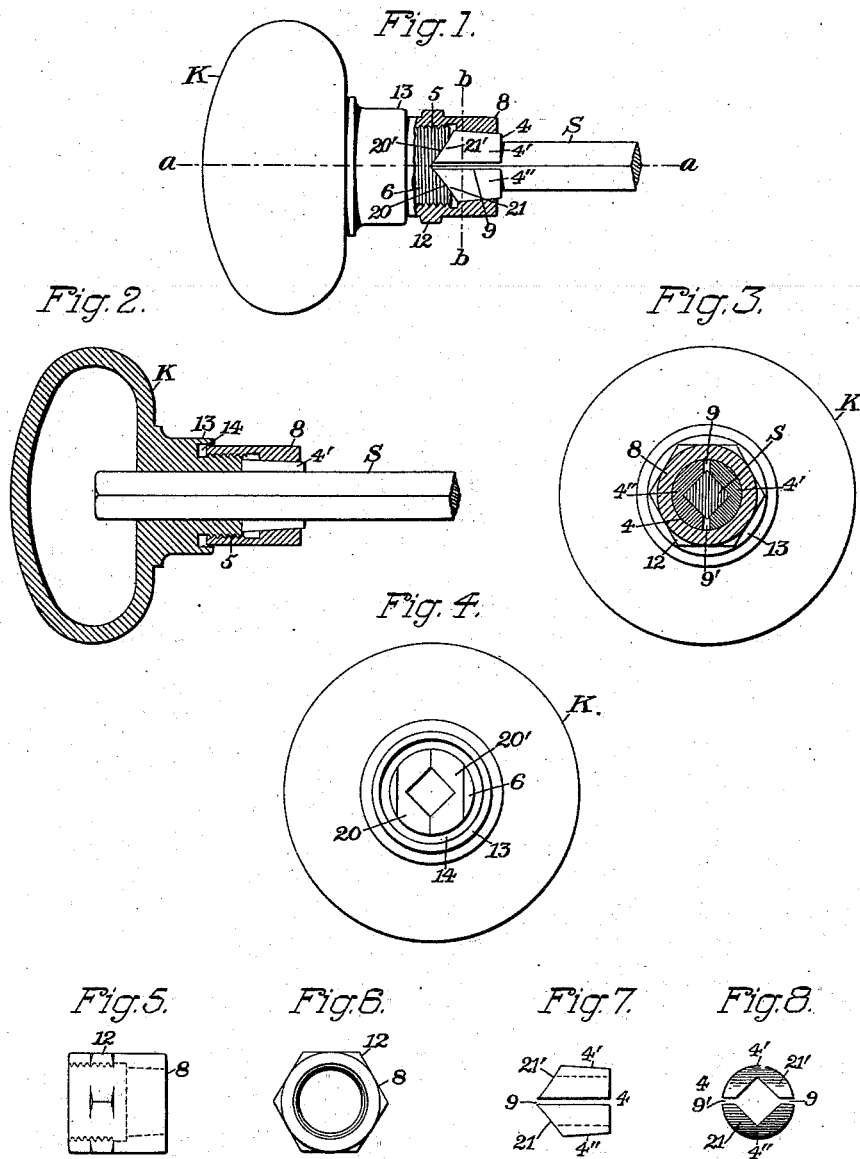


(No Model.)

C. F. DOEBLER.
KNOB ATTACHMENT.

No. 524,848.

Patented Aug. 21, 1894.



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UNITED STATES PATENT OFFICE.

CHARLES F. DOEBLER, OF HARTFORD, CONNECTICUT.

KNOB ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 524,848, dated August 21, 1894.

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To all whom it may concern:

Be it known that I, CHARLES F. DOEBLER, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Knob Attachments, of which the following is a specification.

This invention relates to that class of knob-attachments in which the knob is removably fixed to the spindle by means of clamping devices, and is in the nature of an improvement upon the knob-attachment described and claimed in United States Letters Patent No. 503,204, granted to me August 15, 1893, to which reference may be had.

The object of my present invention is to provide a knob-fastening having a spindle-clamp separate from the knob-stem and operable by the co-action of a clamp-sleeve which is carried by the knob-stem and exerts pressure upon one end of the spindle-clamp, and the knob-stem proper that exerts pressure upon the said clamp at the other end thereof to thereby secure a uniform pressure and impingement of the spindle from end to end of the spindle-clamp.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side view, partly in section, of a knob-stem embodying my present improvement; Fig. 2 a sectional view on line *a-a* of Fig. 1. Fig. 3 is a transverse section taken on line *b-b* of Fig. 1 showing the parts at the left-hand of said line. Fig. 4 is an end view of the same with the spindle removed, as seen from the right-hand of Fig. 1. Fig. 5 is a side elevation of the clamp-sleeve. Fig. 6 is an end elevation of said clamp-sleeve as seen from the left-hand in Figs. 1, 2 and 5. Fig. 7 is a side elevation of the longitudinally-divided spindle-clamp, and Fig. 8 is an end view of said spindle-clamp as seen from the left-hand in Fig. 7.

Similar characters designate like parts in all the figures.

In the improved knob-attachment shown in the drawings, the spindle *S* is, or may be of the usual squared cross-sectional form and of uniform diameter throughout the length thereof, as illustrated in Fig. 2. The knob-stem *6* of the knob *K* is fitted to slide freely and closely on the spindle *S* and is shown ex-

ternally-threaded at 5, Fig. 1, to receive the correspondingly internally-threaded end of the nut or clamp-sleeve 8. The projecting end of said clamp-sleeve 8 as shown at the right-hand in Figs. 1 and 2, is bored internally tapering or conical, the small end of the bore being at the end of the sleeve farthest from the knob, and being of a construction substantially similar to the construction of the clamp-sleeve described in the patent hereinbefore referred to.

The spindle-clamp 4, shown in detail in Figs. 7 and 8, will preferably be made, as shown, in two pieces, 4', 4'', formed externally conical at one end to correspond with, and fit within the conically-bored projecting end of the clamp-sleeve 8 as illustrated in Figs. 1 and 2; and are outwardly tapered at the opposite end, as shown at 21, 21', in Fig. 7, to correspond with and fit a V-shaped bearing-groove or channel formed transversely in the end face of the knob-stem, as will be hereinafter more fully explained. This spindle-clamp is internally fitted to the spindle *S* and is shown longitudinally slotted or divided at points 9, 9', on a plane bisecting the apex of the V-shaped or tapered end of said clamp.

In practice, the spindle-clamp will be, as shown in Figs. 1 and 2, of sufficient length to project slightly beyond the clamp-sleeve 8 when the parts of the knob-attachment are assembled, and when the clamp-sleeve 8 is in its normal position, and thus is adapted to bear, at its outer end, against the usual washer (not shown) for locating the knob longitudinally on the spindle and relatively to the door to which the knob shall be applied.

In the prior patent referred to, the knob-stem abutting-end of the spindle-clamp was constructed simply to effect a non-rotative engagement between it and the end of the knob-stem, whereas in the present invention, the knob-stem abutting-end of said spindle-clamp and the bearing-end of the knob-stem are so constructed that a transverse pressure toward the axis of the spindle is exerted upon the spindle-clamp by the knob-stem as the said knob-stem is drawn into close engagement with this end of the said spindle-clamp. To secure this end the pieces 4', 4'', comprising the spindle-clamp are each beveled off or

inclined from their adjacent side-edges backward toward the opposite end of the clamp, so as to form, when assembled, a pair of wedge faces to be acted upon by the wedge or V-shaped abutting-end of the knob-stem which press the parts comprising the spindle-clamp toward each other, for securing an impingement of the spindle at this end of the clamp.

As shown in Fig. 1, the knob-stem has formed across the end thereof, a V-shaped groove which extends nearly across the diameter of the knob-stem, which groove has the two inclined bearing-faces 20, 20', respectively, that correspond with, and engage the tapered faces 21, 21', respectively, of the wedge-like pieces which form the spindle-clamp, the said bearing-faces 20, 20', of the knob-stem being in a plane of movement of the parts of the spindle-clamp.

In assembling the knob-attachment, the spindle being in its proper position, the spindle clamp 4 is placed against the end of the knob-stem 6, and the clamp-sleeve is then screwed part way onto said stem, thus leaving the clamp sufficiently free to slide on the spindle without material resistance. The parts of the knob being thus loosely assembled together, the knob is then slid upon the spindle until the end of the spindle-clamp strikes against its bearing-surface and thus locates the position of the knob upon the spindle. Next, by means of an ordinary wrench applied to the squared portion 12 of the clamp-sleeve 8, this sleeve is screwed farther onto the threaded portion 5 of the knob-stem, which brings the conically-bored end of the clamp-sleeve into close contact with the external conical end of the parts 4', 4'', of the spindle-clamp, and at the same time presses the bearing-faces 20 and 20' of the knob-stem closely against the tapered faces 21 and 21' of the parts of the spindle-clamp, thereby co-acting to press the parts of the spindle-clamp at both ends toward each other, tightly impinging the spindle the entire length of the said spindle-clamp. This operation, by reason of the spindle-clamp bearing against the end of the knob-stem, as before described, does not tend in any way to displace the knob-stem upon the spindle, but materially increases frictional impingement between the spindle-clamp, clamp-sleeve and spindle and thus prevents longitudinal and rotative movements of the knob with relation to the spindle. By this means the knob is firmly fixed upon the spindle in the required place and the fastening operation is readily performed. And, owing to the described co-

action of the clamp-sleeve and the knob-stem upon the spindle-clamp to impinge this upon the spindle, all these parts are firmly and rigidly fastened together, and the several elements constitute a knob-attachment of unusual power, adapted to be so firmly fixed in place, that in ordinary use it can have no play on the spindle.

In some cases, the knob will be provided with a guard-flange 13 for covering the extreme end of the clamp-sleeve and the space at 14 between the end of said sleeve and the knob, but this feature constitutes no part of my present invention.

Having thus described my invention, I claim—

1. In a knob-attachment, the combination with the spindle, of a compressible spindle-clamp oppositely tapered at its ends, an externally-screw-threaded knob-stem having bearing-faces to engage one tapered end of said spindle-clamp, and an internally tapered clamp-sleeve to engage the other tapered end of the spindle-clamp and adapted to be screwed upon the knob-stem to bring the parts into close engagement, and, in connection with the said knob-stem, compress the said spindle-clamp to impinge the spindle, substantially as described.

2. An improved knob-attachment, comprising a spindle angular in cross-section, a series of wedges oppositely and loosely disposed around the spindle and adapted to be pressed toward each other to impinge said spindle, a knob-stem having wedge-like or inclined bearing-faces at its outer end adapted for engagement with the wedges, and means, substantially as described, to draw the knob-stem wedges into close engagement to tightly impinge the spindle, substantially as described.

3. In a knob-attachment, the combination with the spindle angular in cross-section, of a knob-stem having an angular opening to fit said spindle and having a tapered spindle-clamp-seat in its forward end, a compressible spindle-clamp divided longitudinally, loosely engaging said spindle, and having its knob-stem-abutting-end oppositely tapered or inclined each side the line of division and in the plane of compression, and means, substantially as described, to draw the knob-stem and clamp with their inclined abutting-ends into close engagement, substantially as described.

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