No. 616,258.

Patented Dec. 20, 1898.

C. H. REMBOLD.

DOOR HINGE.

(Application filed May 20, 1898.)

(No Model.)

FIG. 1.

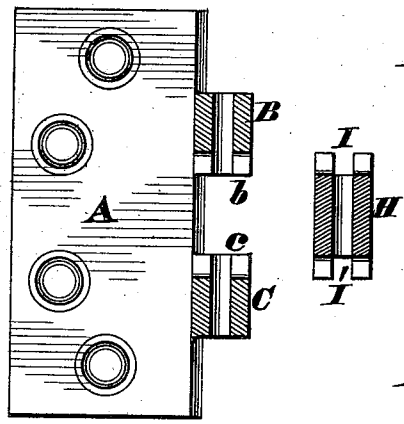


FIG. 2.

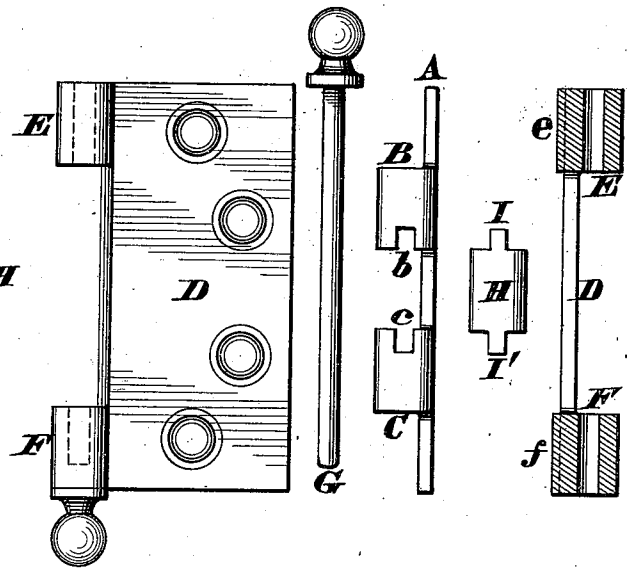


FIG. 3.

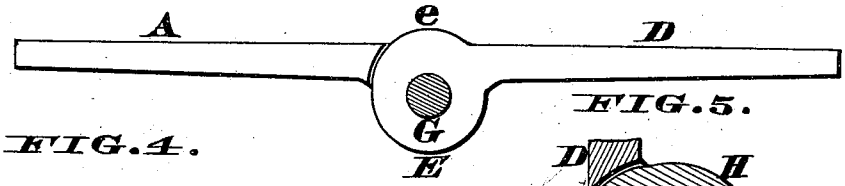


FIG. 4.

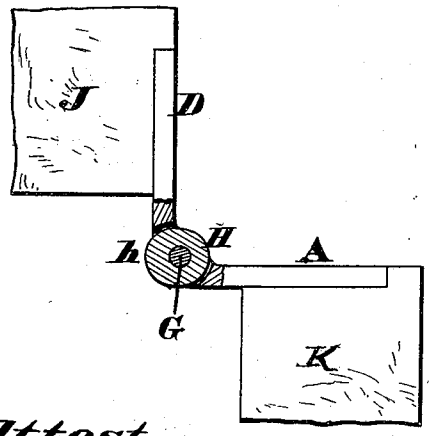


FIG. 5.

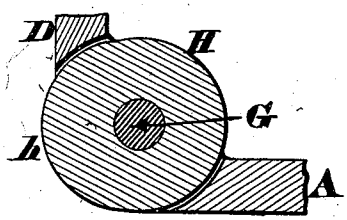
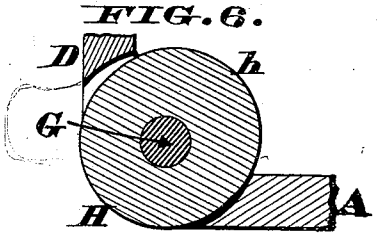


FIG. 6.



Attest.

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UNITED STATES PATENT OFFICE.

CHRISTOPHER H. REMBOLD, OF CINCINNATI, OHIO.

DOOR-HINGE.

SPECIFICATION forming part of Letters Patent No. 616,258, dated December 20, 1898.

Application filed May 20, 1898. Serial No. 681,208. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPHER H. REMBOLD, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Door-Hinges; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form a part of this specification.

This invention relates to those hinges which are used for hanging doors from frames or casings; and my improvement comprises a hinge whose peculiar combination of parts serves to gradually arrest a door while being swung around to a certain predetermined distance, and then to positively stop it in such an open position.

The hinge differs but very little in appearance from an ordinary door-hinge, being composed of a pair of leaves or straps having a number of interlocked knuckles traversed by a customary pin or pivot, and certain portions of the knuckles are eccentric with reference to the axis of said pivot. These eccentrics, of which one or more may be provided, are preferably integral with the casing-leaf knuckles, and when a door has been opened the desired distance the nearest edge of the other leaf impinges by degrees against said eccentric or eccentrics, thereby stopping the door, as hereinafter more fully described; but in a more elaborate form of my hinge the single eccentric is integral with a detachable sleeve capable of being engaged with a pair of knuckles of the door leaf or strap, which sleeve when applied in an inverted position is rendered inoperative, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a front elevation showing the component members of my hinge separated from each other and the detachable sleeve and the knuckles of the door-leaf sectioned. Fig. 2 is an edge view of the two leaves and sleeve, the knuckles of the casing-leaf being sectioned. Fig. 3 is an enlarged plan showing the hinge opened as far as it will go, its pintle being sectioned. Fig. 4 is a horizontal section showing how the sleeve serves as a stop to limit the opening of a door. Fig. 5 is a greatly-enlarged horizontal section through said sleeve. Fig. 6 is a similar section showing said sleeve in an inoperative position.

A represents a leaf or strap capable of being secured to a door, and B C are customary knuckles integral with said leaf.

D represents a complementary leaf or strap capable of being secured to a door frame or casing, and E F are customary knuckles integral with this leaf. The rear portions of these last-mentioned knuckles are swelled outwardly, as at *e f*, which swells are eccentric with reference to the axis of the pin or pintle G, that traverses all the longitudinal bores of the hinge-knuckles in the usual way.

By referring to Fig. 3 it will be evident that when the hinge is opened so far as to bring their leaves A D in line with each other the joint edge of the door-leaf A will impinge against the immovable eccentrics or swells *e f* of the knuckles E F, and thereby prevent the door being opened any farther and hold it in the position shown. Again, as these swells gradually develop from the knuckles the door is stopped or checked without producing any jar or concussion, and for this reason there will be no straining of the hinge. In this form of my hinge it is evident the longitudinal bores of the knuckles must be of uniform diameter and in line with each other, and the pin be of the same diameter as these coincident passages, so as to prevent any unnecessary binding and friction of the moving parts of the device.

The above describes the arrangement of the eccentric or eccentrics when the hinge is to be so applied to a door as to enable it to be opened way back and stand at a right angle to its frame or casing; but when it is desired to arrest the door when it is practically parallel with said casing, as seen in Fig. 4, a different disposition of the eccentric must be made. In this case an eccentric *h* is formed on the outer surface of a detachable sleeve H, which is just long enough to fit snugly between the knuckles B C of the door-leaf A, and has at its ends lugs I I′ to engage with notches *b c* in the opposing ends of said knuckles. One notch will do for each knuckle; but I prefer using a pair of them, because there is considerable strain imposed on the sleeve when it alone serves as a door-check. This hinge is applied to a casing J and door

K in the usual manner, and when the latter is opened the sleeve H must turn in unison with the knuckles B C, because it is positively locked to them. This opening takes place freely while the concentric portion of the sleeve is opposite the joint edge of the leaf D; but as soon as the eccentric part *h* of said sleeve begins to bear against said edge the door is gradually arrested and held in position. This action of the eccentric will be more apparent by referring to Fig. 5; but by detaching the sleeve, inverting it, and reengaging it with the knuckles B C the eccentric *h* will be disposed as seen in Fig. 6 and will no longer control the opening of the door, or, in other words, the swell *h* is inoperative.

By causing the sleeve H to coact with the eccentric knuckles E F in checking the opening of a door there will be two oppositely-acting resistances in each hinge, one where said sleeve impinges against the edge of leaf D and another where said knuckles bear against the edge of leaf A.

Whether either or both of these constructions be embodied in a single hinge it is evident its leaves, while having a free swinging motion around the pivot, must not shift bodily in any direction, because any material shifting of either leaf with reference to the other leaf would counteract the automatic stop action of the eccentric or eccentrics. Again, in Fig. 1 the lower end of knuckle F has an ornamental termination of the same size and shape as the head of pin G, so as to impart a finished appearance to the hinge; but in Fig. 2 this termination is omitted in order that the casing-leaf may be inverted, if desired.

Finally, my invention has been shown as applied to a hinge having but two knuckles on each leaf, although the exact number of knuckles is immaterial, the only precaution being to have the eccentric sleeve arranged to swing around with the door leaf or strap.

I am aware it is not new to completely inclose a cylindrical bushing within a leaf-knuckle and provide the bushing with an eccentric bore for the reception of a pivot in order that the partial withdrawal and intentional turning of said pivot will so change the position of said bushing as to bodily shift the leaves with reference to each other, and thereby compensate for the shrinking or settling of a door, as such an adjustable hinge is seen in Letters Patent No. 583,512, issued June 1, 1897, to Michael H. Sexton. Therefore I expressly disclaim any form of hinge which has provision in it for the bodily shifting of either of the leaves.

I claim as my invention—

1. A hinge including a pair of knuckled leaves having longitudinal bores of uniform diameters; a pivot traversing these bores, and of cylindrical shape from end to end; and, projecting from one of said knuckles, an external swell or eccentric, that acts as a stop, in the manner described, said leaves being so jointed to said pivot as to be incapable of lateral shifting, for the purpose stated.

2. A hinge including a leaf having a pair of knuckles; another leaf having a pair of knuckles whose opposing ends are notched; a readily-detachable sleeve having an eccentric exterior, and lugs that engage with said notches; and a pivot traversing the bores of said knuckles and sleeve, in the manner described, and for the purpose stated.

In testimony whereof I affix my signature in presence of two witnesses.

CHRISTOPHER H. REMBOLD.

Witnesses:

JAMES H. LAYMAN,

JOHN C. ROGERS.