

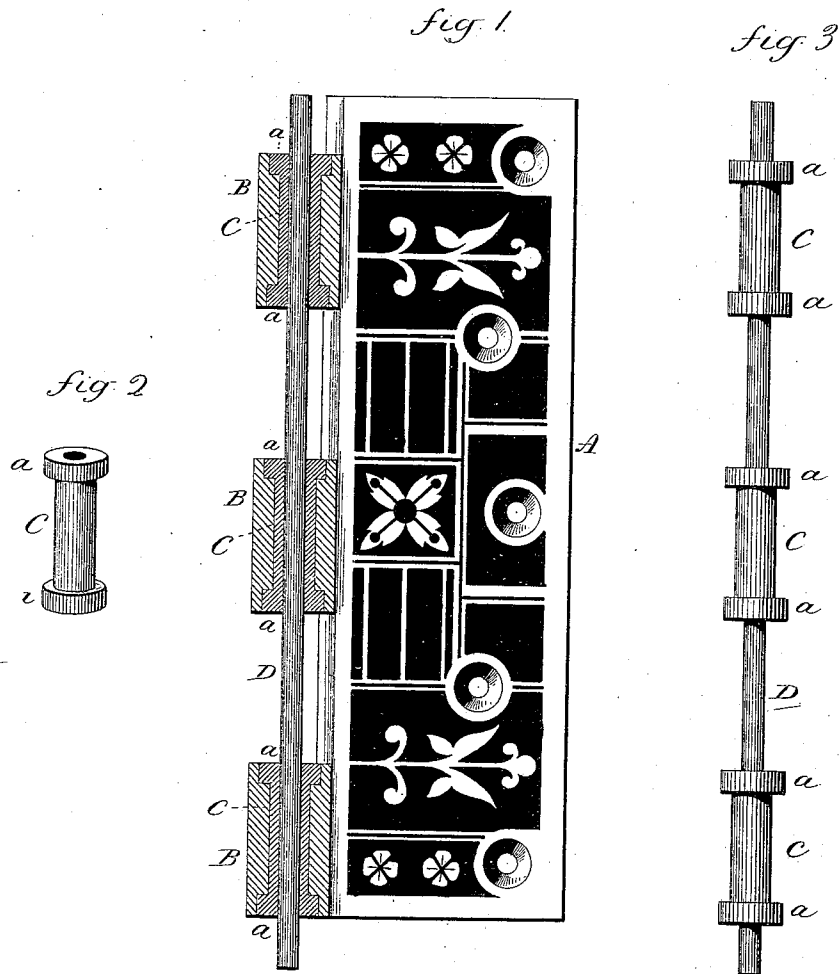
(No Model.)

W. GILFILLAN.

HINGE.

No. 292,005.

Patented Jan. 15, 1884.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## HINGE.

SPECIFICATION forming part of Letters Patent No. 292,005, dated January 15, 1884.

Application filed June 5, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM GILFILLAN, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Butt-Hinges; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a face view of one part of a hinge, showing the knuckles in longitudinal section; Fig. 2, a perspective view of one of the bushings; Fig. 3, the bushing arranged upon the spindle preparatory to introduction into the mold.

This invention relates to an improvement in the construction of cast-metal hinges, with special reference to that class made from what is termed "bronze" metal, but applicable to other kinds of metal.

In the use of bronze-metal hinges, a serious difficulty arises from the fact that the metal is so soft that one part turning upon the other wears rapidly upon the bearing-surfaces, permitting the door to drop until it will rub upon the threshold; then the door must be trimmed at the bottom, or the hinges must be repaired. This repairing is usually done by the introduction of collars between the bearing-surfaces of the knuckles. Again, a difficulty exists in the manufacture of this class of hinges. In drilling the knuckles for the pintle, the drill is liable to "run," so that the hole bored is not perfectly straight through all the knuckles, making it difficult to insert the pintle, and, when inserted, the bearings are not perfectly concentric; hence the parts of the hinge do not work freely, the one upon the other.

The object of my invention is to overcome these difficulties; and it consists in a hard-metal bushing for each of the knuckles, introduced into the mold in which the parts are cast like a core, and upon which the metal will flow and unite the bushing to the hinge, as more fully hereinafter described.

A represents one leaf of a butt-hinge, on

which B B B are the parts of the knuckle, which may be of usual form and of any desirable style or pattern. The shape of the knuckle and leaf or the ornamentation has nothing to do with this present invention. The bushing for the knuckles is made of hard metal, and substantially as represented in Fig. 2, in which C is the body, terminating in a collar-like head, *a*, at each end. This bushing may be of hard cast-iron, and is drilled longitudinally, corresponding to the size of the pintle to be used. The length of the bushing corresponds to the length of the knuckle.

In molding the hinge, a core-print is introduced, corresponding to the pintle of the hinge. Supposing the hinge to be such as seen in Fig. 1—that is, with three knuckles—three of the bushings are prepared and arranged upon a spindle, D, as seen in Fig. 3, each corresponding in position to the respective knuckles of the hinge. Thus prepared, the spindle, with the bushings, is laid into the mold, the core-prints having prepared a seat for the spindle; then the metal is poured into the mold, and flows around the respective leaves, as seen in Fig. 1; then removed from the mold the spindle D is withdrawn, leaving a perfectly-straight hole through the several knuckles for the insertion of the pintle. The ends of these bushings form bearings of hard metal, upon which the leaves of the hinges will work. Each part of the hinge is provided with the same bushings.

In drilling the bushings preparatory to casting the hinge, no special care is necessary, because the spindle brings them into proper alignment with each other, regardless of their exterior surface. The saving in the cost of drilling more than pays the cost of the bushings, so that no extra expense is involved in the introduction of this improvement in the hinge, whereby it is not only more perfect in its working, but more durable in use.

While I prefer to make the bushings with a collar-like head at each end, they may be otherwise shaped and accomplish the object of the invention.

I claim—

1. The method herein described of making

- bronze and similar metal hinges, consisting in the arrangement of hard-metal bushings upon a spindle in a position relative to each other corresponding to the knuckles on the hinge to  
5 be cast, said spindle and bushings placed in the mold preparatory to casting, and so that metal poured into the mold will flow around said bushings in the formation of the knuckles, substantially as described.
- 10 2. A bronze-metal hinge constructed with a hard-metal bushing extending through the knuckle, and inclosed in the knuckle in the process of casting, and whereby the two ends of the bushing in the knuckles of one part form the bearings for the adjacent ends of the 15 knuckles of the other part, substantially as described.

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