(No Model.)

2 Sheets—Sheet 1.

F. HOLLAND.

HINGE.

No. 547,435. Patented Oct. 8, 1895.

Fig. 1.

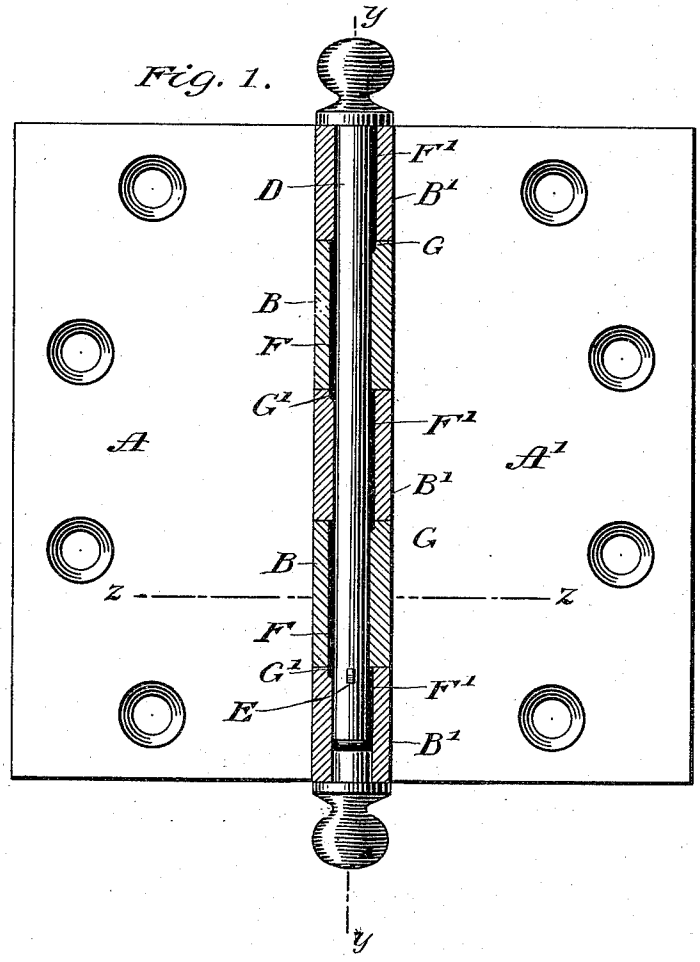


Fig. 2.

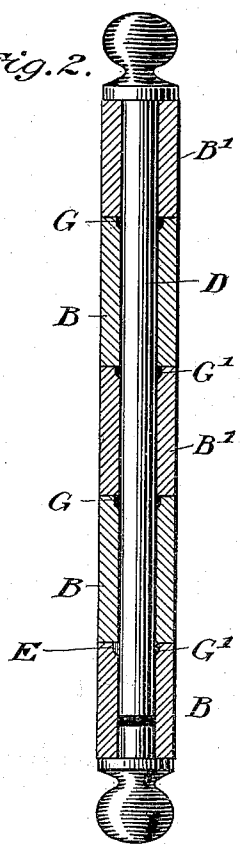
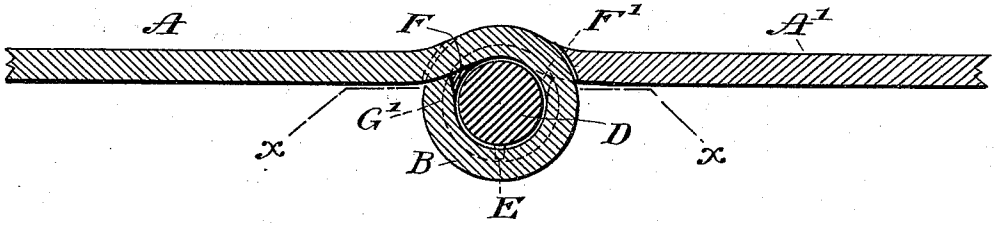


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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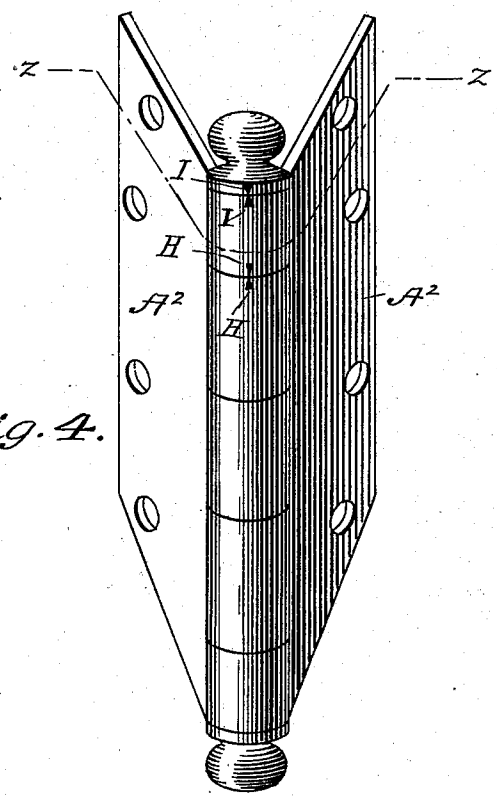


Fig. 4.

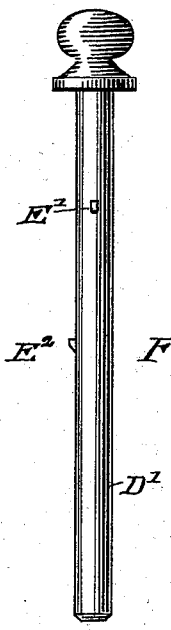
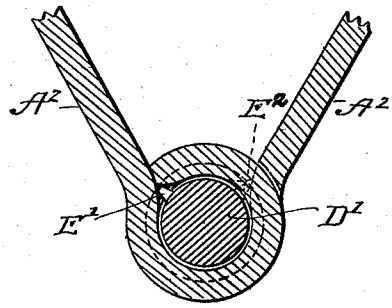


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANKLIN HOLLAND, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO THE STANLEY WORKS, OF SAME PLACE.

HINGE.

SPECIFICATION forming part of Letters Patent No. 547,435, dated October 8, 1895.

Application filed June 13, 1895. Serial No. 552,735. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN HOLLAND, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented a new and useful Hinge, of which the following is a specification.

My invention relates to an improvement in butts and hinges, consisting of two or more leaves secured together by a detachable pintle-bearing; and it consists in the device hereinafter fully described.

The object of my invention is to construct the bearing of a hinge in such a manner that the pintle shall be prevented from becoming accidentally disengaged therefrom, at the same time permitting it to be readily detached.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 is a side view of an open hinge, the knuckles being illustrated in vertical cross-section on line *x x*, Fig. 3, so as to reveal the interior construction of the pintle-bearing and the said knuckles. Fig. 2 is a vertical sectional view of the knuckles and pintle-bearing of a hinge, taken in the plane of the line *y y*, Fig. 1, and at right angles to the vertical section illustrated in Fig. 1. Fig. 3 is an enlarged horizontal cross-sectional view on the plane of the line *z z*, Fig. 1, of a hinge of my improved pattern. Fig. 4 is a perspective view of a hinge containing a modification of my invention. Fig. 5 is a perspective view of the pintle used therewith. Fig. 6 is a cross-sectional view of a portion of the hinge shown in Fig. 4, taken on the plane of the line *z z*.

Similar letters refer to similar parts.

A A′ are hinge-leaves provided with knuckles B B′. D is a pintle-bearing adapted to pass through the said knuckles B B′ and to afford a bearing for the same.

To prevent the pintle from being accidentally withdrawn from the hinge I provide the pintle D with a projection E.

In forming knuckles upon hinges it is customary to roll the same, and in doing so there is produced a longitudinal or upright groove on the inner side of the knuckle on the line where the edge of the knuckle meets the hinge-leaf. These grooves are designated by the reference-letters F F′. The projection E upon the pintle D is of such a size that it can readily pass through the said longitudinal grooves F F′. By preference I provide the alternate knuckles B B′ with annular grooves G G′, respectively, which grooves enlarge the knuckle adjacent to the perforation through which the pintle is adapted to pass. In operation the end of the pintle is inserted into the top knuckle B′. The projection E passes first through the longitudinal groove F′ in the said top knuckle until it reaches the next adjacent knuckle B. By then turning the said pintle-bearing the projection E passes around the annular groove G until it comes into the plane of the longitudinal groove F, which permits the pintle to be introduced a distance equal to the length of the said groove.

By repeating the operation above described the pintle is gradually passed through each separate knuckle until the projection E reaches the annular groove F′ most remote from the entrance. By turning the same slightly out of alignment with the upright or longitudinal groove F the pintle D is prevented from being accidentally withdrawn from engagement with the knuckles and lost. The process of withdrawing the said pintle is the reverse of the process of introducing the same.

It is obvious that if desirable only one annular groove may be provided, and in that event the projection E is by preference formed upon the pintle D at a distance from the upper end of the pintle equal to the distance from the entrance to the said annular groove. It is obvious also that if desirable the annular groove described may be provided at a point intermediate in the length of one of the knuckles instead of at one end thereof, as above described, without departing from the spirit of my invention.

One or more projections E may be formed upon the pintle, in which event it would be desirable to have the knuckles all of a substantially corresponding length and the longitudinal or vertical grooves F F′ therein alternately opposite each other while the said pintle-bearing is being introduced into the said knuckles, it being assumed that the projections E are formed on opposite sides of the pintle.

The modifications of my invention shown in Figs. 4, 5, and 6 embody the features already described in that the knuckles are provided with the upright and annular grooves referred to in the previous figures.

In the modification shown in Figs. 4, 5, and 6 I provide the pintle-bearing D′ with two or more projections E′, said projections being formed on the said pintle D′, by preference, out of the same vertical plane, as shown in Figs. 5 and 6. With the projections E′ E^2 set as indicated, it is obvious that in order to withdraw the pintle from the knuckles formed on the leaves A^2 A^2 it is necessary to open the said leaves to the proper angle until the upright grooves in the knuckles are directly above the projections E′ E^2. To accomplish this it is also necessary, after having opened the leaves to the proper angle, as shown in Fig. 4, to revolve the pintle-bearing, so that the position of the projections E′ E^2 and the upright grooves next adjacent will be in corresponding upright planes. When the parts are in this position, it is obvious that the pintle may be withdrawn until the lowermost projection E^2 comes up into the plane of the annular groove in which the uppermost projection E′ previously turned. Then, by again revolving the pintle, the said projection E^2 may be swung into the corresponding plane with the upright groove in the uppermost knuckle, and the pintle may then be entirely withdrawn. To show the proper angle to open the leaves A^2 A^2 it may be desirable to provide on the outer surface of the knuckles suitable marks—for instance, arrow-heads H H, which, when they coincide, as shown in Fig. 4, indicate that the leaves are open to the proper angle. It may be further desirable to provide in the knuckle adjacent to the head of the pintle-bearing D′ other indicating-marks I I, which indicate the proper position of the pintle for the first part of the process of withdrawing. When the parts are in the position indicated in Fig. 6, which is similar to the position indicated in Fig. 4, the pintle-bearing D′ may be withdrawn until the uppermost projection E′ is out of engagement with the upper knuckle, so as to permit the said pintle or pin D′ to be revolved until the lowermost projection E^2 can be entirely withdrawn. This latter modification may be admirably adapted for use on safe-locks where the pintles are ordinarily riveted in order to prevent their being withdrawn, this process of riveting being sometimes undesirable for the reason that the doors cannot be taken off without breaking the rivet-heads, whereas, by this modification, when the door is closed the pintles are held in the knuckles by a means equally effective, and when the door is opened to the proper angle the said pintles may be withdrawn and the entire door removed, if desirable.

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

1. A hinge consisting of two or more leaves having knuckles formed thereon, upright or longitudinal grooves in the inner surface of one or more of said knuckles, annular grooves in one or more of said knuckles communicating with said upright groove or grooves, with a pintle, said pintle having one or more projections adapted to enter and pass through said grooves, substantially as and for the purpose specified.

2. A hinge consisting of two leaves A^2 A^2 having knuckles formed thereon adapted to be alternately engaged by a pintle bearing, upright or longitudinal grooves in two or more of said knuckles, annular grooves therein as described, and a pintle D^2 having two projections E′ E^2 formed thereon, substantially as and for the purpose specified.

3. A hinge consisting of two leaves A^2 A^2 having knuckles formed thereon adapted to be alternately engaged by a pintle bearing, said knuckles being provided with the indicating arrows H H, and having upright and annular grooves therein as described, and with the pintle projections E′ E^2 and with the indicating arrows I I, substantially as and for the purpose described.

FRANKLIN HOLLAND.

Witnesses:
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W. R. SIMPSON.