

L. SIMMONS.
HINGE.

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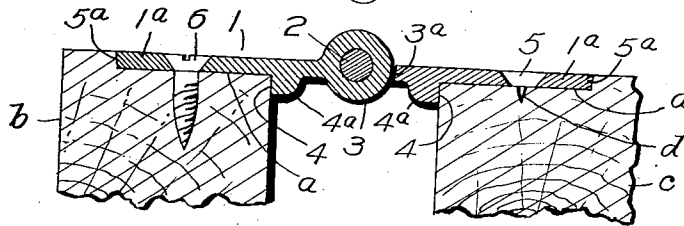
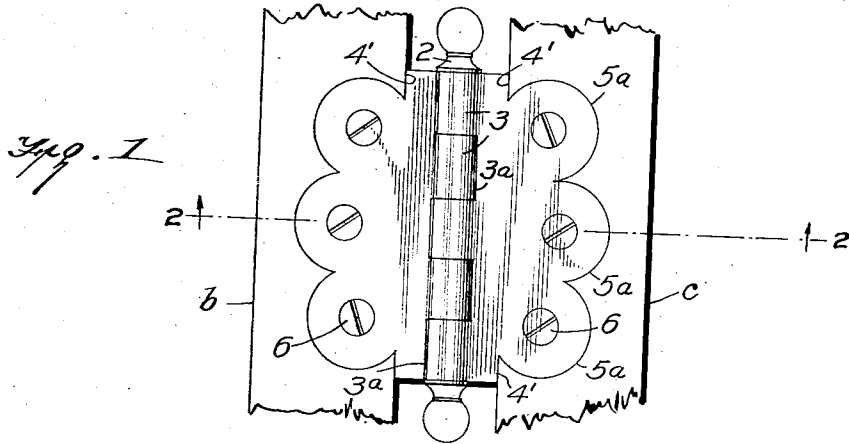
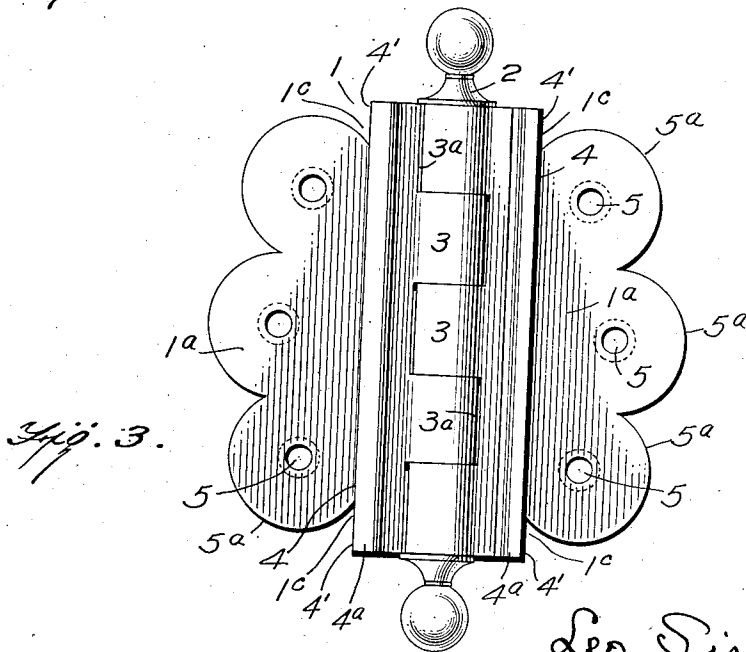


Fig. 2.



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To all whom it may concern:

Be it known that I, LEO SIMMONS, a citizen of the United States of America, and resident of Washington, District of Columbia, have invented certain new and useful Improvements in Hinges, of which the following is a specification.

This invention relates to certain improvements in hinges; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I now believe to be the preferred embodiment or mechanical expression of my invention from among other forms, constructions and arrangements within the spirit and scope thereof.

It is an object of my invention to provide a door hinge wherein each leaf embodies a gage parallel with the hinge pin or axis and bearing a certain fixed relation to the securing screw holes in the leaf and to the edge of the leaf, said edge of the leaf being essentially made up of segmental portions concentric with the respective screw holes and bearing a certain fixed relation to said gage, all with the end in view of enabling the mechanic to apply the hinge to the door and jamb with maximum speed and accuracy by utilizing a boring tool or auger for excavating the seats or sockets for the hinge leaves after the mechanic has employed the hinge as a gage to accurately locate the auger centers through the medium of the securing screw holes in the hinge leaves.

With these and other objects in view, the invention consists in certain novel features in construction and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings:—

Figure 1 shows in edge elevation a door jamb and a door and a hinge in accordance with my invention secured to said jamb and door.

Fig. 2 is a section on the line 2—2, Fig. 1.

Fig. 3 is a rear elevation of the hinge.

In the particular embodiment illustrated, I show the hinge composed of two approximately similar flat cast metal hinge leaves 1, and a hinge pin or axis 2. As usual in door hinges, the adjoining (inner) longitudinal

parallel edges 3^a of the hinge leaves are formed with projecting eyes 3 and these eyes are alined and receive the hinge pivot or pin 2, and this hinge pivot is parallel with and located midway between the said longitudinal inner edges of the hinge leaves.

Each leaf is cast or otherwise formed with an outwardly-facing longitudinally-arranged straight-edge, gage or shoulder 4 located at the inner side or face of the leaf parallel with the inner edge thereof and with the hinge pivot. In the example illustrated, this gage is formed by the straight flat longitudinal outer side edge of a rib 4^a that serves to stiffen and strengthen the hinge leaf and also to form a guard for fitting the face of either the door or jamb and covering the raw or unfinished edge formed in excavating the hinge leaf socket or seat. In this instance, the rib extends throughout the length of the hinge leaf from one end edge thereof to the other, although I do not wish to limit my invention to a gage continuous throughout the length of the hinge leaf.

The flat face area 1^a of each leaf that is located outwardly beyond the gage 4 (or the inner edge of which is defined by gage 4) constitutes the securing portion of the leaf *i. e.* the portion of the leaf that is to occupy and be countersunk in the seat or socket *a* excavated in the door *b* or in door jamb *c*.

This area 1^a is provided with several holes 5 to receive the screws 6 by which the hinge leaf is secured to the door or to the jamb. Adjacent screw holes are located out of alinement longitudinally of the hinge leaf to reduce to the minimum danger of the screws splitting the wood of the door or jamb.

The outer portion of the perimeter of each leaf from the gage 4 at one end of the leaf to the portion of the gage at the other end of the leaf, is formed by a series of intersecting curves or semi-circles 5^a, the centers of which are located by the screw holes 5, respectively. For instance, in the specific example illustrated, each leaf has two end screw holes and an intermediate or central screw hole arranged out of alinement with the end holes, and these screw holes are located transversely of the leaf, approximately midway between the gage 4 of the leaf and the outer edge thereof, and each screw hole forms the center of the adjacent semi-circular edge por-

tion 5^a of the leaf, and hence said perimeter portion of the leaf is formed by two end semi-circular portions 5^a and an intermediate intersecting semi-circular portion 5^a.

5 The mechanic in preparing to hang a door with hinges of my invention, will first temporarily hold the hinge in proper position on the door edge and jamb with the gages 4 squarely fitting the side faces of the jamb and door and with the securing portions 1^a 10 of the leaves resting against the portions of the jamb and door where the seats or sockets are to be excavated. While thus holding the hinge, the mechanic will by means of a 15 pencil or any other suitable instrument, inserted successively through each screw hole 5, locate suitable marks on the wood of the jamb and door that will give the mechanic the various centers for his auger or like ro- 20 tary excavating tool. He will then remove the hinge and employ an auger or the like rotary tool having a radius substantially equal to the radius of each semi-circular edge portion 5^a, in excavating holes in the door 25 and jamb of the required depth. For instance, for the particular embodiment illustrated, three holes will be bored for each hinge leaf and the centers for the three holes will be located by the three screw holes 5, 30 respectively. Any surplus wood that may remain between the three holes can be easily and quickly removed by a knife or other means. The seats or sockets for the hinge 35 leaves can be thus most quickly and accurately formed and the semi-circular edge walls of the sockets will snugly and accurately receive and fit the hinge leaves. The centers (d, Fig. 2) left by the bit of the 40 auger in the floors of the seats or sockets will serve to center and facilitate the entrance of the screws 6 when securing the hinge to the door and jamb after the same has been fitted in the sockets or seats formed by the auger.

45 Those skilled in the art fully appreciate the time and care required in excavating door hinge seats by the methods now practised and the difficulty encountered in attaining any degree of accuracy without skill 50 on the part of the mechanic, repeated trials, and numerous measuring operations. Excavating hinge seats by means of the chisel is slow and inaccurate even where squares and other measuring instruments are employed by a skilled mechanic.

55 It has heretofore been proposed to provide door hinges having the complete perimeter of each leaf excepting its inner edge formed by intersecting semi-circular portions concentric with the screw holes, the hinge being 60 flat throughout except for the hinge joint and without gage means; with the end in view of utilizing the auger in excavating the hinge leaf seats, but to the best of my 65 knowledge, information and belief, such pro-

posal did not meet with success in the trade because of the time and skill required in properly locating the centers for the auger with respect to the edges of the door and jamb and with respect to the location of the 70 hinge pivot. In other words, the hinge leaves of said old hinge could not be employed with any degree of accuracy as a pattern or gage for locating the auger centers. It was necessary to use the eye and 75 approximate measurements and distances and to follow out a system of measurements and trials that did not lead to accuracy and speed and that required skill and experience, and in fact gained nothing over the common 80 slow methods employed in excavating the common rectangular sockets for the door hinges in use today. I have overcome these disadvantages and produced a hinge that the layman without skill, can utilize in 85 quickly and accurately hanging doors and that enables the operator or mechanic to accurately employ the auger for excavating the hinge seats. If the measuring steps can be avoided in locating the auger centers, and 90 if quickly attained accuracy is possible, great speed can be attained in hanging doors provided the rotary auger or like tool can be used for excavating the hinge seats. I attain this desirable result by combining in 95 each leaf, the gage with the semi-circular edges whose centers are the screw holes, respectively. The gages accurately and automatically locate the screw holes the proper 100 distances from the edges of the door and jamb, and the proper distances from the hinge pivot and also properly locate the vertical or longitudinal position of the screw holes of each leaf with respect to the other and with respect to the hinge pivot, and 105 hence the auger centers determined by the screw holes can be quickly, easily and accurately marked on the jamb and door, and the secured hinge will necessarily be set squarely and accurately with respect to the 110 door and jamb.

It will be noted that the portion of each leaf formed with the integral rib 4^a and that intervenes between the hinge joint (the 115 eyes 3') and the securing portion 1^a of the leaf, is of greater length longitudinally of the hinge than the securing portion 1^a and projects beyond the same at the hinge ends, thereby forming the gage 4 of each leaf with 120 projecting straight-edge ends 4' in longitudinal continuation of and forming part of the gage edge 4. At the opposite ends of each leaf the inner portions of the end semi-circular edge portions 5^a and the adjacent 125 gage ends 4' converge and meet to form acute angle sockets or notches 1^c arranged longitudinally of the leaf. By this formation, the gage ends 4' bear against the uncut faces of the jamb and door above and below the hinge seats or sockets, while the said 130

seats are undercut transversely thereof or are contracted at their inner sides where opening through the side faces of the jamb and door to resist direct pull on the hinge leaves tending to draw them transversely from their seats. This leaf and seat formation in connection with the gage ends 4', braces and upholds the hinge against loosening and tends to prevent door sagging.

10 I do not wish to limit all features of my invention to the exact leaf formation shown having three screw holes and semi-circular edge portions.

What I claim is:—

15 1. A door hinge embodying pivotally united hinge leaves, each leaf formed with a longitudinal leaf-stiffening guard rib providing a gage parallel with the hinge pivot, each leaf having screw holes between said
20 gage and the outer edge of the leaf, said edge made up of intersecting semi-circular portions each concentric with the screw hole adjacent thereto, said rib being arranged at the inner side of the leaf and spaced from
25 the hinge pivot and from said screw holes, substantially as described.

2. A door hinge composed of a pair of pivotally-united leaves, each leaf having a securing portion and an intermediate portion intervening between the securing portion and the hinge axis and at its inner face having a longitudinal gage shoulder parallel with the hinge axis and defining the inner

boundary of the securing portion and formed to abut the side face of the door or jamb, the securing portion having a securing screw hole spaced from said shoulder and from the remaining perimeter of said securing portion, said remaining portion of the perimeter being curved and including a semi-circle whose center is defined and located by said hole, for the purposes substantially as described.

3. A door hinge composed of a pair of approximately similar pivotally united hinge leaves, each leaf composed of a securing portion formed to fit in a seat or socket excavated in the jamb or door and an intermediate portion integral with said securing portion and intervening between the same and the hinge axis and at its inner face having a gage parallel with the hinge axis and projecting longitudinally at opposite ends with respect to the ends of the securing portion, said gage defining the inner edge of the securing portion, the remainder of the perimeter of the securing portion being made up of intersecting semi-circles with the end portions of the edge of said securing portion and said projecting gage ends forming the leaf with tapering end notches, said securing portion having transverse holes forming the centers of the adjacent semi-circles, respectively.

LEO SIMMONS.