

J. KAUFFMAN.
Hinge.

No. 159,682.

Patented Feb. 9, 1875.

Fig. 1.

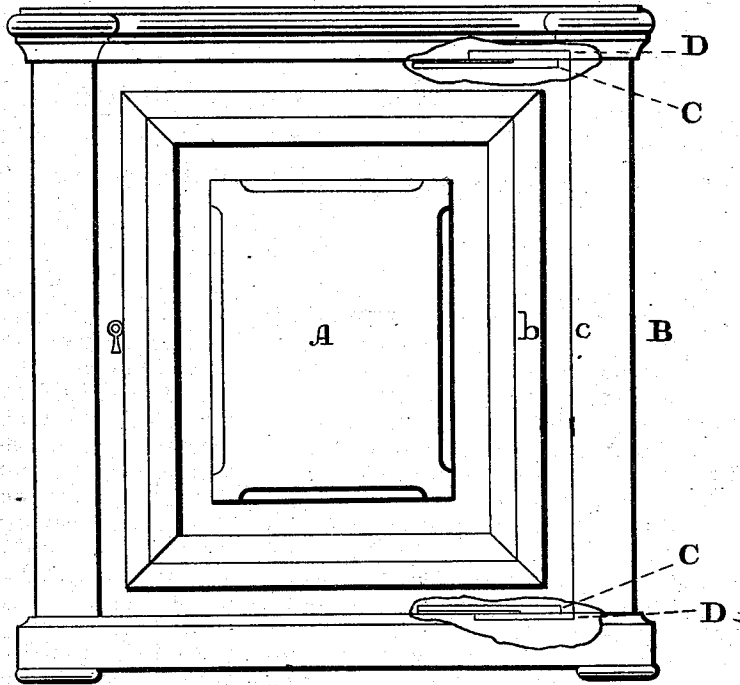


Fig. 4.

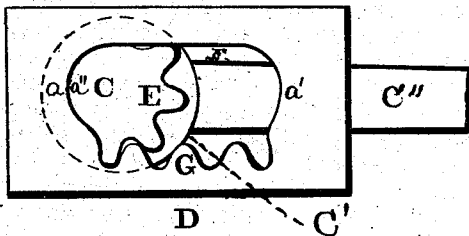


Fig. 2.



Fig. 3.

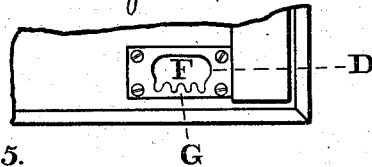
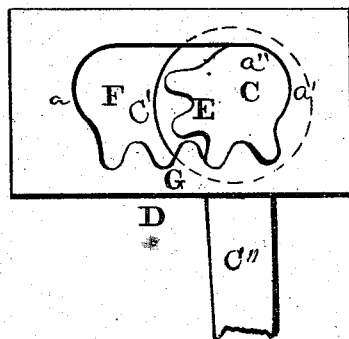


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH KAUFFMAN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HINGES.

Specification forming part of Letters Patent No. **159,682**, dated February 9, 1875; application filed January 8, 1875.

To all whom it may concern:

Be it known that I, JOSEPH KAUFFMAN, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Door-Hinges; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a face view, partly broken away, of an article of furniture having my invention applied thereto. Fig. 2 is a top view of the door thereof. Fig. 3 is a top view of the bottom of the frame. Fig. 4 is an enlarged view, showing the hinge or door closed. Fig. 5 is a similar view, showing the hinge or door open.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in an open plate, which has at one side of the opening a series of teeth or a rack, and a shanked disk entering said opening, and having a toothed segment, which meshes with the teeth or rack of the open plate, the remaining portion of the disk fitting snugly in the space of the open plate, so that there is no play of said portion in the space.

A plate is secured to the top and bottom of the frame or support of the door, and a shanked disk to the top and bottom of the door, so that when the parts are in position, the disks swing in the open plates, and cause an easy and uniform motion to the door and remove strain therefrom.

The extent of rotation or swing of the door is limited by the side walls of the opening of the plate, and thus there can be no injury or fracture to the wood-work, since the door in opening cannot strike the adjacent portion of the frame or support.

The construction of the hinge causes the door to open and close in an ellipse, and thus the molding of the door at the axial end clears the frame or support it would otherwise strike.

Referring to the drawings, A represents a door, and B the frame-work of a piece of furni-

ture or other article, all of which may be of well-known form and construction. To the top and bottom of the door, at the axial or hinged end thereof, there are secured disks C by means of the shanks or stems C', and to the adjacent portion of the frame B there are secured open plates D, the plates and disks constituting the hinges of the door. Each disk C has a portion of its periphery formed of a toothed segment, E, and the plate D is formed with a wide opening or space, F, at one of the long sides of which is a rack or series of teeth, G. In the narrow sides of the space F there are swells *a a'*, which correspond in contour to the untoothed portion *a''* of the disk C, said portion being the segment of a circle. The disk C enters the opening F of the plate D, and the teeth of the segment E engage or mesh with the rack or teeth G.

When the door opens, the closed position being shown in Fig. 4, the disk moves from one swell *a* of the opening F to the other, the teeth E working in the rack G. When the door is opened to full extent, the body of the disk strikes the swell *a'* of the opening F opposite to that from which it started, and thus comes to a full stop, whereby the opening of the door is limited, and there is no liability of the door striking the wood-work.

As the door opens, the molding or ornamentation *b* thereof is prevented striking the adjacent portion *c* of the frame-work B, owing to the ellipse described by the door, whereby said molding moves or comes within the outer face of the portion *c*, thus clearing the same.

In closing the door, the shelves of the article of furniture, if any, are cleared, owing to the ellipse described by the door, and thus I obviate cutting the shelves, as heretofore practiced.

It will be seen that the disks move over larger surfaces in the open plates, and thus with great leverage, whereby strain on the parts is diffused, and the interposed teeth or gearing E G cause the motion of the disk to be vastly eased.

It will also be seen that the door is limited or stopped in closing, owing to the disk striking the swell *a* of the opening F.

When the door is opened, at least two of

the teeth of the segment E mesh with the teeth G of the opening F, thus causing the diffusion of the strain on the hinge.

Each disk C is connected to a disk or flange, C', which is larger than the opening F of the plate D, so that the flange C will rest on the outer face of the plate D, and bear there-against during the movement of the door. This transfers the strain or weight of the door over the plate D, and prevents the toothed disk being forced into the opening F beyond its established location. Moreover, when the door is opened, the flanges or disks C' cover and conceal the openings F of the plates D. To the flanges C' I secure the shanks or stems C'', by which the door or hinges are connected. It will also be seen that the disk C fits snugly within the space F, and at no time is there

any play between the disk C and plate D, so that the door will not rattle or give, nor open or close beyond its exact points.

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

1. The plate D with opening F, rack G, and swells *a a'*, in combination with the disk C, having segment *a''*, and toothed segment E, substantially as and for the purpose set forth.

2. The disk C, having flange C', shank or stem C'', and toothed segment E, in combination with the open plate D having rack G, substantially as and for the purpose set forth.

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Witnesses:

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