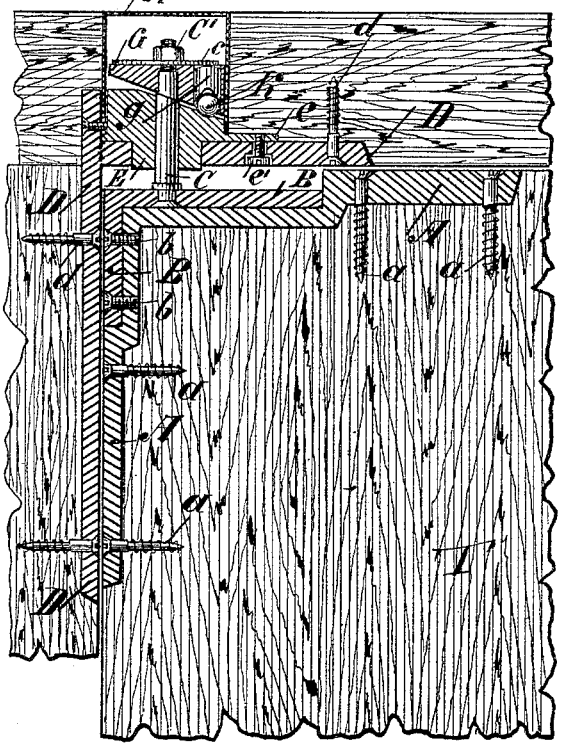
(No Model.) 2 Sheets—Sheet 1.

F. A. H. FAULHABER & C. F. KOCH.

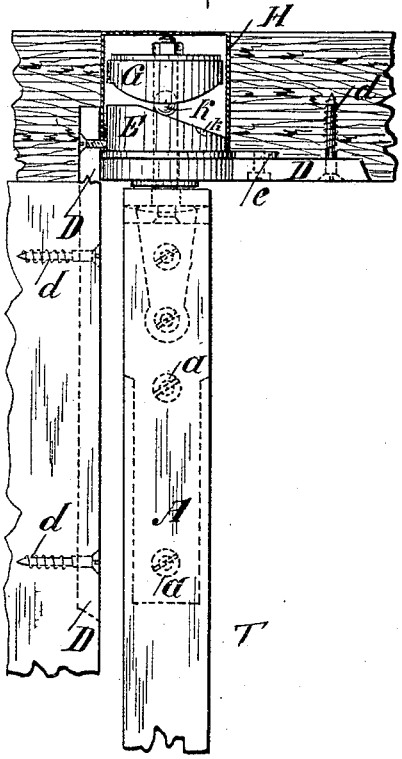
HINGE.

No. 453,803. Patented June 9, 1891.

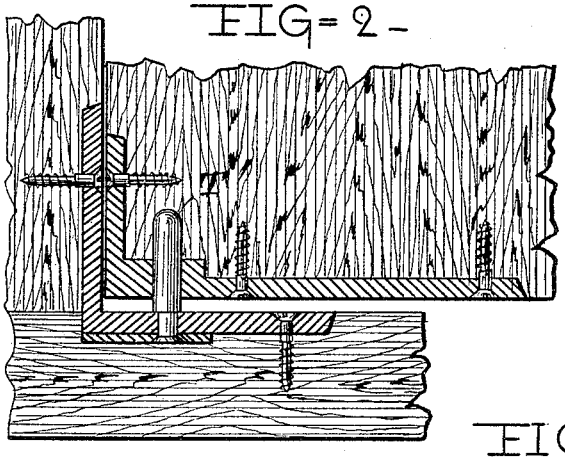
FIG=1-



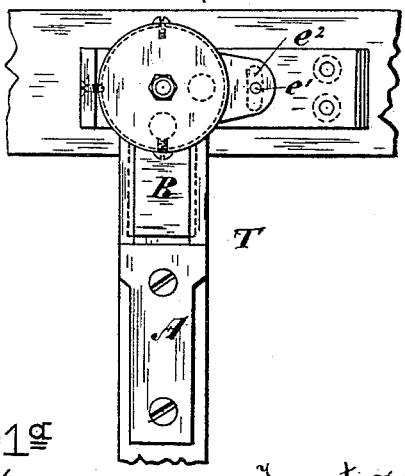
FIG=3-



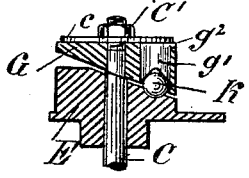
FIG=2-



FIG=4-



FIG=1a



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(No Model.) 2 Sheets—Sheet 2.

F. A. H. FAULHABER & C. F. KOCH.

HINGE.

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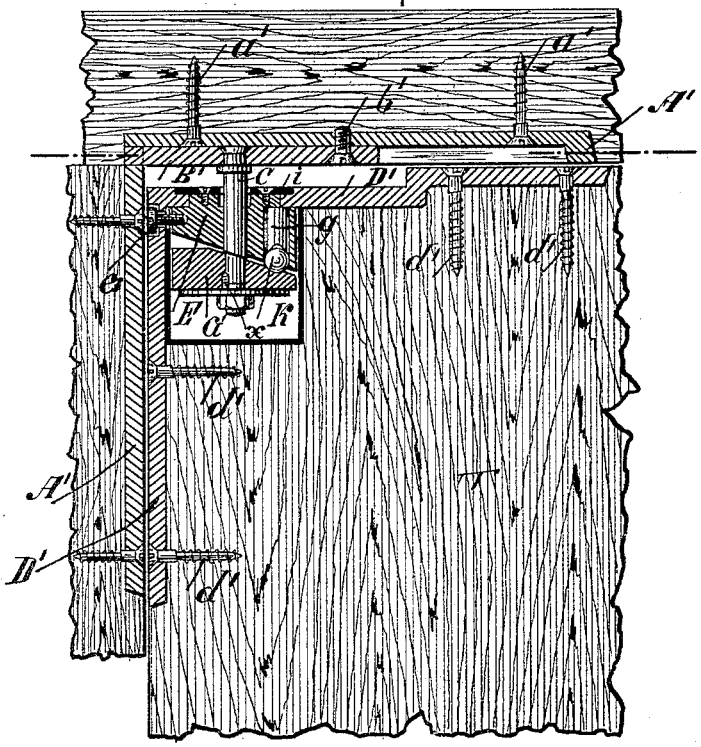
FIG-5-



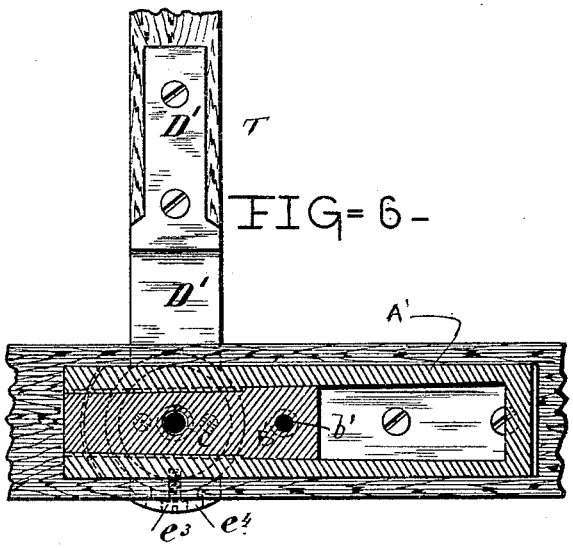


FIG-6-

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UNITED STATES PATENT OFFICE.

FRIEDRICH AUGUST HERMANN FAULHABER AND CHRISTOPH FRIEDR. KOCH, OF SCHWABISCH HALL, GERMANY.

HINGE.

SPECIFICATION forming part of Letters Patent No. 453,803, dated June 9, 1891.

Application filed January 7, 1891. Serial No. 376,947. (No model.)

To all whom it may concern:

Be it known that we, FRIEDRICH AUGUST HERMANN FAULHABER and CHRISTOPH FRIEDRICH KOCH, subjects of the King of Würtemberg, and residing at the city of Schwabisch Hall, in the Kingdom of Würtemberg and Empire of Germany, have invented certain new and useful Improvements in Self-Closing Door-Hinges, of which the following is a specification.

This invention relates to improvements in hinges for doors; and the object of our invention is to provide a new and improved hinge, which is so constructed as to automatically close the door, and is especially adapted for that kind of doors which open in both directions.

The invention consists in the construction and combination of parts and details, which will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal sectional view, on an enlarged scale, of the upper corner of a door provided with our improved self-closing hinge. Fig. 1ª shows a slight modification. Fig. 2 is a similar view of the bottom part. Fig. 3 is an elevation of the hinge, parts being in section and parts of the door and casing being shown in elevation, the door being opened. Fig. 4 is a plan view of the same. Fig. 5 is a vertical longitudinal sectional view, on an enlarged scale, of the upper corner of the door and casing provided with a modified construction of our improved self-closing hinge, and Fig. 6 is a plan view, parts being shown in section.

Similar letters of reference indicate corresponding parts.

The angle-iron A is placed into a suitable recess in the edges of the door T at the upper corner, and the horizontal shank of said angle-iron is provided with an offset *d*, so as to bring part of it below the top edge of the door. Screws *a* serve for holding the said angle-iron on the edge of the door. In a recess of the angle-iron A the angle-iron B is placed and held by screws *b*, passed through the vertical shank of said angle-iron B. The upper surface of the horizontal shank of said angle-iron B is a short distance below the upper edge of the door, and a pivot C projects upward from the horizontal shank of the angle-iron B and passes through the horizontal bore of a cylindrical block E, having its upper surface cut off diagonally, which block E has a neck placed into an aperture in a horizontal shank of an angle-iron D placed in the recess of the door-casing and held in place by the screws *d*. The cylindrical block E has a wing *e* resting on the upper surface of the horizontal shank of the angle-iron D, a screw *e'* passing through said horizontal shank of the angle-iron D into said wing, and thus holding the cylindrical block E and preventing it from turning. The upper end of the pivot C passes through the central aperture of a block G, having its bottom surface cut off diagonally, which block has a cylindrical bore near one edge for receiving a cylindrical piece *g*, provided in its lower end with a conical recess, as shown in Fig. 1, or with a forked recess, as shown in Fig. 1ª. A plate *c* is placed upon the top of the block G, and rests upon the cylindrical piece *g*, which plate is held in place on the top of said block G by a nut C' screwed on the upper end of the pivot C. The lower end of the piece *g* rests upon a ball K, in turn resting on the upper inclined surface of the cylindrical block E. The casing H, resting in a suitable recess of the door-casing, surrounds the blocks E and G. The lower block E is provided in its upper beveled or inclined surface with a recess for receiving the ball K when the door is closed. The lower end of the door is mounted to turn on a pivot T' projecting upward from the bottom of the door-casing. When the door is opened in either direction, the pivot C is turned in the cylindrical block E, and the upper block G turns with the pivot, causing the ball K to run up the inclined upper surface of the lower block E. Thereby the ball K, the upper block G, and the pivot C, and the door T are moved upward a slight distance, the horizontal shank of the angle-iron A having the offset to permit of such movement.

As soon as the door is released, its own weight, which bears fully on the ball K, causes said ball to travel down the inclined upper surface of the block E, whereby the door is

closed. As the entire weight of the door rests on the ball K, the movements of the door can take place with a minimum of friction. When the door is in the closed position the ball K rests in a recess in the top of the upper inclined surface of the block E, and is thus held in its closed position. As it may be necessary to adjust the door slightly when in closed position, the screw e', which passes into the wing e of the lower block E, passes through a segmental slot e^2 of the horizontal shank of the angle-iron D, as shown in dotted lines in Fig. 4, which slot permits of a slight adjustment of the block E around the pivot C.

In the construction shown in Fig. 5 the pivot C is fixed to a plate B′, held by a screw b' in a groove in the under side of the horizontal shank of the angle-iron A′, held by screws a' in the casing. An angle-iron D′ is held in a suitable recess on the upper corner of the door by screws d'. The block E, containing the cylindrical piece g and ball K, is arranged in the manner described, and the block E is prevented from turning by a screw e^3, passed through a slot e^4 in the horizontal shank of the angle-iron D′ into said block E. The plate i is fastened by screws on the upper end of the block E. The lower end of said block E is beveled to correspond with the bevel on the upper surface of the block G′, keyed by a key x on the pivot C. When the door is opened, the ball runs up the inclined upper beveled surface of the block G′, whereby the door is raised on the pivot, and when the door is released the ball runs down the incline and closes the door under the action of the door's own weight.

The construction shown in Fig. 5 has the great advantage that the door can easily be removed, for when the screw b' is taken out of the plate B′ said plate can be moved lengthwise in the groove in the under side of the horizontal shank of the angle-iron A′, and can then be withdrawn entirely.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a door-hinge, the combination, with a pivot, of two blocks having adjacent beveled surfaces, one of said blocks being connected rigidly with the pivot and the other mounted loosely on the same, a ball held in one of said blocks, a cylindrical piece resting on the ball and having its bottom end forked or recessed conically, a plate for holding said cylindrical piece in place in the block, and a ball resting against the recessed end of said cylindrical piece and adapted to run on the inclined surface of the other block, substantially as set forth.

2. In a door-hinge, the combination, with a pivot, of a block mounted loosely on the pivot and having a wing, a screw engaging said wing and serving for locking said block in place, an additional block also having a beveled surface adjacent to the beveled surface of the first block, which second block is fastened on the pivot, and a ball mounted in one of the blocks and adapted to run on the inclined surface of the other block, substantially as set forth.

In witness whereof we have hereunto set our hands in presence of two witnesses.

FRIEDRICH AUGUST HERMANN FAULHABER.
CHRISTOPH FRIEDR. KOCH.

Witnesses:
MAX KLAIBER,
CARL PFUND.