

R. G. WINTER.  
HINGE CONSTRUCTION FOR DOORS.  
APPLICATION FILED MAR. 9, 1907.

989,219.

Patented Apr. 11, 1911.

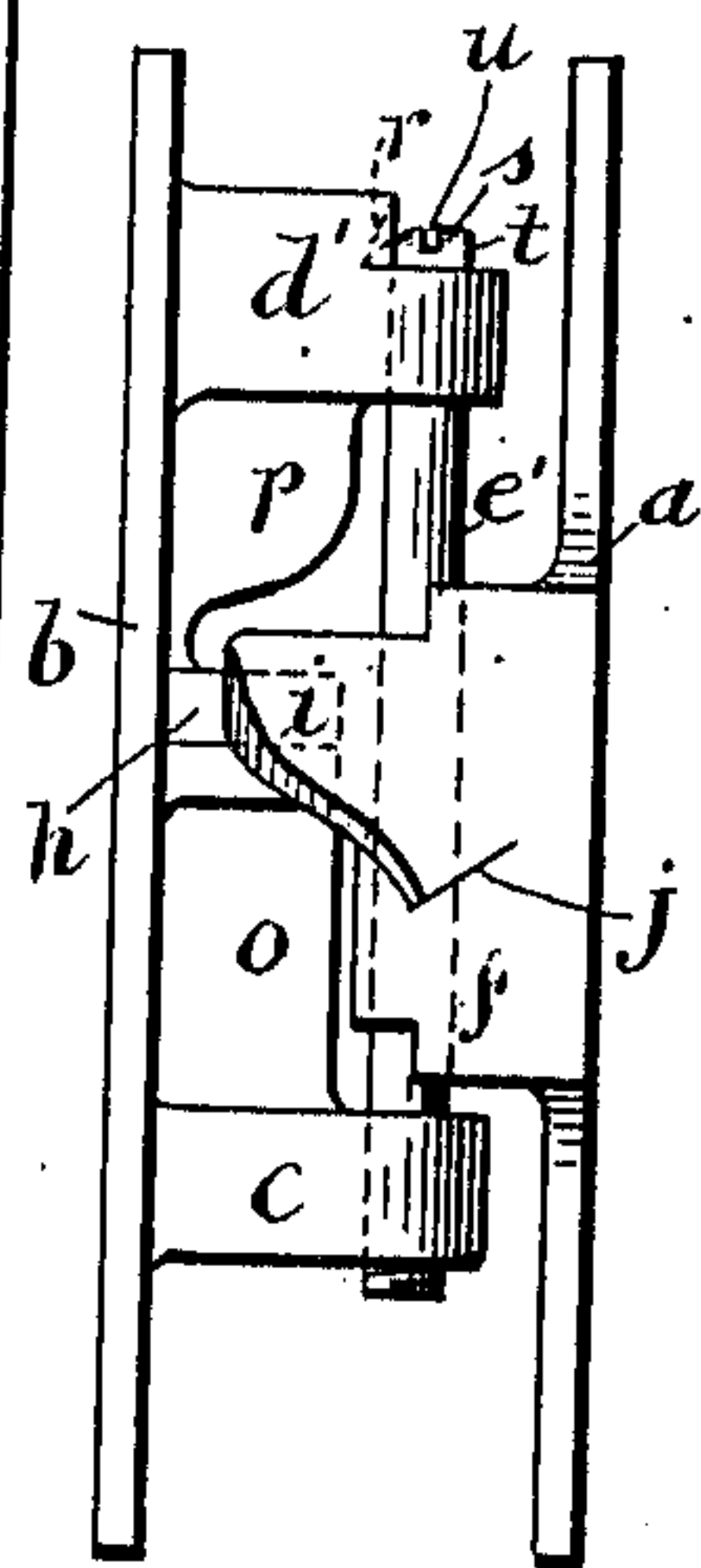
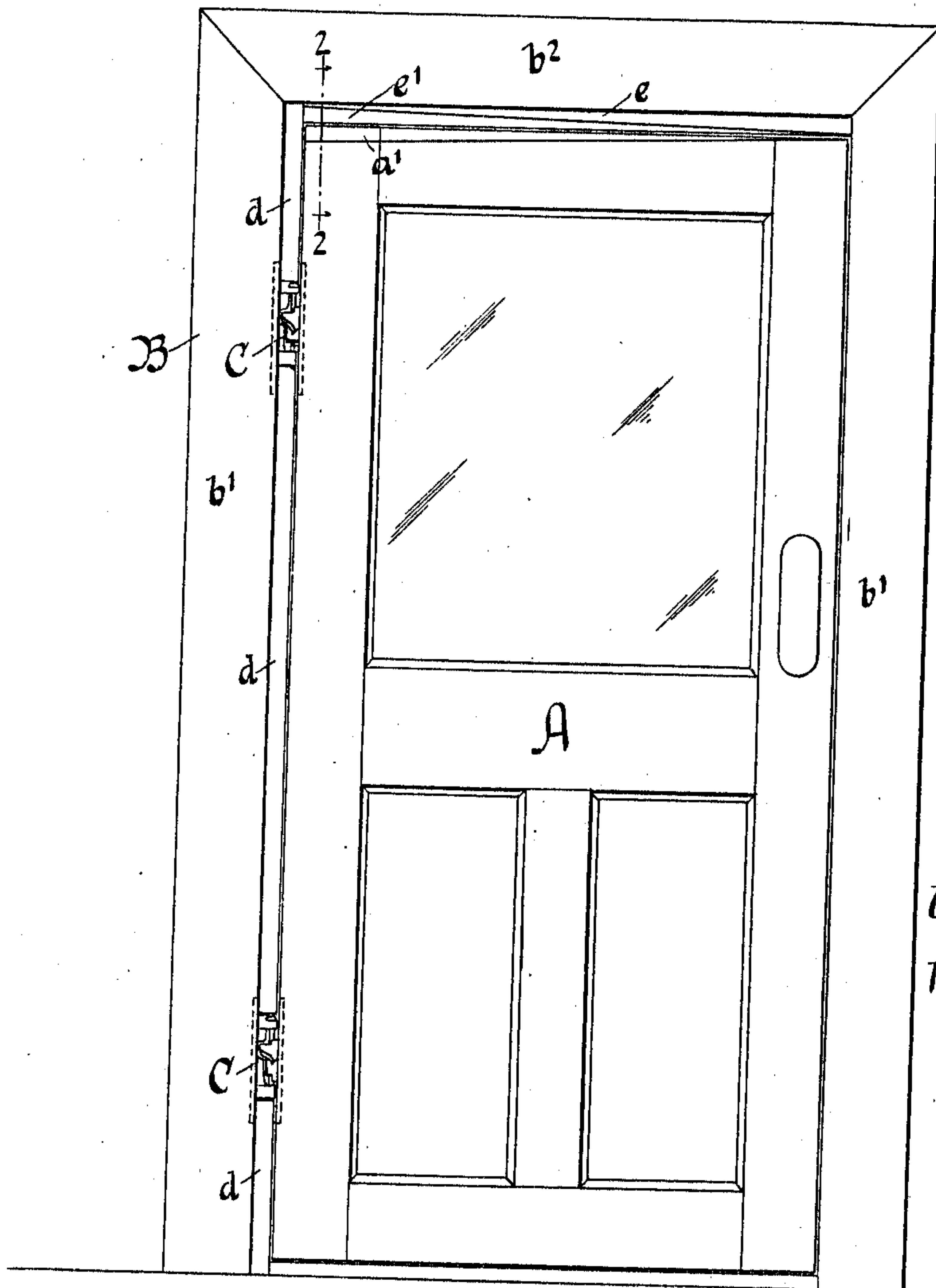


Fig. 1

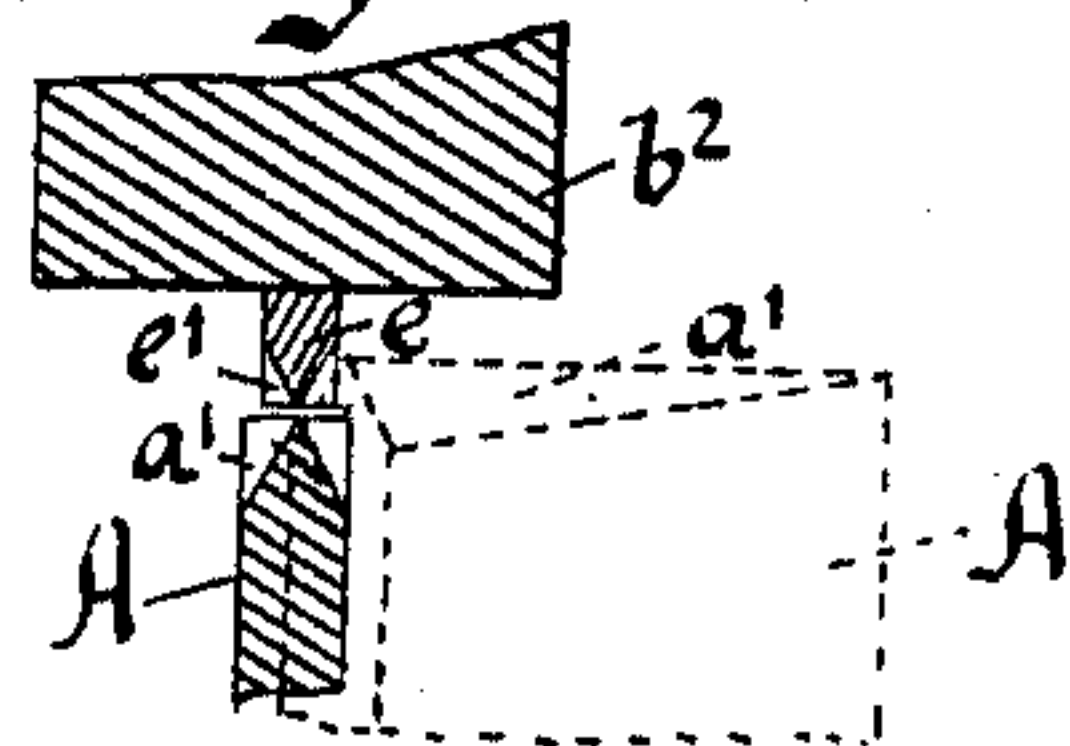


Fig. 2

Fig. 3

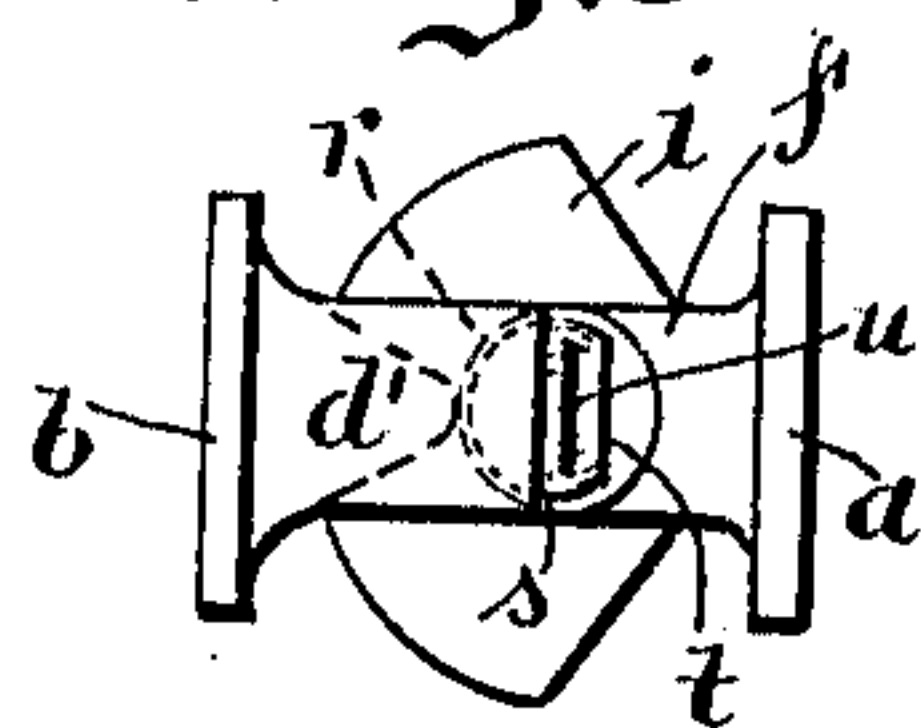


Fig. 4

Rudolph G. Winter, Inventor

Witnesses

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# UNITED STATES PATENT OFFICE

RUDOLPH G. WINTER, OF MILWAUKEE, WISCONSIN.

## HINGE CONSTRUCTION FOR DOORS.

989,219.

Specification of Letters Patent.

Patented Apr. 11, 1911.

Original application filed March 20, 1906, Serial No. 306,952. Divided and this application filed March 9, 1907. Serial No. 361,503.

*To all whom it may concern:*

Be it known that I, RUDOLPH G. WINTER, of Milwaukee, Wisconsin, have invented certain Improvements in Hinge Construction for Doors, of which the following is a specification.

This invention treats more particularly of double swinging-doors and has for its object to enable the latter to be used with double swinging gravity hinges of any suitable design, but more particularly those of the form and design set forth in my United States Patent Number 883,999, issued April 7, 1908, of which this application is a division.

One of the great objections to the use of gravity hinges for swinging-doors, such as are customarily used in vestibules, bars, and like places, has been the fact that for the operation of such hinges it was always necessary to leave wide-open spaces around the back and top edges of the door-leaves, the former to enable the swinging to take place freely without the least binding against the door-jamb, and the latter to enable the door to rise as required by the action of the gravity hinge, without striking against the lintel. As the necessary space thus left open might measure from one to two inches, it is obvious that a tight and close-fitting door and one which should dispense with drafts could not be made by the use of the gravity hinge as previously constructed.

In my construction I provide filling-strips arranged in such a manner that they close all the spaces around the edges of the door when the latter is shut, yet at the same time do not in any way interfere with the action of the hinge in opening.

My hinge-construction may best be understood from a consideration of the following description thereof taken in connection with the accompanying drawings, wherein—

Figure 1 is a side elevation of a door and frame showing a double-acting gravity-hinge mounting for the door. Fig. 2 is a transverse section through the upper part thereof on the plane indicated by the line 2 of Fig. 1. Fig. 3 is a side elevation of the hinge on an enlarged scale in the closed position of door; and Fig. 4 is a plan view of the hinge.

In these drawings every reference letter and numeral refers always to the same part.

In these drawings is shown a door A and

a frame B consisting of jambs  $b^1$  and a lintel  $b^2$ . The door A is represented as swung upon double-acting gravity hinges C which may be of any desired pattern, but are herein shown as of the same form and style described and claimed in my aforesaid patent. In this form of hinge, the respective leaves shown in detail in Figs. 3 and 4 are designated  $a$  and  $b$ . The hinge-leaf  $b$  is herein shown as the fixed leaf and is provided with two pintle-lugs  $c$  and  $d'$ , which carry the pintle or bolt  $e'$  of the hinge; while the swinging-leaf  $a$  has a single central pintle-lug  $f$  with a longitudinal perforation through which the bolt  $e'$  passes. Each leaf is provided with screw-holes  $g$  for securing it to the door or frame. Opposite the lug  $f$  on the leaf  $a$  is a cam-lug  $h$ , which, as shown, is sloped or pitched downwardly on each side. Coöperating with this lug on the hinge-leaf  $a$ , and carried by the pintle-lug  $f$  thereof, is a fin  $i$ , the form of which is, generally speaking, a double helicoid, described about the bolt  $e$  as a center, and it has the cam-surface  $j$  on its underside which rests upon the lug  $h$ . The form of the cam-surface  $j$  comprises two helicoidal surfaces which come together at the center, and when the door is in closed position as shown in Fig. 1, the lug  $h$  supports the oblique helicoidal flanks of the surface  $j$ .

In all such double-acting gravity hinges there is necessarily a space or opening left between the jamb and the door, and this opening is filled according to my construction with a series of thin filling-strips  $d$  which are of a width equal to that of the opening and extend between the two hinges, from the upper hinge to the top of the door, and from the lower hinge to the bottom of the door, respectively. These filling-strips  $d$  are nailed lightly in place after the door has been mounted on its hinge, so that they can be readily removed when the door is to be taken off, for which purpose it is necessary to raise the pintle of the hinge, and these filling-strips serve also for the purpose of holding the pintle down in place and preventing it from rising.

At the top of the door there is necessarily a gap between the door and lintel to leave sufficient space for the door to rise in opening without striking the lintel, because in double swinging-doors the plane of the door when shut is in the center of the lintel and



not on one side thereof as it is in doors which swing only in one direction. To avoid this I have placed immediately over the central position of the door a narrow filling-strip *e* which is secured permanently to the lintel. This filling-strip *e* may be of the same or less width than the door itself, but the edges thereof, especially near the inside of the door, should be chamfered off or beveled as shown at *e*<sup>1</sup>; while the upper edge of the door is similarly chamfered off as shown at *a*<sup>1</sup>. These chamfered edges may be parallel but are preferably oblique as shown in the drawings, the chamfer increasing from nothing at the free edge of the door up to a maximum on the hinged edge at which point the two chamfers on opposite sides of the strip and door meet in the center forming a sharp V-angle, as clearly shown in Fig. 2. By this arrangement the abutting edges of the strip *d* and door A may be made to come quite close together, as the outer or free edge of the door does not rise perceptibly until after it passes out from under the filling-strip, while the inner or hinged edge remains to some extent under the filling strip during almost the entire opening movement, so that the chamfering at this point is necessary to provide for the rise of the door on opening which is caused by the action of the gravity hinge.

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

35 1. The combination of a gravity hinge for swinging doors opening in either direction and causing the movable leaf to rise with

respect to the fixed leaf in opening in either direction, a door-frame to which the fixed leaf of said hinge is secured, a door to which the movable leaf is secured, the upper edge of said door being lower than the under surface of the lintel by an amount equal to or greater than the rise of said door in opening; and a filling-strip secured to the under surface of said lintel in line with said door when closed; the upper edge of said door and the lower edge of said strip being beveled off on each side whereby the door swings clear of said strip.

2. The combination of a gravity-hinge for swinging doors opening in either direction and causing the movable leaf to rise with respect to the fixed leaf in opening in either direction, a door-frame to which the fixed leaf of said hinge is secured, a door to which the movable leaf is secured, the upper edge of said door being lower than the under surface of the lintel by an amount equal to or greater than the rise of said door in opening; and a filling-strip secured to the under surface of said lintel in line with said door when closed; the upper edge of said door and the lower edge of said strip being each obliquely beveled on each side, and the width of the bevel being greatest at the hinged side of the door.

In witness whereof, I have hereunto set my hand this sixth day of March, 1907.

RUDOLPH G. WINTER.

In presence of—

GEORGE WETMORE COLLES,  
ELSIE M. HOTZ.