

R. G. WINTER.
HINGE.

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1,203,441.

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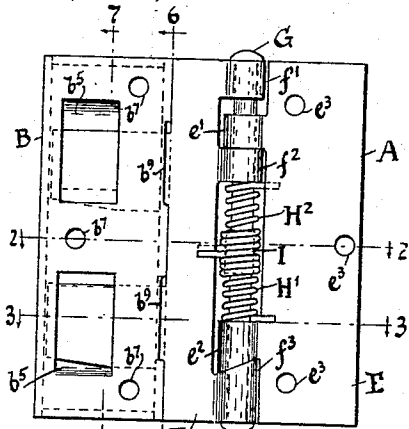


Fig. 1

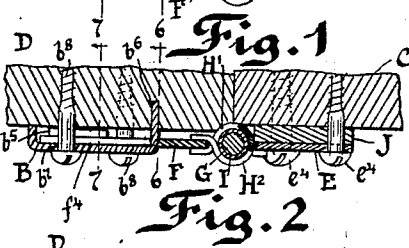


Fig. 2

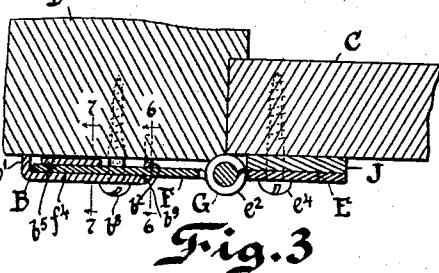


Fig. 3

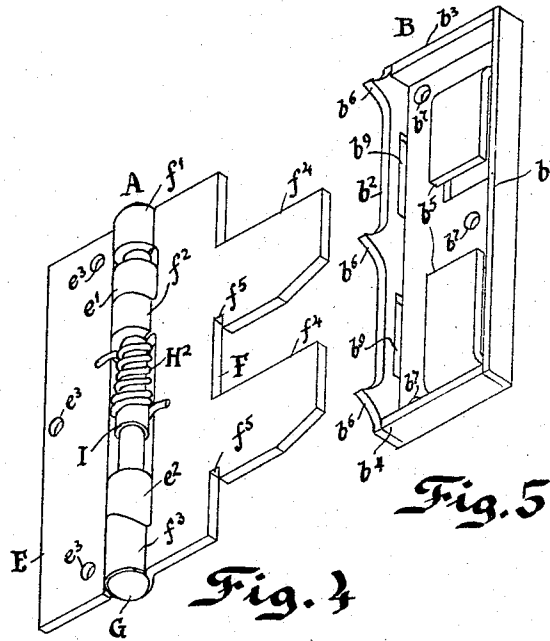


Fig. 4

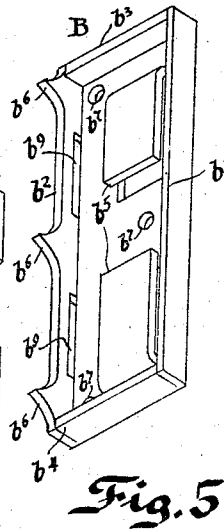


Fig. 5

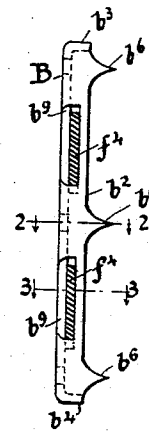


Fig. 6

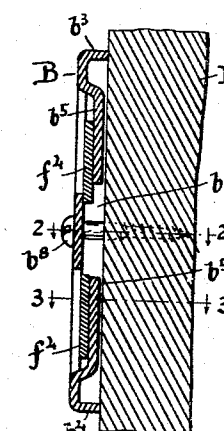


Fig. 7

Witnesses

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UNITED STATES PATENT OFFICE.

RUDOLPH G. WINTER, OF MILWAUKEE, WISCONSIN.

HINGE.

1,203,441.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RUDOLPH G. WINTER, of Milwaukee, Wisconsin, have invented a Hinge, of which the following is a specification.

This invention relates to detachable hinges, that is to say hinges consisting of two parts, detachable one from the other, one of which is secured to the door-jamb and the other to the door, whereby the door may be removed from the casing by a simple lifting or other like movement.

The object of the invention is to produce a hinge especially adapted for light doors, such as screen-doors, storm-doors, etc., which can be cheaply manufactured and will be strong and substantial in use and fully reversible so that the same hinge can be used for either right-hand or left-hand doors, or doors swung in any manner.

My invention comprises two essential elements, namely, first, the hinge proper, one leaf of which is provided with means for permanently fixing it to the door; and secondly, a hollow slotted member mounted on the casing with which the other leaf of the first member is formed to engage by sliding it into suitable sockets in said second member, and which then houses and protects said engaging parts.

More specifically my invention may best be understood by reference to the following detailed description, taken in connection with the accompanying drawing, wherein—

Figure 1 is a front elevation of the hinge with the two sections interlocked; Fig. 2 is a transverse section thereof on the plane 2, showing also portions of the door and casing to which it is attached; Fig. 3 is a transverse section of the hinge on the plane 3, with portions of the door and casing; Figs. 4 and 5 are perspective views of the two members of the hinge separated, from the rear or inner side; Fig. 6 is a side elevation of the second member of the hinge separately, with the interengaging portions of the first member in position therein, being a section on the plane 6; and Fig. 7 is a longitudinal section through the same on the plane 7.

The hinge comprises the two members A and B, the first of which is intended to be attached to the door C and the second to

the casing or jamb thereof, D. The member A is itself composed of the two leaves E and F, which are pivoted together by the pintle G, the leaf E having formed on its pivoted edge the pivot lugs e^1 and e^2 , and the leaf F on its pivoted edge the pivot lugs f^1 , f^2 and f^3 , through all of which the pintle G passes. It will be noted that the lug e^1 is narrower than the space between the two lugs f^1 and f^2 and that the lugs e^2 and f^3 have mutually engaging oblique faces, whereby as the leaf E swings about the leaf F in either direction it is raised relatively thereto so that the gravity of the door acting on the oblique faces produces an impulse tending to swing it shut, and this impulse is moreover assisted or increased by one of the two springs H^1 , H^2 , which, as will be seen, are symmetrically disposed and coiled in opposite directions, so that when the leaf E swings in one direction the spring H^1 acts to close it, the spring H^2 remaining neutral, and when the leaf E swings in the other direction the spring H^2 becomes active and the spring H^1 remains neutral. Although this hinge may be used for a double-swinging door it is primarily intended to be used on single-swinging doors, but the provision of the two opposite springs is made in order that the hinge may act equally well whichever way the door is swung. Now the peculiarity of these springs is that they have a double action, that is to say act both torsionally and compressionally; for inasmuch as they completely fill the space between the lugs e^2 and f^2 when the door swings, so that the leaf E is raised relative to the leaf F, the springs will be longitudinally compressed and thereby exert together a downward pressure upon the oblique faces of the lugs e^2 and f^2 , thus acting to close the door in this way as well as by the previously described torsional action of one of the springs. Now in order both to assist the torsional force by removing torsional friction from the pintle and also to assist the compressive force by relieving the pintle of endwise friction, and also to prevent buckling of the springs, I further provide a short sleeve I upon the pintle in the center of the space between lugs e^2 and f^2 , upon which sleeve the adjacent ends of the two springs H^1 and H^2 are closely coiled as

shown. (The lower spring H^1 is omitted in Fig. 4 to show this sleeve.) It will be seen that this sleeve provides a correctly formed bearing surface upon the pintle which can receive and hold a lubricant so as to relieve the friction as well as to prevent any buckling of the springs.

The leaf E of the member A is provided with screw-holes e^3 adapted to receive screws e^4 , whereby the leaf is secured to the door C, and in order further to make the hinge fully reversible it will be seen that the flat portion of the leaf is disposed in the axial plane on the pintle and a liner or shim J is inserted between it and the door. The other leaf F is provided with means for engaging it with member B, said means comprising a pair of horizontally extending tongues f^4 , each of which has at its base on one side (this being always the under side) a notch or recess f^5 . The member B consists of a sheet of metal having its four edges, b^1 , b^2 , b^3 and b^4 , turned at right angles so as to form a rest against the face of the casing and protect the depressed tongues b^5 which are within the box so formed from contact with the casing. The side b^2 which lies next to the edge of the door is preferably provided with one or more pointed projections b^6 , which are pressed into the casing when the member is attached and provide an additional hold thereto. The face of the member B is also provided with screw-holes b^7 , through which pass screws b^8 , fixing it permanently to the casing.

In the flange b^2 on the side nearest the edge of the door are formed two slots b^9 , which are of the same width as the thickness of the tongues f^4 and of a greater length than the width of the latter. Coöperating with these slots b^9 , the tongues b^5 are formed by cutting out three sides thereof from the face of the member B and pressing them inwardly a sufficient distance to allow the tongues f^4 to slide neatly between them and the face of the member B, as clearly illustrated in Fig. 7. It will be seen that these tongues b^5 are disposed oppositely or symmetrically to one another, thus making the member B fully reversible so that it can be used with either side up indifferently.

The members being separated as shown in Figs. 4 and 5 are readily engaged by sliding the tongues f^4 into the slots b^9 until they pass under the tongues b^5 and until the edge of the body of the member F comes up against the edge of the member B, whereupon the door being released, the member F is pulled down by gravity until the notches f^5 engage over the abutments or lower edges of the slots b^9 , and the door is thus held firmly in position until it is desired to detach it again, which is done by simply raising the door sufficiently to disen-

gage the notches f^5 from the lower edges of the slots b^9 and pulling the member F out of engagement with the member B.

While I have herein above shown the most improved form of my invention, I wish it understood that not all of the features are essential thereto or necessarily made in the exact form shown, but various changes and modifications in the constructions as herein shown may be made without departing from the spirit of my invention, and I wish it understood therefore that the latter is not otherwise limited than by the scope of my claims.

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

1. A detachable hinge comprising two members, one of said members consisting of two leaves pivoted together, one of said leaves being adapted to be fixed to a door and the other of said leaves having a tongue provided with a notch on its under edge, the other of said members comprising a hollow structure adapted to be secured to a door casing, and having a slot in one of its edges through which said tongue is insertible to lie wholly within and be housed by said other member, and said notch being adapted to engage the lower edge of said slot by gravity acting on said door to bring same into normal position.

2. A detachable hinge comprising two members, one of said members consisting of two leaves pivoted together, one of said leaves being adapted to be secured to a door and the other of said leaves having a tongue provided with a notch on its under edge, the other of said members comprising a piece of sheet metal having a flanged edge and adapted to be secured to a door casing, and having a slot in said flanged edge through which said tongue is adapted to pass, said notch being adapted to engage the lower edge of said slot by gravity acting on said door to bring same into normal position, and said other member being provided with a depressed tongue formed from its face, between which and said face the end of said tongue on the first member is adapted to pass and firmly lie.

3. A hinge provided with two hinge leaves and a pintle, said leaves having pivot lugs through which said pintle passes, two of said lugs having oblique coöperating faces whereby one of said leaves in turning on the pintle is moved longitudinally thereon, there being an open space on the pintle between one of said two lugs on one of said leaves and the next one of the remaining lugs on the other of said leaves, and a pair of oppositely wound and symmetrically disposed coiled springs mounted on said pintle in said open space and filling the latter longitudinally of said pintle and each having its ends

respectively engaging said hinge leaves, whereby said springs act both torsionally and compressionally to return the swinging leaf and door connectible thereto to closed position from either direction.

4. A hinge provided with two hinge leaves and a pintle, said leaves having pivot lugs through which said pintle passes, two of said lugs having oblique cooperating faces whereby one of said leaves in turning on the pintle is moved longitudinally thereon, there being an open space on the pintle between one of said two lugs on one of said leaves and the next one of the remaining lugs on the other of said leaves, and a pair of oppositely wound and symmetrically disposed coiled springs mounted on said pintle in said open space and filling the latter longitudinally of said pintle and each having its ends respectively engaging said hinge leaves, whereby said springs act both torsionally and compressionally to return the swinging leaf and door connectible thereto to the closed position from either direction,

and a bearing sleeve on said pintle having the adjacent ends of said springs coiled thereon.

5. A detachable hinge comprising two members, one of said members consisting of two leaves pivoted together, one of said leaves being adapted to be fixed to a door and the other of said leaves having a tongue provided with a notch on its under edge, the other of said members comprising a hollow structure adapted to be secured to a door casing, and having an opening in one of its sides and an abutment, through which opening said tongue is insertible to lie wholly within and be housed by said other member, and said notch being adapted to engage said abutment by gravity acting on said door to bring same into normal position.

In witness whereof I have signed my name in the presence of two witnesses.

RUDOLPH G. WINTER.

Witnesses:

GEORGE WETMORE COLLES,
GEORGE A. AFFELDT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."