

UNITED STATES PATENT OFFICE.

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HINGE.

No. 879,067.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM BOYD RODMAN, a citizen of the United States, and a resident of Charleston, in the county of Charleston and State of South Carolina, have invented a new and Improved Hinge, of which the following is a full, clear, and exact description.

This invention relates to door or other hinges formed of cast or plate metal, of a class known as butt hinges, and has for its object to provide novel details of construction for a butt hinge, which render it light, strong and capable of close folding into recesses in the edge of a door and a corresponding edge of a casement, so as to conceal the hinge and permit a close folding of the door on the casement at the hinged edge thereof, and also permit the door to be completely opened, so as to lie flat against the casement and adjacent side wall.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views. Figure 1 is a front side view of the improved door-hinge, mounted upon portions of a door and casement, the door being fully opened; Fig. 2 is a detached reversed side view of the improved hinge, seen in direction of the arrow *x* in Fig. 3; Fig. 3 is a sectional plan view of portions of a door and casement, and a plan view of the improved hinge in opened adjustment, secured in recesses in said door and casement; Fig. 4 is a plan view in section of portions of a door and casement, and a plan view of the improved hinge thereon, adjusted for holding the door disposed at a right angle to the casement, and Fig. 5 is a sectional plan view of a portion of a door held closed on a casement, and a plan view of the improved hinge secured thereon and in completely folded condition.

The improved hinge comprises four leaf sections 10, 10^a, 10^b, 10^c and two reinforcing leaves 11, 11^a, all having jointed connection together, as will be hereinafter described. The hinge-leaves 10 and 10^c are the outer ones, that are attachable respectively upon the casement B and the edge of a door A by means of screws *d*, that pass through perforations *d'* in said leaves, the latter occupy-

ing recesses C, C' in the casement B and edge of the door A, respectively, as shown in the drawings. Upon one side edge of the leaf 10, near each end thereof, two spaced arms *a*² are formed at a right angle to said leaf, as shown at *e*, said arms, that all project from the same side of the leaf, each having a pintle-sleeve *a* formed on the free vertical edge thereof, and as the arms are of an equal length it will be evident the axes of the sleeves *a* will be alined with each other. The hinge section 10^a is in leaf form and at a suitable distance from each end thereof a short arm is laterally projected in the same direction as the arms *a*², and on the vertical edges of each of the two arms on the leaf 10^a a pintle-sleeve *a'* is formed. The positions of the sleeves *a'* relative to the spaced sleeves *a* is such that the sleeves *a'* may be introduced respectively between each pair of sleeves *a* and be thereto loosely secured by pintles, as indicated in Figs. 3 and 4. Upon the opposite side edge of the hinge-leaf 10^a two spaced pintle sleeves *a*⁴ are formed at and near each end thereof, said sleeves all projecting at the same side of the hinge-leaf as do the sleeves *a'*. The hinge-leaf 10^b, which is the next one in sequence, is substantially similar in size with the leaf 10^a, and at the side edge thereon that is nearest thereto, two pintle sleeves *a*³ are formed, at such points with relation to the sleeves *a*⁴ that each sleeve *a*³ may be inserted between a respective pair of said sleeves and be thereto loosely secured by inserting pintles therethrough, as indicated by dotted lines in Fig. 2.

Upon the opposite side edge of the hinge-leaf 10^b two short arms *a*² are formed, respectively, opposite the pintle sleeves *a*³, and upon each of said arms at their free side edges a pintle-sleeve *c* is formed. The remaining hinge-leaf 10^c is provided with two pairs of short arms *a*², one pair at each end thereof, and at the ends of said arms pintle-sleeves *c'* are formed that, when the hinge-leaf is to be connected to the leaf 10^b, receive the pintle-sleeves *c* between them, these alined sleeves being hinged together by inserting pintles therethrough. Between the sleeve and pintle connections that hinge adjacent edges of the hinge sections 10^a, 10^b together, a pair of spaced pintle-sleeves *b*, *b* is formed on the side edge of the hinge-leaf 10^a, and a similar pair of pintle-sleeves *b*³, *b*³ is formed on the adjacent edge of the hinge-leaf 10^b.

The reinforcing leaves 11, 11^a are of similar form, that is, substantially rectangular, and respectively have a central pintle sleeve b' , b^2 formed on one end thereof. The spaced
 5 pintle sleeves b , b receive between them the sleeve b' and a pintle is inserted there-through. In a like manner the pintle-sleeves b^3 , b^3 receive between them the sleeve b^2 and are hinged thereupon by a pintle.
 10 It will be seen that by the provision of the short arms a^2 space is afforded for the loose insertion of the reinforcing leaves 11, 11^a between the leaves 10^a, 10^b and, as shown, said leaves are disposed side by side between
 15 the jointed connections of said leaves that have been described, and thence are extended oppositely or toward respective hinge-leaves 10 and 10^c. Upon the opposite end of the reinforcing leaf 11, two spaced pintle-sleeves b^4 , b^4 are formed, which receive be-
 20 tween them a similar pintle-sleeve b^5 , these sleeves being integral formations on the ends of short, laterally-projected arms on the hinge-leaf 10^c and reinforcing leaf 11, and
 25 are loosely connected together by a pintle. At the opposite end of the reinforcing leaf 11^a a central pintle-sleeve b^4 is formed thereon, it being integral with a short arm projected at a right angle from the end of said leaf 11^a,
 30 and upon the adjacent side edge of the hinge-leaf 10 two short arms a^2 are projected therefrom at a right angle, whereon pintle-sleeves b^5 , b^5 are formed. The sleeves b^5 , b^5 receive between them the sleeve b^4 and said
 35 sleeves are pivoted together by a pintle. It will be seen that the hinge-leaves 11, 11^a extend across the hinged joint between the adjacent leaves 10^a, 10^b, and by contact with said joint when the hinge is flexed, serve to
 40 strengthen the hinge and distribute the strain imposed by the door on all the joints between sections of the hinge. Furthermore, the reinforcing hinge-leaves 11, 11^a, by their relative position and hinged con-
 45 nection with the arms on the leaf sections 10, 10^c, cause the four main sections of the hinge to flex properly when the door is swung to open or close it, and also adapt these sections 10, 10^a, 10^b, 10^c to fold to-
 50 gether compactly within the recesses C, C' when the door A is closed upon the casement B.

The improved hinge may be used in any number for the proper support of a heavy
 55 door, and by the construction and arrangement of the parts thereof as described, the door may be swung so as to lie flat against the side of the casement or wall adjacent thereto, or be opened any distance with ease,
 60 all parts of the improved hinges employed for supporting the door coöperating for such a purpose.

It is understood that the improved hinge may be formed in any size desired, and be applied to hinge the lids on boxes or for any
 65 other analogous use; furthermore, it may be produced from plate metal cut and bent into form, or be cast into shape from any preferred metal, as may be desired.

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

1. A hinge, comprising four leaf sections, arms on adjacent edges of certain leaves, pintle-sleeves on said arms, and pintles en-
 75 gaging said sleeves.

2. A hinge, comprising four leaf sections, arms on certain of said sections at adjacent side edges thereof, said arms projecting at right angles from the leaves, pintle-sleeves on
 80 the arms, and pintles engaging said sleeves.

3. A hinge, comprising four leaf sections, and offset pintle-sleeves on said leaf sections at the side edges thereof, corresponding sleeves that are alined in sequence being
 85 pivoted together by a pintle, thus adapting the hinge sections for folding flat one upon the other.

4. A hinge, comprising four leaf sections, a plurality of spaced arms disposed at an
 90 angle in the same plane on the side edge of each leaf section, pintle sleeves formed on the ends of the arms and adapted for arrangement in sequence on adjacent leaf sections, and pintles engaging alined sleeves.
 95

5. A hinge, comprising four flat leaves, two leaves that are outermost having screw-holes therein, a series of spaced short arms projected at a right angle from like side
 100 edges on said perforated sections, pintle-sleeves formed on the ends of the arms on each leaf section, and alined with each other, the remaining intermediate pair of leaf sections having laterally-offset spaced pintle-sleeves thereon that are (alternated and
 105 alined with each other, and pintle-rods connecting said alined sleeves.

6. A hinge, comprising four leaf sections hinged together at adjacent edges, said hinge-joints being laterally offset so as to
 110 permit all the leaves to fold one upon the other, and two reinforcing leaves, hinged by their ends on the side edges of the outer leaf sections so as to loosely bear upon the hinged adjacent edges of the two intermediate leaf
 115 sections.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM BOYD RODMAN.

Witnesses:

W. H. COGSWELL,
 J. P. DENHAM.