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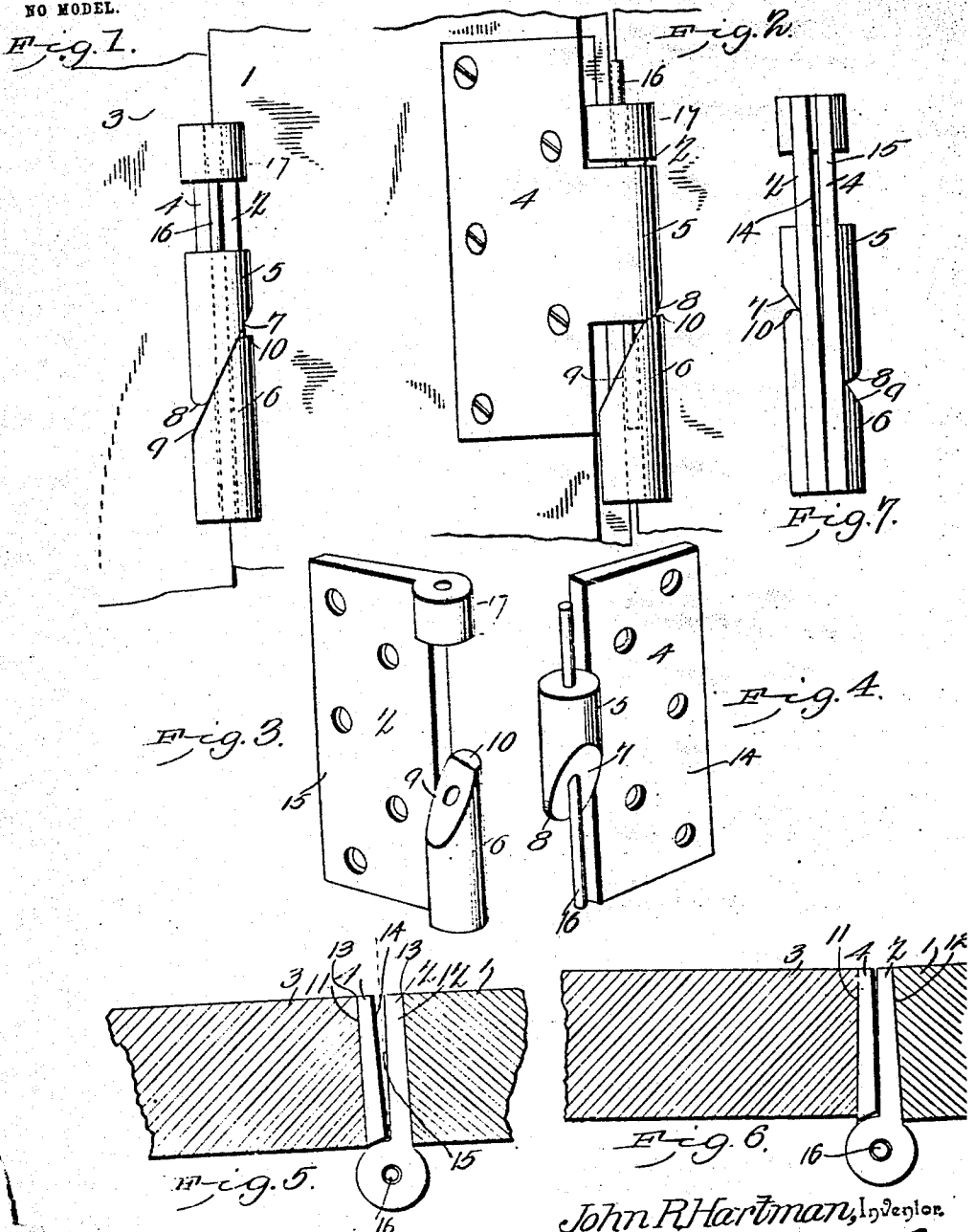
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J. R. HARTMAN.
DOOR HINGE.

APPLICATION FILED APR. 22, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN R. HARTMAN, OF DAVENPORT, IOWA.

DOOR-HINGE.

SPECIFICATION forming part of Letters Patent No. 749,379, dated January 12, 1904.

Application filed April 22, 1903. Serial No. 153,824. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. HARTMAN, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented a new and useful Door-Hinge, of which the following is a specification.

My invention relates to door-hinges, and especially to that class of hinges which operate by gravity to close the door, and has for its objects to produce a device of this character of simplified construction which will operate efficiently and perfectly to maintain the door tightly closed, one which will permit of the door opening smoothly and readily and will during the opening operation elevate the lower edge of the door to override obstructions, one which will maintain the door in its complete open position or any desired intermediate position and which when the door is released will quickly and automatically close the same, and, further, one which during its operation will obviate sagging of the door, with the attendant liability of the hinge-pin becoming bent and inoperative.

To these ends the invention comprises the details of construction and combination of parts more fully described hereinafter.

In the accompanying drawings, Figure 1 is an elevation showing my improved hinge applied to a door, the latter being closed. Fig. 2 is a similar view showing the door partly open. Figs. 3 and 4 are detail perspectives of the respective leaves of the hinge. Fig. 5 is a top plan showing the hinge in its normal position. Fig. 6 is a similar view illustrating the action of the hinge in compensating for wear of the door. Fig. 7 is a vertical longitudinal section illustrating the longitudinal beveling of the parts to prevent sagging of the door.

Referring to the drawings, 1 indicates the door-casing, which carries the leaf 2 of my improved hinge, and 3 the door, which carries the leaf 4 of the same. The door and casing are suitably mortised to receive the leaves of the hinge, which are secured in place in any suitable or desired manner, but preferably by screws, as usual.

The leaf 4 has formed thereon an integral beveled hinge-knuckle 5, which coöperates

with a similarly-beveled knuckle 6, formed on the leaf 2 to control the opening and closing of the door, as will be hereinafter described. The bevel of knuckle 5, which is indicated at 7, extends downward and inward from a point near the longitudinal center of the outer face of the knuckle to a point near the lower end of the inner face of the same, at which point the outer lower edge of the knuckle is rounded, as at 8. The bevel 9 of knuckle 6, which registers with the bevel 7 of knuckle 5, extends upward and inward from a point near the longitudinal center of the outer face of the knuckle to a point near the inner face of the same at its upper end, and this upper end is squared, as at 10. In this connection it is to be noted that the bevels 7 and 9 are absolutely parallel to each other and present perfectly flat working faces, and, further, that the horizontal line of the bevels extends parallel with the inner flat meeting faces of the leaves of the hinges for the purpose presently explained.

The meeting faces of the leaves 2 and 4 are in a horizontal plane, flat, and smooth, as clearly shown in Fig. 3, while the outer faces 11 and 12 of the same which lie, respectively, against the door and its casing are beveled transversely from the inner edges 13 of the leaves outward to their point of meeting with the hinge-knuckles, and, further, the meeting faces 14 and 15 of the respective leaves are slightly reversely beveled from end to end longitudinally, as clearly illustrated in Fig. 7. By this construction it will be seen that when the door is closed, as in Fig. 1, the weight of the door upon hinge 4 causes the beveled knuckle 5 of the latter to ride downward upon the beveled knuckle 6 of hinge 2, thus exerting a straining action transversely of the door for maintaining the latter in closed position, which section will, owing to the transverse beveling of the hinge-leaves, permit the outer free edge of the door to gradually and automatically move inward from the position shown in Fig. 5 to that in Fig. 6, thus compensating for wear upon the door face and jamb and preventing looseness and rattling of the parts. At the same time there will, owing to the longitudinal beveling of the hinge-

leaves, be exerted a slight lifting action upon the outer free edge of the door in a vertical plane which will entirely prevent sagging.

16 indicates the usual pivoting or hinging pin by which the respective leaves of the hinges are pivotally connected. In accordance with my invention this pin is fixedly and rigidly carried by the knuckle 5 of the door-leaf and extends centrally through the same and through the lower knuckle 6 of the casing-leaf and an upper knuckle 17 of the latter. The pin works freely and with a sliding motion through the two knuckles of the leaf 2, so that when the door is moved to an open position the cam-face 7 may ride freely upward upon the cooperating cam-face 9 or downward upon the same during the closing movement of the door. By this construction I secure a positive and regular upward and downward movement of the door and a rigidity of the pin which insures an equality of bearing of the same in the knuckles 6 and 17 and prevents bending of the pin irrespective of the amount of inequality of straining to which the door may be subjected in use.

In practice the hinge will operate with a smooth noiseless action, and the knuckle 5 will ride freely on the knuckle 6 during the opening of the door, and owing to the rounding of the lower corner 8 of the knuckle 5 the door will swing freely and without jarring and will be maintained at its open position by the lower edge of the knuckle 5 riding upward and resting upon the flat upper edge 10 of knuckle 6. The door will at the beginning of the opening movement be quickly lifted to cause its lower edge to override obstructions and will swing automatically by gravity from its open to its closed position after the closing movement has been positively initiated.

When closed, the door will, owing to the transverse beveling of the outer faces of the leaves, be subjected to a slight straining action which, as above described, will not only serve to maintain it in such position, but will as the edge of the door and jamb become worn compensate for such wear and prevent looseness and rattling of the parts. Further, owing to the longitudinal beveling of the inner faces of the leaves the door will be subjected to a lifting action to prevent sagging. It is to be particularly noted that in attaining these ends my hinge is entirely free from springs or other auxiliary mechanism, thus not only simplifying the construction and reducing the cost of the device, but also obviating the use of parts which in practice are liable to become readily disordered and imperfect in operation.

Having thus described my invention, what I claim is—

1. In a hinge, the combination with a pair of leaves, of cooperating beveled knuckles carried thereby, said leaves having their outer faces transversely beveled from their inner edges outward to the point of juncture with the knuckles.

2. In a hinge, the combination with a pair of leaves, of cooperating beveled knuckles carried thereby, said leaves having their adjacent faces reversely beveled longitudinally and their outer faces transversely beveled from their inner edges outward to the point of juncture with the knuckles.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN R. HARTMAN.

Witnesses:

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R. V. McCORMICK.