

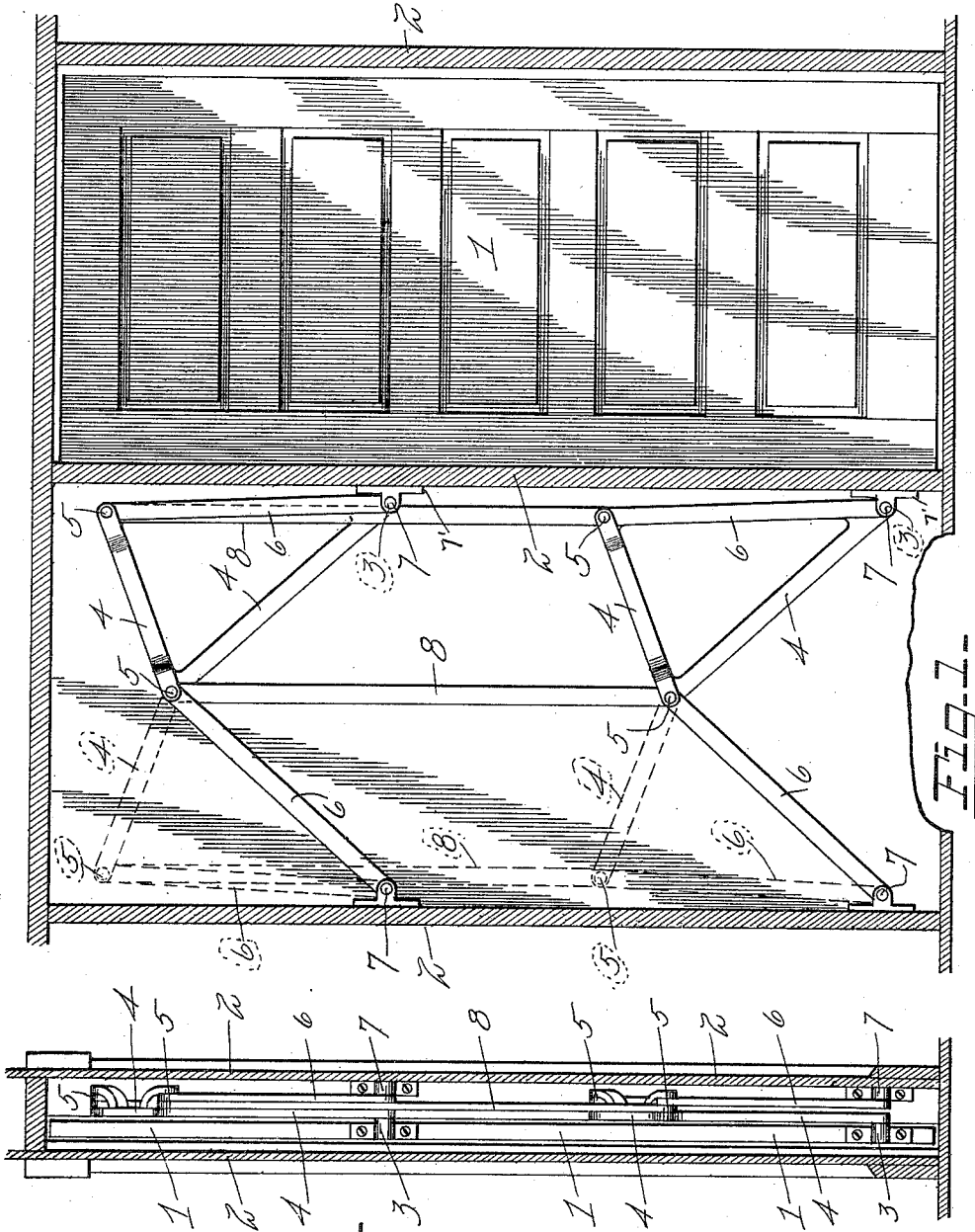
H. L. BIDDLE.
DOOR HANGER.

APPLICATION FILED FEB. 21, 1910.

Patented Oct. 4, 1910.

2 SHEETS-SHEET 1.

971,586.



Witnesses
M. L. L. L.
Edward P. Smith

FIG. 2.

Inventor
Henry L. Biddle
By *R. M. Carter* Attorney

971,586.

H. L. BIDDLE.
DOOR HANGER.
APPLICATION FILED FEB. 21, 1910.

Patented Oct. 4, 1910.
2 SHEETS—SHEET 2.

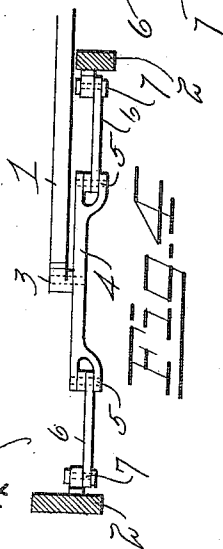
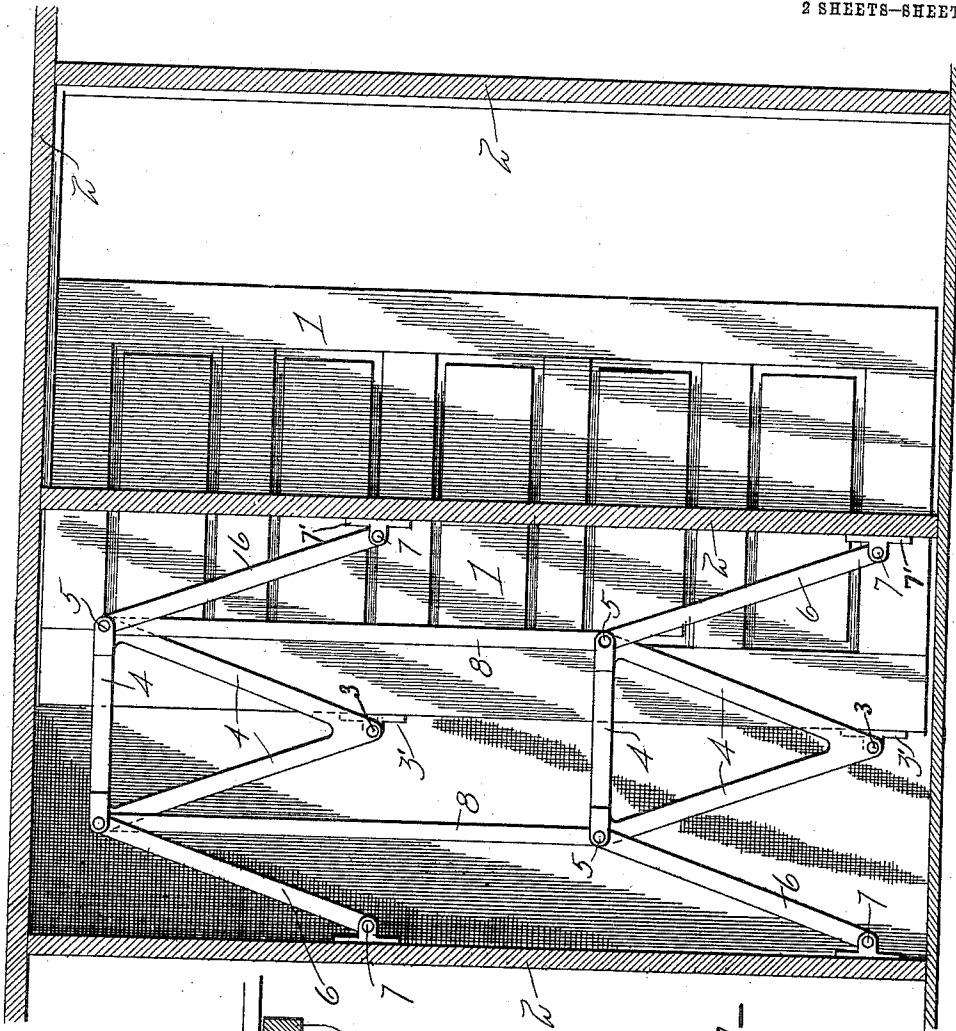


Fig. 3-

Witnesses
M. Subler
Howard A. Smith

By

Henry L. Biddle, Inventor
R. J. M. Carty, his Attorney

UNITED STATES PATENT OFFICE.

HENRY L. BIDDLE, OF DAYTON, OHIO.

DOOR-HANGER.

971,586.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed February 21, 1910. Serial No. 544,969.

To all whom it may concern:

Be it known that I, HENRY L. BIDDLE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Door-Hangers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in hangers for edgewise movable doors.

The object of the invention is to provide means for hanging an edgewise movable door which reduces to a minimum the usual friction incidental to such doors, and which retains the door in a true vertical position regardless of its position.

In the accompanying drawings Figure 1 is a front elevation of an edgewise movable door equipped with my invention. In this view the casing is removed and the door is shown in its closed position. The full lines indicate the position of the mechanism when the door is thus closed, while the dotted lines show the position of said mechanism when the door is entirely open. Fig. 2 is an end elevation of Fig. 1 with the casing removed. Fig. 3 is a view similar to Fig. 1 showing the door in an intermediate position and the mechanism in a corresponding position. Fig. 4 is a top plan view of the system of levers in the position shown in Fig. 1.

In the specification and drawings similar reference characters indicate corresponding parts.

The edgewise movable door 1 may of course be of any of the conventional sizes and likewise the casing 2 which incloses the door and its mechanism is of suitable proportions to accommodate the same. These parts are usually made to correspond with the building construction. On one edge of the door are mounted two bearings 3' which are adapted to receive pivots 3 by means of which two triangular frames 4 are connected with said door at the apexes of their angles. The length of the top horizontal portion of each of these triangular frames is preferably equal to one half the throw of the door, and the lengths of the sides of

each of said triangular frames is preferably one and one half the length of the top depending upon the throw of the door. Pivotally attached to the upper corners of the triangular frames by means of pivots 5, are right and left disposed supporting links 6 which in turn are pivotally supported on pins 7 in bearings 7' attached to the intermediate portion of the casing. These link levers 6 carry the weight of the door at all times and which it will be understood is distributed throughout the system of levers. The lengths of the levers 6 are equal to each other and equal to the sides of the triangular frames 4. To insure the triangular frames moving upon their pivots in unison, they are joined by equalizer rods 8 which are connected to said triangular frames at the pivots 5.

It will be seen from the drawings that the main supporting levers 6, the equalizing rods 8 and the casing form parallelograms, and owing to the distance between the upper and lower pivots 7 being equal to the lengths of said equalizer rods, said rods will always move in true vertical planes. The equalizing rods 8 and the upper horizontal members of the triangles also form a parallelogram and therefore during the movements of the said rods 8 the upper sides of the triangular frames will always be parallel. As a consequence the lower ends of the triangular frames will, during their movement, be in vertical alinement, and as the door is attached to said triangular frames by the pivots 3, the said door will, during its sliding movements, be held in a vertical position. From the drawings it will be apparent that the door will always travel in a true horizontal line and will be free from sagging at any point. The downward movement of the pivots 5 on the right is compensated for by the upper movement of the pivots 5 on the left owing to the arrangement of connecting levers shown and described. It will thus be seen that there is a minimum of friction attending the movement of the door from either of its extreme positions and the possibility of the door at any time sagging or becoming displaced is entirely eliminated.

I do not desire to limit myself to details of construction which may be varied without departing from the spirit of my invention, which consists in two triangular frames which are pivoted at the lower apexes of

their angles to the door and which are connected by parallel equalizers to each other, and to the adjacent parts of the door casing by pivotal links.

5 I claim:

1. In a door hanger, the combination with a casing, and a door adapted to be movably mounted therein, of a system of levers among which are two triangular frames
10 which are pivoted to the door, rods connecting said triangular frames, and link levers pivotally connecting the upper corners of said triangular frames to the adjacent upright portions of the casing, whereby the
15 door is supported in a movable position, substantially as specified.

2. In a door hanger, the combination with a casing and a door adapted to be movably mounted therein, of upper and lower triangular frames pivoted to said door at their
20

lower apexes, parallel equalizing rods pivotally connected to the upper corners of said triangular frames, and supporting levers interposed between said triangular frames and the adjacent parts of the door casing.

25

3. In a movable door hanger, the combination with a door, of upper and lower oscillating frames pivoted thereto supporting levers on opposite sides thereof pivotally connected thereto and to the door casing,
30 and equalizing connecting devices between said frames whereby said frames are equalized and maintained in relative positions.

In testimony whereof I affix my signature, in presence of two witnesses.

HENRY L. BIDDLE.

Witnesses:

MATTHEW SIEBLER,
HOWARD S. SMITH.