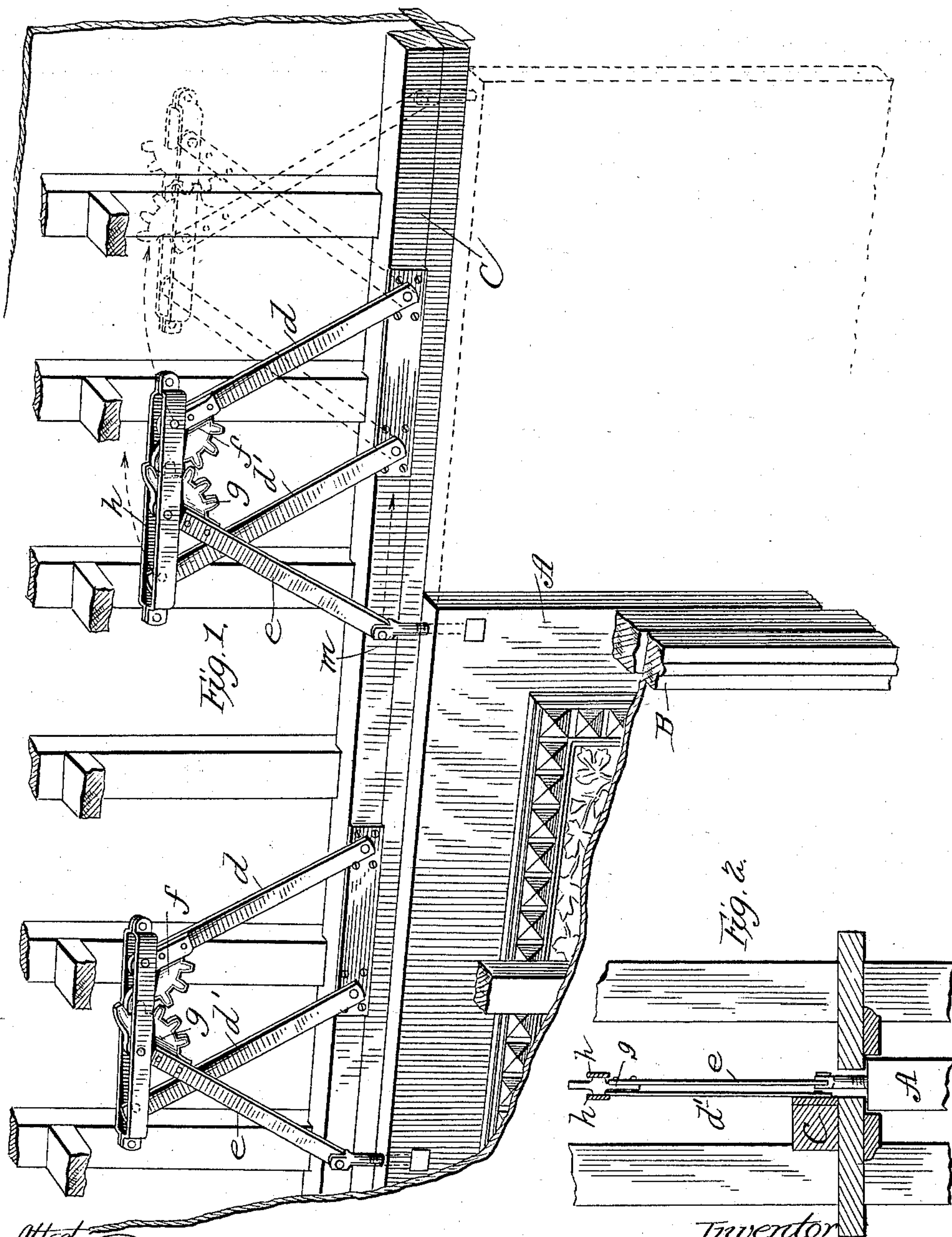


(No Model.)

W. J. LANE.
SUPPORT FOR MOVING BODIES.

No. 477,558.

Patented June 21, 1892.



Attest
Matthew M. Alden
J. L. Middleton

Inventor
William J. Lane
by Ellis Spear
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM J. LANE, OF POUGHKEEPSIE, NEW YORK.

SUPPORT FOR MOVING BODIES.

SPECIFICATION forming part of Letters Patent No. 477,558, dated June 21, 1892.

Application filed November 21, 1891. Serial No. 412,626. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. LANE, a citizen of the United States of America, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Supports for Moving Bodies, of which the following is a specification.

My invention is a support for moving bodies, and is designed to maintain such bodies in the same plane of movement and in substantially right lines. I have shown it as applied to what is called a "sliding door;" but it is applicable to other uses.

In the accompanying drawings and in the following particular description is shown one form in which my invention may be embodied and as it is applied to a door as an illustration of its application.

In the drawings, Figure 1 represents it in perspective, and Fig. 2 in end elevation, both figures showing, also, the door connections.

In the drawings, A represents the door, and B the casing in the wall in which the door, slides. Above the lintel, to a suitable support, as C, is fixed the base on which the pivoted bar *d* is mounted. This base, for convenience in this particular application of my invention, is a metal plate. The bar *d* is pivoted to the base, so as to oscillate in the plane of movement of the door or in a plane parallel thereto. The upper or free end of the bar *d* is provided with a connection by which the pivoted arm may be controlled, so as to maintain the same inclination or angle in both the bar and the arm, as hereinafter explained. This connection may be in various forms. I have shown a substantial and operative form in the figures; but in order that the bar and the arm may serve as a movable support for moving bodies—such as a sliding door—it is necessary that the bar and the arm should have other than a single pivotal support upon the base, and in the embodiment shown herein of my invention this additional support consists of a second pivoted bar, (shown at *d'*.) This is pivoted upon the base and is united at its upper end to the upper end of the bar *d* by means of a connection *h*, the union being formed by pivots, the distance between the pivots of the connection *h* being the same

as the distance between the pivots in the lower ends of the bars. The distance also between the upper and lower pivots of each bar is the same. When straight bars are used, as in the figures, they are parallel. Whatever the form of the bars, the relative position of the pivots and the substantial parallelism are the same, and the frame formed by the bars and their connection will maintain this parallelism of the bars which constitute the opposite sides thereof, whatever be the inclination of the frame. When the pivoted bar *d* is supported in this manner, as above described, it carries the arm *e*, pivoted upon the connection *h* at a point between the upper pivots of the two arms.

The controlling connection shown between the arm *e* and the bar *d*, whereby equality of angular movement or inclination between said bar and arm are maintained consists of two segments attached to or forming a part of the said bar and arm, respectively. The segment *f* is fixed to the end of the bar *d* and the segment *g* in reversed position is fixed to the arm *e*, and the teeth of the segments are in close engagement. The radius of the two segments is the same, and their centers are the pivotal points of the bar and arm, respectively. Supposing, therefore, for example, that the bar *d* stands in a vertical position and the segments to be so arranged and connected that the arm *e* is in a position parallel therewith, the movement of inclination of the bar in one direction will carry the pivoted end of the arm in the same direction, but will impart, also, to the pivoted arm motion upon its pivot exactly equal to the pivotal movement of the bar, but in an opposite direction, so that the inclination of the bar and the arm will always be the same, but in opposite directions, and as the bar *d* is maintained by its connection in the frame the bar and the arm will always maintain the same angle to a perpendicular line. The arm *e* is pivotally connected at its lower end or free end to the door or the stud upon the door and the distance between its two pivots is the same as that between the two pivots of the bar *d*, or substantially the same. This construction maintains the lower pivot of the arm in its movement in the same straight

line, and so suspended the door is carried and may be pushed back and forth. It depends from the arm *e*, and the arm *e* is connected to the bar *d* and through it with the support which maintains the arm *d*—namely, the parallel frame heretofore described or any equivalent of the parallel frame. The segments are shown in this construction simply as one of the forms which may be used for controlling the movement of the arm and maintaining the equality of angle between the arm and the bar. They may be conveniently made of cast metal, with a pivot in the center of the segment and with the bar or arm riveted to the back of the segment. The arm is arranged a little aside from the vertical plane of the bar or frame, so as to pass with the inclination in either direction. While the equality of inclination between the arm and the bar maintains the lower end of the arm in the same straight line, the pivotal point of its lower end being raised by the inclination of the arm as much as the upper end is lowered by the inclination of the bar, the opposite inclination of the arm extends the range of the pivotal point, and so of the door or other thing which is supported, and this range of movement in either direction from the position above supposed is equal to twice the cosine of the angle of inclination of the bar, the arm *e* being taken as the unit of length.

I have shown the arm as supported upon the same line as the upper pivots of the bars; but in carrying a door, for example, it may be convenient to lower the point of support or pivot of the arm, in order to correspondingly lower the end of the arm through the casing; but the principle of operation is the same. The connection between the arm and the top of the door, as shown in the drawings, is a common one. The connection between the upper ends of the bars and in which the arm is also pivoted may be conveniently formed of flat bar-iron or steel, as shown in the drawings, the segments being located between the sides. It will be apparent, also, that the single arm might be pivoted on a fixed base and the parallel arms made to move.

The support for the door or other moving body may be caused to trace a line curved or arched upward or downward, if desired, by making the distance between the pivots of the arm either greater or less than that between the pivots of the bar. Thus it is sometimes desirable in moving a door to raise it in its movement and lower it at either end of its travel, so that it may rest closer to the carpet than would be practicable in moving.

I claim as my invention—

1. A bar pivoted and supported upon a suitable base and an arm with connections between the bar and arm which maintains the arm at the same angle of inclination as the

bar, but in reversed position, substantially as described.

2. A frame capable of yielding in the plane of movement of the body supported thereby, carrying a pivoted arm, and connections between said arm and the frame, whereby the arm is moved and maintained at the same angle with the frame, but in reversed position, substantially as described.

3. In combination with a base, a pair of bars pivoted thereon, a connection between their free ends, a pivoted arm carried by said bars, and connection between said arm and bars, whereby the arm is maintained at the same angle as the bars in reversed position, substantially as described.

4. In combination with a base, a pair of bars pivoted thereon, a connection between their free ends, an arm pivoted on said connection, and a pair of engaging segments—one on the arm and one on a bar—whereby the arm is maintained at the same angle as the bar and in reversed position, substantially as described.

5. The frame capable of yielding in the plane of movement of the body supported thereby, the arm pivoted thereon, and connection between the arm and frame, whereby inclination of the frame in one direction moves the arm equally in the opposite, a base for said frame, and connection between the arm and the moving body which it supports, substantially as described.

6. In combination, the door-casing, the door, the frame capable of yielding in the plane of movement of the body supported thereby, pivoted on a base above the door, and the arm connecting the frame with the door, and connection between the frame and arm, whereby the arm is maintained at the same angle of inclination as the frame, but in reversed position, substantially as described.

7. The frame capable of yielding in the plane of movement of the body supported thereby, pivoted on a base, an arm pivoted on the frame and connected to the frame by a pair of toothed segments, and a door pivoted to the arm, substantially as described.

8. A pair of frames capable of yielding in the plane of movement of the body supported thereby pivoted on a suitable base, each carrying an arm pivoted on said frame, with connections between said arms and their respective frames arranged to maintain said arms at the same angle in reversed position in relation to said frame, and connections between the arms and the door, substantially as described.

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

WILLIAM J. LANE.

Witnesses:

F. W. DAVIS,
E. M. MEEKS.