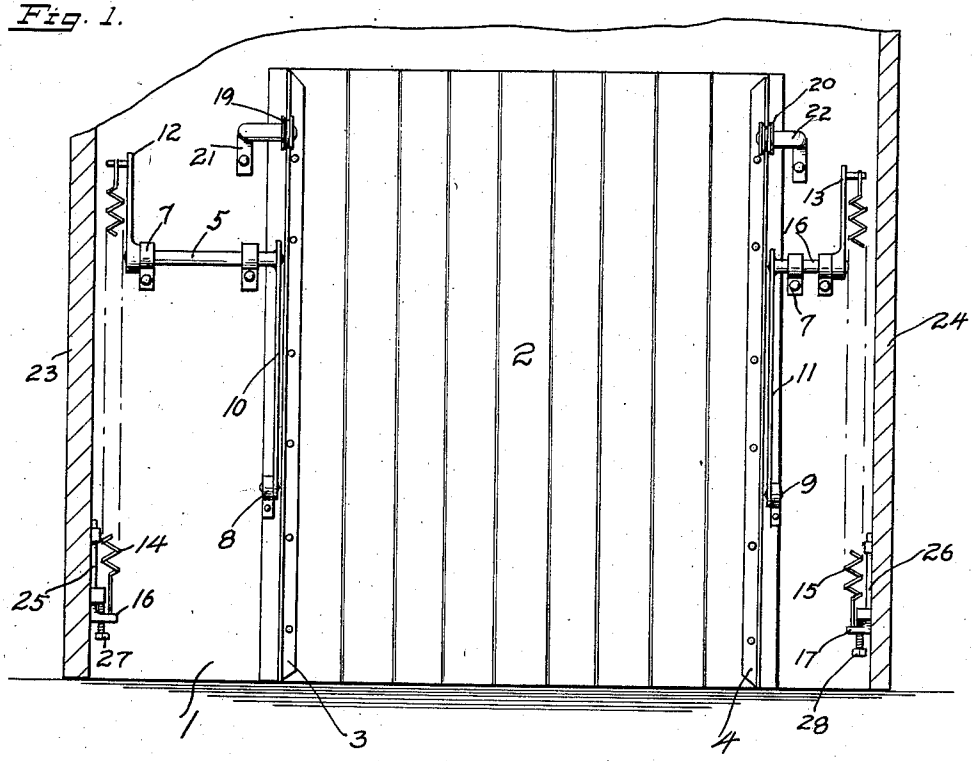
April 29, 1941. J. A. McFARLANE ET AL 2,239,924

OVERHEAD SWINGING DOOR

Filed Dec. 12, 1938

Fig. 1.



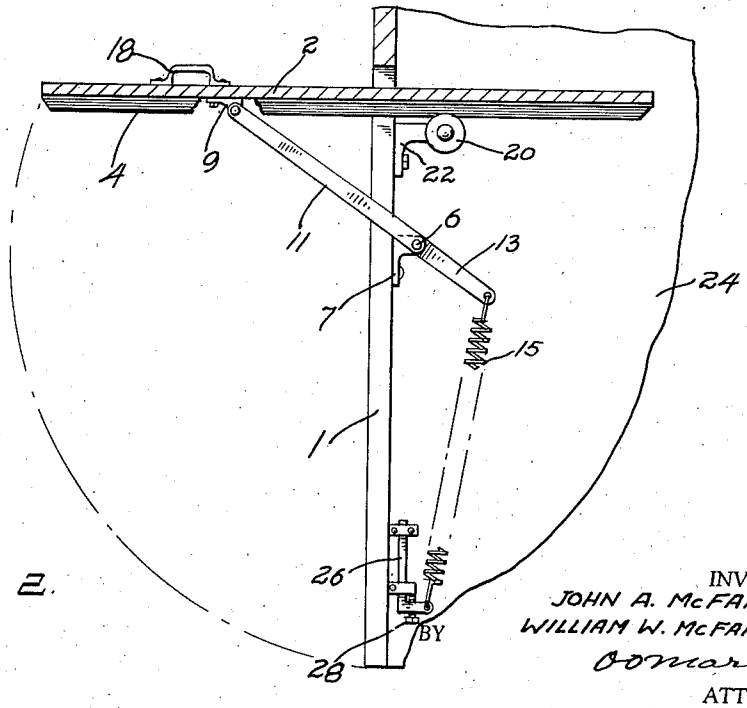


Fig. 2.

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OVERHEAD SWINGING DOOR

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5 Claims. (Cl. 20—16)

This invention relates to doors and more particularly to the certain type of overhead swinging doors which are becoming increasingly popular at the present time.

It is the object of the invention to provide a door of this type of great simplicity, economy and ease of operation. It is a further object to provide a door suspension mechanism readily adaptable to door framings of various widths. Another object is the provision of a door combination wherein the door panel, when elevated, constitutes a projecting canopy designed to shield persons or material occupying the space thereunder from rain and sun.

With these objects in view, the invention resides in the combinations hereinafter fully described. A preferred form of the invention is illustrated in the appended drawing, of which:

Fig. 1 is an inside elevation of a portion of a building on which the device of the invention is shown mounted, and

Fig. 2 is a substantially corresponding sectional end elevation, taken through the center of the door.

The numeral 1 designates a wall having a door opening and door framing, and the door panel is indicated by the numeral 2. On the inside of the door panel, parallel with and close to the side edges thereof, are mounted steel bars 3, 4, preferably angle irons such as often used to reinforce light panels of this type.

A short distance above the horizontal center line of the door panel and on each side thereof are mounted axially alined rods 5, 6, pivotally secured to the inner wall surface by suitable bearing brackets 7. A distance below this center line and rigidly secured to the panel are provided axially alined studs 8, 9, positioned close to the side edges thereof and parallel with the said pivot rods. A pair of bars 10, 11 are rigidly secured to the inner ends of the pivot rods and the other ends of these bars are pivotally affixed the said studs to maintain the door suspended from the inner walls of the building. Arms 12, 13 are secured to the outer ends of the pivot rods, and springs 14, 15 extend from the ends of the arms to members 16, 17, which are slidably secured to the walls, close to the ground.

A handle 18 is secured to the outer surface of this door panel, by means of which the door panel may be swung into overhead, open position, and rollers 19, 20 are hung on brackets 21, 22, fastened to the inner wall of the building close to the top of the door. These rollers are preferably grooved, and they are positioned to ride on the inwardly projecting edge of the angle irons 3, 4.

The handle 18 is gripped to swing open the door and the panel is drawn outward. This operation requires no physical effort because the link bars 10, 11 at the start are substantially vertically directed and so carry the weight of the door. The moment, however, that the lower portion of the door commences to swing outward, it is seen that the upper end thereof contacts the rollers 19, 20 and, as the link bars simultaneously commence to swing upward, it follows that the panel commences to move upward on the rollers. The arms commence to swing inward at the same time, away from the dead center, thereby permitting the springs 14, 15 to start counteracting the weight of the door. When the door reaches the upper, full open position, it is seen that the arms 12, 13 are at an angle to the pull of the springs which enables the latter to exert great pull on the door to maintain it firmly in elevated position.

When the door is fully elevated, it is seen that about one half portion thereof projects beyond the wall to form a canopy. This is very advantageous in many cases as, for instance, in garages or shops where work is to be done beyond the end of an automobile so close to the door that the latter would interfere with the progress of the work. The door may then be opened and the projecting canopy protects the workmen against the weather. Also in merchandising, where goods may be displayed below the overhanging canopy, is this arrangement of great advantage.

The extent of the projection may be varied to suit particular requirements by relocating the pivot rods 5, 5 and the studs 8, 9, but it is well to maintain the elevated door substantially in balanced position, as indicated in Fig. 2, where the distance from the studs to the outer edge of the door substantially equals the distance from the rollers to its inner edge.

It is noticed that the pivot rod 5 is much longer than the rod 6. This is done in order to illustrate that no matter what the distance from the door opening to the side walls 23, 24 may be, it is always possible to adapt the length of the pivot rods thereto, in order that the spring mechanism always may be close to the side walls in an out of the way position.

Adjustment of the tension of the springs is important in devices of this type, and such adjustment is shown effected by means of slides 25, 26, which are extensions of the members 16, 17,

in which screws 27, 28 are seated. The lower ends of the springs are anchored in these members and a few turns of these screws suffice to obtain the proper spring tension for easy operation of the door and to maintain it firmly elevated.

We claim:

1. The combination with a building having a door opening, of a door for closing said opening, axially alined pivots journaled on the wall of the building on each side of the door about one-third the distance from the top thereof, bearing brackets at the side edges of the door about one-third the distance from its bottom, bars having one end rigidly secured to said pivots and journaled in said bearings at the other end, arms extending from the pivots, springs extending from said arms to the wall near the floor, and a roller on the wall near the top of the door at each side thereof for guiding and supporting the door during and upon its elevation.

2. The combination with a building having a door opening, of a door for closing said opening, axially alined pivots journaled on the wall of the building on each side of the door about one-third the distance from the top thereof, bearing brackets at the side edges of the door about one-third the distance from the bottom thereof, bars having one end rigidly secured to said pivots and the other journaled in said bearings, arms rigid on and extending from the pivots, springs extending from the free ends of said arms to the wall near the floor, angle irons along the side edges of the door, and a roller on the wall near the top of the door at each side thereof on which said rails ride to guide and support the door during and upon its elevation.

3. The combination with a building having a door opening, of a door for closing said opening, axially alined rods rotatably mounted on the wall of the building on each side of the door about one third the distance from the top thereof, bearing brackets at the side edges of the door about one-third the distance from its bottom, link bars having one end rigidly secured to the inner ends of said rods and journaled in said bearings at the other end, arms on the outer ends of the rods, springs extending from said arms to the wall near the floor, a roller on the wall near the top of the door and at each side thereof for guiding and supporting the door during and upon its elevation, and means for adjusting said springs.

4. In combination with a building having a door opening in one side wall, a combined door and canopy, parallel guide rails along the inner side edges of said door, a roller journalled on the inner face of the wall at each side of and near the top of the opening for engagement by said rails, bearing brackets on the inner side edges of the door and spaced from its bottom, axially alined pivot rods journalled on the inner side of the wall, spaced from and substantially beneath the rollers, link bars rigidly held by said rods and journalled at one end in said bearing brackets, rock arms on said rods, and springs from the arms to points on the side of the wall to hold the bars extended with their outer ends and the rollers in the same horizontal plane and supporting the projecting door at substantially equal distances from its bottom and top respectively.

5. In combination with a building having a door opening in one side wall, a combined door and canopy, parallel guide rails along the inner side edges of said door, a roller journalled on the inner face of the wall at each side of and near the top of the opening for engagement by said rails, bearing brackets on the inner side edges of the door and spaced from its bottom, axially alined pivot rods journalled on the inner side of the wall, spaced from and substantially beneath the rollers, link bars rigidly held by said rods and journalled at one end in said bearing brackets, rock arms on said rods and springs from the arms to points on the side of the wall, said link bars being projected outside of the said side wall by said springs to an upwardly inclined position of rest supporting the door in a horizontal position with substantially half of its area projecting beyond the wall.

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