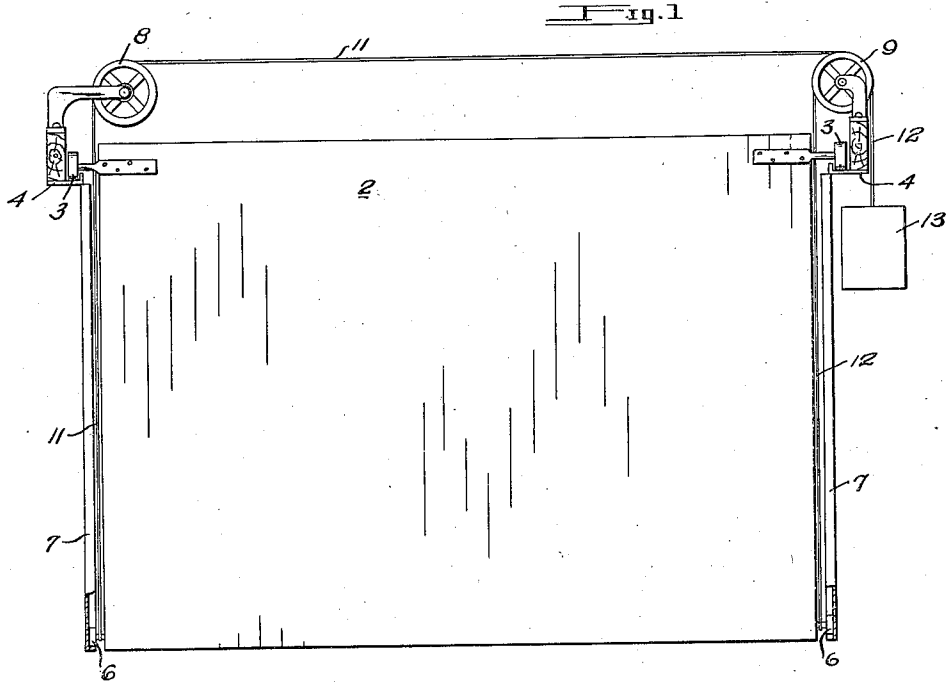
Dec. 4, 1923. 1,476,097

L. H. NISHKIAN

DOOR

Filed Oct. 15, 1919

Fig. 1



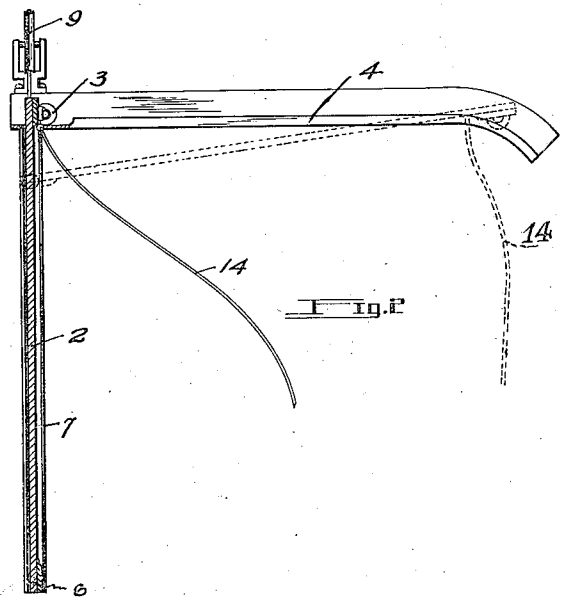


Fig. 2

WITNESS:
C. S. Evans

INVENTOR.
LEON H. NISHKIAN.
BY White & Frost
his ATTORNEYS.

Patented Dec. 4, 1923. 1,476,097

UNITED STATES PATENT OFFICE.

LEON H. NISHKIAN, OF SAN FRANCISCO, CALIFORNIA.

DOOR.

Application filed October 15, 1919. Serial No. 330,763.

To all whom it may concern:

Be it known that I, LEON H. NISHKIAN, a citizen of the United States, and a resident of the city and county of San Francisco, and State of California, have invented a new and useful Door, of which the following is a specification.

My invention relates to door and door mounting structures.

An object of the invention is to provide a door adapted to be raised vertically in the doorway and which is always in balance so that in opening and closing the door only such force is necessary as will overcome the small friction of simple moving parts.

Another object of the invention is to provide a door and mounting structure which can be installed in a relatively large passage or doorway in which the head room is too limited to permit the use of previous structures.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of my invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood that I do not limit myself to the showing made by the said drawings and description, as I may adopt variations of the preferred form within the scope of my invention as set forth in the claim.

Referring to the drawings:

Figure 1 is a front elevation of a door and door mounting in accordance with my invention. Figure 2 is a vertical sectional view through the door and mounting.

The door structure of my invention comprises a door 2 of a size necessary to fill the doorway when in the closed position and of any desired construction. Usually it will be of rectangular form and relatively large since my invention is particularly adapted for heavy doors to close large openings. On the opposite edges of the upper end of the door are mounted rollers 3 adapted to run on the tracks 4 which are suitably supported preferably in a horizontal plane and extending inwardly from points in the plane of the doorway adjacent each upper corner of the door. The upper end of the door 2 is thus adapted to roll back and forth upon the horizontal tracks 4.

The lower end of the door is provided on each side with rollers 6 adapted to move within the recess of the vertically disposed guides 7 which are preferably formed of pieces of shallow channel iron. The guides 7 are arranged on each side of the doorway in the plane of the desired closed position of the door.

Mounted above each upper corner of the door are pulleys 8 and 9, pulley 9 being double grooved. A cable 11 attached to the lower end of the door below pulley 8 passes upwardly over pulley 8 then across to pulley 9, below which it is attached to cable 12 also running over pulley 9 and attached to the lower end of the door below that pulley. The united cables are attached to a counterweight 13 which is sufficiently heavy to balance substantially one-half of the weight of the door.

Thus in the closed position, the door hangs vertically from the rollers 3 resting on the tracks 4, one-half of its weight being carried by the tracks and one-half by the counterweight. The upper end of the door is movable only horizontally on the tracks, and the lower end of the door is movable only vertically within the guides 7.

The door is operated by means of a rope 14 attached near the upper edge of the inside. Pulling the rope to open the door moves the upper end along the tracks 4 the lower end rising. The position of the door when partially opened is shown in the dotted lines of Figure 2. No matter what the position of the door, substantially one-half of its weight is carried by the counterweight and one-half by the tracks, the center of gravity of the system of moving parts remaining in the same horizontal plane. Hence the power needed to move the door from closed to open position, or from open to closed position, is very small, being that sufficient to overcome friction and inertia, and none is expended in lifting the door.

In the extreme open position of the door, it lies substantially in the horizontal plane of the tracks 4, the rollers 6 lying adjacent the ends of the tracks, so that practically no head-room is lost, the door occupying only a space substantially equal to its own thickness.

Preferably the inner ends of the tracks 5 are turned downwardly a small amount so that when the rollers 3 reach the downwardly curved part, the weight of the door tends to move it to its maximum open position and retain it there.

If desired, the vertical guides 7 may be removably attached to the sides of the doorway so that if occasion demands they can be removed. This removable guide feature is particularly applicable where two of my doors are used edge to edge with a double guide between their adjacent edges, and it is desired to make provision for clearing the entire opening.

By virtue of this construction, substantially one-half the weight of the door is carried by the track and one-half by the counterweight and the door is counterbalanced in all of its positions.

I claim:

A device of the character described comprising a door, a track extending horizontally inwardly from each side of the door and terminating in a downwardly turned portion, means movable on said track and attached to the upper end of said door for supporting substantially one-half of its weight from said track in all positions of said door, a counterweight equal to substantially one-half of the weight of the door arranged adjacent one edge of said door, a pulley over each edge of said door, flexible means passing over said pulleys for connecting said counterweight with the lower end of said door at opposite edges, a substantially vertical guide for controlling the direction of movement of the lower end of said door, and means for applying force in a horizontal direction to the upper end of said door whereby the initial opening movement of said door is effected without lifting it and the initial closing movement of said door is slightly retarded by the downwardly turned portion of said horizontal tracks.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this 25th day of September, 1919.

LEON H. NISHKIAN.

In presence of—
H. G. PROST.