

No. 806,699.

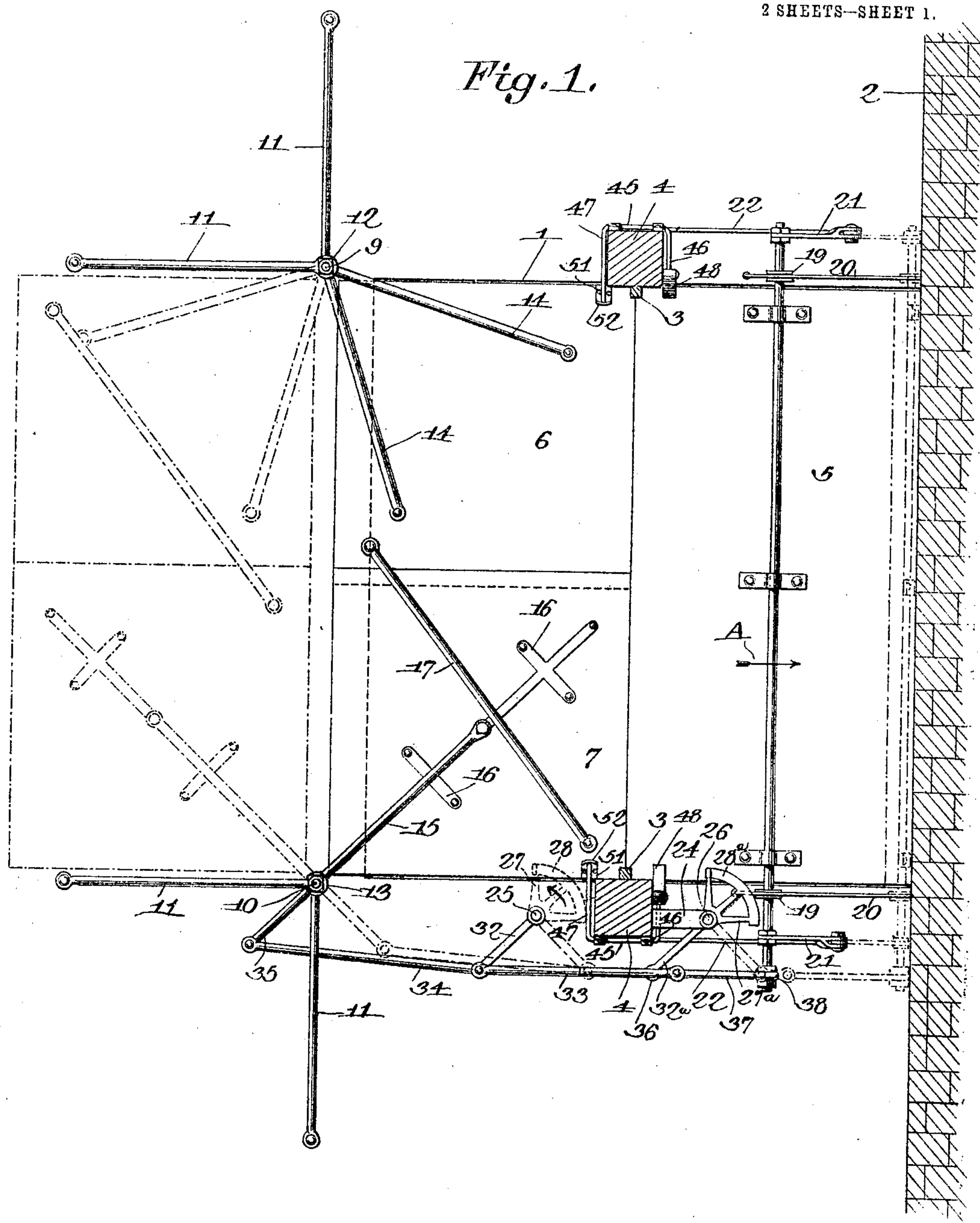
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J. W. McGHEE.

AUTOMATIC CLOSURE FOR ELEVATOR HATCHWAYS.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 1.



Witnesses

E. J. Stewart
Wm. Bagger

John W. McGhee, Inventor.

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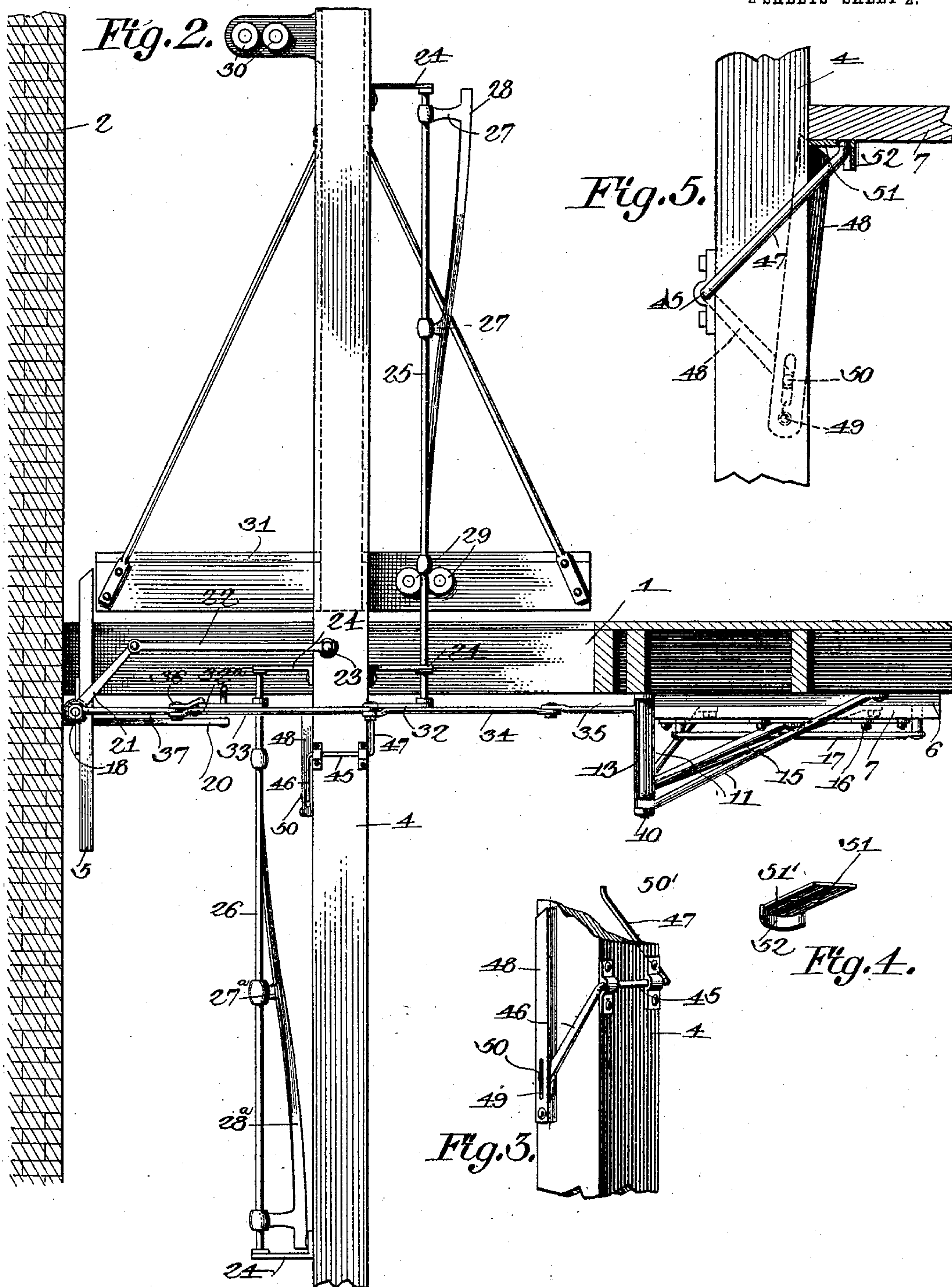
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UNITED STATES PATENT OFFICE.

JOHN W. MCGHEE, OF ARKANSAS CITY, KANSAS, ASSIGNOR OF ONE-FOURTH TO JOHN J. BERNARD AND ONE-FOURTH TO ROBERT J. HOTALING, OF ST. LOUIS, MISSOURI.

AUTOMATIC CLOSURE FOR ELEVATOR-HATCHWAYS.

No. 806,699.

Specification of Letters Patent.

Patented Dec. 5, 1905.

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To all whom it may concern:

Be it known that I, JOHN W. MCGHEE, a citizen of the United States, residing at Arkansas City, in the county of Cowley and State of Kansas, have invented a new and useful Automatic Closure for Elevator-Hatchways, of which the following is a specification.

This invention relates to automatic closures for elevator-hatchways in general, and more particularly to those which are operated and controlled by the elevator-car in its ascent and descent.

The invention has for its object to simplify and improve the construction and operation of devices of this class; and with these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention.

In said drawings, Figure 1 is a bottom plan view of an elevator-hatchway provided with a closure constructed in accordance with the principles of the invention. Fig. 2 is a side elevation, a portion of the floor and wall being shown in section. Figs. 3 and 4 are perspective detail views illustrating parts of a locking device for sustaining one of the movable members of the hatch in a closed position. Fig. 5 is a side view showing said locking device in operative engagement with the hatch member.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

In the accompanying drawings the elevator-shaft 1 has been shown as located adjacent to and bounded on one side by a wall 2 of the building in which it is located. The guide-rails 3 are mounted in the usual manner upon the uprights or supports 4.

In the present form of the invention the hatch has been shown as being made up of a half-door 5 and two quarter-doors 6 and 7, the several members combining to form a hatch of the requisite size and outline to constitute a closure for the hatchway. The mem-

bers constituting the hatch are in practice disposed adjacent to the ceiling of the floor below the one having the hatchway or opening, where said members are supported movably, as follows: Adjacent to the inner corners of the hatchway are supported vertical shafts 9 and 10, each of which is firmly secured in position and reinforced by means of braces 11. Each of the shafts carries a sleeve supported thereon for rotation, said sleeves being designated 12 13. One of said sleeves (in the present instance the sleeve 12) is firmly connected with the quarter-section 6 of the hatch, the latter being reinforced by means of a pair of spaced braces 14, whereby it is connected with the sleeve 12. The quarter-section 7 is connected with the sleeve 13 and is reinforced by means of a single diagonal brace 15, which latter, however, is sustained by bridge-pieces 16, so as to insure a rigid and durable construction. The quarter-sections 6 and 7 of the hatch are connected with each other by means of a link-rod 17, extending diagonally across the member 7 and connected pivotally with each of the members 6 and 7, so that when one of said members is turned upon its pivotal support a corresponding swinging movement will be imparted to the other member, so that when rotary motion is imparted, for instance, to the sleeve 13 the member 7 will swing from the position indicated in full lines in Fig. 1 to the position indicated in dotted lines in said figure, carrying with it the quarter-section or member 6, which is likewise swung to the open position, (indicated in dotted lines,) or vice versa, according to the direction of rotation of the sleeve to which motion is imparted. In thus swinging from one position to another the corner of the member 7 diagonally opposite to the corner which is connected with the sleeve 13 will pass between the braces 14 14 so as not to interfere with or be interfered with by said braces. The members or quarter-sections 6 and 7 are obviously located in different planes, the member 6 being shown disposed above the member 7.

The half-section 5 of the hatch is securely mounted upon a shaft 18, which extends transversely across the hatchway and is provided with wheels or rollers 19, movable upon tracks 20, adjacent to the sides of said hatchway.

Said shaft is provided with radially-extending arms 21, pivotally connected with the outer ends of arms 22, the inner ends of which are pivotally connected at 23 with the uprights or guide-rail supports 4.

The guide-rail supports 4 are provided with brackets 24, affording bearings for vertically-disposed shafts 25 and 26, the former extending upwardly and the latter extending downwardly from the hatchway equipped with the improved closure. Each of said shafts is provided with radiating arms 27 27^a, sustaining at their outer ends a spirally-disposed flange 28 28^a, and each of said flanges making one-fourth of a turn around the shaft with which it is connected. Said flanges are adapted to be engaged by pairs of rollers 29 and 30, connected with the elevator-car 31 at suitable points near the lower and upper ends of the same. The shafts 25 and 26 are provided with radiating arms 32 32^a, connected with each other by means of a link 33, whereby said shafts will be caused to move in unison. The arm 32^a of the shaft 26 has been shown as connected, by means of a link 34, with an arm 35, radiating from the sleeve 13, carrying the quarter-section 7 of the hatch. The arm 32 of the shaft 25 is connected by a link 36 with the free end of an arm 37, terminating at its opposite end in a sleeve or collar 38, which is supported for rotation upon the shaft 18.

In Fig. 2 of the drawings the car 31 has been illustrated in descending position, the rollers 29 being about to pass out of engagement with the spiral flange 28, connected with the rock-shaft 25. On the downward movement of the car to this point the rock-shaft 25 has been oscillated to the extent of one-fourth of a revolution in the direction indicated by an arrow in Fig. 1 of the drawings, said motion being transmitted by the link 33 to the rock-shaft 26, with the result of swinging open the quarter-sections 6 and 7 of the hatch by oscillating the sleeve 13, supporting the member 7. At the same time the rock-shaft 18, carrying the half-section 5, has been moved in the direction of the arrow A by the link 36 and arm 37, the half-section 18 being at the same time tilted from a horizontal to an approximately vertical position by means of the pivotally-connected arms 21 and 22. The parts then being in the position illustrated in Fig. 2, the continued descent of the elevator-car will be unobstructed, and presently the rollers 30 near the upper end of the elevator-car will pass into engagement with the flange 28^a, connected with the rock-shaft 26, thus causing the positions of the rock-shafts to be reversed and the several sections of the hatch to be restored to a closed position, it being obvious, of course, that the two flanges 28 and 28^a are oppositely disposed or wound with relation to their respective supporting-shafts. The car, it will thus be seen, will open the

hatchway when it approaches the same and automatically close the hatch after passing.

For the purpose of securing the half-section 5 of the hatch in a closed position, so as to prevent it from yielding to pressure from above, such as in the event of a person accidentally stepping thereon, locking means are provided as follows: Supported in suitable bearings upon each of the uprights 4 is a rock-shaft 45, provided at opposite sides of said upright with arms 46 47, the former of which extends in an inward and downward direction, while the latter extends in an inward and upward direction. Pivoted upon the side of the upright adjacent to the arm 46 is a latch member 48, having a slot 49, in which slides a pin 50, connected with the arm 46, so that by the movement of said arm the latch member 48 may be tilted upon its pivot to move its upper end into locking position under one corner of the hatch member 5, while when the arm 46 is moved in the opposite direction the latch member will be withdrawn and the hatch-section 5 will be permitted to swing over. The arm 47 upon the opposite side of the upright 4 terminates in a bent portion or hook 50', adapted to engage an aperture 51' in a plate 51, provided with a flange 52 and secured to one of the swinging hatch members 6 7 in a position where it will engage the arm 47, the flange 52 being curved, so as to guide the bent portion of said arm into engagement with the aperture 51'. It will be observed that when the hatch members swing shut the flanged plates 51 will engage the arms 47, thus tilting the rock-shafts 45 and swinging the latch members 48 into engagement or locking position. When the hatch members 6 and 7 swing open, the operation is reversed, the bent portions of the arms 47 pulling out of the apertures 51' and the locking members or supports 48 being withdrawn from under the corners of the hatch-section 5, which is thus permitted to open.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains. The construction is simple and thoroughly efficient for the purposes for which it is designed.

The construction herein shown and described is found especially applicable when the elevator-shaft is located adjacent to a wall, partition, or similar obstruction. When the shaft is not thus located or obstructed, it may be found preferable to construct the hatch of four quarter-sections, two on each side, the said quarter-sections being arranged to swing and to coöperate in the manner herein described. It would also be feasible to construct the hatchway of two slidable and tilt-able half-sections constructed and operated in conformity with the construction of the half-

section 5 herein shown and described. These and all similar modifications are considered to be wholly within the scope of the invention.

Having thus described the invention, what is claimed is—

1. In a device of the class described, a hatch including two quarter-sections supported for oscillation in a horizontal plane, means for directly actuating one of said sections, and a link connecting the two sections to cause them to be operated simultaneously.

2. In a device of the class described, a hatch including two quarter-sections supported for oscillation in a horizontal plane, diagonal bracing means for one of said sections, V-shaped bracing means for the other section to admit of the passage of the corner of the first section, and a link connecting said sections.

3. In a device of the class described, a pair of supported vertical shafts, sleeves upon said shafts, hatch members connected with said sleeves, braces extending from said hatch members to the supporting-shafts, a link member connecting the hatch members, and means for directly operating one of the hatch members.

4. In a device of the class described, a pair of supported vertical shafts, sleeves upon said shafts, hatch members connected with said sleeves, braces extending from said hatch members to the supporting-shafts, a link connecting the hatch members to transmit motion from one to the other of said members, an arm extending radially from one of the sleeves, a link connected with said arm, and means for operating said link.

5. In an elevator-hatchway, a pair of supported vertical shafts, sleeves upon said shafts, hatch members connected with said sleeves, a link connecting the hatch members, an arm extending radially from one of the sleeves, supported vertical rock-shafts, spiral guide means connected with said rock-shafts, an ele-

vator-car, means connected with said car to engage the spiral guides upon the rock-shafts, arms extending from the latter, and connecting means between one of said arms and the arm extending from one of the hatch-section supporting-sleeves.

6. In a device of the class described, a hatch including two quarter-sections and a half-section simultaneously operable to clear the hatchway.

7. In a device of the class described, a hatch including two quarter-sections supported to swing in a horizontal plane and a half-section mounted upon a slidable rock-shaft, and means for imparting to the latter an oscillatory movement.

8. In a device of the class described, a hatch comprising two quarter-sections supported to swing in a horizontal plane and a half-section supported upon a rock-shaft which is tiltable and movable in a horizontal plane; pivoted latch means for supporting the inner corners of the half-section, and means for actuating said latch means by the impact of the horizontally-movable quarter-sections.

9. In a device of the class described, a hatch comprising two quarter-sections supported to swing in horizontal planes and a half-section supported upon a rock-shaft which is movable in a horizontal plane, latch-bars supported pivotally and adapted to engage the inner corners of the hatch-section, rock-shafts having arms slidably engaging said latch-bars, and auxiliary arms extending from said rock-shafts and having engaging means supported in the path of the quarter-sections of the hatch.

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

JOHN W. MCGHEE.

Witnesses:

HENRY B. FUNK,
JAMES C. TOPLIFF.