

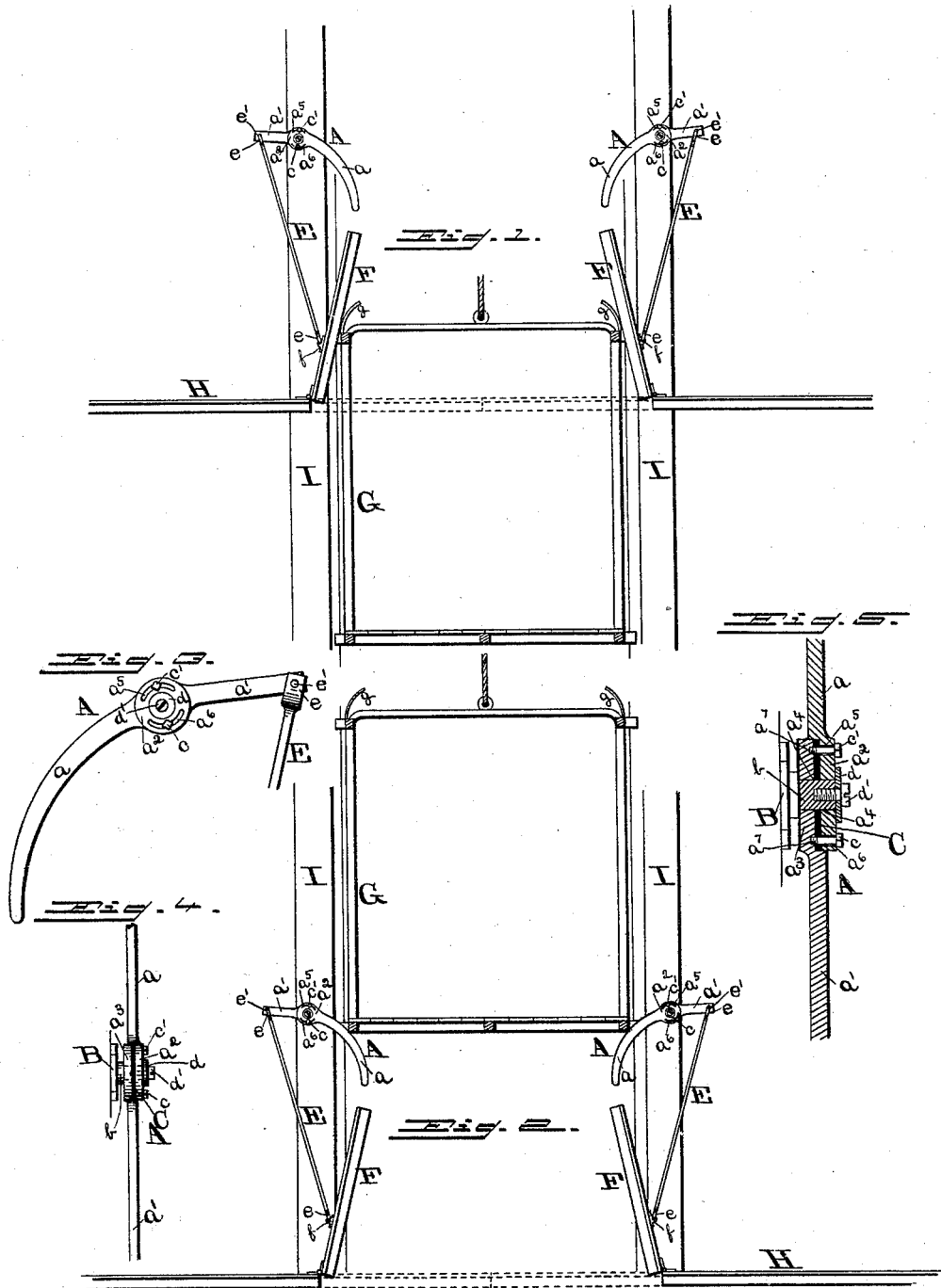
(No Model.)

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MECHANISM FOR OPERATING HATCHWAY DOORS.

No. 421,388.

Patented Feb. 18, 1890.



WITNESSES

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MECHANISM FOR OPERATING HATCHWAY-DOORS.

SPECIFICATION forming part of Letters Patent No. 421,388, dated February 18, 1890.

Application filed October 29, 1889. Serial No. 328,601. (No model.)

To all whom it may concern:

Be it known that I, DAVID B. CLEM, a citizen of the United States, and a resident of Lansdale, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Hatchway-Door-Operating Mechanism, of which the following is a specification.

My invention has relation to mechanism for the automatic opening and closing of hatchway-doors, prior to and subsequent to the passage of an elevator through the hatchway, and has for its object to simplify the construction and increase the efficiency of the same.

Heretofore the automatic opening of hatchway-doors has been accomplished generally through the employment of a pivoted curved arm having one of its ends projecting into the pathway of the elevator, which latter strikes the former and depressing the same raises its inner end along with the door to which it is attached. It has been found necessary, owing to the variations in the conditions under which the curved arms have been employed, to provide means for altering the curvature thereof. This has been accomplished by the pivoting of one or both the arms to the central bearing of the arm and attaching a brace to the outer ends of the same, said brace being pivoted to one of said ends and secured to the other by a nut, which serves as the adjusting medium, and the whole being an adjustable bell-crank lever. This construction is more complicated than need be, and is troublesome and expensive to make.

My invention consists in the provision of an arm curved substantially as that above described and pivoted in such position as to bring one of its ends into operative relation with the hatchway, and made in two sections, a short and a longer one. Each of said sections are formed with flat circular enlargements or disks on their inner ends. Said enlargements are each provided with a central opening, so that when the disks are placed in proper relation said openings will be aligned and ready for the reception of the boss on which they are journaled and secured in such position by a washer and set-screw.

The outer of the two disks is provided with two concentric segmental slots, while the other one is provided with two threaded sockets in alignment with said slots. Interposed between these disks is a rubber ring with a central opening corresponding with those of the disks, and two other openings in alignment with or intermediate the slots and sockets. A set-screw being inserted in each of the slots and through the openings in the rubber gasket will find entrance to the sockets, into which they are screwed to such extent as to secure the proper friction between the disks and ring, and thus prevent their unintentional slipping and the altering of the curvature of the arms. It will thus be seen that the only operation necessary to the adjustment of the curved arm is a slight loosening of the set-screws and the movement of the arm-sections to the desired extent.

My invention will be more specifically described hereinafter, and will be clearly understood upon reference to the accompanying drawings, wherein—

Figure 1 is an elevation of improved arm in operation with elevator ascending, and Fig. 2 is a similar view with elevator moving in the reverse direction. Fig. 3 is an enlarged elevation of one of the arms detached, and Fig. 4 is an edge view of same partly broken away, showing the base-plate and bearing. Fig. 5 is a longitudinal transverse sectional enlargement of Fig. 4.

A represents the curved arm composed of the two sections a a' , the former being about double the length of the latter and each being formed at its inner end with a circular enlargement or disks a^2 a^3 , having each a central opening a^4 therein for the reception of the shouldered boss or bearing b , formed on the base-plate B, which plate is secured on the upright as the side of the hatchway, it being understood that there is provided a pair of arms A for each hatchway—one at each side—or where there is but one door of course but a single arm is necessary.

As shown in Figs. 4 and 5, the disks a^2 a^3 are offset oppositely when viewed edgewise, so as to bring the main portions or sections midway between the flat outer sides of said disks and have interposed between their op-

posing faces the rubber ring or gasket C, which, when the disks and gasket are brought into proper relation, owing to the yielding nature of the same, will effectually obviate all tendency toward slipping of the disks under the leverage exerted by the arm. The ring C, as will be readily imagined, has a central opening for the passage of the boss *b*, also openings for the passage of the screws which secure the disks together. Disk *a*² has formed therein two concentric slots *a*⁵ *a*⁶, extending clear through said disk and equidistant from the central opening *a*⁴, and disk *a*³ has two threaded sockets *a*⁷ therein in line with the said slots when the disks and gasket C are in proper relation, so that when the bolts *c* *c'* are inserted in the slots *a*⁵ *a*⁶ and through the openings therefor in said gasket the threaded ends of said bolts will register with the sockets *a*⁷, and the bolts, being turned or screwed inwardly, will serve to maintain the disks and gasket in proper relation and to obtain the proper degree of pressure between them, thus preventing the undesired slipping, and at the same time affording means for adjusting or altering the curvature of the arm according as the exigencies of the case dictate.

If the hatchway-doors be very wide, it is necessary to have but slight curvature in the arm, in order to obtain an extended movement of the doors in the least space of time. On the other hand, if the doors be narrow, it is not necessary to have so great a movement of the doors in the same space of time, consequently the curvature of the arms need be greater.

d represents a washer secured to the end of the boss *b* by the screw *d'*, and serves to prevent the dislodgment of the arm A from said boss without interfering with its free oscillation, and the disks on the sections *a* *a'*, being of about the same thickness as said sections and side by side, afford an extended bearing for said arms and prevent their wobbling on the boss *b*.

As shown in Figs. 1, 2, and 3, the mediums through which the motions of the arms are communicated to the hatchway-doors F are the connecting-rods E, formed with forked ends *e*, with openings therein for the reception of pins *e'* in the sections *a'*, and similar pins, which may be in any way convenient, mounted or secured on the said doors, as at *f*.

It is obvious that other means of connecting the rods to the doors and arms may be employed without departing from the spirit of my invention; also, it may be found convenient to dispense with the rubber ring or gasket hereinbefore described and shown, in which case it might be found preferable to roughen or form teeth on the meeting faces of the disks, or otherwise form said meeting-faces as to secure a clutching action, all of which modifications I consider embraced by the spirit of my invention.

In Fig. 1 I have shown an elevator G on

the ascent and in the act of raising the hinged doors through the medium of the usual bows *g*, secured to the cross-beam of said elevator, while in Fig. 2 I have shown said elevator in the act of descending and its bottom in contact with and operating the arms A, the base-plates of the bearings of which arms are secured to the uprights I, which bearings need not necessarily be the same as hereinbefore described, and shown in the drawings.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with an elevator-hatchway, of a curved sectional arm connected at one end with the hatchway-door and at the other end projecting into the pathway of the elevator, a flat disk secured to or integral with the inner end of each arm-section and provided with a central opening, a support in the latter, and a bolt or bolts passing through one of said disks outside said opening and into the other disk, substantially as and for the purpose described.

2. The combination, with an elevator-hatchway, of a curved sectional arm connected at one end with the hatchway-door and at the other end projecting into the pathway of the elevator, a flat disk secured to or integral with the inner end of each arm-section and provided with a central opening, a support in the latter, one of said disks having a slot or slots outside its central opening, a bolt or bolts passing through the slot or slots and into the other disk, and a yielding gasket or washer between the disks, substantially as and for the purpose described.

3. The combination, with an elevator-hatchway, of the arm A, composed of the section *a*, with the disk *a*² thereon, provided with the slots *a*⁵ *a*⁶, and the section *a'*, with the disk *a*³ thereon, provided with the sockets *a*⁷, the bolts *c* *c'*, passing through said slots and into said sockets, said arm being pivotally supported, so that one end will project into the pathway of the elevator, and the other end is connected with the hatchway-door, substantially as and for the purpose described.

4. The combination, with an elevator-hatchway, of the arm A, composed of the section *a*, with the disk *a*² thereon, provided with the slots *a*⁵ *a*⁶, and the section *a'*, with the disk *a*³ thereon, provided with the sockets *a*⁷, the bolts *c* *c'*, passing through said slots and into said sockets, the gasket C, said arm being pivotally supported, so that one end will project into the pathway of the elevator, and the other end is connected with the hatchway-door, substantially as and for the purpose described.

5. The combination, with an elevator-hatchway, of the arm A, composed of the section *a*, with the disk *a*² thereon, provided with the slots *a*⁵ *a*⁶, and the section *a'*, with the disk *a*³ thereon, provided with the sockets *a*⁷, the bolts *c* *c'*, passing through said slots and into

said sockets, the gasket C, the plate B, provided with the boss *b*, said disks being provided with openings *a*⁴ for said boss, the washer *d*, the set-screw *d'*, the pin *e*, and the
5 forked rod E, pivoted on said pin and attached to the hatchway-door, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of October, A. D. 1889.

DAVID B. CLEM.

Witnesses:

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