No. 719,437. PATENTED FEB. 3, 1903.

J. A. CRAIG.

ELEVATOR SHAFT DAMPER.

APPLICATION FILED MAR. 12, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

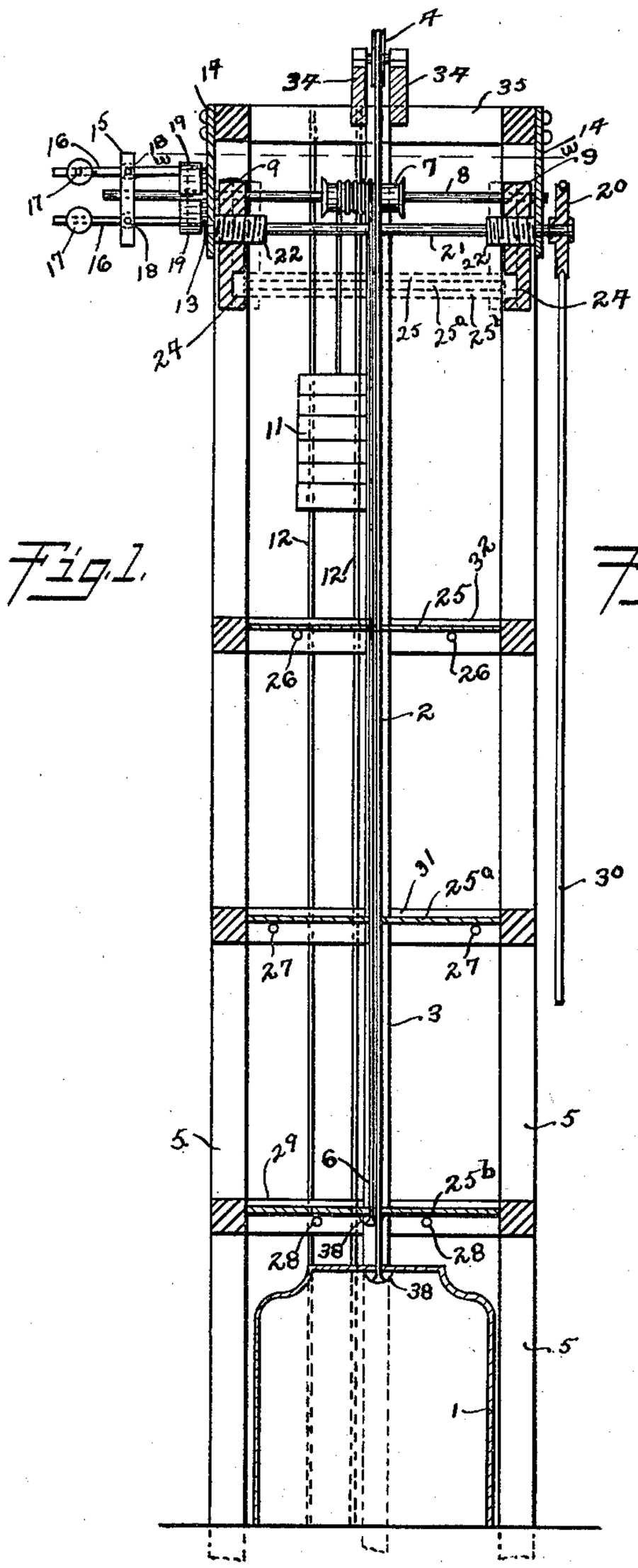

Fig. 1.

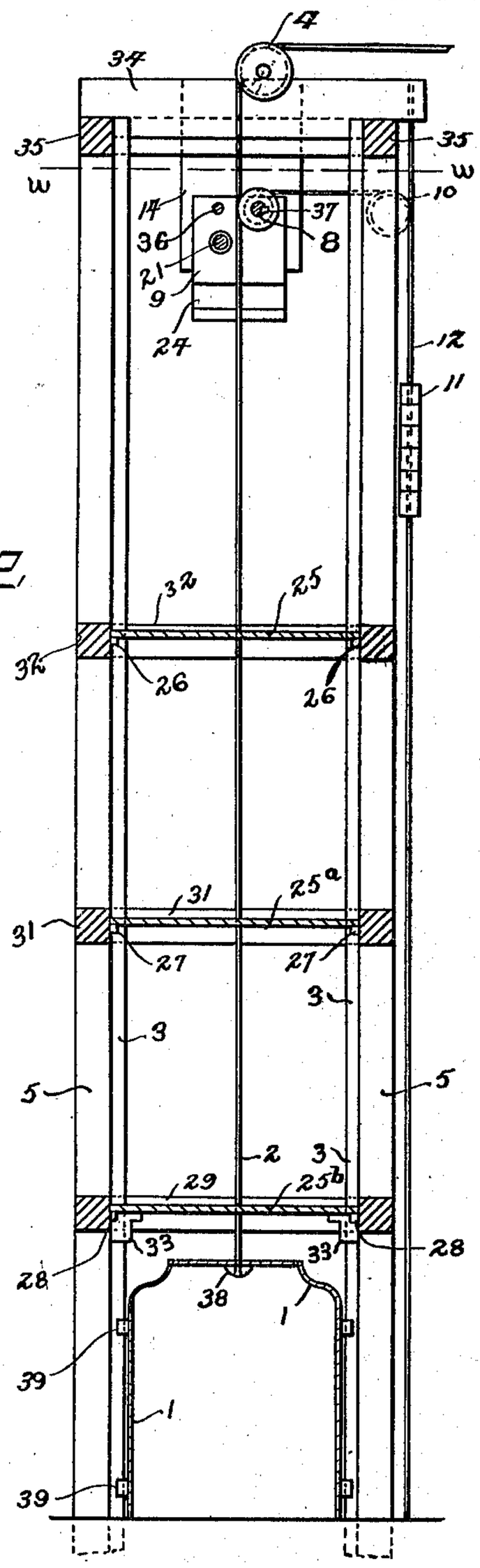

Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

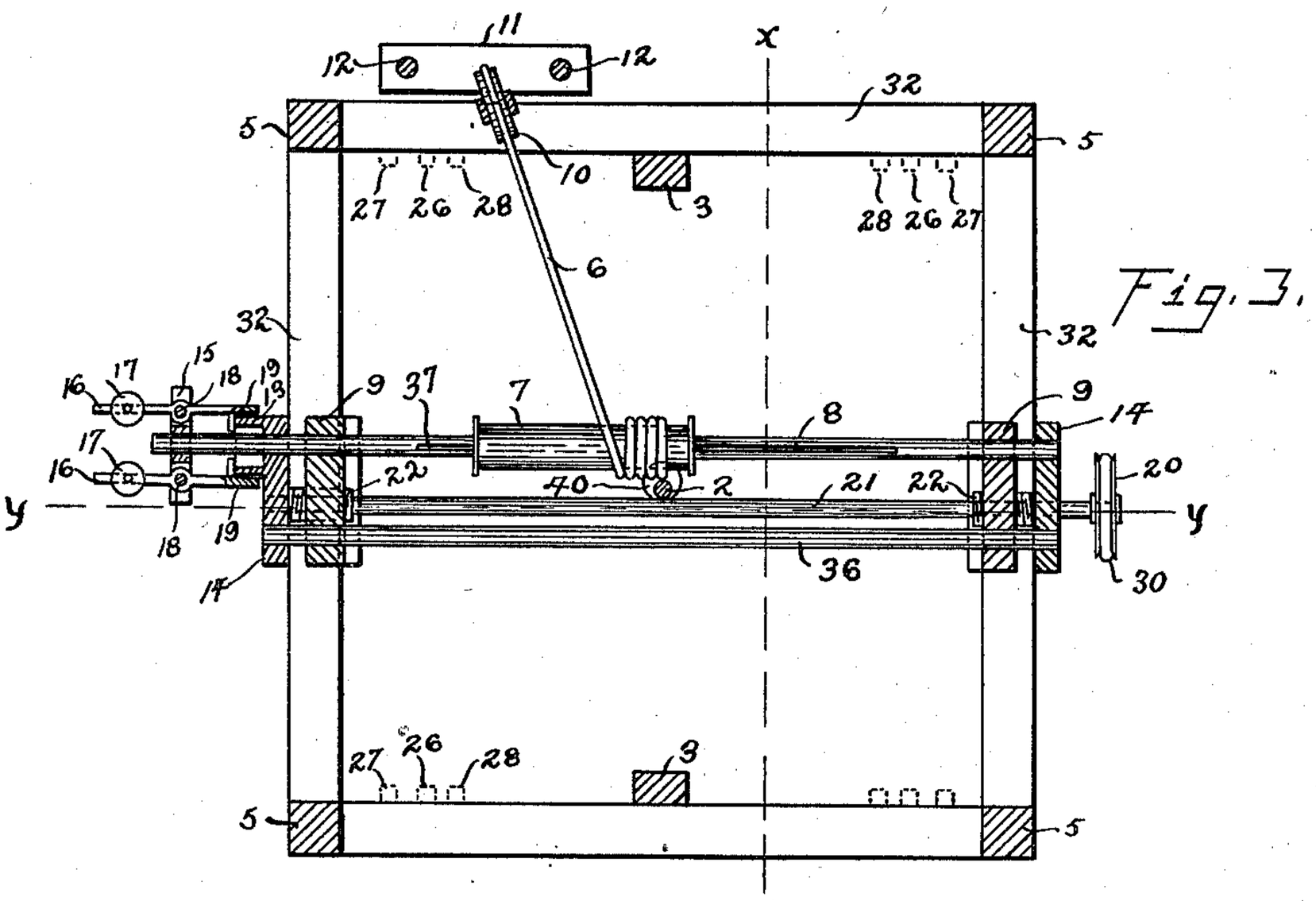

Fig. 3.

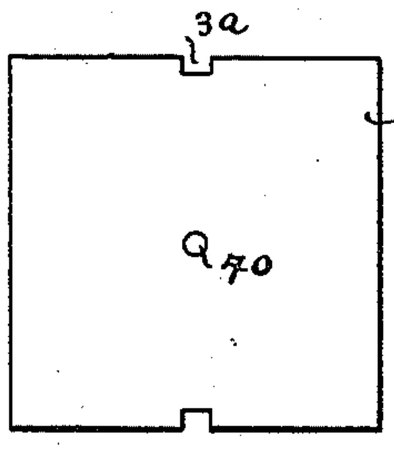

Fig. 4.

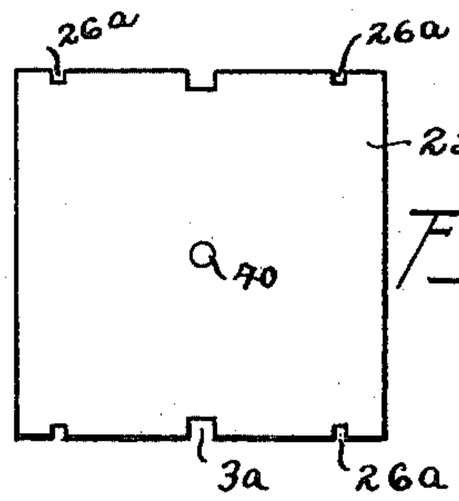

Fig. 5.

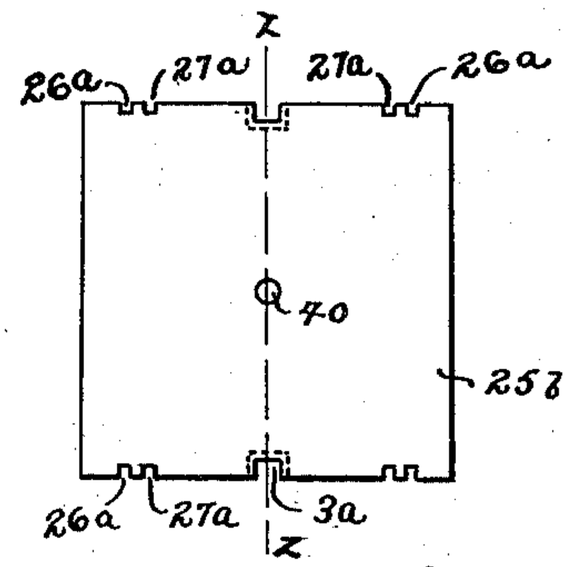

Fig. 6.

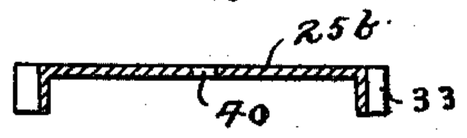

Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES A. CRAIG, OF OMAHA, NEBRASKA, ASSIGNOR OF ONE-HALF TO GEORGE W. CRAIG, OF OMAHA, NEBRASKA.

ELEVATOR-SHAFT DAMPER.

SPECIFICATION forming part of Letters Patent No. 719,437, dated February 3, 1903.

Application filed March 12, 1902. Serial No. 97,957. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. CRAIG, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Elevator-Shaft Dampers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to dampers for elevator-shafts wherein said shafts are closed for fire protection at each of the floors through which said shafts pass.

The object of my invention is to provide means for closing or damping elevator-shafts at each floor through which said shafts pass; to provide means for operating said dampers from any floor through which said shafts pass, and to enable the elevator to be operated for any desired height without affecting the damping of the shaft above the point to which said elevator is operated.

My invention consists in the novel form of dampers used, in the means employed for holding the same in position, for releasing the same, for governing the fall thereof, and in certain other novel combinations and arrangement of parts, as will be more fully described hereinafter.

In the accompanying drawings, Figure 1 is a vertical sectional view of an elevator-shaft having my improved dampers applied thereto, the section being taken on the plane of the line *y y* of Fig. 3. Fig. 2 is a similar view taken on the plane of the line *x x* of Fig. 3. Fig. 3 is a sectional plan view taken on the plane of the lines *w w* of Figs. 1 and 2. Figs. 4, 5, and 6 are detail plan views of the damper-plates; and Fig. 7 is a sectional view of the lower damper-plate, taken on the line *z z* indicated in Fig. 6.

In the drawings, 1 is an ordinary elevator-cage, having lifting-cables 2 and guideways 3 of the usual form. At the top of the elevator-shaft and below the lift-cable sheave 4 are placed the shafts 8 and 36. These shafts pass transversely across the elevator-shaft and are supported by suitable bearing-plates 14, which are secured to the framework 35. The said shafts 8 and 36 serve as supports and guides for the blocks 9 9, which are placed adjacent to the bearing-plates 14 and which have notches 24 in the inner faces thereof, adapted to normally receive the edges of and support the damper-plates 25, 25^a, and 25^b. The shaft 21 is journaled in the bearing-plates 14 and has enlarged threaded portions 22, fitting into corresponding threaded openings in the blocks 9 9. The said threads are right-handed in one of the blocks 9 and left-handed in the other, so that when the said shaft 21 is turned in one direction the blocks will be forced toward each other, and when said shaft is turned in the opposite direction the blocks will be forced apart. One end of the shaft 21 extends through the bearing-plate 14 and has a sheave 20 thereon, around which passes a cable 30, which preferably extends downward through all of the floors traversed by the elevator-shaft, but which may be extended to any other suitable place. By pulling on this cable 30 the shaft 21 may be rotated, thus forcing in or out the blocks 9 9 and supporting or dropping the damper-plates 25 25^a, &c. The lower damper-plate 25^b has a cable 6 attached to the central part thereof and passing upward together with the lift-cable 2 through the holes 40 in the other damper-plates. The said cable 6 passes several times around a drum 7 on the shaft 8, thence over a small sheave 10, and downward to a counterweight 11, adapted to move up or down along suitable guides 12 12. The counterweight is made heavy enough to nearly but not quite balance the weight of the lower damper-plate 25^b.

One end of the shaft 8 passes through the bearing-plate 14 and has a cross-arm 15 secured thereto, upon which are pivoted the arms 16 16. On one end of the said arms 16 16 are weights 17 17, and on the other ends of said arms are curved shoe-plates 19, adapted to form a frictional contact with a ring 13, secured to the bearing-plate 14, when the weights 17 are thrown outward by centrifugal force resulting from the rotation of the shaft 8.

The drum 7 is secured to the shaft 8 by a feather 37, so that when the drum is rotated by the cable 6 the shaft 8 will turn therewith; but the drum may slide along said shaft, thus taking up the creeping action of the cable

and holding the same central with the elevator-shaft.

Pins 26 26 are placed in the sides of the elevator-shaft to catch and support the upper damper-plate 25 and hold the same on the level of the upper floor. The other damper-plates 25^a and 25^b have notches 26^a therein, which miss the pins 26 and allow said plates to pass on down to their respective floors. The second damper-plate 25^a is caught by the pins 27, and the notches 27^a in the lower damper-plate 25^b allow said plate to pass the pins 27 and go on down to be caught by the pins 28.

The plate 25^b is provided with guide-blocks 33, adapted to engage the guideways used for the elevator-cage 1.

The operation of the device is as follows: The damper-plates being held by the blocks 9 9 in the position indicated in dotted lines in Fig. 1 and it being desired to close or "dampen" the elevator-shaft, (as at night or on an alarm of fire,) the cable 30 is pulled from any suitable point to which it may run. This will rotate the shaft 21, and thereby force outward the blocks 9 9 and release the damper-plates. The plates, being heavier than the small counterweight 11, will fall and in so doing will draw the cable 6 around the drum 7, thereby rotating said drum and the shaft 8 and actuating the governor mechanism on the end of said shaft, and thus controlling the speed of fall of the said damper-plates. All the damper-plates being supported by the lower plate 25^b and this plate having the guide-blocks 33 thereon, the plates will fall squarely and be caught by the pins 26, 27, and 28, as before described.

When desired to open again the elevator-shaft, the cage 1 is run up in the usual manner and the plates, being carried therewith, are lifted to position and secured in place at the top of the shaft by the blocks 9 9, as before.

It is obvious that this mechanism may be applied to any number of floors through which an elevator-shaft may pass and that other means might be used for catching the plates at the successive floors from top to bottom, such as gradually-decreasing sizes of plates and openings therefor from top to bottom of the shaft. Although I have shown the preferred means for this purpose, I do not wish to limit myself to the exact construction shown. It is also very clear that as the damper-plates are always above the cage it is impossible to shut the cage between floors (as is the case with shaft-dampers now in use) and that the cage may be run to any desired height without affecting the damping of the shaft for the floors above.

Now, having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an elevator-shaft-damping device, damper-plates normally supported at the top of the shaft; means for releasing said plates, frictional governing means for controlling the fall thereof and means whereby one of said plates will be caught at each of the floors traversed by the said shaft.

2. In an elevator-shaft-damping device, damping-plates normally supported above said shaft, holding-blocks for supporting said plates, means for releasing said plates by drawing apart said holding-blocks, a cable attached to one of said plates, a drum around which said cable is passed and governing mechanism connected with said drum for controlling the speed of rotation thereof.

3. In an elevator-shaft-damping device, a plurality of damping-plates normally supported above the shaft, a cable attached to the lower of said plates, a counterweight attached to the other end of said cable, a drum around which said cable is passed, a governor mechanism connected with said drum, and blocks on said lower damper-plate engaging with guideways in said shaft, substantially as set forth.

4. In a damping device for elevator-shafts, a plurality of damping-plates, holding-blocks normally supporting said plates at the top of the elevator-shaft, a threaded shaft passing through said holding-blocks, a sheave on said shaft and a cable attached to said sheave whereby the shaft may be rotated for spreading the holding-blocks and releasing the damper-plates.

5. In a damping mechanism for elevator-shafts and in combination with an elevator-cage, damping-plates, means for normally supporting the same at the top of the shaft, means for releasing the plates, a cable attached to one of the plates, frictional governing means operated by said cable, and means for catching and supporting one of the plates at each floor traversed by the elevator-shaft, the said plates being adapted to be raised and carried above the elevator-cage when the same is run upward and, if released from the holding means at the top of the shaft, to be deposited at their respective floors when the cage is run downward, substantially as described.

6. A damping mechanism for elevator-shafts, comprising damping-plates, blocks for holding said plates at the top of the elevator-shaft, a shaft for releasing said plates from said holding-blocks, guide-blocks on one of said plates, a cable secured to the said plate, governing mechanism operated by said cable, pins in the sides of the elevator-shaft for supporting one of the said damper-plates at each floor traversed by the said elevator-shaft and notches in some of said damper-plates coinciding with some of said pins but not coinciding with other of said pins, substantially as described.

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

JAMES A. CRAIG.

Witnesses:

GEO. W. CRAIG,

D. O. BARNETT.