



No. 799,243.

PATENTED SEPT. 12, 1905.

A. W. KRUSEE.  
ELEVATOR BRAKE.  
APPLICATION FILED MAR. 21, 1905.

2 SHEETS—SHEET 2.

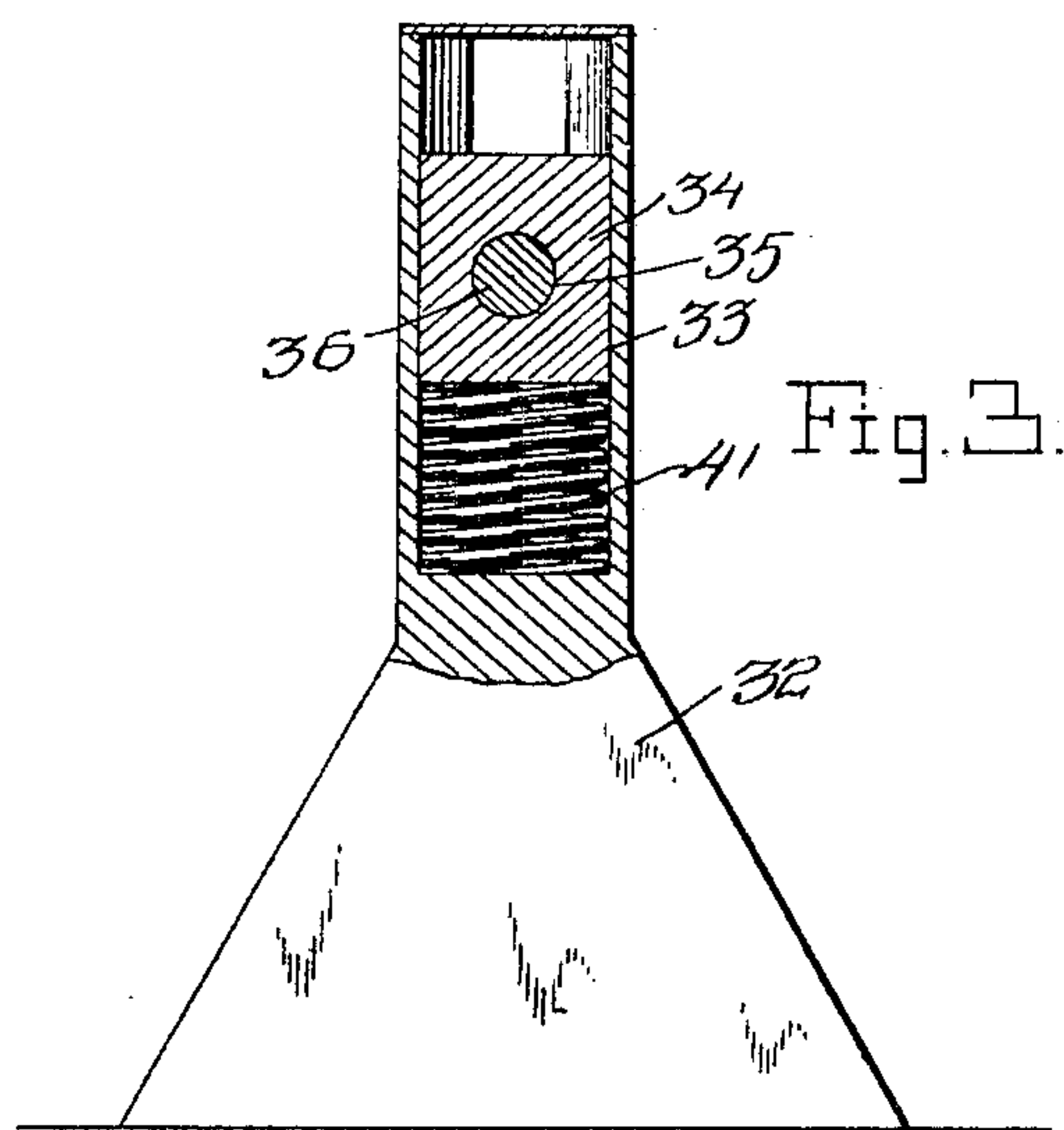
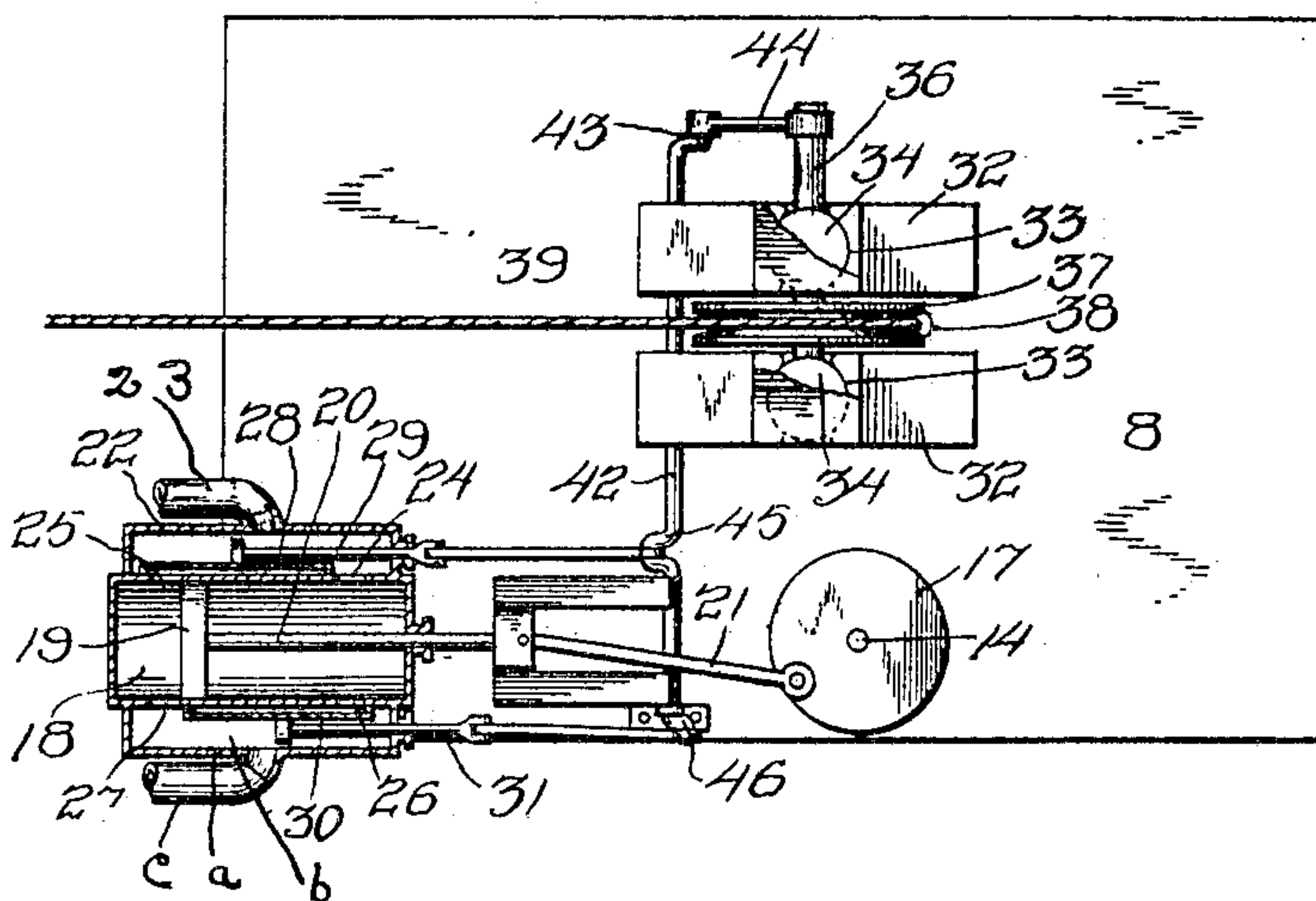


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## ELEVATOR-BRAKE.

No. 799,243.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed March 21, 1905. Serial No. 251,203.

*To all whom it may concern:*

Be it known that I, ARTHUR W. KRUSEE, a citizen of the United States, residing at Sundance, in the county of Crook, State of Wyoming, have invented certain new and useful Improvements in Elevator-Brakes; 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.

This invention relates to elevators, and more particularly to brakes therefor, and has for its object to provide a brake which will be arranged for operation by fluid-pressure and which will be so constructed that it will be held in inoperative position when the cage-supporting cable is taut, but will be moved into operative position to hold the cage against movement when the cable is slackened.

Other objects and advantages will be apparent from the following description, and it will be understood that modifications of the specific construction shown may be made and any suitable material may be used without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like characters of reference indicate similar parts in the several views, Figure 1 is a side elevation of an elevator provided with the present invention. Fig. 2 is an elevation of the elevator looking at right angles to Fig. 1. Fig. 3 is a section on line 3 3 of one of the pulley-supporting uprights shown in Fig. 2. Fig. 4 is a top plan view with the cylinder in horizontal section.

Referring now to the drawings, there is shown an elevator-shaft 5, having horizontal sills 6 and 7 at its lower end and having a platform 8 at its top, the platform being supported by uprights 9. Vertical cage-guides 10 and 11 are disposed within the shaft, the guide 10 being secured at its lower end to the sills 6 and at its upper end to the platform 8. The guide 11 is arranged for movement toward and away from the guide 10 and has a plurality of spaced arms 12 secured to its outer face 13, the arms being arranged in pairs. A vertically-extending rock-shaft 14 is journaled at one end in a bracket 15, secured to the sill 7, and extends upwardly through the platform 8, this shaft having a plurality of laterally-extending arms 16, one of which is pivoted between each pair of the arms 12, and this rock-shaft is arranged to move the guide

11 toward and away from the guide 10 when the said rock-shaft is moved.

At its upper end the rock-shaft carries a horizontally-extending disk 17, and mounted upon the platform adjacent to this disk there is a hollow cylinder 18, having a movable piston 19 therewithin. The piston 19 is carried by a piston-rod 20, which extends outwardly of the cylinder and is connected by means of a pitman 21 with the disk 17, upon which the pitman is eccentrically pivoted, and the arrangement is such that movement of the piston from one end of the cylinder to the other will rock the shaft 14 sufficiently to move the guide 11 from one limit of its movement to the other.

At one side the cylinder 18 is provided with a fluid-chamber 22 having a fluid-supply pipe 23 connected therewith, and communicating with this fluid-chamber and with the interior of the cylinder adjacent to the forward and rearward ends of the latter, respectively, there are inlet-ports 24 and 25, outlet-ports 26 and 27 being formed in the cylinder opposite to the ports 24 and 25, respectively. A slide-valve 28 is disposed within the chamber 22 and may be moved by a valve-rod 29, connected therewith, to close either of the ports 24 and 25, a similar slide-valve 30 being arranged for movement into position to close either of the ports 26 and 27 and being operable by means of a rod 31. A casing *a* is secured to the side of the cylinder and incloses a chamber *b*, with which the ports 26 and 27 communicate, and the valve 30 is located within this chamber. An exhaust-pipe *c* communicates with the chamber *b*.

Mounted upon the platform 8 there are a pair of pulley-supporting uprights 32, having longitudinal passages 33 therein, which open through their sides, and slidably engaged in these passages there are vertical movable blocks 34, having horizontal bearings 35 therein, which receive a pulley-supporting shaft 36, this shaft carrying a pulley 37, which lies between the uprights 32. A cable-receiving opening 38 is formed through the platform below the pulley, and through this opening there is passed a cage-supporting cable 39, which is secured at its lower end to a cage 40, slidably mounted between the guides 10 and 11, the cable being engaged over the pulley 37 and being secured to a suitable winding-drum. Springs 41 are disposed between the blocks 34 and the bottoms of the passages 33, and these



springs hold the blocks yieldably at the upward limit of their movement, though these springs are not sufficiently strong to support the weight of the cage 40. A crank-shaft 42 is journaled in the uprights 32 and has a crank 43 at one end which is connected, by means of a pitman 44, with the pulley-receiving shaft 36, so that when the blocks are moved the crank-shaft 42 will be moved. The crank-shaft carries a second crank 45, which is connected with the valve-rod 29, and also carries a third crank 46, which is connected with the valve-rod 31 for movement of these rods when the crank-shaft is moved.

The positions of the cranks 45 and 46 with respect to the shaft 42 are such that when the blocks 34 are at the downward limits of their movements, in which position they will be when the elevator is in operation, as will be readily understood, the slide-valve 28 will be held in position to close the port 25, while the valve 30 will be held in position to close the port 26. With the valves in this position fluid from the chamber 22 will fill the forward portion of the cylinder 18, thus holding the piston 19 at the rearward limit of its movement, and the arrangement of parts is such that the guide 11 will be held at the limit of its movement away from the guide 10.

Should the weight of the cage be removed from the pulley 37 by the breaking of the cable or in any other manner, the springs 41 will raise the blocks 34, and the pulley-receiving-shaft and the crank-shaft 42 will be shifted to shift the positions of the slide-valves 28 and 30, as will be readily understood from the drawings. In their shifted positions the slide-valves will close the ports 24 and 27, opening the ports 25 and 26, and the piston will be moved to the forward limit of its movement, thus rocking the shaft 14 and moving the guide 11 toward the guide 10 to bind the cage 40 between the guides, thus preventing the descent of the cage.

What is claimed is—

1. In an elevator, the combination with spaced cage-guides, one of said guides being movable toward and away from the other, of a cage slidably mounted between the guides, a lifting-cable connected with the cage, means for moving the movable guide into frictional engagement with the cage to hold the latter against movement, and means for holding the guide-moving means with the guide in inoperative position when the lifting-cable is taut, the second-named holding means being arranged for movement into inoperative position when the cable is slackened.

2. In an elevator, the combination with spaced cage-guides, one of said guides being movable toward and away from the other, of a cage slidably mounted between the guides, a lifting-cable connected with the cage, a ver-

tically-movable pulley with which the cable is engaged, means for holding the pulley yieldably against downward movement, said means being arranged to permit of downward movement of the pulley under the weight of the cage, means for moving the movable guide into and out of frictional engagement with the cage, and means connected with the pulley for holding the guide-moving means with the guide out of engagement with the cage when the pulley is at the downward limit of its movement, the second-named means being arranged for movement into inoperative position when the pulley is moved upwardly.

3. In an elevator, the combination with spaced cage-guides, one of said guides being movable toward and away from the other, of a cage between the guides and adapted for frictional engagement by the movable guide, a rock-shaft, connections between the rock-shaft and the movable guide for movement of said guide when the shaft is rocked, means for rocking the shaft to move the guide, a lifting-cable connected with the cage, means coöperating with the lifting-cable for holding the shaft-rocking means with the shaft in position to hold the guide out of engagement with the cage when the cable is taut, said shaft-rocking means being arranged for movement to bring the guide into engagement with the cage when the cable is slackened.

4. In an elevator, the combination with a stationary cage-guide, and a cage-guide movable toward and away from the stationary guide, of a cage slidably mounted between the guides, a lifting-cable connected with the cage, said movable guide being adapted for frictional engagement of the cage to hold the latter against movement, means coöperating with the cable for holding the guide out of engagement with the cage when the cable is taut, and means for moving the guide into engagement with the cage when the cable is slackened.

5. In an elevator, the combination with spaced guides, of a cage slidably mounted between the guides, one of said guides being movable into and out of frictional engagement with the cage, fluid-operated mechanism connected with the movable guide for movement thereof, a lifting-cable connected with the cage, means coöperating with the cable for holding the fluid-operated mechanism with the guide out of engagement with the cage when the cable is taut, said fluid-operated mechanism being arranged for movement of the guide into engagement with the cage when the cable is slackened.

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

ARTHUR W. KRUSEE.

Witnesses:

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