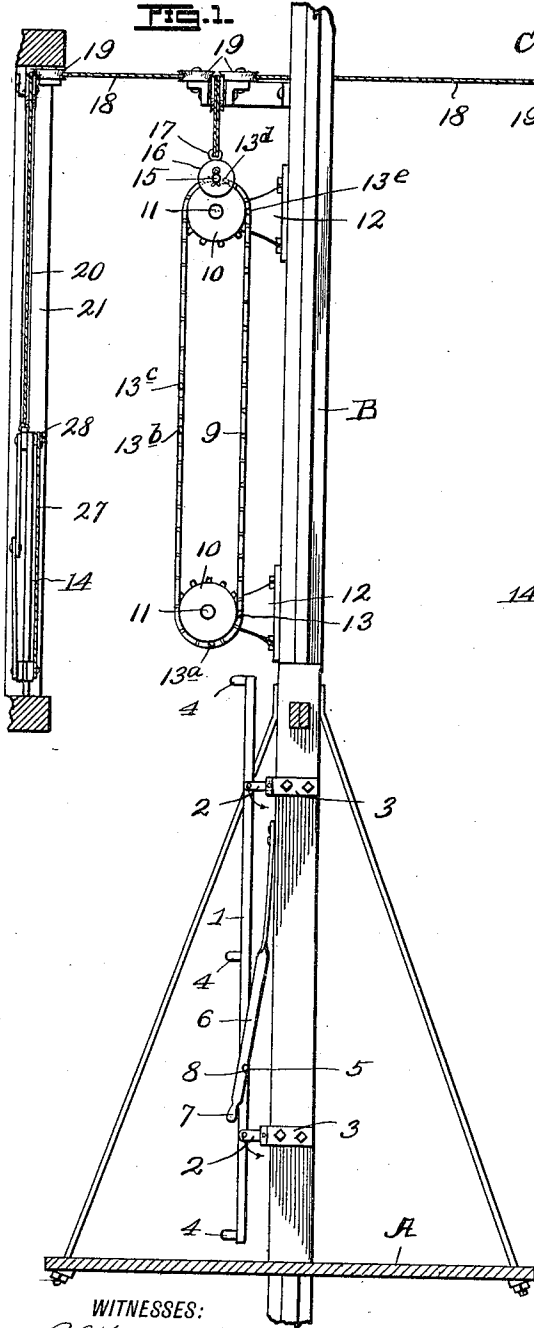


G. W. UNDERWOOD.
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APPLICATION FILED JULY 5, 1912.

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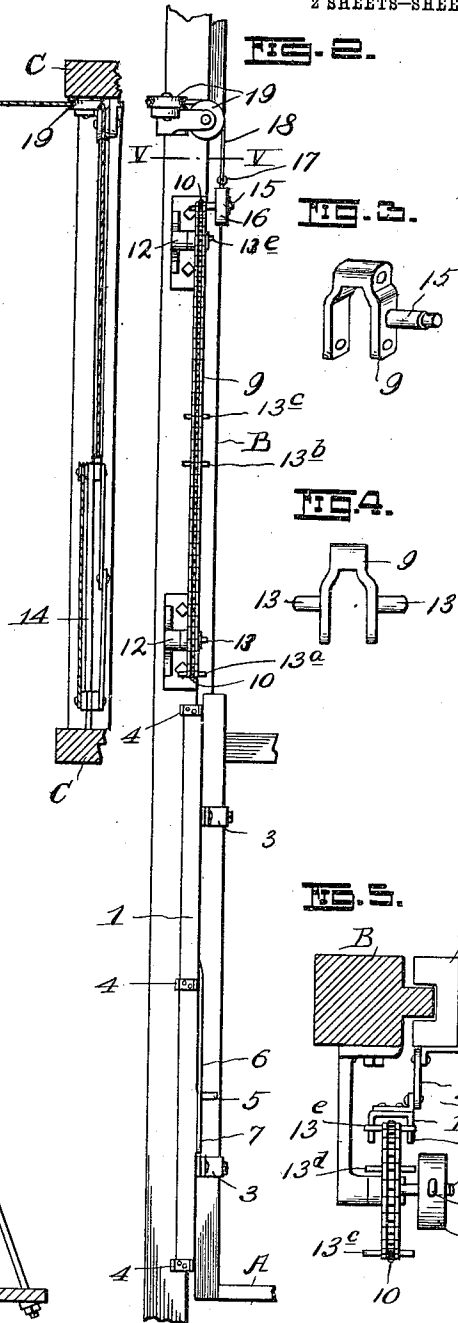
Patented June 17, 1913.

2 SHEETS—SHEET 1.



WITNESSES:

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2 SHEETS—SHEET 2.

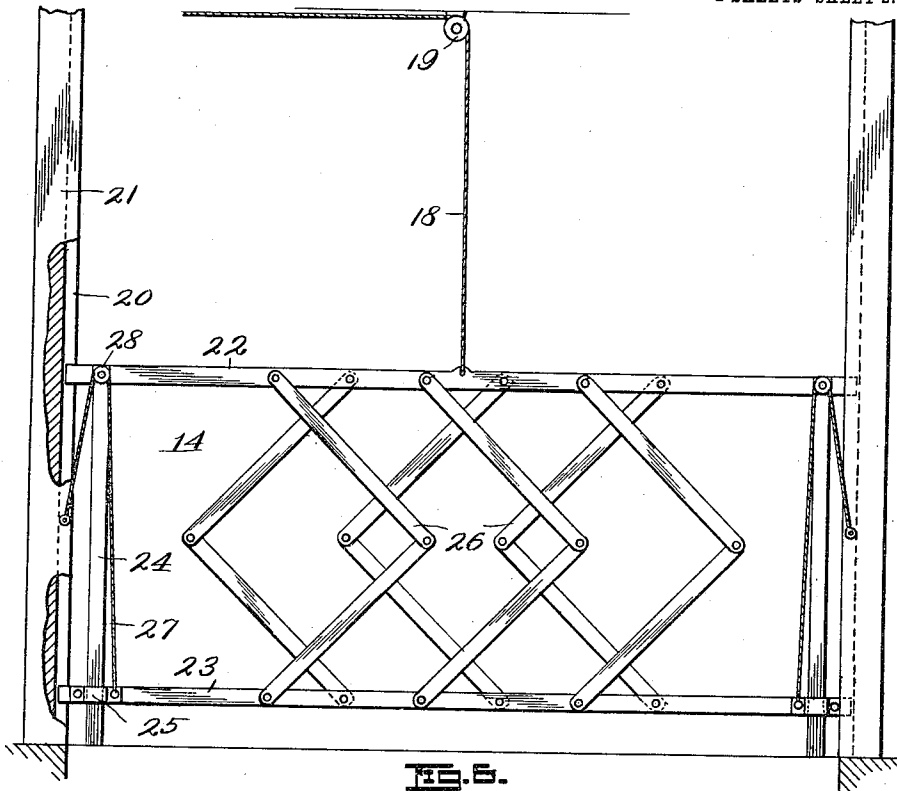


FIG. 6.

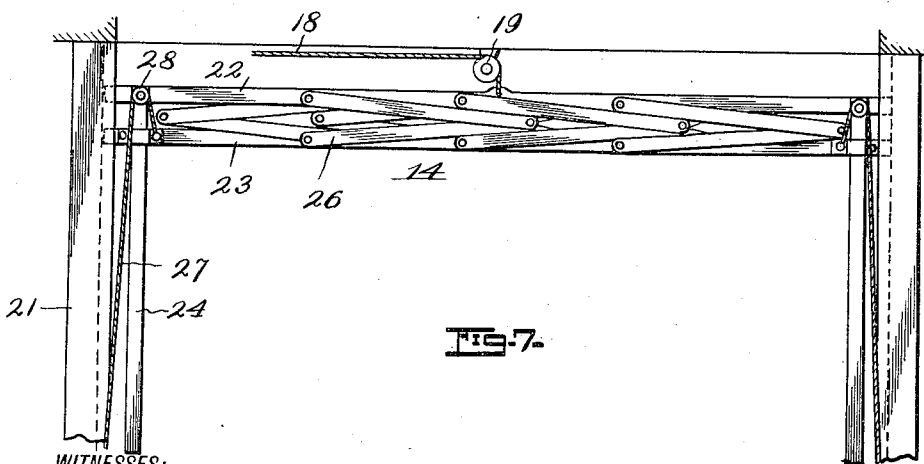


FIG. 7.

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SAFETY-GATE FOR FREIGHT-ELEVATORS.

1,064,791.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed July 5, 1912. Serial No. 707,698.

To all whom it may concern:

Be it known that I, GEORGE W. UNDERWOOD, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Safety-Gates for Freight-Elevators, of which the following is a specification.

My invention relates to improvements in safety gates for freight elevators, and one object is to provide a gate of this character which may be actuated by the elevator car at the will of the operator.

A further object is to provide a gate whereby maximum overhead clearance may be had with a low ceiling.

Other objects of the invention will hereinafter appear, and in order that said invention may be fully understood, reference will now be made to the accompanying drawings, in which:

Figure 1 is a vertical section of an elevator shaft, the car and the gates. Fig. 2 is a broken front elevation of the parts shown on Fig. 1, with the gates removed. Fig. 3 is a detail of one of the links of a sprocket-chain employed in carrying out the invention. Fig. 4 is a detail of one of the links of said chain. Fig. 5 is a cross section on line V—V of Fig. 1. Fig. 6 is a front elevation of a collapsible gate employed in carrying out the invention, in extended and lowered positions. Fig. 7 is a front elevation of the collapsible gate in raised and folded positions.

A designates a freight elevator car; B one of the guide-posts of the car; and C two floors of the building, in which the elevator is installed.

1 designates a vertically-arranged bar pivotally-mounted upon links 2, pivotally-secured to straps 3, projecting from one side of the car A. Bar 1 is provided with a plurality of forwardly-extending forks 4, one fork being arranged at each end of the bar, and another midway between the ends of said bar, as shown on Fig. 1. Bar 1 is also provided with a laterally-projecting handle 5, whereby it may be drawn forward and upward to the position shown on Fig. 1, or swung downward and backward against the forward ends of straps 3.

6 designates a spring detent secured at its upper end to one side of car A and provided at its lower end with a handle 7. Said detent has a notch 8 to receive handle 5 for the

purpose of reliably-locking bar 1 in its forward position, as shown on Fig. 1.

9 designates an endless propelling sprocket-chain mounted upon a pair of sprocket-wheels 10, journaled on stub-shafts 11, projecting laterally from a pair of brackets 12, secured to one of the guide-posts B. Sprocket-chain 9 is provided, in the present instance, with six pairs of lugs 13, 13^a, 13^b, 13^c, 13^d, and 13^e, projecting laterally in opposite directions, as shown on Fig. 4, there being two pairs of lugs for coöperation with each fork 4, to actuate the gates 14, as will hereinafter appear. One link of sprocket-chain 9 has a laterally-projecting stud 15, upon which a counterweight 16 is mounted to assist the car in raising the gates, as will hereinafter appear. Counterweight 16 has an eye 17 to which a pair of cables 18 are attached. Cables 18 extend from eye 17 around overhead guide-sheaves 19, and each is attached at its lower end to a gate 14.

Each gate 14 is slidably-arranged in grooves 20 of guides 21, and are collapsible, so that when installed in a building with low ceilings ample head room will be left where gates of ordinary type could not be employed. Each gate comprises upper and lower horizontal rails 22 and 23, respectively, a pair of vertical legs 24 rigidly-secured at their upper ends to rail 22 and slidably-engaged by rail 23, clips 25 operably-connecting rail 23 with the legs 24, and a plurality of lazy-tongs 26, pivotally-connected to the rails 22 and 23.

27 designates a pair of cables employed in folding each gate, said cables being secured at their lower ends to clips 25, and at their upper ends to guides 21, and run around guide-sheaves 28, mounted at the upper ends of legs 24.

In practice, when the gates are down, as shown on Fig. 1, the counterweight 16 is vertically above the axis of the uppermost sprocket-wheel 10, while lugs 13 are arranged in the path of the uppermost fork 4, when bar 1 is locked in its forward position, as shown. Assuming that the elevator car A is traveling upward, the initial fork 4, upon engaging lugs 13, carries the same upward until they pass out of engagement therewith, at which time the intermediate fork 4 engages lugs 13^b, and carries the same upward until the car is stopped with its platform level with the floor of the land-

ing. This movement of the lugs 13 and 13^b carries the chain 9 one-half of a revolution and brings the counterweight 17 vertically beneath the axis of the lowermost sprocket-wheel 10, so that it will support the gates in raised position. The downward movement of the counterweight 16 raises the gates to the position shown on Fig. 7, and as said gates move upward they are folded by their respective cables 27, which draw the lowermost rail 23 upward more rapidly than the uppermost rail 22 is raised by its respective cable 18. Should the car A resume its upward movement after stopping at the landing, the intermediate fork 4, which has been brought into contact with the lugs 13^b, moves chain 9 until the counterweight 16 travels around to one side of the lowermost sprocket-wheels 10, when the gates, which are heavier than said counterweight, pull the same upward to its initial position, as shown on Fig. 1. The gates are prevented from traveling down to closed position faster than the elevator car moves upward, by lugs 13^c contacting with the underside of the intermediate fork 4. When the gates are closed lugs 13^c are left in the position shown on Fig. 1, so that they may be contacted by the lowermost forks 4, should it be desired to open the gates when the car returns. From the foregoing it will be understood that a complete revolution of chain 9 is effected to open and close the gates. When it is desired to run the car past a floor without actuating the gates, detent 6 is released from handle 5 and bar 1 is swung downward and backward, as indicated by the arrow, Fig. 1.

For high or low ceilings the sprocket-wheels 10 will be placed farther or closer together, and the lugs 13 to 13^c, inclusive, will be spaced accordingly on the chain 9.

While I have shown two gates 14, it is obvious that my apparatus will operate equally as well with one gate, and I reserve the right to make such other changes as properly fall within the spirit and scope of the appended claims.

Having thus described my invention, what

I claim and desire to secure by Letters Patent, is:

1. In combination with an elevator gate and an elevator car, a counterweight to assist in raising said gate to open position, a suitably-guided cable attached at its ends to the gate and said counterweight, a propelling chain carrying said counterweight, lugs suitably-spaced on said chain, a manually-operable bar mounted on the elevator car, means on said bar to engage certain of the lugs and move the chain in one direction to open the elevator gate and engage the other lugs to move the chain in a reverse direction to close the gate, a handle on said bar to actuate the same, and a detent carried by the car and adapted to engage said handle to lock the bar when in position for the elements thereon to engage the lugs, substantially as described.

2. In combination with an elevator gate and an elevator car, a counterweight to assist in raising said gate to open position, a suitably-guided cable attached at its ends to the gate and said counterweight, a propelling chain carrying said counterweight, lugs suitably-spaced on said chain, a manually-operable bar, links operably-connecting said bar to the elevator car, and forks carried by said bar to engage certain of the lugs and move the propelling chain in one direction to open the elevator gate and engage the other lugs to move the propelling chain in a reverse direction to close the gate, substantially as described.

3. In combination with an elevator car and hatchway, a collapsible gate at the hatchway, cables attached to opposite sides of the hatchway and the lower portion of the gate, and means attached to the upper portion of the gate and controlled by the car, which coacts with said cables in raising and collapsing the gate.

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

GEORGE W. UNDERWOOD.

Witnesses:

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F. G. FISCHER.