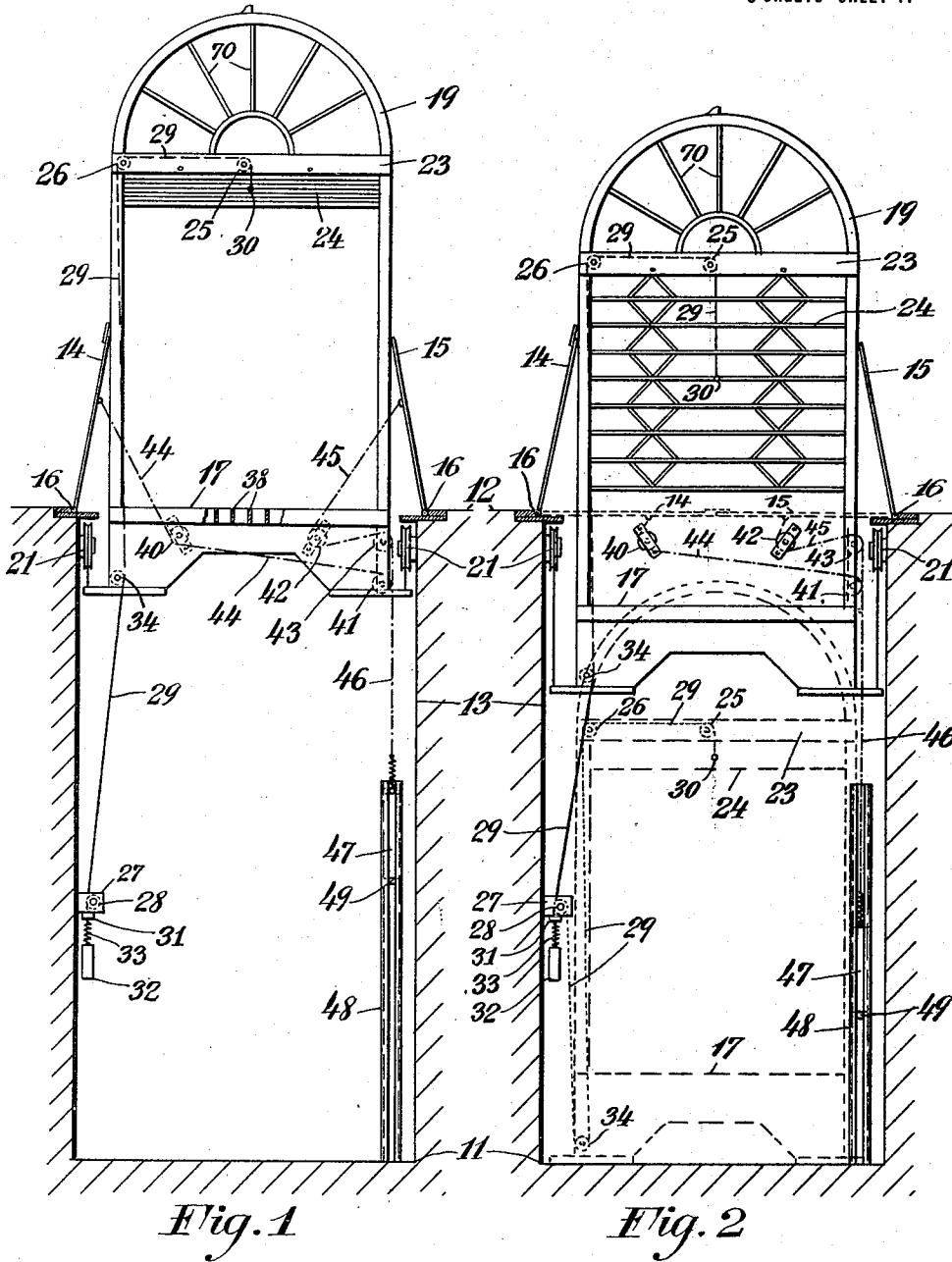


J. S. LINDHOLM.
SAFETY DEVICE FOR SIDEWALK ELEVATORS.
APPLICATION FILED SEPT. 22, 1915.

1,201,316.

Patented Oct. 17, 1916.

3 SHEETS—SHEET 1.



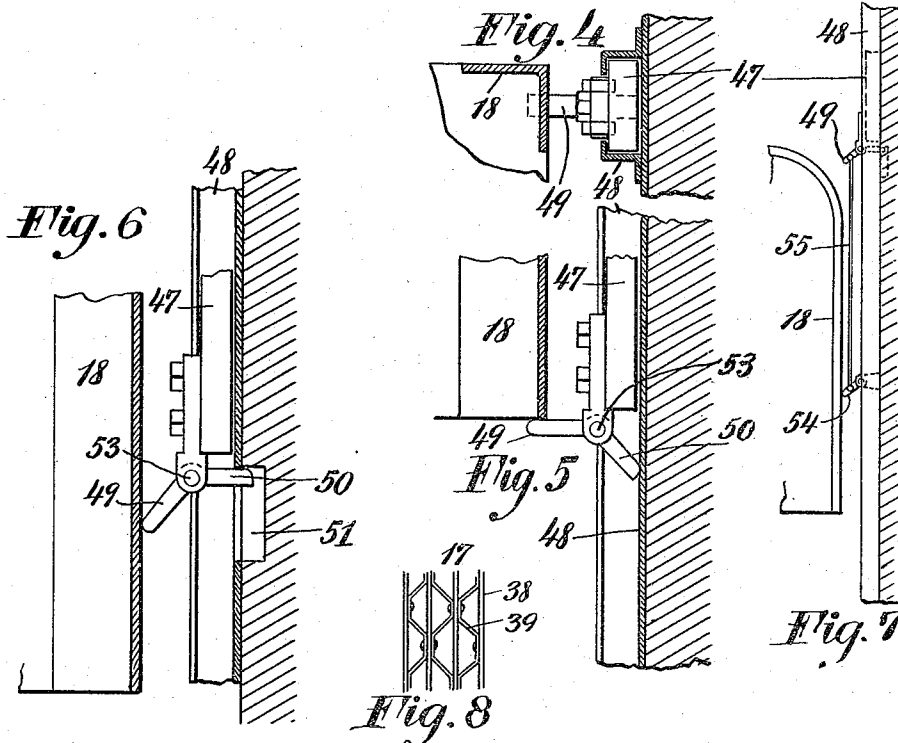
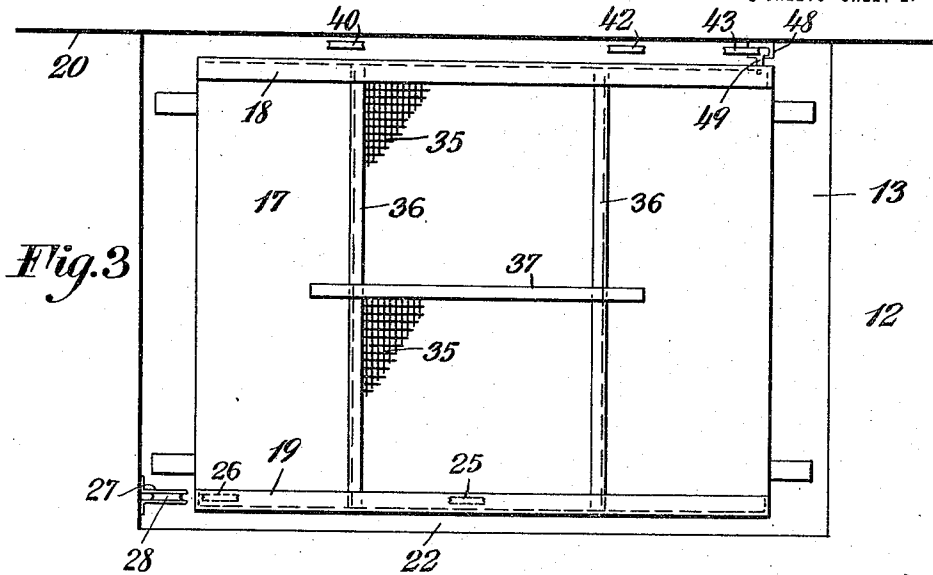
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3 SHEETS—SHEET 2.



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Fig. 9

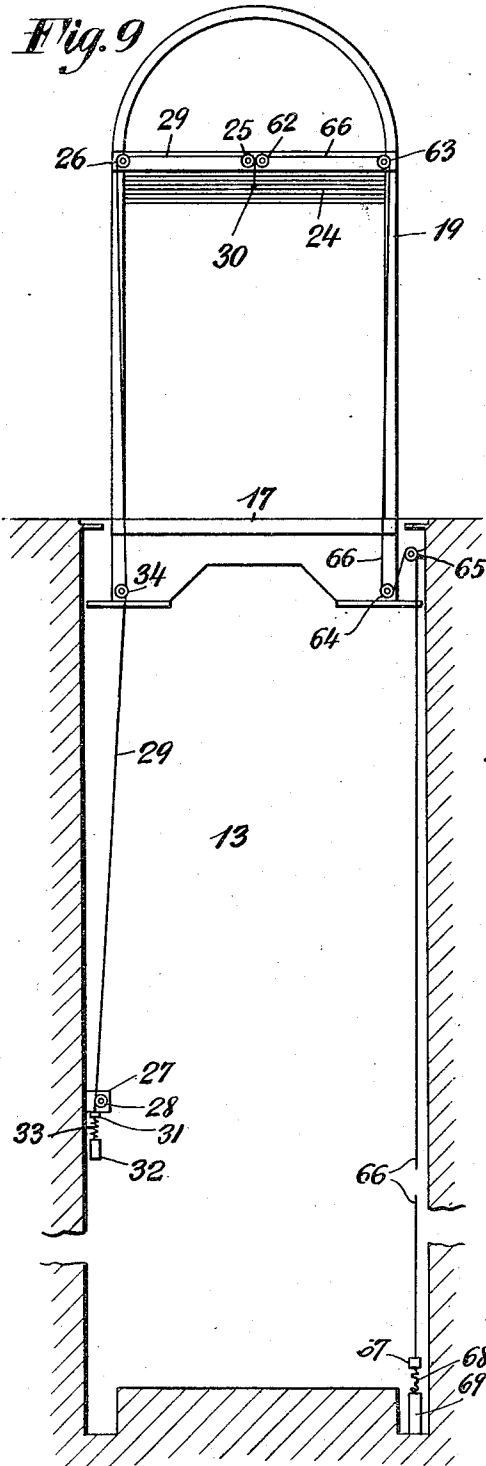
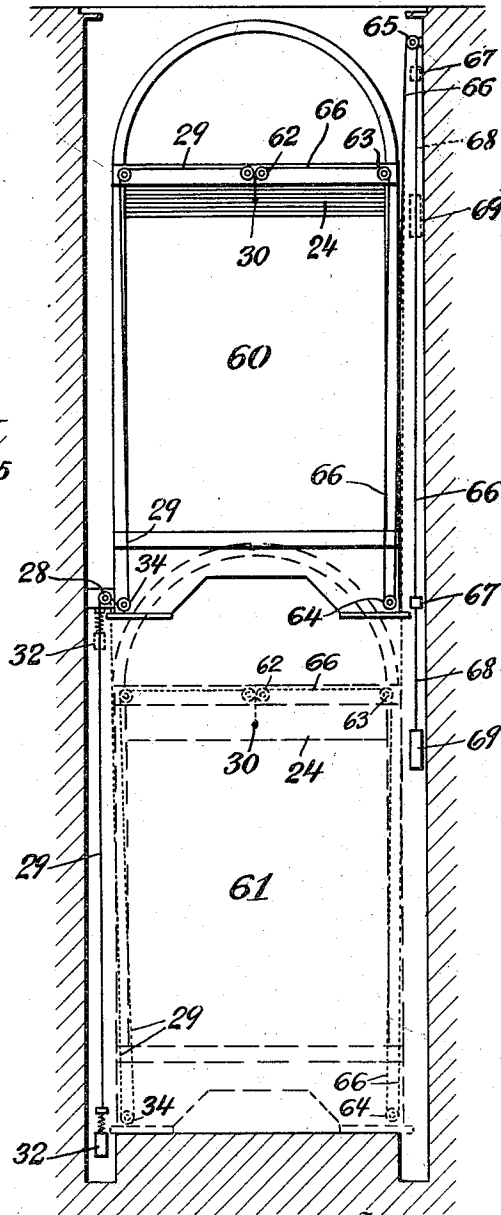


Fig. 10



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UNITED STATES PATENT OFFICE.

JENS S. LINDHOLM, OF BROOKLYN, NEW YORK.

SAFETY DEVICE FOR SIDEWALK-ELEVATORS.

1,201,316.

Specification of Letters Patent.

Patented Oct. 17, 1916.

Application filed September 22, 1915. Serial No. 51,923.

To all whom it may concern:

Be it known that I, JENS S. LINDHOLM, a citizen of the Danish Monarchy, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Safety Devices for Sidewalk-Elevators, of which the following is a specification.

This invention relates to improvements in safety gates for sidewalk elevators. Some or all of the features of this invention may, however, be used in connection with other types of elevators and hoisting apparatus and it is not my intention to limit myself to the disclosure herein.

The object of the invention is to provide one or more safety gates adapted to be attached to a sidewalk hoisting apparatus with the view of preventing accidents while the elevator descends below the sidewalk level.

Another object of the invention is to provide means for preventing the sidewalk doors from being accidentally or purposely left open after the descent of the elevator.

Still another object is the provision of an open-work elevator platform to admit light and air to the lower levels when the elevator platform is level with the sidewalk.

With these and other objects hereinafter referred to my invention comprises a safety gate and other safety devices for sidewalk elevators and the operating means therefor as hereinafter described and claimed and as illustrated in the accompanying drawing in which—

Figure 1 is a view showing the sidewalk elevator at its upper level with the safety gate open. Fig. 2 is a similar view showing the elevator in position at the moment the safety gate is closed. Fig. 3 is a plan view of the elevator. Figs. 4, 5, 6 and 7 are detail views, hereinafter more particularly referred to, of the sidewalk door safety mechanism. Fig. 8 is a fragmentary view of the open-work platform. Figs. 9 and 10 are views similar to Figs. 1 and 2 but showing a modified arrangement of the gate operating mechanism in cases where the elevator shaft or well has more than one landing.

The type of elevator illustrated in the drawings is known as a sidewalk elevator which is usually used for transporting freight only from a level 11 under the sidewalk 12 to the latter. The shaft or well 13 is generally closed by sidewalk doors 14 and 15 pivoted at 16. The elevator itself

comprises the platform 17, a framework of bow irons 18, 19, one in the rear, near the building line 20, Fig. 3, and one in the front.

21 designates in general the hoisting or operating means which are well known in the art and need no detailed description.

In operation the elevator is hoisted from the bottom 11 of the shaft 13 to the level of the sidewalk 12. As it rises the bow irons strike the doors 14 and 15 opening them. The doors ride on the bow irons as the elevator ascends and when it has reached its uppermost position the doors rest against the sides of the bow irons as shown. When the elevator descends, the doors close by folding inwardly over the bow irons, all of which is well known. It is obvious, however, that when the elevator has descended a short distance, say a couple of feet, there is grave danger that a person may accidentally fall inwardly over the platform under the bow irons and become injured. It also happens that the doors are purposely kept open to admit light and air below, in which case there is danger of children falling down through the sidewalk opening between the doors and endwise of the latter, or at the front at 22 in Fig. 3. It may also happen that through curiosity in watching the descent of the elevator children lean over it and fall in just prior to the closing of the door.

It is the object of this invention to prevent accidents by providing a gate to close when the elevator has descended a short distance below the sidewalk, by providing means compelling the doors to remain closed when the elevator is below the sidewalk and by providing suitable top protecting means to close the opening between the doors as the elevator descends and the doors close. To this end there is mounted on the front bow iron 19 a support 23 to which is secured a foldable gate 24 of the well known lazy tongs construction. Two sheaves 25 and 26 are also secured to the support 23. A third sheave 34 is mounted on the elevator on the lower part thereof. In the shaft 13 there is mounted a bracket 27 with an idler 28. A rope 29, meaning in this instance also a cable or a chain, is secured to the gate at 30 and passes over the sheaves 25, 26, 34 and 28 and through the bracket 27 below which the rope carries a stop 31 and a weight 32 for keeping the rope taut over the sheaves.

When the car is at the sidewalk level the

gate is closed as shown in Fig. 1. In this position the stop 31 is then pulled up against the bracket 27 and the length of the rope 29 does not permit the gate to drop. Therefore in this position the gate forms no obstruction to the loading or unloading from the platform 17. But when the elevator descends a short distance to the position shown in full lines in Fig. 2, the rope is of course slackened and pulled down over the sheave 25 by the weight of the gate which then automatically closes. The gate remains closed until the elevator is near the bottom 11 of the shaft 13 when the rope stop 31 again hits the bracket 27, tightens the rope and the gate opens. Any slight play or variation in the length of the rope is compensated for by the spring 33 aforesaid.

In order to prevent accidents by falling in over the elevator as it descends, I provide a wire shield 35 between the bow irons supported on cross bars 36 and a bow bar 37 which hits the doors 14 and 15 in the middle thereof as the elevator ascends, and I also provide front protecting bars 70 to close the open space between the gate and the bow iron 19.

When the elevator is at the sidewalk level, it may be left there and light and air admitted below through the open work platform 17 which may consist of flat irons 38 and lattice work 39.

In order that the doors may not be left open there are provided in the shaft 13 the sheaves 40, 41, 42 and 43. The rope 44 secured to the door 14 passes over the sheaves 40 and 41, and the rope 45 secured to the door 15 passes over the sheaves 42 and 43. The two ropes are joined in one rope 46 to which there is yieldingly secured a weight 47 which moves in guides 48 secured to the wall of the shaft. To the bottom of the weight 47, which serves to keep the door ropes taut, there is pivoted a dog 49 having a tail piece 50. When the doors are open the position of the dog 49 is as shown in Fig. 5. After the descent of the elevator and when the doors begin to close, the lower end of the bow iron 18 strikes the dog and pulls the weight 47 down with the door ropes, thereby compelling the doors to follow the bow of the irons and close, the tail piece of the dog sliding against the guide 48 as shown in Fig. 5. When the doors have closed the dog will have reached a recess 51 in the wall of the shaft 13 into which the tail piece 50 will slide and the dog will turn on its pivot 53 as shown in Fig. 6. The dog will now remain in this position during the further continued descent of the elevator as is obvious, because the bow iron slides against the dog and consequently the doors cannot open until on the ascent of the elevator the lower end of the bow iron passes above the dog and by striking the doors

pulls the dog out of the recess and permits the weight and dog to rise. In case the shaft is longer than the height of the bow iron, there will be provided a second or more dogs 54 in the well connected by a link 55 to the upper dog as shown in Fig. 7 and whereby the dogs will remain turned downwardly and the doors closed during the descent of the elevator.

In case there is more than one landing in the shaft 13, I provide means for opening the gate when the elevator reaches the first or uppermost landing, in which case the scheme illustrated in Figs. 1 and 2 cannot very well be used because the rope stop 31 only operates at two extreme limits of the travel of the elevator and may or may not cause the gate to open at a given intermediate point.

Referring to Figs. 9 and 10 I have illustrated an arrangement providing for the opening of the gate at the first landing at 60, while the second landing is at 61. In these figures all details have been eliminated which do not refer directly to the plan of arrangement illustrated and the elevator is shown in mere outline. The parts in Figs. 9 and 10 which correspond to similar parts in Figs. 1 and 2 are numbered correspondingly.

First it will be observed that the gate is open at the sidewalk level and closed a short time after having commenced to descend by means constructed, operated and numbered like the mechanism shown in Figs. 1 and 2.

In order to open the gate at 60, I provide additional sheaves 62, 63 and 64 on the elevator and an additional sheave 65 in the shaft 13. A rope 66 is secured to the gate 24 at 30 and passes over said sheaves and at the other end of said rope I provide a weight 67 to keep the rope taut and attached to said weight by a short rope 68 is a second weight 69. The combined weights 67 and 69 are heavier than the gate 24. It follows that when the elevator is at the sidewalk level the weights 67 and 69 are at their lowermost position as in Fig. 9, the rope 68 being slack. When the elevator descends to the position shown in Fig. 2 and the gate closes, the weight 67 is pulled up, but the weight 69 is not, because the movement of 67 is compensated for by the rope 68 and the gate will close. Further descent of elevator to the landing at 60 causes a pull on the rope 66 which opens the gate because the weights 67 and 69 at the other end of said rope are heavier than the gate with the result that the gate remains open during the further descent of the elevator and the weights 67 and 69 are raised. When the elevator is at 60 the weights 67 and 69 are about midways in the shaft as shown in full lines in Fig. 10. When the elevator is at the bottom the weights are at the top as shown in dotted

lines. The corresponding positions of the rope stop 31 and weight 32 are shown similarly in full and dotted lines respectively. When the elevator again ascends, the

5 weights 67 and 69 move to the bottom of the shaft and when the elevator reaches the sidewalk level, the gate is opened as in Fig. 1.

It will therefore be clear that this invention provides a gate for a sidewalk elevator 10 which closes shortly after the elevator descends. That the gate is open at the sidewalk level and at the landings below the latter. That the doors are closed positively and kept closed while the elevator is below the 15 sidewalk level. That an open-work platform is provided to admit light and air and that the top of the elevator is screened above and in the front to prevent accidents. It will also be noted that the operation of the gate 20 and doors is wholly automatic and the arrangement is very simple. The precise location of the various sheaves and the parts in the elevator shaft is of course immaterial except that they be located at the proper levels.

25 The invention is otherwise susceptible of changes and modifications and I claim all variations, changes and modifications as properly belong within the principle of the invention and the scope of the appended 30 claims.

I claim:—

1. The combination with an elevator shaft, an elevator movable therein, a safety 35 gate on said elevator, a rope secured to the said gate, a stop on said rope and means in said elevator shaft cooperating with the said rope stop to operate the said gate.

2. The combination with an elevator

shaft, an elevator movable therein, a safety gate on said elevator, a rope secured to the 40 said gate, a stop on said rope and means in said elevator shaft cooperating with the said rope stop to operate the said gate at predetermined points in the travel of said elevator.

3. The combination with an elevator shaft, an elevator movable therein, a safety gate on said elevator, a rope secured to the 45 said gate, a stop on said rope and means in said elevator shaft cooperating with the said rope stop to operate the said gate, to open the said gate when the elevator is at the sidewalk level and to close said gate when the 50 said elevator descends.

4. The combination with an elevator 55 shaft, an elevator movable therein, a safety gate on said elevator, a rope secured to the said gate, a stop on said rope and means in said elevator shaft cooperating with said rope stop to open the gate when the elevator 60 is at the sidewalk level and at the bottom of the elevator shaft and to close the gate during the travel of the said elevator.

5. The combination with an elevator shaft, an elevator movable therein and comprising 65 a platform and upstanding bow irons, a safety gate mounted on the latter, a rope secured to said gate, a stop on said rope and a bracket mounted in said elevator shaft cooperating with said rope stop to operate the 70 said gate.

Signed at New York in the county of New York and State of New York this 16th day of September A. D. 1915.

JENS S. LINDHOLM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."