Aug. 16, 1932. F. C. REILLY 1,872,007

ELEVATOR VENTILATION

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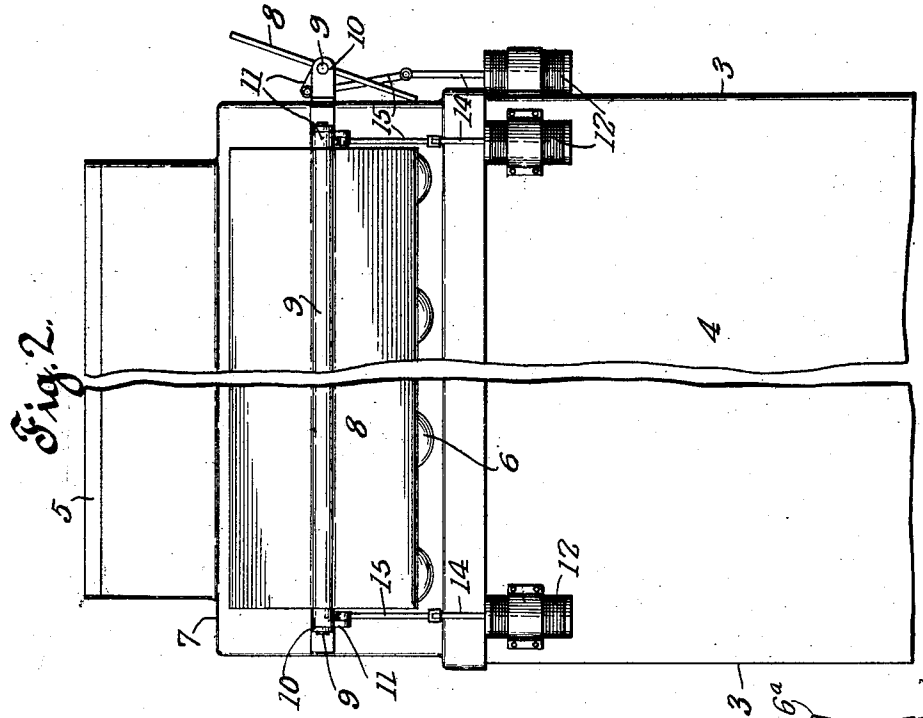

Fig. 2.

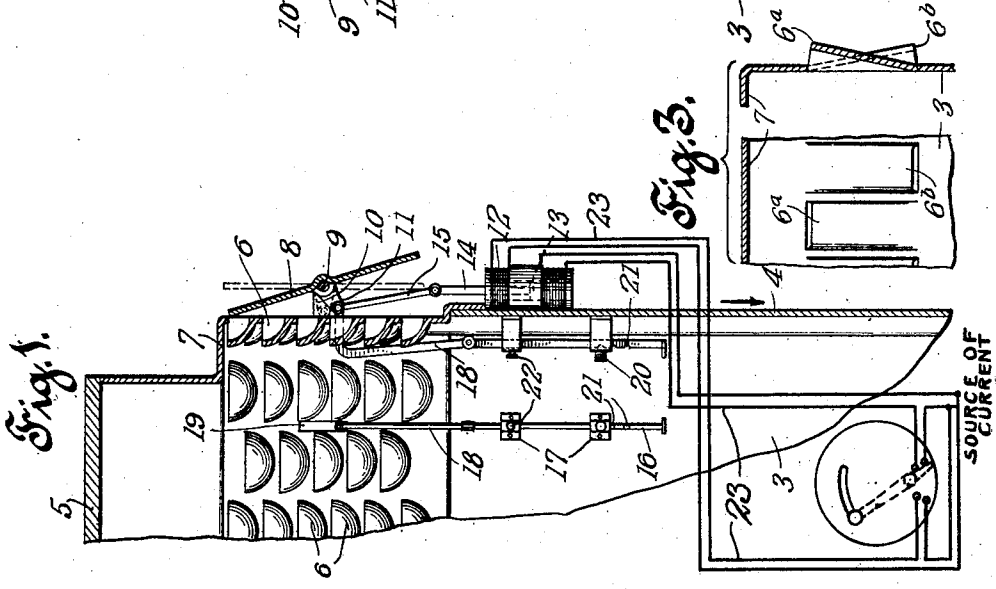


Fig. 1.



Fig. 3.

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## ELEVATOR VENTILATION

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This invention relates to the ventilation of elevators.

For fire and other safety reasons, elevator cars at the present time are usually closed in about the sides and top. Because of this fact, the ventilation is usually poor and the electric fans which are now sometimes installed in these closed elevator cars can only partially alleviate these conditions.

It is the purpose of the present invention to secure a proper ventilation of closed elevator cars and to accomplish this in a simple practical fashion.

Special features of the invention whereby the foregoing and other desirable objects are attained are the provision of louvers, grilles or ventilating openings in the walls of the car and deflectors operable in the travel of the car to direct air in through the ventilating openings. These deflectors may be in the nature of vanes or scoops and may be automatically or manually controlled.

Practical embodiments of the invention are illustrated in the accompanying drawing, but it should be understood that the precise structure may vary, all within the true spirit and broad scope of the invention.

Fig. 1 is a broken part sectional view illustrating the upper wall portions of an elevator car and showing an embodiment of the invention incorporated therewith; Fig. 2 is a broken outside view of the elevator car showing the ventilator controls on different sides of the car and in different operative positions; Fig. 3 is a combination sectional view illustrating a modification.

In so much of the elevator car as is illustrated, the side, back and top walls are indicated at 3, 4 and 5 respectively and cupped ornamental ventilating grilles 6 are shown set in the side and back walls, near the top and close below the ceiling or roof of the car. These grilles or screens may be of any desired ornamental or other shape, but the inwardly and upwardly cupped design shown has the advantage that all entering air is deflected up toward the ceiling of the car, so that there can be no direct drafts or blasts on the passengers in the car. The ceiling structure is shown as having an inset 7 overstanding the upwardly directed mouths of the grilles serving as a deflector to diffuse, break the force and direct the air currents down in the passenger space in the car. The location of these ventilating openings however may be varied and they may for instance, be set at different levels, even, if desired, down near the floor of the car.

The deflectors governing the inflow of air are shown at 8 in the form of vanes pivoted midwidth at 9 in suitable brackets 10 and offset sufficiently from the walls of the car to operate as well defined scoops when tilted in one direction or the other.

The tilting of the vanes is effected in the illustration by providing the same adjacent their pivotal centers with inwardly projecting rocker arms 11 and suitable mechanical connections for swinging the same one way or the other.

Automatic reversal of the vanes is effected in the illustration by electro-magnets 12 in the form of solenoids having magnetic cores 13 connected by rods 14 and pivoted links 15 with the rocker arms of the vanes. These electro-magnets may be so connected with the reversing lever or control of the car, as indicated at 23, Fig. 1 that when the car travels downwardly the solenoids will be energized to swing the vanes inwardly at the top and out at the bottom as in Fig. 1, to scoop the air in through the grille in the downward travel of the car and to swing the vanes as shown at the right in Fig. 2 to scoop in the air in the upward travel of the car. In this latter view, the vane which appears in elevation at the back of the car is shown reversed, that is closed at the top and open at the bottom, so as to induce an outflow of the air at the back of the car, thus creating a predetermined circulation. The vane actuating means may be connected to operate in these reversed ways, if found desirable, or certain vanes may be disconnected and held in predetermined relations, to suit particular requirements. Also the vanes may be secured in an intermediate substantially inoperative position, more or less parallel with the walls of the car as indicated in broken lines in Fig. 1.

Means by which the vanes or deflectors may be secured in various positions, or be operated independently of any automatic control, are shown in the form of hand slides 16 inside the car guided in brackets 17 and connected at the top by pivoted links 18 with the rocker arms 11, said links being angled as indicated to extend out through slots 19 in the grille work to the vane shifting arms.

Spring plungers or the like may be provided for restraining and yieldingly retaining these hand slides as indicated at 20, the same cooperating with notches 21 in the slides corresponding to the fully tilted and intermediate positions of the vanes.

If desired, means for positively locking the slides and hence the vanes may be provided such as the lock screws indicated at 22 in the upper guide brackets, designed when operated to grip and hold the slides and consequently the vanes in any desired relation.

With the operating and controlling means disclosed, it will be evident that the vanes may be automatically or manually shifted, or some be automatically and others hand controlled and some or all may be secured in various relations, to best suit different requirements. The automatic reversal of the vanes also may be effected by the reversal of the air force, which results when the movement of the car is changed from one direction to the other.

In some cases, the inflow of air may be effected automatically by means of scoops such as shown at 6*a* and 6*b* in Figure 3, the same forming part of the grille work, pressed outwardly of the car; the first mentioned, facing upwardly and taking in air on the upward movement of the car, and the second mentioned, facing downwardly to take in air on the downward movement of the car. These scoops are shown as arranged alternately in upwardly and downwardly facing relation, and as relatively small and closely spaced, but they may be arranged in groups of a kind instead of alternately, and they may be spaced in various ways and made in larger or smaller sizes, depending on various conditions, such as size and speed of the car, extent of travel, etc. The scoops or ventilation openings may be screened, if desired, against entrance of dust, etc.

Other changes and modifications possibly will occur to those skilled in this art, the same being within the broad scope of this invention.

What is claimed is:

1. In elevator ventilation, an elevator car having walls with a ventilation opening or openings therein, and air deflecting means positioned to direct air into the car through said ventilating opening or openings in the vertical travel of the elevator.

2. In elevator ventilation, an elevator car having walls with a ventilation opening or openings therein, air deflecting means positioned to direct air into the car through said ventilating opening or openings in the vertical travel of the elevator and means for reversing said air deflecting means to render the same effective in the upward or in the downward travel of the car.

3. In elevator ventilation, an elevator car having walls with a ventilation opening or openings therein, air deflecting means positioned to direct air into the car through said ventilating opening or openings in the vertical travel of the elevator and means for automatically reversing the effective operation of said air deflecting means upon the reversal of vertical travel of the elevator car.

4. In elevator ventilation, an elevator car having walls with a ventilation opening or openings therein, air deflecting means positioned to direct air into the car through said ventilating opening or openings in the vertical travel of the elevator, automatic means for reversing said air deflecting means upon reversal of the direction of travel of the car and means for arbitrarily controlling said air deflecting means independently of such automatic control.

5. In elevator ventilation, an elevator car having walls with ventilation openings therein, vanes governing admission of air into different openings and means for arbitrarily setting the different vanes at different selected angles.

6. In elevator ventilation, an elevator car having walls with ventilation openings therein, a vane horizontally pivoted over the outside of said ventilation openings and means for shifting the vane at its pivotal support to vary the air deflecting action produced by said vane in the up and down travel in the elevator car.

7. In elevator ventilation, an elevator car having walls with ventilation openings therein, a vane horizontally pivoted over the outside of said ventilation openings, means for shifting the vane at its pivotal support to vary the air deflecting action produced by said vane in the up and down travel in the elevator car, the pivotal mounting of the vane being approximately midwidth the vane and the vane being shiftable to opposite angular positions to enforce an inflow of air in the upward travel in one position and in the other position to enforce an inward flow on the downward travel of the car.

8. A combination as in claim 7 with means for holding the vane in an intermediate relatively inactive position.

9. The combination as in claim 7, in which the shifting means is automatically operable in the reversal of travel of the elevator car and in which arbitrarily operable means are provided for setting the vane in different selected positions.

10. In elevator ventilation, an elevator car having ventilating grilles and means for enforcing the flow of a ventilating current of air through said grilles in the vertical travel of the car.

11. In elevator ventilation, an elevator car having ventilation grilles in the walls of the same, externally located air deflectors variably operable to enforce desired ventilating currents of air through said grilles in the vertical travel of the elevator car.

12. An elevator car having upwardly and downwardly facing air scoops in the side of the same.

In testimony whereof I affix my signature.

FRANK C. REILLY.