No. 615,222. Patented Nov. 29, 1898.

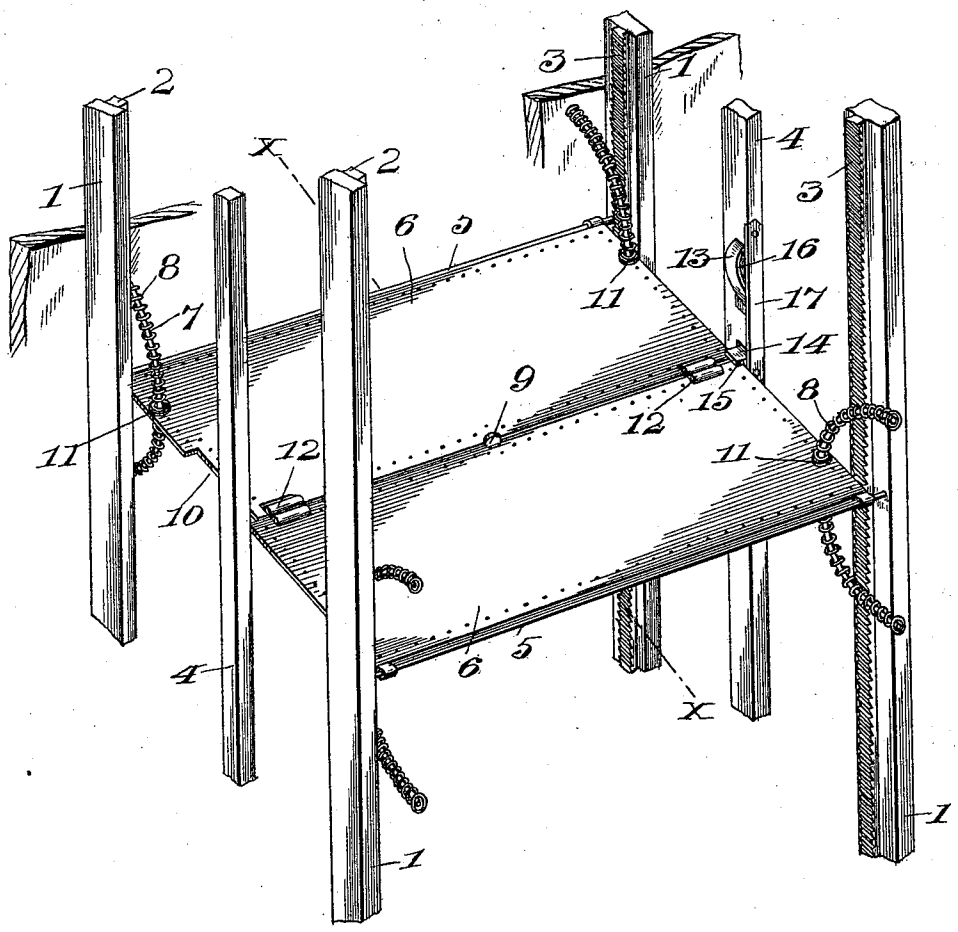
S. H. KEECH.

SAFETY DOOR FOR ELEVATOR SHAFTS.

(Application filed July 3, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.



Witnesses
Harry W. Hahn
Victor J. Evans

Inventor
Samuel H. Keech.
By John Wedderburn
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 615,222. Patented Nov. 29, 1898.

S. H. KEECH.

SAFETY DOOR FOR ELEVATOR SHAFTS.

(Application filed July 3, 1897.)

(No Model.) 3 Sheets--Sheet 2.

Fig. 2.

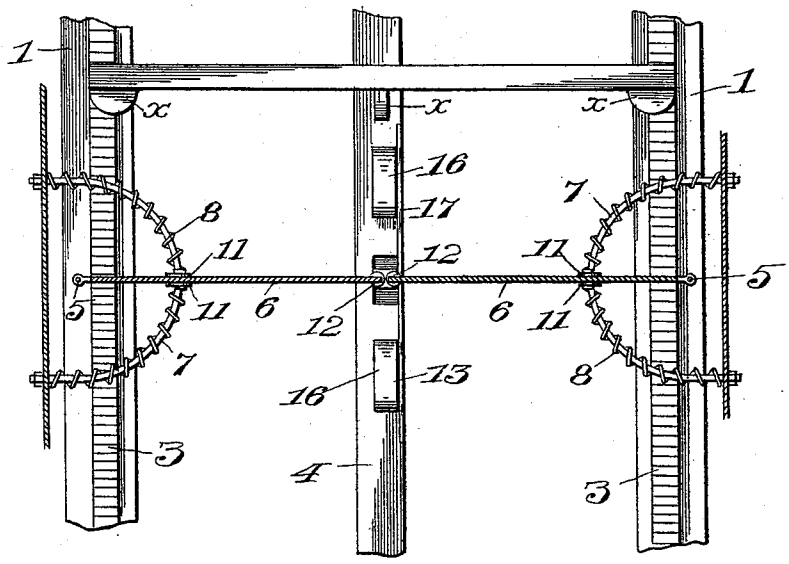


Fig. 3.

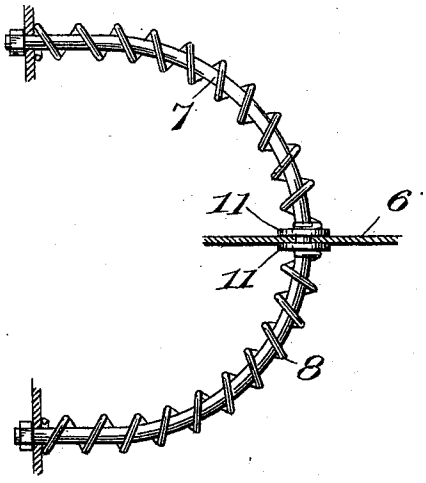
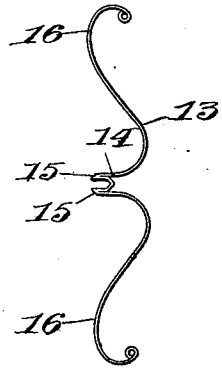


Fig. 4.



Witnesses
Harry W. Hahn
Victor J. Evans

Inventor
Samuel H. Keech
By John Wedderburn
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 615,222. Patented Nov. 29, 1898.

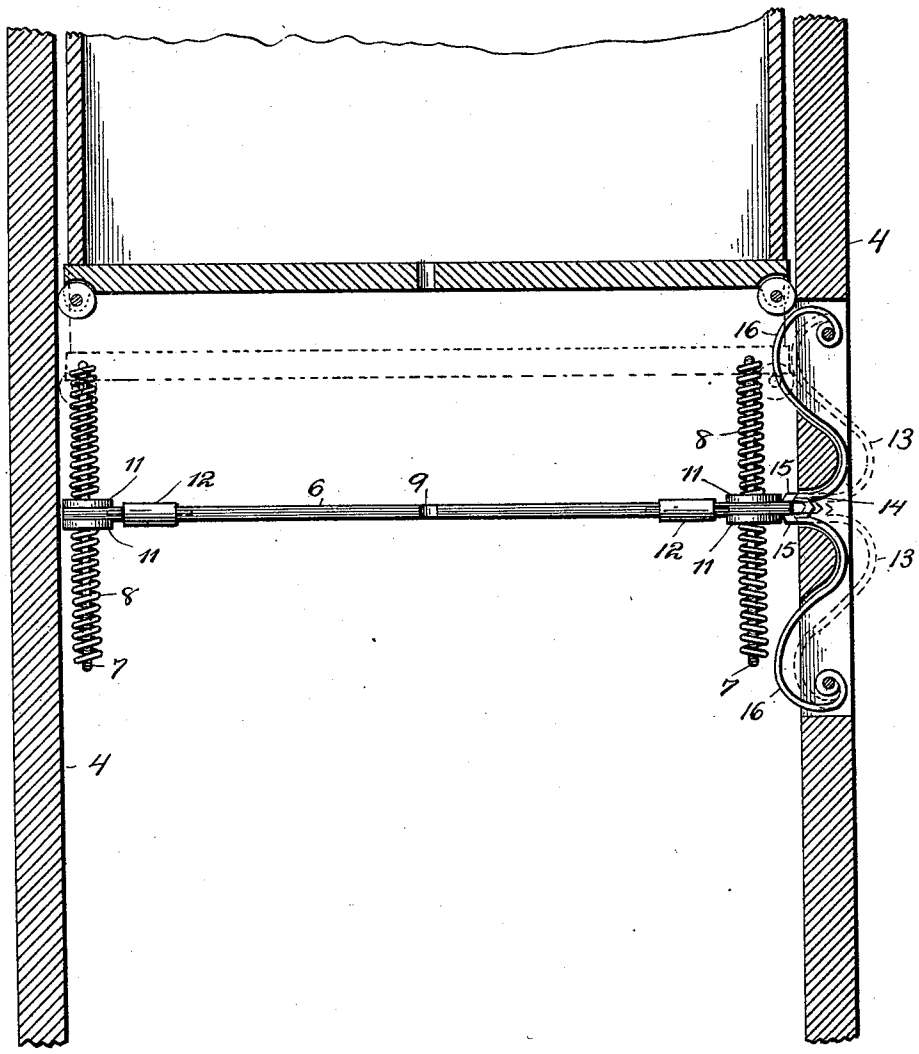
S. H. KEECH.

SAFETY DOOR FOR ELEVATOR SHAFTS.

(Application filed July 3, 1897.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.



Witnesses
Victor J. Evans.
L. M. Walker.

Inventor
Samuel H. Keech.
by W. S. Stockbridge
his Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SAMUEL HUNT KEECH, OF KANSAS CITY, KANSAS, ASSIGNOR OF ONE-HALF TO CHARLES ELLSWORTH JAQUISH, OF SAME PLACE.

SAFETY-DOOR FOR ELEVATOR-SHAFTS.

SPECIFICATION forming part of Letters Patent No. 615,222, dated November 29, 1898.

Application filed July 3, 1897. Serial No. 643,365. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HUNT KEECH, of Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Safety-Doors for Elevator-Shafts; 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.

The object of this invention is to provide an elevator-shaft with doors which close the shaft between the different floors of the building and are held locked in a closed position, being automatically unlocked and opened as the car passes up and down, said doors being spring-actuated to bring them to their normal position or closed.

The invention contemplates a construction and arrangement by which the doors are made very light and provided with attachments which make the operation of opening and closing the same as noiseless as possible and also arrange for reducing any wear that would be likely to come upon the car.

The invention consists in certain novel features and combinations hereinafter described, and specifically indicated in the claims.

In the following specification I have entered into a detail description of the invention, reference being had to the accompanying drawings, and to letters and numerals thereon, which designate the different parts, and what I consider to be the novel features of construction are specifically set forth in the appended claims.

In the drawings forming part of this specification, Figure 1 is a perspective view showing the application of my invention, including so much of an elevator-shaft as will illustrate its connection therewith. Fig. 2 is a transverse sectional view on the line *x x* of Fig. 1. Fig. 3 is a detail view of the closing-springs. Fig. 4 is a detail view of the automatic lock mechanism. Fig. 5 is a sectional detail taken at right angles to that shown in Fig. 2.

Referring more particularly to the drawings, in which like numerals and letters of reference refer to similar parts throughout the different views, 1 1 designate the corner-posts or uprights of the shaft, which are provided with the usual guide-flanges 2 and rack-bars 3. At the front and rear of the shaft and located between the corner-posts are uprights or guide-posts 4 4, the one at the rear carrying the improved automatic locking device hereinafter described. At each side of the shaft are located horizontal cross bars or shafts 5, supported at their ends in the corner-posts beyond the guide-flanges or rack-bars, so as not to interfere with the movement of the car. Upon these cross-bars 5 are hinged two doors 6 6, which when brought on a line with each other effectually close the elevator-shaft. In order to bring the doors to a normally-closed position, they are spring-actuated for the purpose, and to this end a curved bar 7 is attached at its ends to a supporting plate or bracket *z* and passed through an opening in the adjoining end of the door in front of its pivot or hinge. Upon these curved bars, so as to bear upon the upper and lower sides of the doors, are helical springs 8. It will be understood that the doors are of the same width, and consequently come together at the center of the shaft, and in order that they will not interfere with the proper passage of the hoisting and lowering cables the inner edge of each door has a recess 9, which together form an opening. One of the doors is also cut away at one side, as shown at 10, to allow for the passage of the operating-cord or pull-rope. Rubber washers 11 are applied to the upper and lower faces of the doors, as particularly shown in Fig. 5. The inner ends of the doors are provided with rollers 12, said rollers being for the purpose of reducing friction between the edges of the doors and the sides of the car as the car is passing between them.

In connection with the doors hereinbefore described for closing an elevator-shaft I provide an automatic locking device to securely hold the doors closed, the same consisting of a flat or narrow plate 13, let into the guide-post at the rear of the elevator-shaft and having its intermediate portion shaped into a catch 14, which engages the corners of the doors. This spring-plate or metal spring is bent practically **S**-shaped on each side of the catch, and the outer loops 16 16 of the spring

project beyond the forward edge of the guide-post, so as to be engaged by the car, the loops 15 15, adjoining the catch, extending within the range of the car. The recess within which the spring is located is of such size as to permit a sufficient play in engaging and disengaging the doors. In applying the spring which forms the automatic lock one side of the guide-post or upright 4 is cut away, as shown, and the said spring covered by a plate 17, said arrangement providing for repairing or renewing the lock should the same become injured.

From the foregoing it will be understood that supposing a car to be approaching the door upon its descent the bottom of said car would first operate upon the upper portion of the spring-catch to release the doors, after which the car would strike the doors and open them downward against the action of the springs, and when the car passes beyond the doors they are returned to their closed position by the lower set of springs, and then engaging the automatic lock will be held closed until again operated. In the upward movement of the car the operation is the same, for the top of the car first engages the lower portion of the spring of the lock and then the doors to open them upward, said doors being returned to their normal position by the upper set of springs which engage therewith.

In the construction of the device I anticipate making the doors of sheet metal in order that they may be as light as possible, and it will be understood that by placing one in the same plane with each floor of the building it will prevent a draft up the shaft in case of a fire, and by locking them in a closed position they will also present platforms that will effectually close the open shaft and act as safety devices to prevent an accident from any one falling into the shaft when the car is above or below. The improvement is more especially intended to close the shaft, so that a fire which originates in a lower floor will not have draft up the shaft and also acts to keep smoke from coming up the shaft and filling the upper rooms of the building.

In order that the car may properly strike the doors to open them, projections x for the purpose are provided on the top of the car and also on the bottom of the same, said projections being located as shown in the drawings, Fig. 5.

It will be understood, of course, that instead of hinging the doors to the corner-posts of the elevator-shaft the said doors could be hinged to the floor-beams of the building or to iron strips placed around the opening in the floor and extending below said opening a sufficient distance that the doors may be swung upward without interfering with the doorway leading to the elevator-shaft. Obviously other modifications or changes could be made in the construction and arrangement of the parts without sacrificing any of the advantages of my invention, and I therefore declare that I do not limit myself to what is herein particularly shown and described, but reserve the right to change or modify the invention within the spirit and scope of my claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination an elevator-shaft, doors hinged to the opposite sides thereof, curved bars passing through the doors near their hinges, and springs located upon the bars to engage the upper and lower sides of the door, substantially as shown and for the purpose set forth.

2. In combination an elevator-shaft, doors hinged to opposite sides thereof, curved bars passing through the doors adjoining their hinges, and springs carried by the bars to engage the upper and lower sides of the door; together with an automatic lock engaging the free ends of the doors.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

SAMUEL HUNT KEECH.

Witnesses:
NIS NISSEN,
J. M. CHRISTY.