



**No. 620,245.**

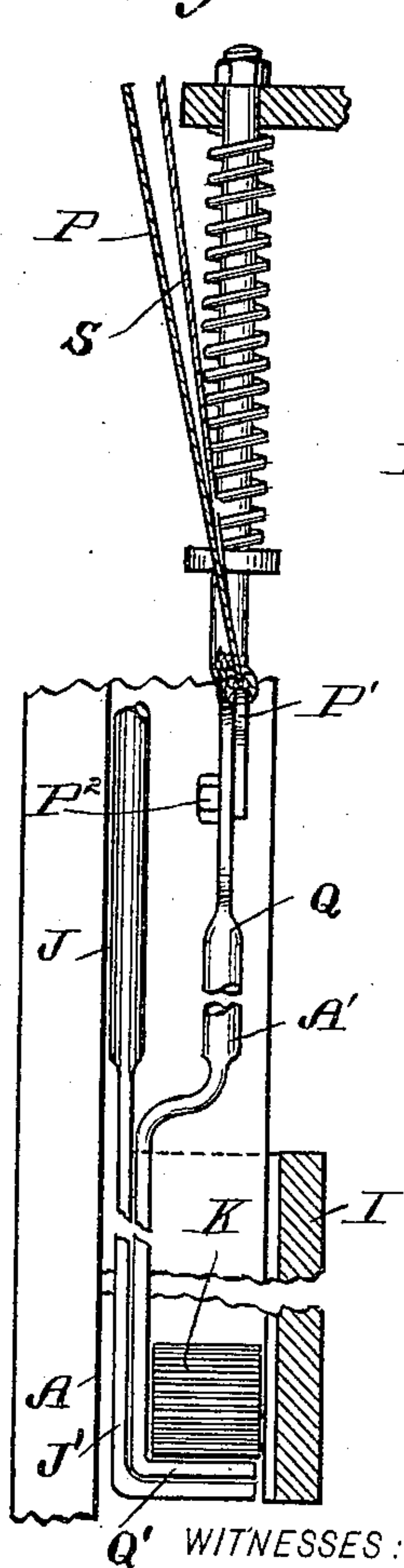
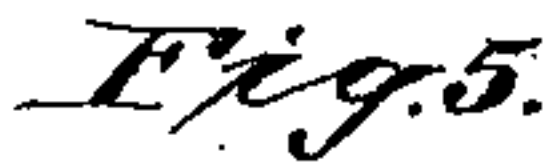
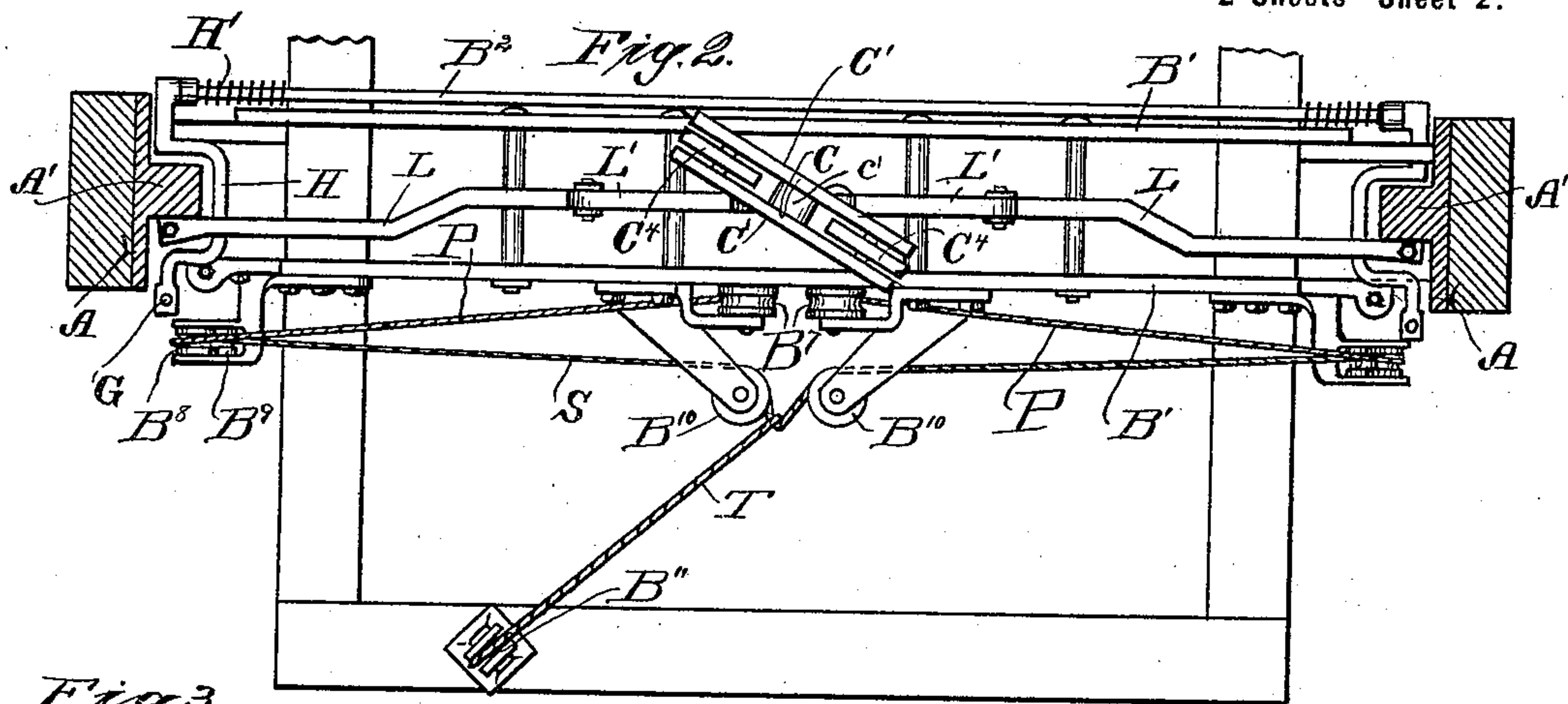
**Patented Feb. 28, 1899.**

**J. McLEAN.**  
**PASSENGER ELEVATOR.**

(Application filed Nov. 2, 1897.)

(No Model.)

**2 Sheets—Sheet 2.**



**Q' WITNESSES:**

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# UNITED STATES PATENT OFFICE.

JOHN McLEAN, OF NEW YORK, N. Y.

## PASSENGER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 620,245, dated February 28, 1899.

Application filed November 2, 1897. Serial No. 657,155. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN McLEAN, a citizen of the United States, residing in the city of New York, in the county and State of New York, have invented a certain new and useful Improvement in Passenger-Elevators, of which the following is a specification.

The improvement relates to safety devices for elevators. One device in successful use for this purpose consists in shoes secured at each side of the car and below the bottom thereof, each of these shoes being provided with an inclined way, making a wedge-shaped recess between the shoe and the contiguous guide-rail of the elevator-way. A roller in each shoe is adapted to be raised so as to be jammed in the wedge-shaped recess by means operated through a lever system at the top of the car, controlled by supplemental suspending cables or cords, which exert a pull when the main cables break. I have provided further means for raising said rollers, comprising an additional roller-lifting rod at each side, connected by small cords with the main or lifting cables, provisions being made for also lifting the jamming-roller by hand from a point within the car when desired.

The accompanying drawings form a part of this specification and represent what I consider the best means for carrying out the invention.

Figure 1 is a front elevation of the car and immediately-adjacent parts with a portion broken away. This figure also indicates parts at the top of the building. Fig. 1<sup>a</sup> is a view, on an enlarged scale, of the equalizing-block, parts representing the top parallel bars of the car being broken away to illustrate more clearly the connection of said block with the car. Fig. 2 is a partial plan view of the car and appurtenances. The remaining figures are on a larger scale. Fig. 3 is an edge view, and Fig. 4 a face view, of one of the roller-containing shoes and immediately-related parts, a portion of the latter figure being broken away to more clearly illustrate the operation of the roller in connection with the contracting-space of the shoe. Fig. 5 is a view of the upper portion of one of the roller-lifting rods with an attached spring and certain connections. Fig. 6 is a detail view

illustrating an existing lever system for operating the wedging-rollers, and Fig. 7 illustrates the provisions for actuating the auxiliary wedges from the governor at the top of the well or way.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A indicates the rigid perpendicular guide-rails, which perform their usual functions. They are of the usual T form to present inwardly-extending vertical ribs or flanges A'.

B is the car.

C is the ordinary equalizing-block presented by the parallel plates C' C', transversely connected by the horizontal pin c, upon which is hung the head c' of the neck extension of a yoke C<sup>2</sup>, the depending members C<sup>3</sup> of which are turned outward to take under a pair of parallel bars B' B', bolted thereto and which rigidly span the top of the car, as indicated in Fig. 2.

D D D D are four hoisting-cables attached to the inner and outer ends of centrally-pivoted levers C<sup>4</sup> C<sup>4</sup>, located between the plates C' at either side of the central pin c. This is the well-known arrangement for equalizing the suspending tension of the cables D under varying conditions.

I use a well-known arrangement of fly-ball governor F, gearing with a horizontal shaft F' at the top of the well or way. This shaft carries a sheave or sheaves F<sup>2</sup>, around which and corresponding sheaves (not shown) at the bottom of the well or way pass wire ropes G. Well-understood lever and dog devices f are designed to be thrown into action to clamp one of the wire ropes G upon the rise of the governor-balls due to an abnormal increase of speed in the car. One run of each wire rope G is attached to the free end of a horizontal lever H, the other end of which is pivotally mounted on a transverse shaft B<sup>2</sup>, a coiled spring H' being provided to normally hold said lever in a horizontal position, but permitting a limited upward movement thereof. Obviously this disposition of the parts actuates the shaft F' and governor through the motions of the car.

A shoe B<sup>3</sup>, rigidly secured on each side of the car, has a bearing or purchase portion B<sup>4</sup>



lying in front of the contiguous flange A' and at the rear thereof an inverted triangular block B<sup>5</sup>. A triangular wedge B<sup>6</sup> is supported in operable relation to the block through its depending connection with the lever H above, so that the lifting of the latter, due to the clamping of the wire rope G by the governor devices, will raise and jam the wedge between the block and rail-flange A' and operate to arrest the car.

I I are strong shoes rigidly secured to the bottom of the car at each side and embracing the flanges A'. Each shoe has a rear bearing portion I' and a front-roller-receiving recess I<sup>2</sup> of the contracted shape indicated by the dotted line i in Fig. 4. There is a rod J at each side of the car rising and sinking therewith and terminating at its lower portion in a flattened hook J', which engages a roller or movable piece K in the contracting-recess of the adjacent shoe. The vertical portion of the hook has a diagonal slot J<sup>2</sup>, receiving a screw I<sup>3</sup>, projecting from the shoe to positively guide the vertical movement of the hook over the face of the shoe.

The rods J extend to the top of the car, where they connect with the outer ends of the levers L L, which form members of a lever system located at the top of the car and including shorter pivoted levers L' L', to the inner ends of which vertical links M M are attached, which depend from a head M', suspended by auxiliary cables N, attached to the car-counterbalance.

As will be seen from an inspection of Figs. 1, 2, and 6, rupture of the main suspending-cables will throw the suspending strain upon the auxiliary cables N to such an extent as to lift the inner ends of the levers L' and move the levers L, elevate their outer ends, raise the rods J with their hooks, and lift the rollers K to wedge them in the narrow portions of the shoe-recesses against the rail-flanges. The peripheries of the rollers are preferably serrated to promote their biting action. Reduction of strain on the auxiliary cables N will tend to lower the hooks and release them.

O O are slender cords attached to the main hoisting-cables D above the car. Their lower ends converge and are attached to the bight of a cord P, which is held loosely between two sheaves B<sup>7</sup> B<sup>7</sup> and extends horizontally therefrom across the top of the car, running at each side over the sheaves B<sup>8</sup> B<sup>8</sup> and thence downward, terminating in a hook, or, more properly, a bent eyebolt P'. The eyebolt P' is secured by a nut P<sup>2</sup> in engagement with the flat portion of a spring-depressed rod Q, somewhat similar in purpose and arrangement to the rod J. This rod Q, as shown in Figs. 3 and 4, is located between the shoe I and the rod J, so that its hook Q' is necessarily in intimate relation with the roller K and can lift the latter without any corresponding movement of the rod J.

There is an additional eyebolt R engaged in the flat portion of each rod Q and connect-

ing with another cord S, which extends up, running over the sheave B<sup>9</sup> on the car, thence across the same, preferably in proximity to the cable P, next over the sheave B<sup>9</sup> at the opposite side, then descends and connects with the corresponding eyebolt R at the opposite side. The cord S has a sharp bend or bight at its mid-length like the other, but instead of extending vertically it extends horizontally toward the front of the car, being supported near the bight of two horizontal sheaves B<sup>10</sup> B<sup>10</sup>. (See Figs. 1 and 2.) A horizontally-extending cord T is attached to the bight of this cord and runs on a sheave B<sup>11</sup> at the top of the car at its front, and thence down, and terminates in a ring T', to be conveniently pulled by the attendant to exert traction on the cord S and effect the raising of the rods Q at both sides, elevation of the rollers K, and jamming of the car.

It will be seen that in addition to the regular provision for operating the triangular wedges when the speed becomes excessive and the means for jamming the rollers to arrest the car upon the breaking of the main suspending-cables I have provided auxiliary devices for raising the rollers K either automatically, as represented by the cord connection O with the main cables, if any one of said cables should break between the point of cord connection and the equalizing-block C, or conveniently by hand, as represented by the cords S and T. Thus should the regular safety appliances for any reason fail to act the attendant can rely upon both the additional automatic and the hand-controlled devices for stopping the car.

I claim as my invention—

1. The combination in an elevator, of guide-rails, a cage or car having shoes loosely embracing the guide-rails and each containing a movable piece K serving wedgewise between the shoe and guide-rail, the governor-controlled rod J and spring-depressed rod Q, located in juxtaposition to and engaging the piece K, the rod Q being operable independently of the rod J, and connections extending to the car or cage for operating the rod Q, substantially as herein specified.

2. The combination in an elevator, of guide-rails, a cage or car having shoes loosely embracing the guide-rails and each containing a movable piece K serving wedgewise between the shoe and guide-rail, the governor-controlled rod J and spring-depressed rod Q located in juxtaposition to and engaging the piece K, the rod Q being operable independently of the rod J, and connections extending therefrom to the hoisting-cables and to means within the car operable by the attendant, substantially as herein specified.

3. The combination in an elevator, of guide-rails, a car or cage having shoes loosely embracing the guide-rails and each containing a movable piece, a hooked rod J, for lifting the piece K and operable by an upper lever system controlled by the main cables, and an



additional rod Q also for lifting the piece K, but operable independently of the rod J, substantially as herein specified.

4. The combination in an elevator, of guide-rails, a car or cage having arresting provision governor devices located at the top of the well or way, for operating said provision shoes on the car loosely embracing the guide-rails and each containing a movable piece K  
10 for serving wedgewise between the car and rail, a hooked rod J for lifting the piece K, and operable by an upper lever system controlled by the main cables, and an additional rod Q, also for lifting the piece K, but oper-  
15 able independently of the rod J, substantially as herein specified.

5. The combination in an elevator, of guide-

rails a car or cage having shoes located contiguous to the guide-rails, a movable piece K in each of the same serving wedgewise between the car and rails, rod Q engaging and adapted to move such pieces, a cord O attached to a hoisting-cable, a cord P connecting the same to said rods and auxiliary provisions operable by the attendant including  
20 a cord S for also raising the pieces K at will, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JOHN McLEAN.

Witnesses:

J. B. CLAUTICE,

M. F. BOYLE.