

No. 743,886.

PATENTED NOV. 10, 1903.

C. W. KIRSCH.

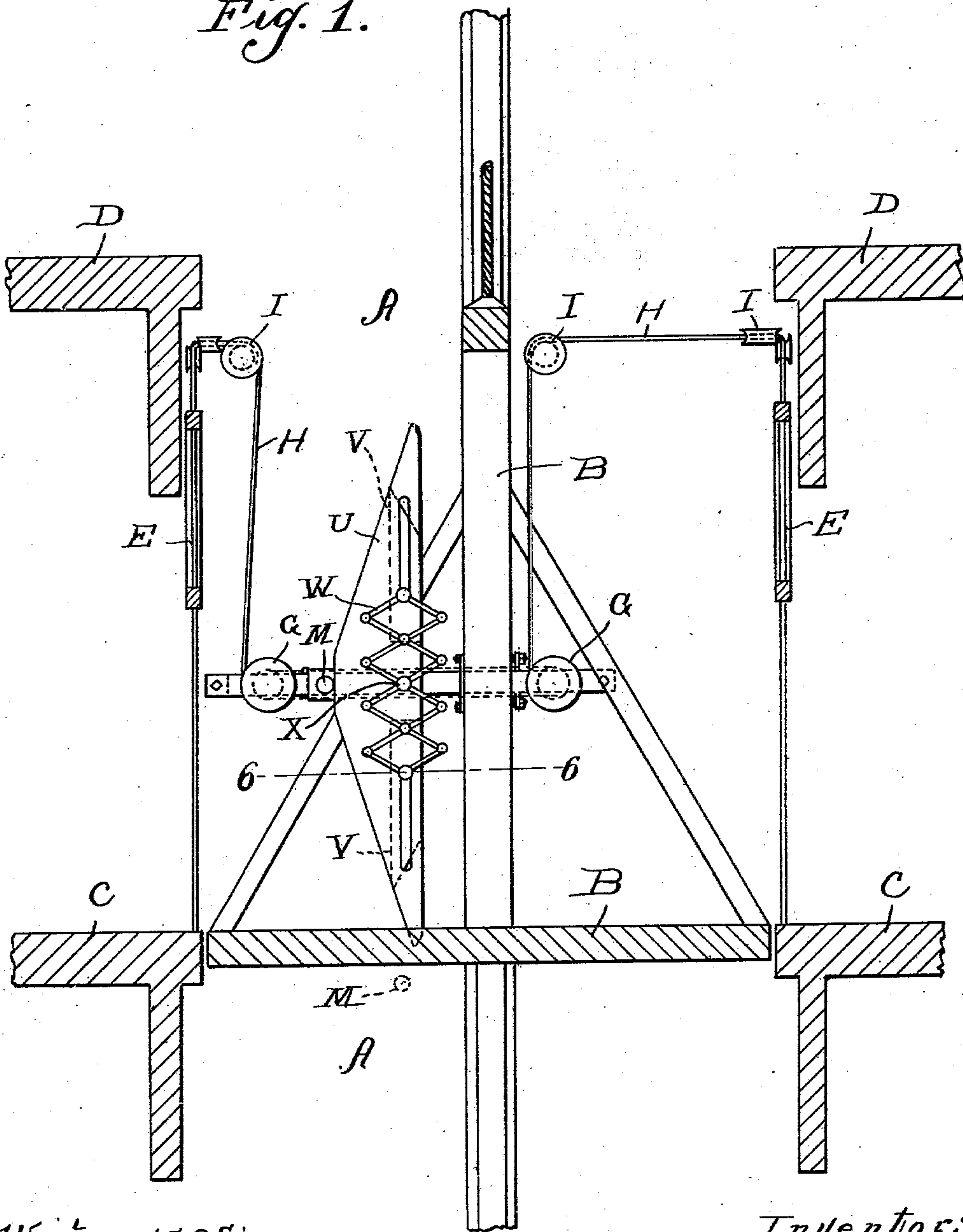
DEVICE FOR AUTOMATICALLY OPERATING ELEVATOR DOORS.

APPLICATION FILED JULY 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2.

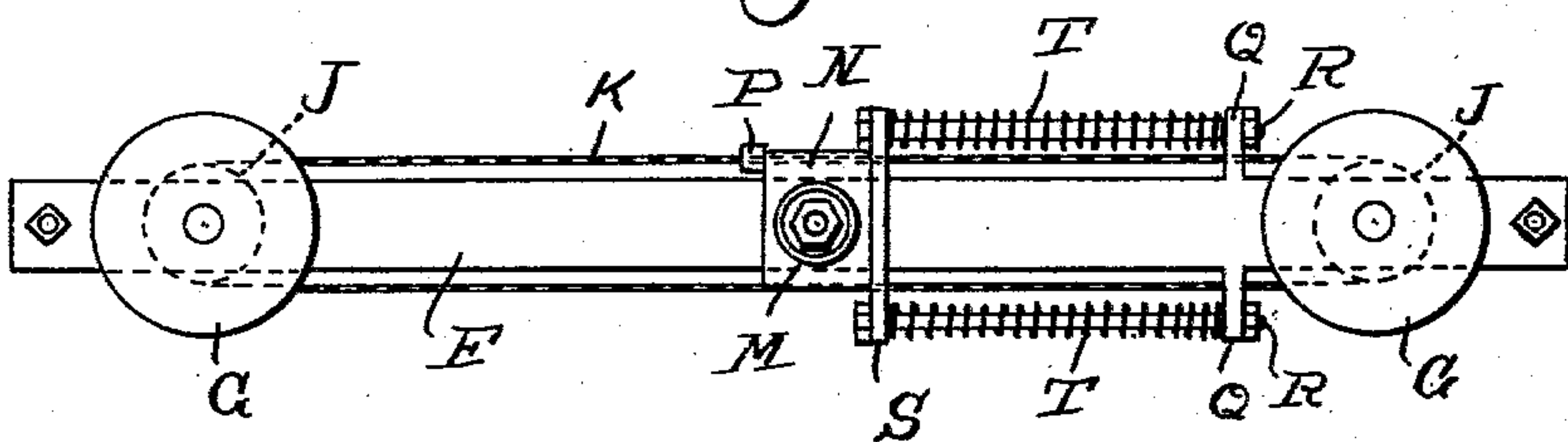


Fig. 3.

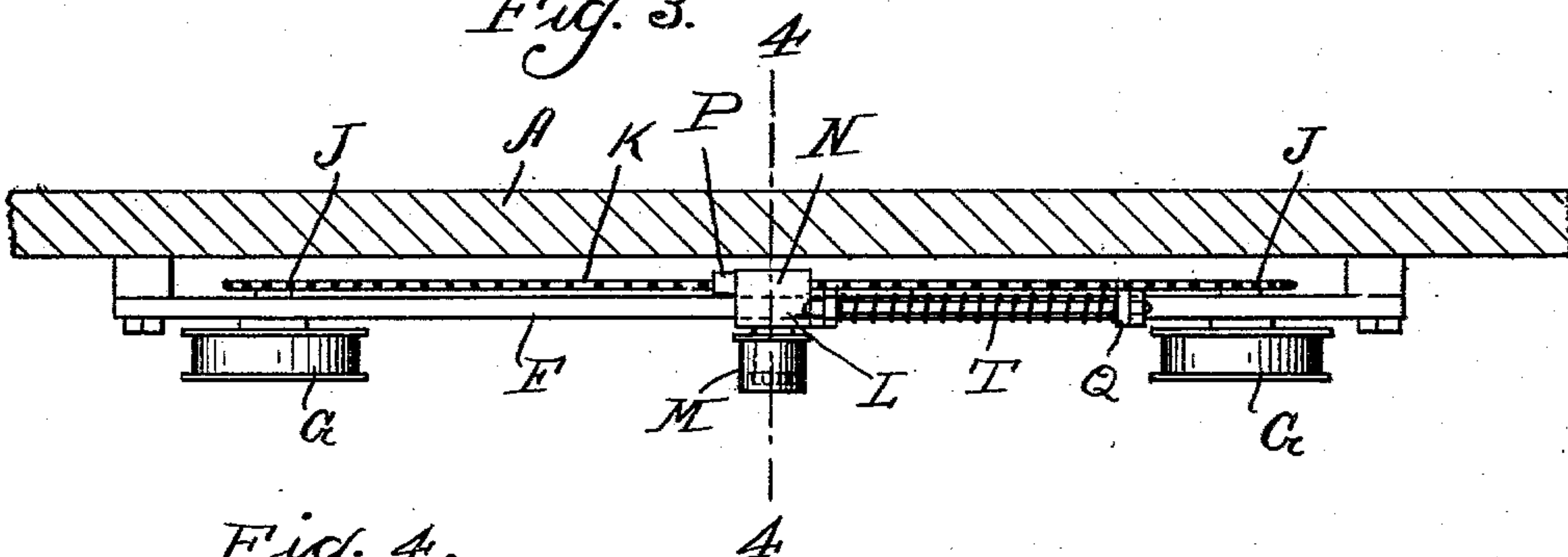


Fig. 4.

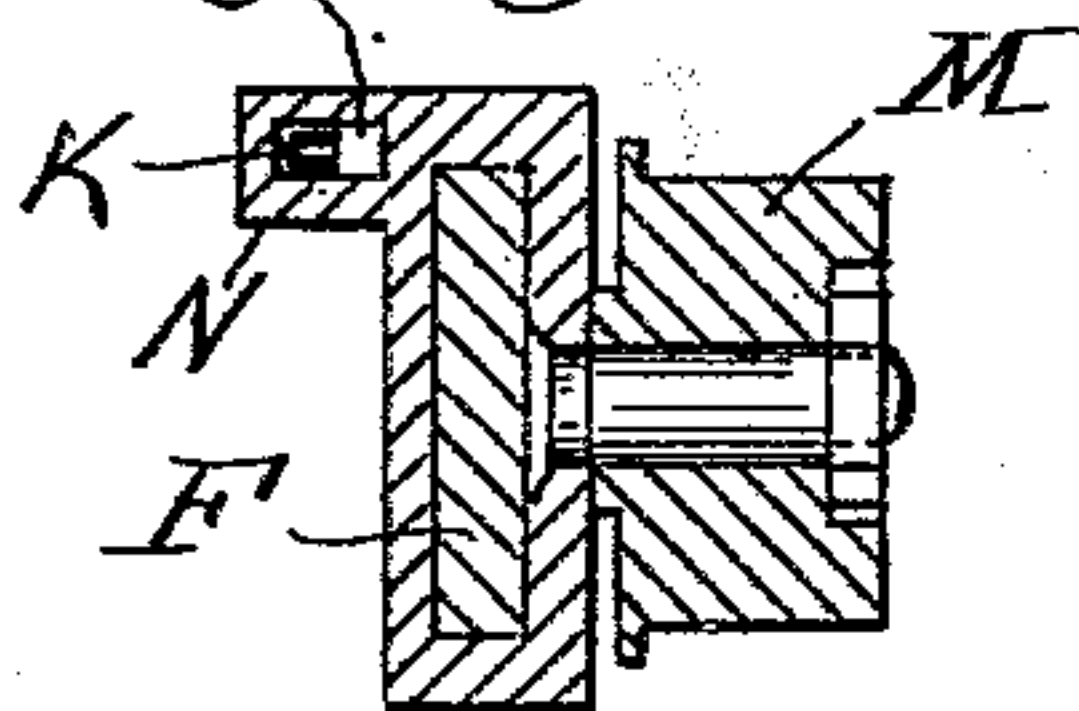
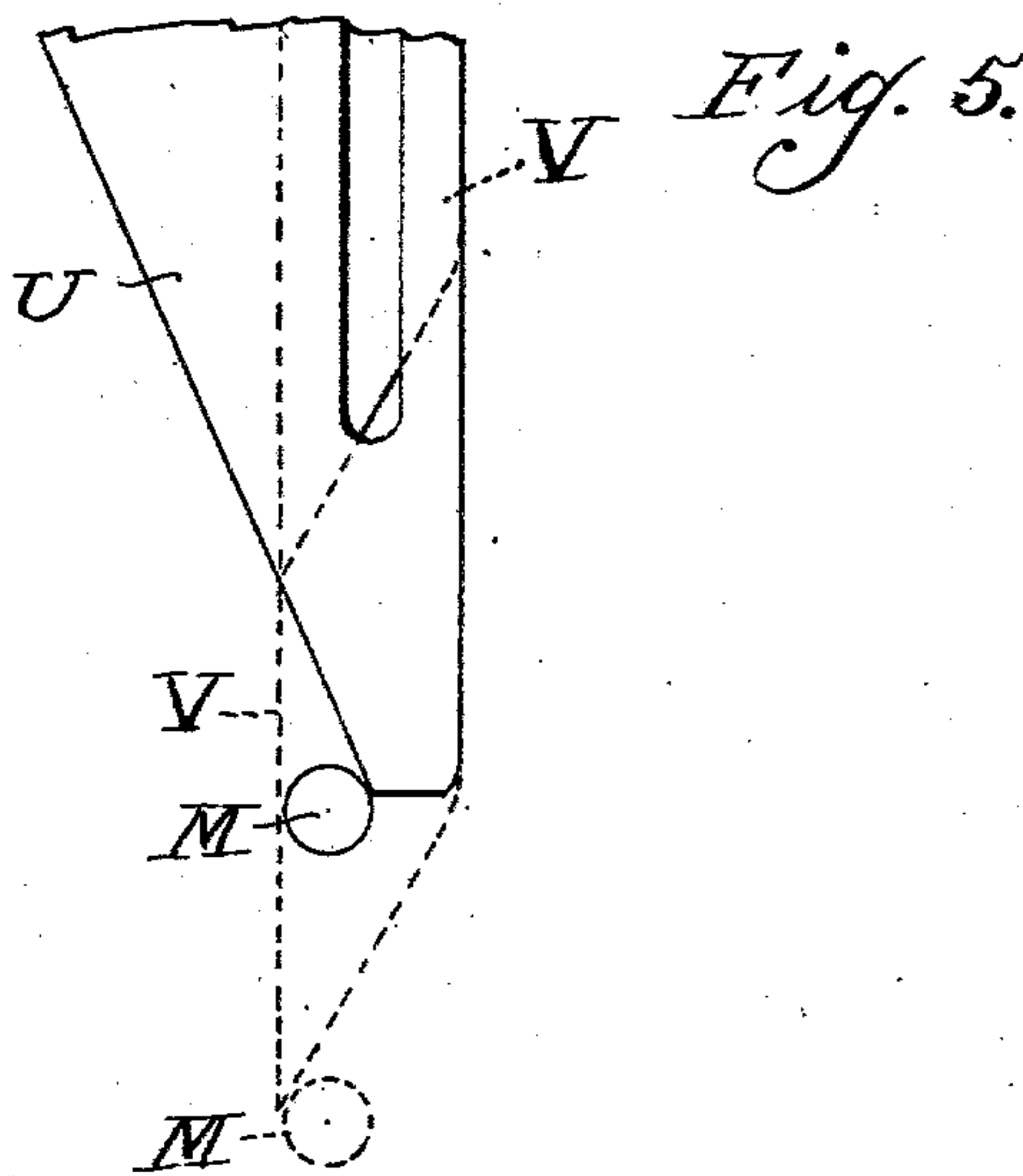
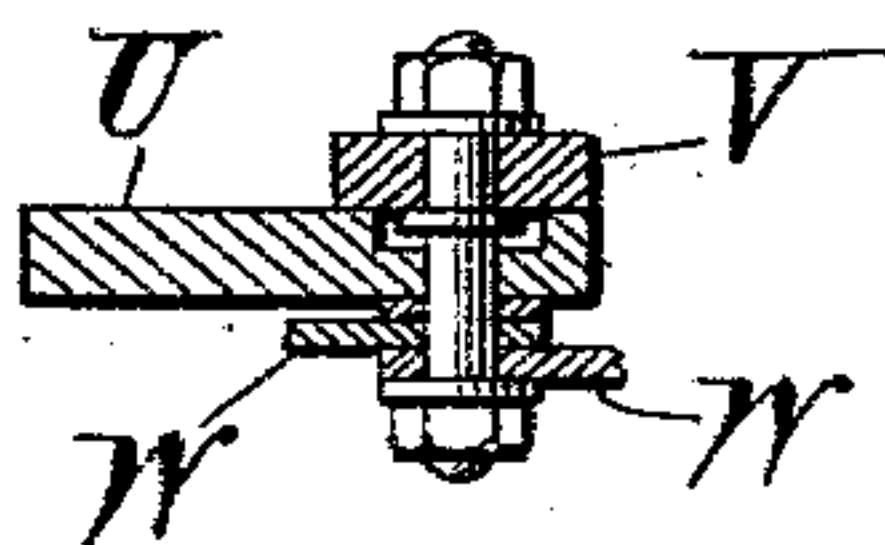


Fig. 6.



Witnesses:

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# UNITED STATES PATENT OFFICE.

CHARLES W. KIRSCH, OF ST. PAUL, MINNESOTA.

## DEVICE FOR AUTOMATICALLY OPERATING ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 743,886, dated November 10, 1903.

Application filed July 24, 1903. Serial No. 166,846. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES W. KIRSCH, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Devices for Automatically Operating Elevator-Doors; 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.

My invention relates to a novel construction in a device for automatically operating elevator doors or gates, the object being to provide a simple and efficient device of this character; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a vertical section showing an elevator-shaft and elevator-car provided with automatic door-operating devices constructed in accordance with my invention. Fig. 2 is a detail view in elevation of the drums for the gate-operating cables and the devices imparting motion thereto. Fig. 3 is a top plan view of the devices shown in Fig. 2. Fig. 4 is a detail transverse section on the line 4 4 of Fig. 3. Fig. 5 is a fragmentary detail view in elevation of the cam carried by the elevator. Fig. 6 is a detail sectional view on the line 6 6 of Fig. 1.

Referring now to said drawings, A indicates the elevator-shaft, B the elevator-car, and C and D indicate two floors of the building, communicating with said elevator-shaft A through openings controlled by gates E. Firmly secured to one wall of said elevator-shaft A is a bar F, which lies out of the path of said elevator-car B. Rotatably mounted upon each end of said bar F is a drum G, connected by means of cables H, passing over pulleys I, with said gates E. Mounted on the shafts of said drums G and rigid therewith are two sprocket-wheels J, which are geared together by means of a sprocket-chain K. Longitudinally movable on said bar F between said drums G is a sleeve L, which carries an idler M on one side and on its other side carries a projection N, provided with a slot O, through which said sprocket-chain K passes, said chain being provided on one side

of said projection N with a collar P, which prevents the free passage of said chain through said slot O in one direction. Mounted on said bar F, adjacent one of said drums G, are two projections Q, through which rods R pass, which are parallel with said bar F. At their other ends said rods R are secured to a plate S, slidably mounted on said bar F, and encircling said rods are spiral springs T, which bear at their ends against said projections Q and plate S, respectively, and serving to hold said plate S normally in the position shown in Figs. 2 and 3. Suitably secured to said elevator-car B is a triangular cam U, in the plane of which the idler M lies, said idler being normally so located that the ends of the tapered edges of said cam U will strike the same at one side of the center thereof, so that said sleeve will be moved horizontally in one direction until it passes over said cam. During this movement the projection N will engage the collar P of said chain and cause the latter to move in unison with said sleeve L, thereby revolving the drums G in one direction and opening the gates E, and after said idler has passed said apex of said cam the gates will cause the drums to be reversed, and thereby carry said sleeve L back to its normal position. To enable a floor to be passed without operating said gates E, I provide sliding shoes V at the ends of said cam U, which are adapted to be moved to project beyond the ends of the latter and are provided with tapered ends inclined in the opposite direction from the tapered sides of the cam and are so arranged that their extreme ends will strike the idler M on the opposite side of its center, so that it will be forced in the opposite direction and move said sleeve L against the action of said springs T and will pass over the vertical rear edge of said cam. When so moved, the said sleeve L is free—that is, it does not carry the chain K with it—so that the gates will remain closed. The said shoes V are so mounted on said cam U in any suitable manner as to be horizontally immovable relatively thereto and are connected with each other by means of lazy-tongs levers W, secured to said cam at X, so that when one of said shoes is moved the other thereof will move in unison therewith.

My device is very simple and efficient and



can be arranged to operate one or more gates simultaneously.

I claim as my invention—

1. In a device of the kind specified, the combination with an elevator-car, a triangular cam thereon, and sliding shoes on said cam adapted to be moved to project beyond the ends thereof, and having their outer edges inclined in a direction opposite to the inclined faces of said cam, of a bar secured to the elevator-shaft, drums rotatably mounted on said bar, gearing between said drums, a sleeve longitudinally movable on said bar, an idler carried by said sleeve and lying in the path of said inclined faces of said cam and said shoes, devices carried by said sleeve and engaging said gearing between said drums for causing the latter to be revolved when said sleeve moves in one direction, elevator-gates, and connection between said gates and said drums.

2. In a device of the kind specified, the combination with an elevator-shaft, and gates controlling communication between said shaft and the floors of a building, of a horizontal bar secured to one wall of said elevator-shaft adjacent each floor, drums rotatably mounted on each of said bars, connection between said drums and said gates for controlling the latter, a sleeve longitudinally movable on each of said bars, connection between said sleeves and said drums for rotating the latter in one direction, a cam carried by the elevator-car and engaging a part of said sleeve for imparting movement thereto, and devices carried by said cam and adapted to be thrown into engagement with said part of said sleeve to reverse the motion thereof.

3. In a device of the kind specified, the combination with an elevator-shaft, gates controlling communication therewith, and devices in said shaft connected with said gates for controlling the movements thereof, of an elevator-car, a cam carried thereby and adapted to engage said gate-operating devices to impart motion thereto to open said

gates, sliding shoes carried by said cam having tapered ends, and adapted to be thrown to project beyond the edges of said cam and engage said gate-operating devices to throw same out of the path of said cam, and lazy-tongs levers connecting said shoes to cause same to move in unison.

4. In a device of the kind specified, the combination with an elevator-car, and a cam carried thereby, of a horizontal bar mounted in the elevator-shaft, a sleeve longitudinally movable thereon, an idler carried by said sleeve and lying in the path of said cam, a drum rotatably mounted on said bar, a sprocket-wheel rigid with said drum, a sprocket-chain connecting said sprocket-wheel with said sleeve for rotating said drum when said idler is engaged by said cam, connection between said drum and the elevator-gate, and devices on said cam adapted to be thrown into engagement with said idler to throw the latter out of the path of said cam.

5. In a device of the kind specified, the combination with an elevator-car, and a cam carried thereby, of a horizontal bar mounted in the elevator-shaft, a sleeve longitudinally movable thereon, an idler carried by said sleeve and lying in the path of said cam, a drum rotatably mounted on said bar, a sprocket-wheel rigid with said drum, a sprocket-chain connecting said sprocket-wheel with said sleeve for rotating said drum when said idler is engaged by said cam, connection between said drum and the elevator-gate, a yielding stop adapted to arrest the return movement of said sleeve, and devices on said cam adapted to be thrown into engagement with said idler to throw the latter out of the path of said cam against the return of said yielding stop.

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

CHARLES W. KIRSCH.

Witnesses:

W. J. HAHN,  
GEO. BROAKINS.