

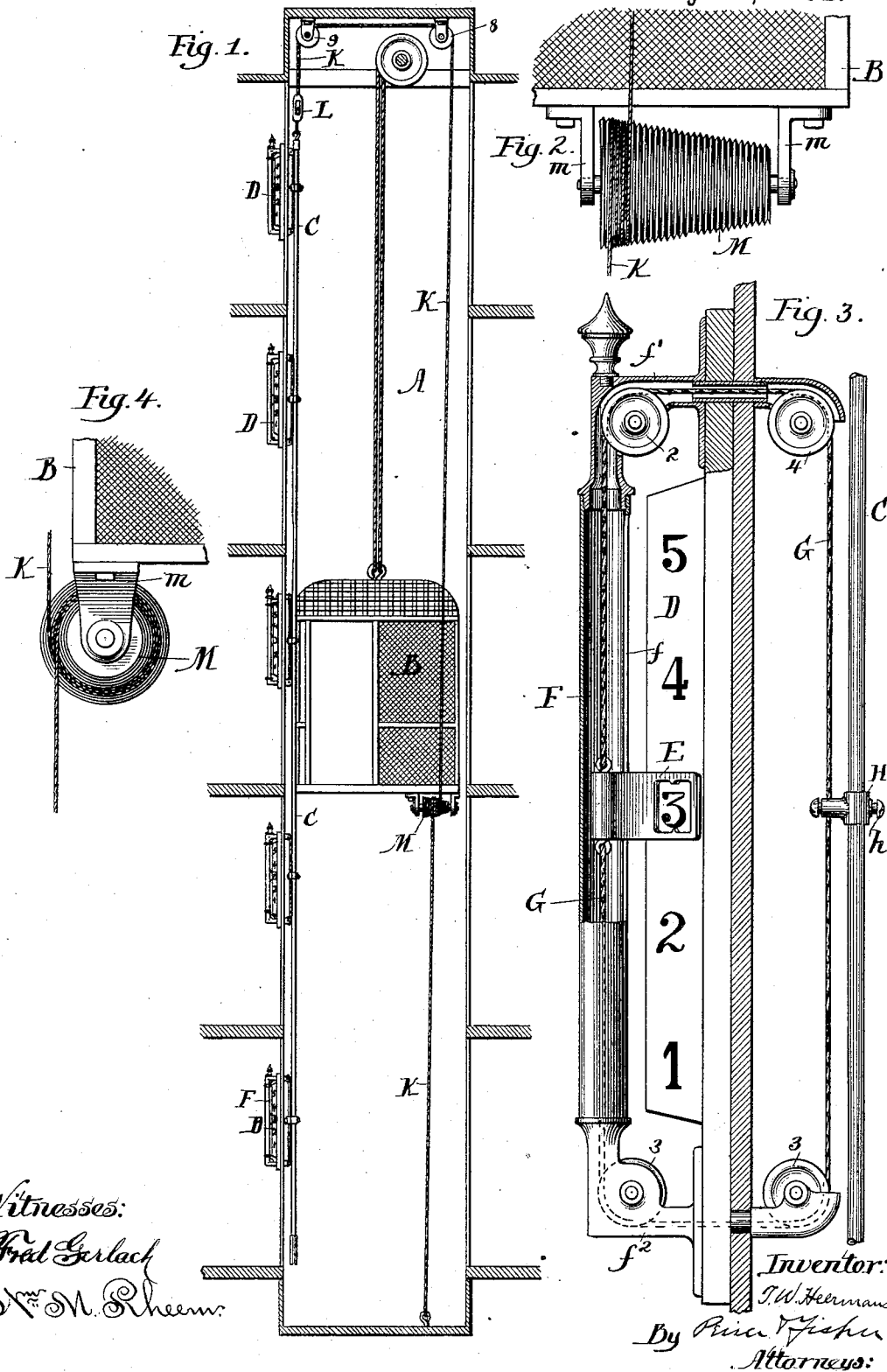
(No Model.)

2 Sheets—Sheet 1.

T. W. HEERMANS.
INDICATOR FOR ELEVATORS.

No. 479,422.

Patented July 26, 1892.



Witnesses:
Fried Gerlach
T. W. Heermans

Inventor:
T. W. Heermans
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Attorneys:

(No Model.)

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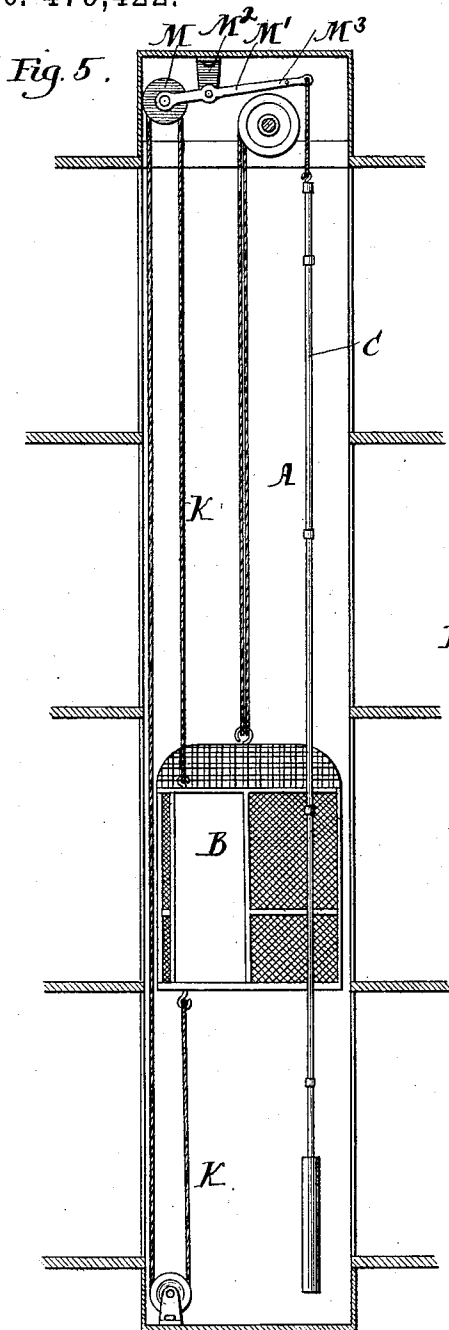
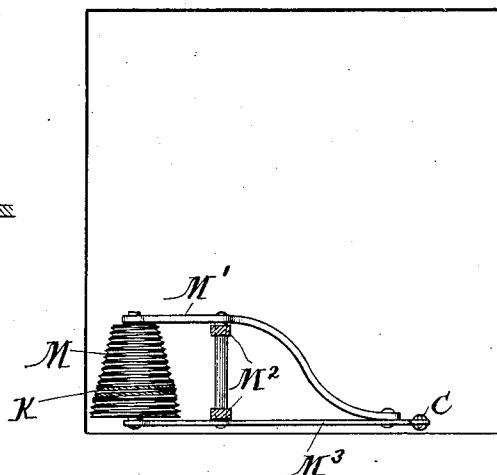


Fig. 6.



Witnesses.

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Inventor:

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By *Paul Fisher*
Attorneys.

UNITED STATES PATENT OFFICE.

THADDEUS W. HEERMANS, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE
ELEVATOR SUPPLY AND REPAIR COMPANY, OF SAME PLACE.

INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 479,422, dated July 26, 1892.

Application filed June 24, 1891. Serial No. 397,342. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS W. HEERMANS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Indicator Mechanism for Elevators, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention has for its object to provide improved indicator mechanism whereby the position of the elevator-car and its direction of travel in the shaft or hatchway may be readily determined by persons at the various floors or landings of the building. This object of invention I have accomplished by the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in vertical section through the hatchway of an elevator, the car of the elevator being shown in side elevation. Fig. 2 is an enlarged detail view of the differential drum or pulley for effecting the shift of the indicator-cable. Fig. 3 is an enlarged detail view in side elevation, parts being broken away, showing one of the indices and means whereby it is connected to the indicator-rod. Fig. 4 is a detail end view of the differential drum or pulley, showing a portion of the elevator-car, to which it is secured. Fig. 5 is a view in vertical section through an elevator-hatchway, showing a modified embodiment of my improved indicator mechanism. Fig. 6 is a plan view showing the means for sustaining the differential drum and indicator-rod at the top of the elevator-hatchway. A designates the hatchway or shaft, within which will travel the elevator car or cab B, any suitable mechanism being employed for raising and lowering this car.

Within the hatchway A or other convenient point is suspended an indicator rod or pipe C, the movement of this pipe serving to operate the various indices at the different floors of the building. These indices may be employed in any desired number and in the preferred embodiment of my invention. Each of the indices is of the construction illustrated more

particularly in Fig. 3 of the drawings—that is to say, there is placed adjacent each door that leads into the hatchway an index-plate D, having figures thereon corresponding to the various floors or stories of the building, and over this index-plate travels the pointer E, this pointer extending through a long slot f of a suitable tube F, that is carried by tubular brackets f' and f^2 . The pointer E is attached to a cord G, preferably an endless cord, (or a chain may be employed, if desired,) that extends through the tube F and over the pulleys 2 and 3 in the brackets f' and f^2 , and through these brackets and over pulleys 4 and 5 to a sleeve or collar H, that encircles the indicator-rod C, and is adjustably held thereon by means of a screw h . Hence it will be seen that as the indicator-rod C is raised or lowered a corresponding shift of the pointer E will occur.

From top to bottom of the elevator-hatchway extends the indicator-cable K, the lower end of this cable being connected at the bottom of the hatchway and the upper portion of the cable being extended over pulleys 8 and 9, suitably sustained at the top of the hatchway. The upper end of the indicator-cable K is connected to the upper end of the indicator-rod C, preferably by means of a turn-buckle L, which allows for adjustment to compensate for the stretching of the cable. The indicator-cable K extends around a drum M, conveniently attached to the elevator car or cab B and preferably at its lower portion. This drum M is journaled in brackets m , attached to the car B, and may project laterally therefrom, so as to permit the cable K to pass at one side of the car or cab B. The drum M is of varying diameter and is spirally grooved, so as to cause the indicator-cable K to shift from end to end of the drum as the elevator-car is raised or lowered.

From the foregoing description it will be seen that when the elevator-car is at its lowest position within the hatchway—that is to say, at the first floor of the building—the indicator-cable K will be wound about the largest part of the drum M, and consequently the upper or free end of the cable K will be in its shortest condition, and consequently the indicator-rod C will be at its highest point and

the indicator-pointer E will be at the lowest point of the indicator-plate D. If now the elevator car or cable B is moved upward, the indicator-cable K will travel along the spiral groove of the drum M toward the smaller end of the drum, and consequently the upper portion of the indicator-cable K will be lengthened, so as to permit the indicator-rod C to drop and cause the pointer E to travel upward upon the indicator-plate D, so that when the car or cab B reaches the top of the hatchway the cable K will be wound about the smallest part of the drum M and the indicator-pointer E will be coincident with the highest number upon the indicator-plate D. Thus it will be seen that the drum M constitutes a differential mechanism for imparting a varying shift or tension to the indicator-cable K, causing this cable to raise or lower the indicator-rod and shift the indicator-pointer in accordance with the rising and falling of the elevator car or cab. Hence it will be seen that by means of the indicator-plate and its pointer, controlled by the mechanism above described, the position and direction of the elevator-car within the hatchway can be readily determined at any landing of the building.

I do not wish my invention to be understood as restricted to a construction in which the indicator-cable K is engaged with the elevator-car itself, since it is obvious that without departing from the spirit of the invention the shift of the cable can be effected by suitable differential mechanism attached to other suitable part of the elevator mechanism—as, for example, by engagement with a drum carried by the usual counterbalance-weights that are employed for the elevator-car and which move in correspondence therewith. So, also, I do not wish the invention to be understood as restricted to the precise form or arrangement of mechanism between the indicator-cable and the various indices, since, obviously, these may be modified within wide limits without departing from the spirit of the invention. So, also, it is plain that instead of locating the indicator-cable K directly in the hatchway it would be feasible to locate this cable at one side of the hatchway, or in case the differential drum M is to be connected with the weights the cable K will be located in proper position with respect thereto. Manifestly, also, the feature of employing a shifting cable extending from top to bottom of the hatchway and suitably connected to one or more indices is of importance whether this cable be wound about a differential drum or whether the strain or pull upon the cable to vary its working length be effected in any other convenient manner, since I regard it as within the scope of my invention to employ any other suitable form of differential mechanism for operating in conjunction with this cable to produce the desired shift of the indicator-pointers.

In Figs. 5 and 6 of the drawings I have illustrated a modified form of my invention. In

this form of the invention I have provided an indicator-cable K, extending from top to bottom of the elevator-hatchway, the cable K being trained over a pulley 20 at the bottom of the hatchway and over the differential drum M, which in this form of my invention is mounted at the top of the hatchway within a journal-frame M', suitably sustained by brackets M². To the arm M³, projecting from the frame, is connected the indicator-rod C, the construction of this rod and its connection with the indices being preferably the same as that illustrated in Figs. 1 and 2 of the drawings and as hereinbefore described. In this form of my invention, as in that hereinbefore set forth, the differential drum M is spirally grooved and is conical or tapering from end to end. The indicator-cable K is passed with two or more turns about the drum and is so arranged upon the drum that when the car is at its highest position the indicator-cable K will be at one end of the drum and will gradually shift to the opposite end of the drum as the elevator-car is raised. It is plain that as the indicator-cable is thus shifted in unison with the travel of the elevator-car from end to end of the differential drum or pulley M the indicator-cable K will, as it approaches the smaller end of the drum, allow the frame M' to rock and allow the indicator-rod C, connected with this frame, to move downward. So, also, as the indicator-cable is moved toward the larger end of the differential drum M a corresponding lifting of the indicator-rod will be effected. To move the indices, instead of connecting the indicator-cable K to the top and bottom of the elevator-car B, as shown, the cable K may be formed as a continuous cable, being connected to one side of the car in any convenient manner.

It is obvious that instead of connecting the indicator-cable K to the car it might be connected to the counterbalance-weights of the elevator mechanism, so as to effect the movement of the indicator-rod in unison with the travel of the car.

What I claim as new, and desire to secure by Letters Patent, is—

1. An indicator mechanism for elevators, comprising the combination, with suitable individual indices and with a vertically-moving part of the elevator mechanism—such, for example, as the car—of an indicator-cable connected with said indices and by the shifting of which cable said indices are operated, said indicator-cable extending into engagement with said vertically-moving part of the elevator mechanism and having a fixed support and being sustained in a manner permitting its working length to be varied, and suitable means for shifting said cable to vary its working length, and thereby effect the proper movement of the indices, substantially as described.

2. An indicator mechanism for elevators, comprising the combination, with suitable individual indices and with a vertically-moving

ing part of the elevator mechanism, such as the car, of an indicator-cable engaged by said vertically-moving part of the elevator mechanism, said indicator-cable extending from top to bottom of the hatchway and having a fixed connection and being sustained in a manner permitting it to be shifted so as to vary its working length, and suitable means for shifting said indicator-cable to vary its working length, and thereby impart movement to the several indices, substantially as described.

3. An indicator mechanism for elevators, comprising the combination, with suitable individual indices, of a vertically-moving part of the elevator mechanism—such, for example, as the elevator-car—an indicator-cable extending from top to bottom of the hatchway, a fixed support for one end of said cable, the opposite end of said cable being free to move and being suitably connected with the indices, and suitable means operated by the vertically-moving part of the elevator mechanism, whereby the working length of said cable may be varied to effect the movement of said indices, substantially as described.

4. An indicator mechanism for elevators, comprising the combination, with suitable individual indices, of an indicator-cable suitably connected with said individual indices, a reciprocating part of the elevator mechanism, such as the car, with which said cable is engaged, said indicator-cable having a fixed connection or support and being connected with the indices in manner permitting the working length of said cable to be varied, and suitable differential mechanism for varying the working length of the cable to effect the shift of the indices, substantially as described.

5. An indicator mechanism for elevators, comprising the combination, with suitable indices, of an indicator-cable extending from top to bottom of the hatchway, a fixed support for one end of said cable, the opposite end of said cable being free to move and being suitably connected with the indices, and a differential drum over which said cable passes and whereby the working length of said cable may be varied to effect the movement of the indices, substantially as described.

6. An indicator mechanism for elevators, comprising an indicator-cable having one end sustained by a fixed connection and having

its opposite end free to shift and suitably connected with the indices, an elevator-car, and a differential drum or pulley connected to said elevator-car over which said indicator-cable passes and whereby the working length of said cable may be varied to impart movement to the indices, substantially as described.

7. An indicator mechanism for elevators, comprising the combination, with suitable indices, of means for shifting said indices, consisting of an indicator-cable connected with said indices, a vertically-moving part of the elevator mechanism with which said cable is engaged, and a spirally-grooved idler-drum of varying diameter over which said indicator-cable passes, whereby said cable when shifted from end to end of said drum will cause the working length of said indicator-cable to vary to effect the movement of the indices, substantially as described.

8. An indicator mechanism for elevators, comprising a suitable indicator-cable extending from top to bottom of the hatchway and a differential mechanism engaging the said cable to impart a varying shift thereto, said differential mechanism being connected to the elevator-car, and a suitable index or indices, and a connection between said index and said cable, substantially as described.

9. An indicator mechanism for elevators, comprising the combination, with suitable indices, of the indicator-cable K, extending from top to bottom of the hatchway and suitably connected to said indices, an elevator-car B, and a spirally-grooved drum or pulley M, attached to the elevator-car over which drum the indicator-cable passes, substantially as described.

10. An indicator mechanism for elevators, comprising the combination, with suitable indices, of the indicator-rod C, connected to said indices, an indicator-cable K, extending from top to bottom of the hatchway and having its lower end fast and its upper free end connected to the indicator-rod, and a differential drum carried by the car and around which drum the said indicator-cable passes, substantially as described.

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Witnesses:

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