(No Model.)

2 Sheets—Sheet 1.

E. WYLDE.

INDICATOR FOR ELEVATORS.

No. 479,484. Patented July 26, 1892.

Fig. 1

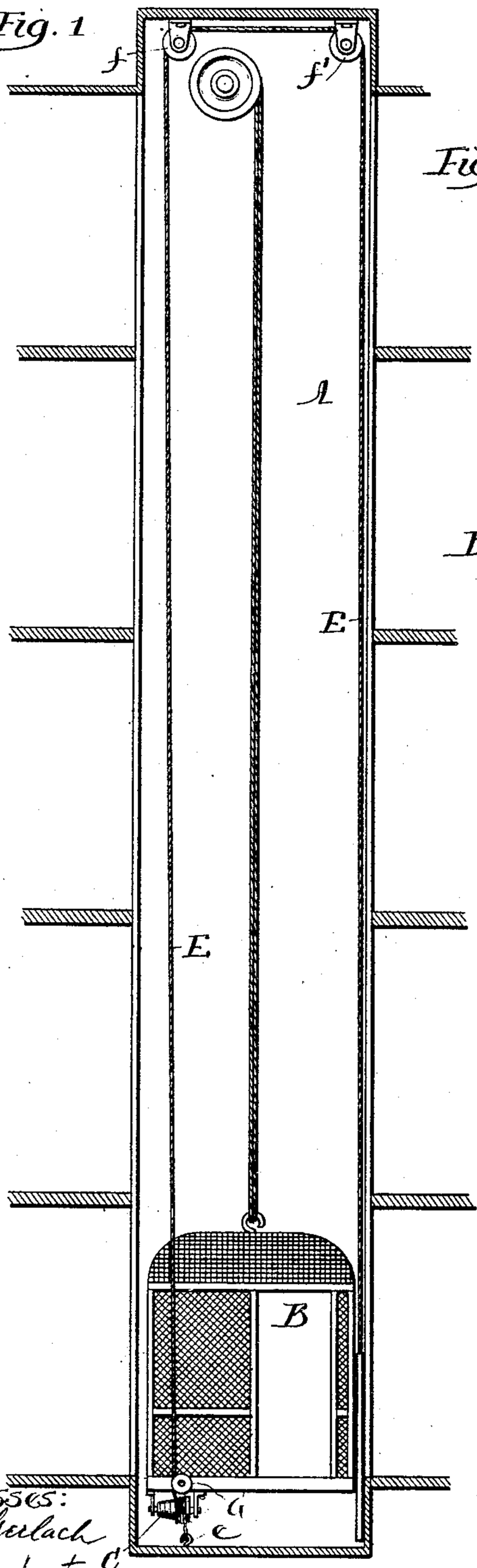


Fig. 2.

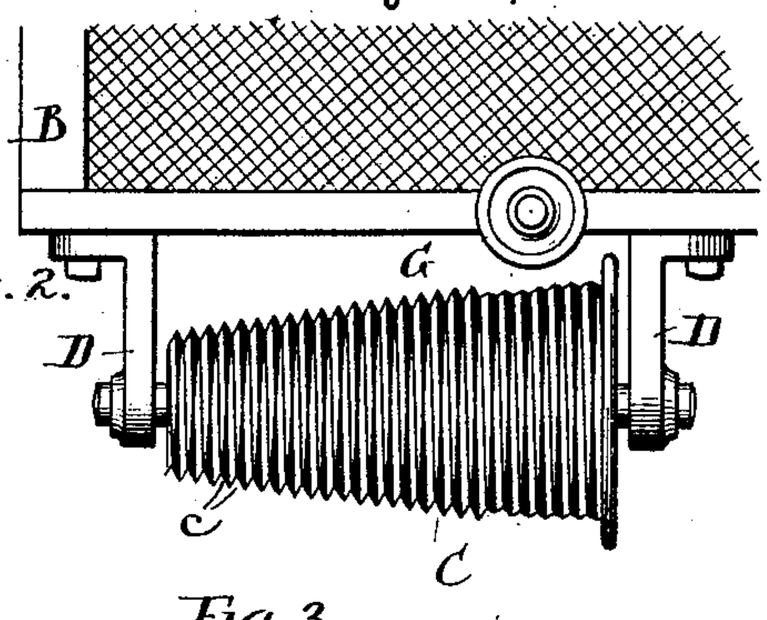


Fig. 3.

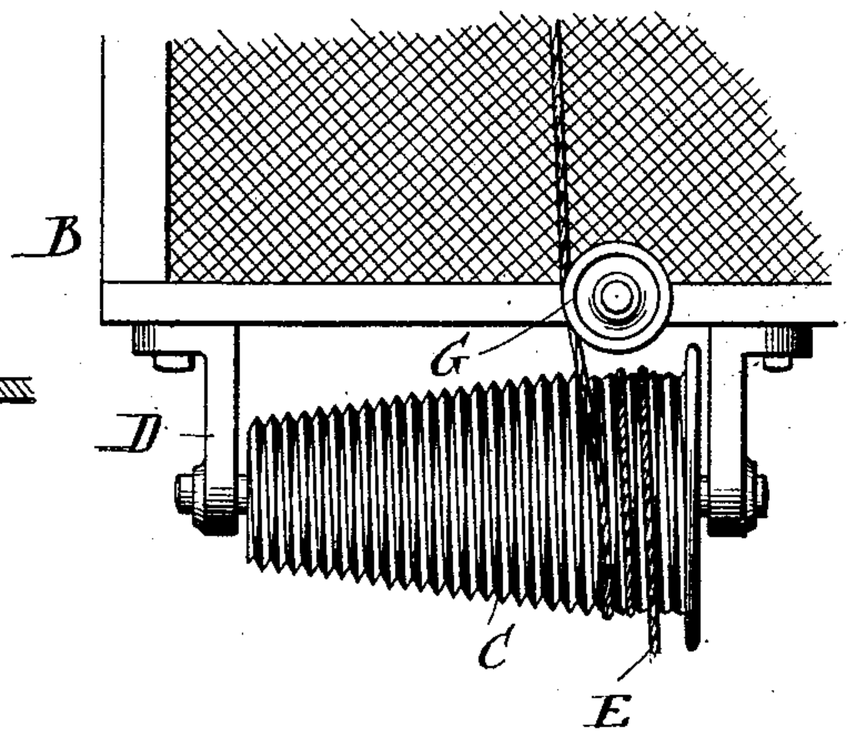
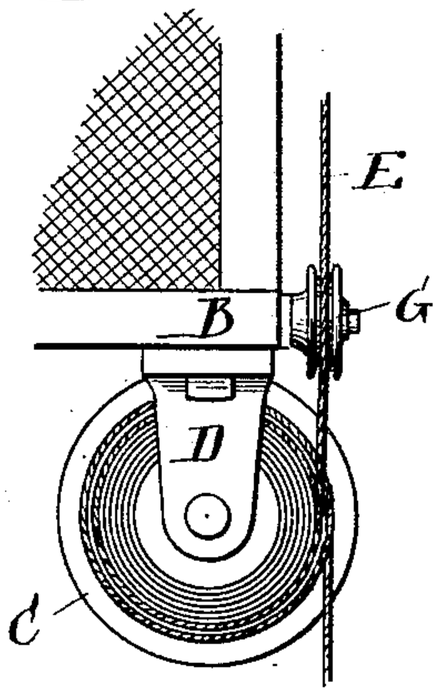


Fig. 4.



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(No Model.) 2 Sheets—Sheet 2.

E. WYLDE.

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No. 479,484. Patented July 26, 1892.

Fig. 5.

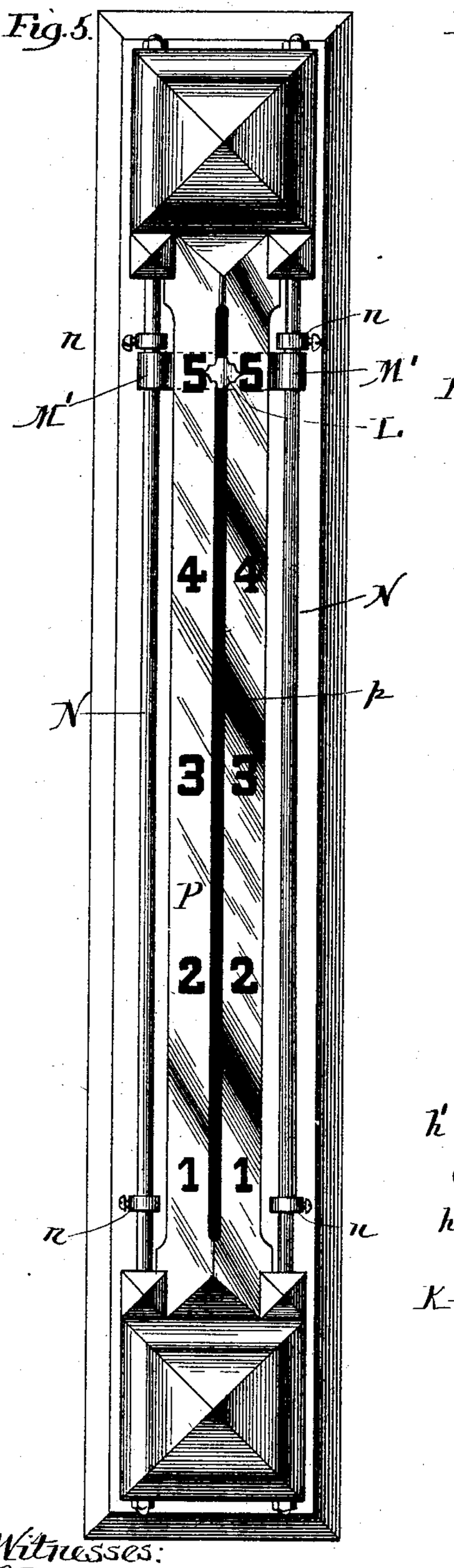


Fig. 6.

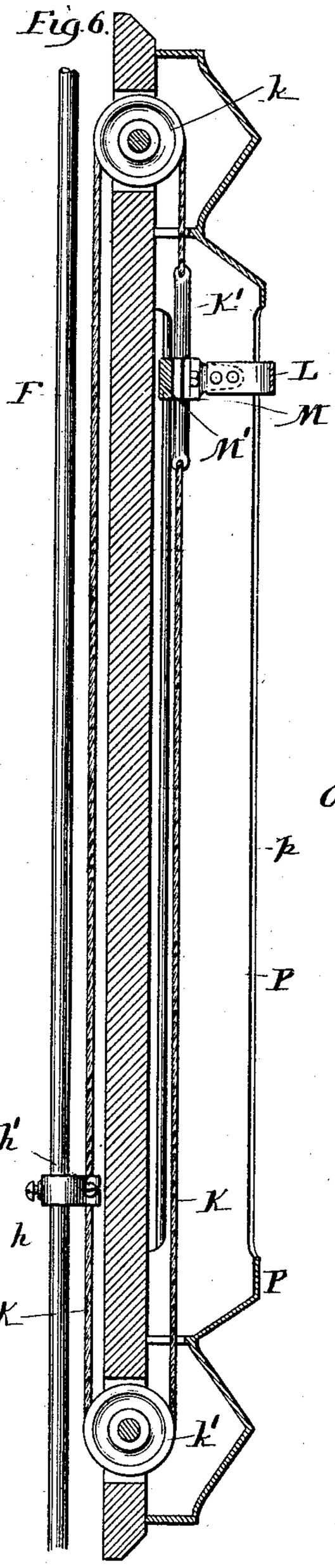


Fig. 7.

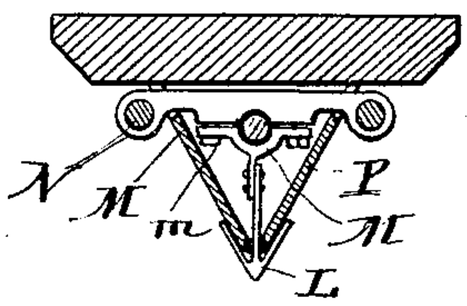
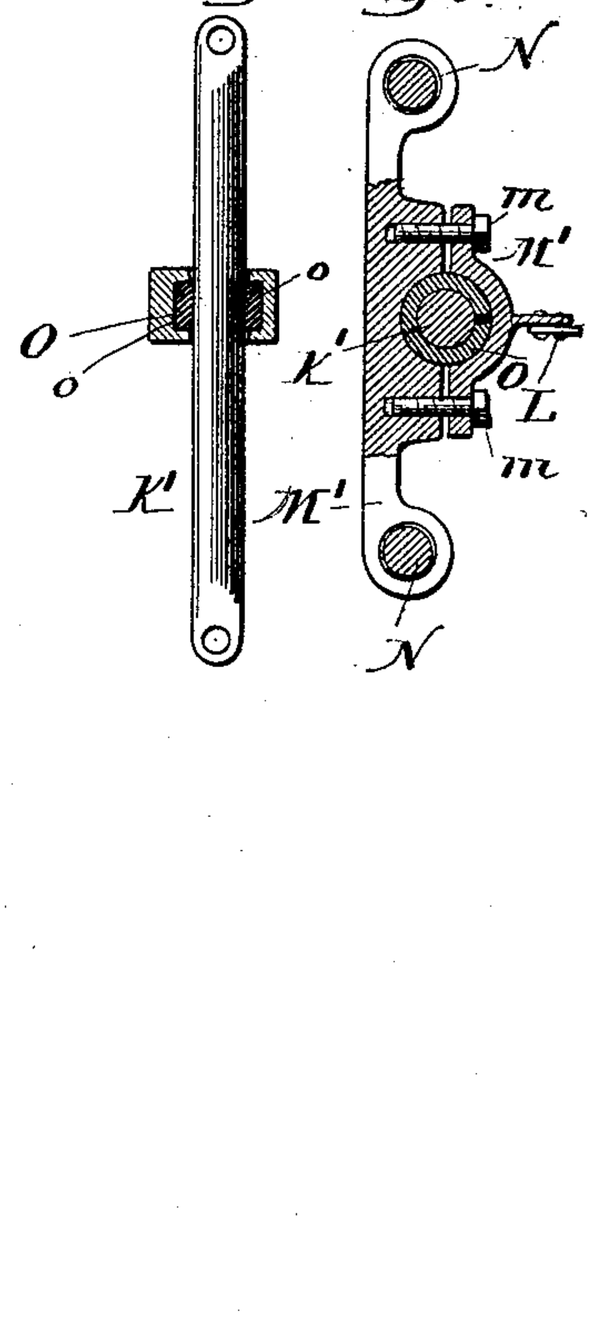


Fig. 9. Fig. 8.



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UNITED STATES PATENT OFFICE.

EDWARD WYLDE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ELEVATOR SUPPLY AND REPAIR COMPANY, OF SAME PLACE.

INDICATOR FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 479,484, dated July 26, 1892.

Application filed January 12, 1892. Serial No. 417,891. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WYLDE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Indicator Mechanisms 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 relation to that class of indicator mechanism designed to indicate to persons upon the several floors of a building the position occupied by the elevator as it is ascending or descending within the hatchway or shaft; and the object of my invention is primarily to provide improved means whereby the pointers of the various indices shall be caused to accurately indicate upon their plates or dials the position of the elevator. This object I have accomplished by the novel mechanism hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

In an application for Letters Patent filed in the United States Patent Office by Thaddeus W. Heermans June 24, 1891, Serial No. 397,340, there is described and claimed an indicator mechanism for elevators, the main feature of which consists in providing an indicator-operating cable sustained in such manner that its working length can be varied so as to effect the shift of the indices with which said cable is connected, and in the construction shown in such application the indicator-operating cable has its working length varied by means of a differential drum, about which the cable is wound with one or more turns, so that as the car traverses the hatchway the differential drum is caused to revolve and the cable is shifted from a larger to a smaller part thereof, and vice versa. In the practical working of an indicator mechanism constructed in accordance with the invention set forth in said Heermans's application it has been found that there is a tendency of the cable to "creep" or shift toward the larger end of the drum, and while this creeping or shifting of the cable is very gradual it in time has the effect of so changing the position of the cable upon the drum as to materially interfere with the accurate registering of the indicator-pointers with the numbers upon the index plates or dials, since the indicator-pointers are connected with the indicator-rod attached to such cable. While it is difficult to account for this creeping of the indicator-working cable toward the larger end of the differential drum, I believe that it is due to the fact that when the car is suddenly stopped there is a slight slacking of the indicator-working cable, and as the differential drum has acquired considerable momentum there is a tendency for the drum to continue to revolve after the car has stopped and during the instant that the cable is in somewhat slackened condition, thereby causing the threads of the drum to further enter the coil of the cable and advance such coil slightly toward the larger end of the drum. Manifestly when this occurs the working length of the cable will be shortened slightly and a shift of the indicator-pointers will occur without any corresponding movement of the elevator-car. To counteract the effect of this "creeping" of the indicator-working cable upon the drum and to secure the accurate movement of the pointers over the face of the dials or indices at all times, I have provided the mechanism next to be described.

Figure 1 is a view in vertical section through the hatchway of an elevator, the car, the indicator-working cable, and the differential drum being shown in side elevation. Fig. 2 is a view in side elevation of a differential drum and adjacent parts embodying my invention. Fig. 3 is a view similar to Fig. 2, but showing the indicator-working cable upon the differential drum. Fig. 4 is an end view of the parts illustrated in Figs. 2 and 3. Fig. 5 is a front view of one of the indices and adjacent parts. Fig. 6 is a view in central vertical section through Fig. 5, parts being shown in side elevation. Fig. 7 is a view in transverse section on line 7 7 of Fig. 5. Fig. 8 is a view in transverse section on line 8 8 of Fig. 6, parts being broken away for better illustration. Fig. 9 is a view in vertical section through the rod that sustains the indicator-pointer.

A designates the hatchway, within which

will travel the elevator-car B, this car being operated by any mechanism suitable for such purpose. To the car B is attached the differential drum C, that is journaled in suitable brackets D, this drum being preferably located so that its periphery shall extend slightly beyond the edge of the car. Upon the drum C is wound with one or more turns an indicator-working cable E, the lower end of this cable being suitably fastened, as at *e*, at the bottom of the hatchway, while the opposite end of the cable extends over suitable pulleys *f* and *f'* and is attached to an indicator-rod F, by which the pointers of the indices upon the several floors of the building are operated.

The differential drum C is provided with the spiral groove *c* and when the elevator-car B is at its lowest position, as indicated in Fig. 1, the coils of the cable E will be wound about the larger part of the drum C, and at such time the indicator-working cable E will lift the indicator-rod F to its highest position; but as the elevator-car B ascends within the hatchway the indicator-working cable E will travel toward the smaller end of the differential drum C and the working length of the cable E will be increased, thereby permitting the indicator-rod F to drop slightly and correspondingly effect the movement of the indicator-pointers attached thereto, as will presently more fully appear.

In order to secure the accurate position of the indicator-cable E upon the drum C, I provide a stop G at a point adjacent to the end of the drum C, this stop G being preferably a grooved idler-roll sustained by a suitable stud or axle projecting from the bottom of the car adjacent the end of the drum C. The purpose of this stop G is to secure the accurate starting of the indicator-working cable E at a proper position upon the drum C each time the car B makes a complete descent.

By reference more particularly to Figs. 1 and 2 it will be seen that when the elevator is at the bottom of the hatchway the cable E will be brought to bear against the periphery of the stop G, and if there has been any creeping of the cable E toward the larger end of the drum, this stop by reason of its engagement with the cable E will tend to accurately lay the cable into proper position upon the drum each time the car reaches its lowest point, in order that any error in the position of the cable E upon the drum may be compensated for. Inasmuch as the drum C is preferably provided with a spiral groove of considerable depth, I prefer to furnish the larger end of the drum with a groove of materially less depth than the groove throughout the remainder of the drum, so as to enable the stop G when contacting with the cable E to lift this cable over the edge of the shallow grooves and into proper position, which it obviously can do much more readily when the grooves are shallow than it could if the grooves were of greater depth.

As there is apt to be a considerable creeping or movement of the indicator-working cable E toward the larger end of the differential drum before the stop G will effect a shift of the cable E into its proper position, I have provided the mechanism next to be described for further aiding in securing the accurate working of the indicator-pointers with respect to the numbers upon the face of the various indices.

In the accompanying drawings I have shown but one indicator-pointer and its index-plate; but it will be understood that the same construction will be employed at the various floors of the building. To the indicator-rod F is attached a collar *h*, to which is connected conveniently by a set-screw *h'* a cord or wire K, the upper end of this cord passing around a pulley *k* and connecting, preferably, with the upper end of the rod K', while the opposite end of the cord K passes around a pulley *k'* and connects with the lower end of the rod K'. Upon this rod K' is carried the indicator-pointer L, and the connection between the rod K' and the indicator-pointer L is effected, preferably, in the manner indicated more particularly in Figs. 6, 7, 8, and 9 of the drawings—that is to say, the indicator-pointer L is attached to a plate M, that is connected by screws *m* to a clamp-bar M', the ends of which are perforated to encircle the guide-rods N, and by preference a friction-ring O, of leather, rubber, or like material encircles the rod K' at the point at which the indicator-pointer L is connected thereto by means of the plate M and bar M'. The plate M and bar M' are preferably formed with the grooves *o*, as seen in the drawings, to better retain the packing-ring O in position. The pointer L extends through a long slot *p* in the index-plate P, suitable numbers or letters being placed upon the face of this plate at distances apart corresponding with the extent of movement imparted to the pointer L as the elevator travels from floor to floor of the building.

In the drawings the indicator-plate P is shown as provided with two faces, and the pointer L has two arms that travel over these faces, but manifestly the plate may be of any convenient shape and may be provided with a single set of figures or letters. My purpose in connecting the indicator-pointer L with the cord or wire K in manner above described is to afford a slip-joint or yielding connection between the pointer L and the cord by which it is moved, so that as the indicator-pointer L reaches the extent of its stroke it can be automatically shifted into proper position or alignment with an extreme number upon the index-plate.

I do not wish my invention to be understood as restricted to the precise mechanism shown, whereby a slip-joint connection between the indicator-pointer and the cord K is effected, as obviously this construction can be varied without departing from the spirit of the invention. When employing a slip-joint

construction of the character above described, I prefer to provide the guide-rods N with stops or collars *n*, preferably adjustable upon the rods N, and by which the extent of movement of the indicator-pointer L can be determined. I have shown in the accompanying drawings both guide-rods N as provided with stops *n* at both top and bottom, but manifestly it is not essential that each of the guide-rods N should be furnished with stops, nor that the stops should be employed at both ends of the rods.

From the foregoing construction it will be seen that when the indicator-rod F is raised or lowered by the indicator-working cable it will cause a corresponding shift of the indicator-pointer L along the face of the index-plate P, the movement of the pointer L corresponding with the movement of the elevator-car. If for any reason any unintentional variation has occurred in the length of the indicator-working cable, owing to its stretching or to its creeping upon the drum, the pointer L does not accurately indicate upon the index-plate P the position of the elevator-car, then when the pointer L has reached the extreme of its movement the ends of the bar M′ will contact with the stops *n* and will prevent the further movement of the indicator-pointer with the rod K′ until the elevator-car has reached the end of its travel, at which time, obviously, the indicator-pointer will exactly indicate the corresponding extreme position of the elevator-car. Hence as often as the bar M′ contacts with the stops or collars *n* any variation of the indicator-pointer L from its proper relation to the index-numbers will be corrected. The screws *m* can be adjusted from time to time, so as to enable the indicator-pointer to be clamped to the rod K′ with sufficient force to insure the proper movement of the pointer while allowing for the slip or movement of the rod K through the ring O when the indicator-pointer has been arrested by the contact of the bar M′ with the stops *n*.

I do not wish to be understood as claiming herein any features of construction described or claimed in the application of Thaddeus W. Heermans, hereinbefore referred to. It is manifest that the precise details of construction above set out may be varied without departing from the spirit of the invention, and that features of the invention may be adopted without its employment as an entirety. Thus, for example, while I prefer to employ an indicator-rod G, it is manifest that the indicator-working cable may itself be extended downward a sufficient distance to take the place of this rod, this cable being suitably weighted at its end.

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

1. An indicator mechanism for elevators, comprising an indicator-working cable sustained in a manner permitting its working length to be varied, suitable indices connected with said cable, a grooved drum or pulley engaging with said cable to vary its working length, and a stop adjacent one end of said drum or pulley to determine the position of the indicator-working cable with respect thereto, substantially as described.

2. An indicator mechanism for elevators, comprising an indicator-working cable, a spirally-grooved differential drum over which said cable passes and by means of which the working length of said cable can be varied, and a stop adjacent one end of said differential drum for determining the position of the indicator-working cable thereon, substantially as described.

3. An indicator mechanism for elevators, comprising an indicator-working cable, suitable indices with which said cable is connected, an elevator-car, a spirally-grooved drum or pulley over which said indicator-working cable passes, said drum or pulley having shallower grooves adjacent its larger end, and a stop adjacent the larger end of said drum for determining the position of the cable with respect thereto, substantially as described.

4. An indicator mechanism for elevators, comprising the combination, with a suitable device—such, for example, as an indicator-rod for effecting the movement of the indices—of an index-plate, a pointer, a suitable slip-joint connection between said pointer and the indicator-rod, and a stop for arresting the indicator-pointer, substantially as described.

5. An indicator mechanism for elevators, comprising the combination, with a suitable device—such, for example, as an indicator-rod for effecting the movement of the indices—of an index-plate, an indicator-pointer, a cord connecting said indicator-pointer with the indicator-rod, and a slip-joint connection between said cord and the indicator-pointer, and a stop for arresting the movement of the indicator-pointer, substantially as described.

6. An indicator mechanism for elevators, comprising the combination, with a suitable device—such, for example, as an indicator-rod for effecting the movement of the indices—of an index-plate, an indicator-pointer, a cord for connecting said indicator-pointer with the indicator-rod, said cord having its ends suitably connected together, whereby it will serve to shift the indicator-pointer in both directions, and a slip-joint connection between said indicator-pointer and said cord, and suitable stops for arresting the movement of said indicator-pointer, substantially as described.

7. An indicator mechanism for elevators, comprising the combination, with a suitable device—such, for example, as an indicator-rod for effecting the movement of the indices—of an index-plate, an indicator-pointer, a cord K, having its ends connected by a rod K′, said indicator-pointer being clamped to said rod

K′ in a manner permitting it to slip thereon, and stops for arresting the movement of said indicator-pointer, substantially as described.

8. An indicator mechanism for elevators, comprising the combination, with a suitable device—such, for example, as an indicator-rod for effecting the movement of the indices—of an index-plate, an indicator-pointer, a bar M′, guide-rods N for said bar, provided with stops n, a clamp-plate M, carrying said indicator-pointer, a friction-ring O, a rod K′, and a cord K, connected with the indicator-rod, substantially as described.

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