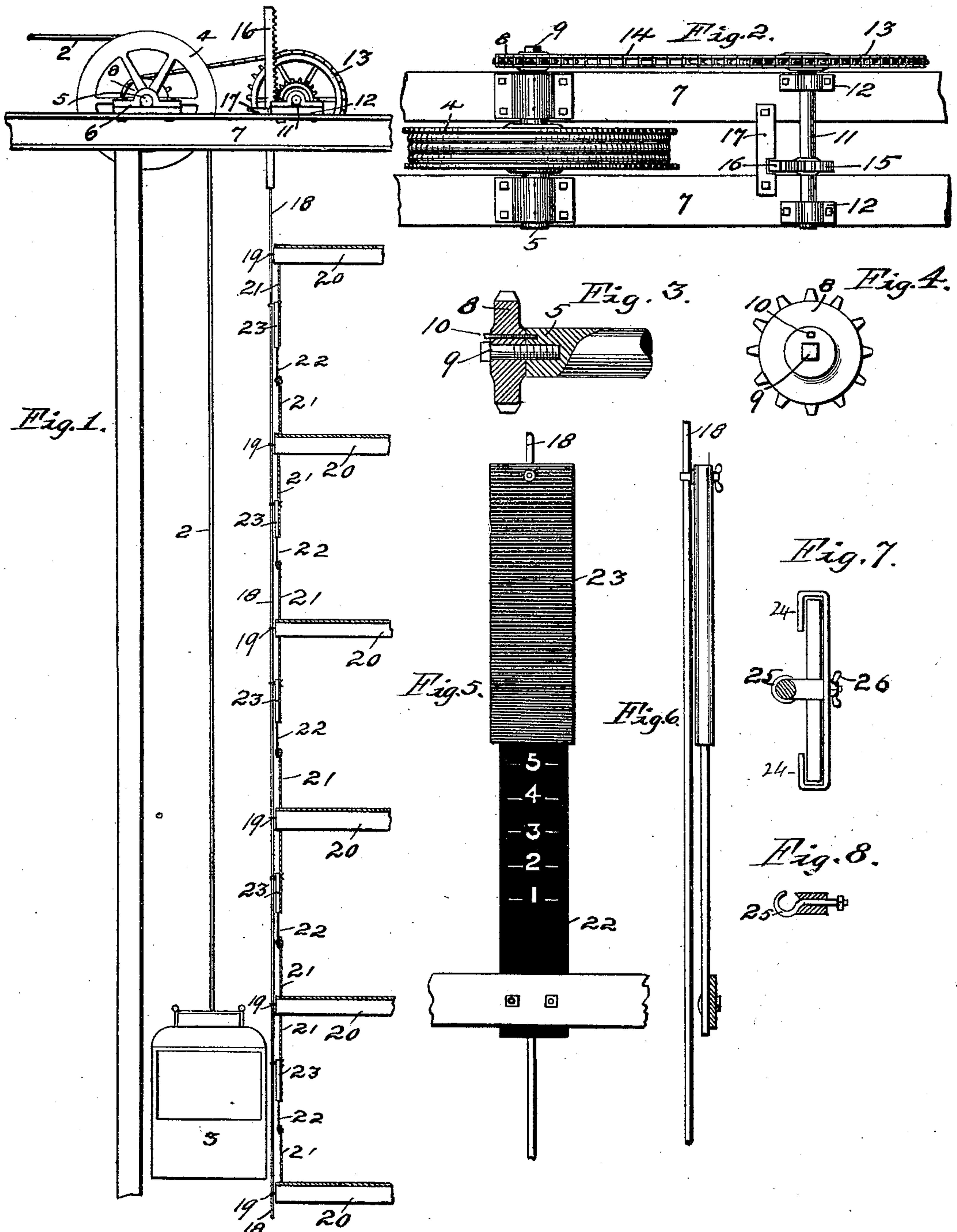


(No Model.)

F. ANDREWS & R. H. DAY.
ELEVATOR SIGNAL.

No. 459 452.

Patented Sept. 15, 1891.



Witnesses.

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UNITED STATES PATENT OFFICE.

FRED ANDREWS AND RAYMOND H. DAY, OF MINNEAPOLIS, MINNESOTA.

ELEVATOR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 459,452, dated September 15, 1891.

Application filed May 22, 1891. Serial No. 393,706. (No model.)

To all whom it may concern:

Be it known that we, FRED ANDREWS and RAYMOND H. DAY, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Elevator-Signals, of which the following is a specification.

Our invention relates to elevator signals or indicators adapted to show to a person standing upon any floor of the building the position of the elevator-car and the direction of its movement.

The object of the invention is to provide a device of a wholly mechanical construction and adapted to accurately indicate the position of the elevator-car, and which will be of very simple and cheap construction.

Our invention consists in the combination, with the elevator-sheave in the top of the elevator shaft or well or the shaft upon which said sheave is secured, of a vertically-operating rack, and means consisting of a speed-reducing device for connecting said rack with said elevator-sheave and operating said rack, a rod extending down from said rack and past the several floors of the building, and indicating devices connected with said rod and adapted to be operated by the movement of said rack operated by the revolution of said elevator-sheave.

Our invention consists, further, in various constructions and combinations hereinafter described, and particularly pointed out in the claims.

Our invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical elevation showing an elevator provided with an apparatus embodying our invention. Fig. 2 is an enlarged plan view showing the elevator sheave or drum and the manner of connecting our device thereto. Figs. 3 and 4 are details showing the small sprockets secured on the end of the elevator-sheave shaft. Fig. 5 is a front view of one of the signaling devices used upon each floor of the building. Fig. 6 is a side or edge view thereof. Fig. 7 is an enlarged plan view of the same, showing the manner of attaching the movable part of the device to the upright rod. Fig. 8 is a detail of the clamp employed for making such attachment.

As shown in the drawings, the cable 2 extends up from the elevator-car 3 over the large sheave or drum 4, secured on the shaft 5, having bearings 6 upon the heavy beam 7. The cable or cables 2 pass from the sheave to any suitable hoisting device. On the end of the shaft 5 we secure the small sprocket-wheel 8 by means of the bolt 9, screwed into the end of the shaft 5, as shown in Fig. 3. The sprocket is thus firmly secured against the end of the shaft and is held from turning by the smaller set-screw 10, passing through the sprocket and into the end of the shaft at a distance from the center thereof. At a distance from the shaft 5 we arrange the second shaft 11, preferably having bearings 12 secured on the beam 7, supporting the elevator-sheave. The large sprocket 13 is secured on the shaft 11, and the sprocket-chain 14 extends over the same and over the small sprocket 8. On the other end of the shaft 11 we provide the pinion 15, and in connection therewith arrange the vertical rack 16, adapted to move in guides 17. The upper end of the rod 18 is secured to the rack 16, as shown in Fig. 1. This rod 18 extends down to the lower floor of the building and is adapted to move in suitable guides 19, provided at the several floors.

Upon the front wall or partition 21 of the elevator-shaft and in each story of the building we provide an indicator consisting in the stationary board or plate 22, having figures arranged one above the other and indicating the several stories of the building. As shown in the detail figures, this plate 22 is secured upon a fixed part of the partition and serves as a guide for the movable cover 23, having lugs 24 engaging the rear side of the plate, as shown in Fig. 7. This movable cover is secured to the rod 18 by a clamp 25, fastened upon the rod 18 by a nut or thumb-screw 26. The cover 23 and the board 22 are preferably both painted black and the figures are painted in white upon the board 22. Hence when the covering part is down the observer very readily sees that the elevator is in the bottom of the building. When raised, the lower edge of the part 23 prominently marks the upper figure.

It is obvious that the large sprocket 13, the shaft thereof, and the rack and pinion may be placed in any position with respect to the

shaft 5, so long as the rod 18 and the rack do not interfere therewith. The movement of the rod 18 is very short in comparison with that of the elevator, being about one or two feet, while the elevator travels the full height of the building. Hence the necessity for the use of the small sprocket upon the drum-shaft 5, the large sprocket on the second shaft 11, and the small pinion on the shaft 11 to reduce the speed and movement of the rack and therewith the movement of the indicators.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with the drum-shaft 5, of a shaft 11, a pinion arranged on each, a rack engaging the pinion on shaft 11 and adapted to operate vertically, a rod 18, extending down from said rack and adapted to operate indicators, and a speed-reducing mechanism connecting said shafts 5 and 11, substantially as described.

2. The combination, with the drum-shaft 5, of a shaft 11, a rack and pinion in connection therewith, a vertical rod 18, adapted to be operated thereby, a small sprocket on said shaft 5, a large sprocket on the shaft 11 and a chain belt 14, extending over the same, and an indicator or indicators having a part or parts connected with said rod, as described, and for the purpose specified.

3. The combination, with a shaft 5 and the sheave or drum 4, provided thereon in the top of the elevator shaft or well, of the sprocket

8, secured on the end of said shaft 5 by a bolt 9, a shaft 11, having sprocket and pinion wheels 13 and 15, respectively, a vertical rack 16, a rod 18, adapted to be operated by the movement thereof, the sprocket-chain 14, extending over said sprocket-wheels, and indicators located in the several stories of the building and each having a movable part adjustably secured to said rod 18, as described.

4. The combination, with the rod 18, of vertical guides therefor, means for moving said rod vertically through a reduction device arranged to be operated by the drum-shaft 5, the stationary plate 22, provided with figures arranged vertically thereon, the movable cover 23, and an adjustable connection between the same and the rod 18, substantially as described.

5. The combination of the shaft 5 and the elevator-drum secured thereon with the rack and pinion, a rod 18, and an indicator or indicators adapted to be operated thereby, and a speed-reducing mechanism arranged between said shaft 5 and said pinion, the wheel of said mechanism connecting with the shaft 5 being secured on the end thereof and outside the bearings of the same, substantially as and for the purpose specified.

In testimony whereof we have hereunto set our hands, this 19th day of May, 1891.

FRED ANDREWS.

RAYMOND H. DAY.

In presence of—

FRED: S. LYON,

O. G. HAWLEY.