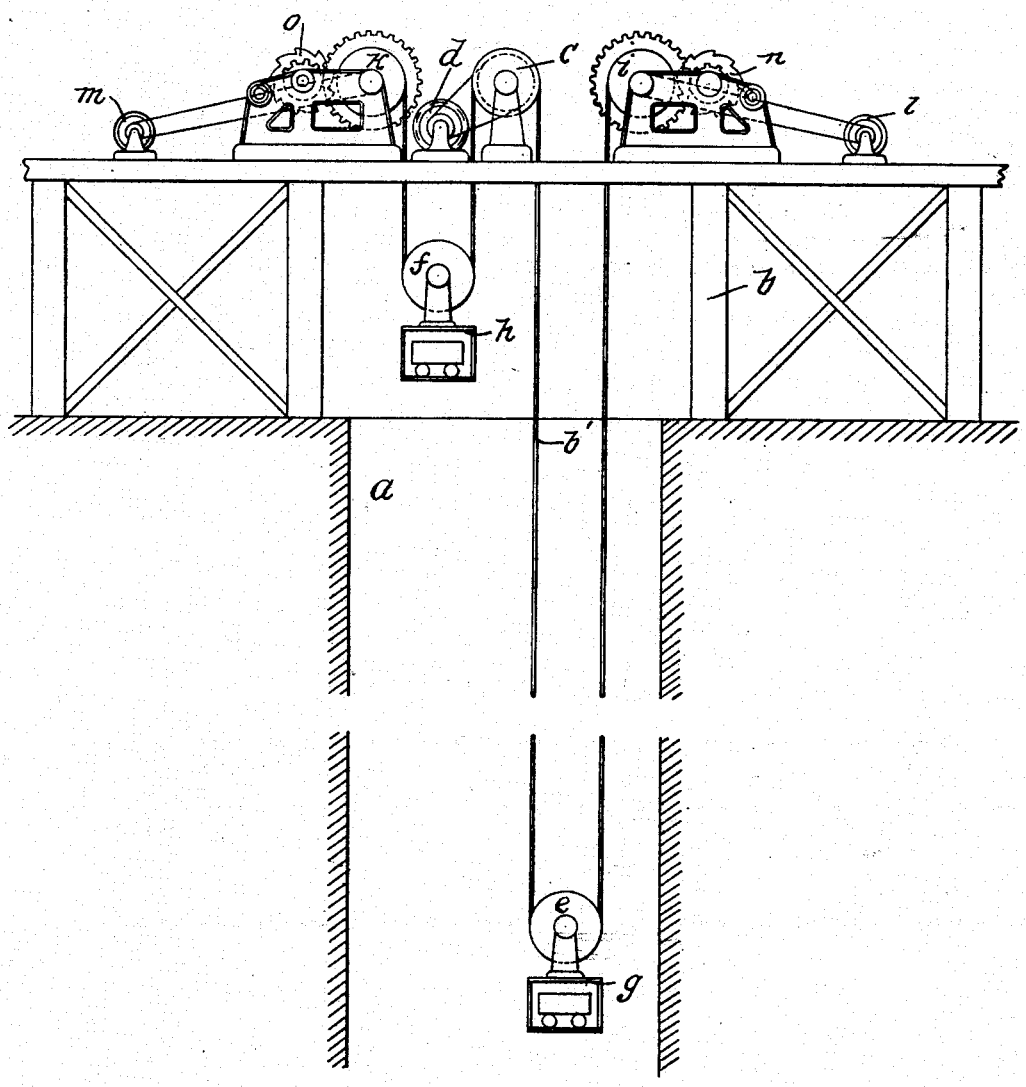
No. 676,898. Patented June 25, 1901.

C. KÖTTGEN & G. MEYERSBERG.

ELEVATOR.

(Application filed Nov. 18, 1899.)

(No Model.)



Witnesses:
May Label.
C. E. Hewett

Inventors
Carl Köttgen,
Gustav Meyersberg,
By Charles A. Brown & Sons
Attorneys.

UNITED STATES PATENT OFFICE.

CARL KÖTTGEN, OF CHARLOTTENBURG, AND GUSTAV MEYERSBERG, OF BERLIN, GERMANY, ASSIGNORS TO SIEMENS & HALSKE ELECTRIC COMPANY OF AMERICA, OF CHICAGO, ILLINOIS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 676,898, dated June 25, 1901.

Application filed November 18, 1899. Serial No. 737,456. (No model.)

To all whom it may concern:

Be it known that we, CARL KÖTTGEN, a subject of the Emperor of Germany, residing at Charlottenburg, and GUSTAV MEYERSBERG, a subject of the Emperor of Austria-Hungary, residing at Berlin, Germany, have invented a certain new and useful Improvement in Elevators, (Case No. 296,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to elevators, and more particularly to that class of elevating or hoisting systems in which a driving-sheave carrying a rope or cable extending to the elevator cars or hoists is employed.

Our invention has for its object the provision of improved means for governing the extent of travel of two or more elevators operated by a common prime mover which will readily permit of the regulating and varying of the distance to which either elevator-car may be lowered, while at the same time permitting the other elevator-car to be elevated to the required height. We are aware that means have already been provided for accomplishing this general result; but it is the object of our invention to improve upon the means heretofore employed, which were not wholly satisfactory and, moreover, were expensive in construction and operation. In accordance with the method of the prior art a driving-sheave was employed, about which the operating-cable was looped, the ends of the cable being attached to the elevator-cars, and in order to adjust the distance to which the elevator-cars were to descend—as, for example, in shafts of mines—these ends of the cable were attached to windlasses provided upon the cars. Many disadvantages in this apparatus will at once manifest themselves. The diameter of the windlasses upon the elevator-cars would have to be very small on account of the limited space. Where the elevator-cars are of large size, windlasses of increased dimensions and weight would have to be employed upon the elevator-cars, frequently requiring motors upon the cars for their operation. Thus an attendant would be required upon each car for the operation of the windlasses in addition to the attendant operating the motor for effecting the rotation of the main driving-sheave at the mouth of the shaft. There is the further disadvantage with the apparatus of the prior art that the surplus rope wound upon the windlasses upon the elevator-cars would also have to be carried, the weight of which, where the mine-shafts are very deep, becomes a material factor. We are enabled to overcome all of these disadvantages by the apparatus constructed in accordance with our invention.

The invention, generally speaking, may be described as consisting in a main driving-sheave, about which the operating-cable is wound, a number of elevator-cars, usually two, each having an idler-sheave upon the top thereof, the idlers upon the elevator-cars engaging the cable at bights therein, the ends of the cable being suitably fastened and both preferably passing about winding-drums or windlasses placed upon the exterior of the shaft in which the elevator-cars are adapted to travel, these windlasses being capable of supervision by the operator who controls the main driving-sheave, so that the number of men required to control the movements of the elevator-cars may be reduced, the elevator-cars not being required to carry any additional winding mechanism for adjusting the length of the rope of the cable. Although We preferably employ two stationarily-disposed windlasses for adjusting the length of the cable, we do not wish to be limited to the number.

We will explain our invention more particularly by reference to the accompanying drawing, illustrating the preferred embodiment thereof.

The drawing illustrates a sheave, two elevator-cars, and a cable winding and driving mechanism for effecting the vertical travel of the elevator-cars.

The shaft *a* is shown, above which is located a staging *b*, which supports a driving-sheave *c*, driven by a motor *d*, the driving-sheave preferably being located above the middle of the shaft. A cable *b'* engages the driving-sheave and may be wound in one di-

rection or another thereon, according to the direction of rotation of the prime mover *d*. The cable after passing over the driving-sheave is passed over idler-sheaves *e f*, carried upon the elevator-cars *g* and *h*, the ends of the cable then passing about windlasses *i* and *k*, which may be driven when required by any suitable means, as prime movers *l* and *m*. The windlasses are provided with ratchet-and-pawl devices *n* and *o*, whereby they may be locked in any position to which they have been rotated. The windlasses are also preferably mounted upon the same staging *b* with the driving-sheave *c*, so that they may be attended by the operator in charge of the driving-sheave. With the windlasses locked in a given position the descent of one elevator-car is limited by the elevation of the other and the elevation of one elevator-car is limited by the descent of the other. If, therefore, it is desired to have the elevator-cars descend to a lower level, the operative length of the cable should be increased, which is done by unwinding a portion of the cable from each of the windlasses.

If it should be desired to raise the lower level to which the elevator-cars are to descend in order that each elevator-car may be elevated the required distance, each of the windlasses *i k* should be operated to wind up the requisite length of cable.

It will be understood that where we use the term "elevator-car" in this specification and in the claims we intend to cover any car, hoist, or receptacle which may be used in elevator service.

While we have herein shown and particularly described one embodiment of our invention, we do not wish to be limited to the precise details of construction shown; but,

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

1. The combination with a driving-sheave, of a cable engaging the same, two elevator-cars each having an idler by which it is suspended from the cable, means for anchoring one end of the cable, and a stationary windlass about which the other end of the cable is wound, which windlass is adapted to vary the operative length of the cable according to the vertical distance that it is desired to have the corresponding elevator-cars travel, substantially as described.

2. The combination with a driving-sheave *c*, of a cable *d* engaged thereby, elevator-cars *g* and *h*, idler-sheaves *e* and *f* carried by the elevator-cars and engaging the cable *d*, and stationary windlasses *i* and *k* about which ends of the cable are wound whereby the operative length of the cable may readily be varied as required, substantially as described.

3. The combination with a driving-sheave, of a cable engaging the same, two elevator-cars each having an idler by which it is suspended from the cable, means for anchoring an unmoving portion of the cable, and a stationary windlass for engaging another unmoving portion of the cable, the portion of the cable intervening between the secured portions thereof engaging the driving-sheave and the idlers carried by the elevator-cars upon either side of the driving-sheave, substantially as described.

4. The combination with a driving-sheave *c*, of a cable *b'* engaged thereby, elevator-cars *g* and *h*, idler-sheaves *e* and *f* carried by the elevator-cars and engaging the cable *b'*, and stationary windlasses *i* and *k* about which ends of the cable are wound whereby the operative length of the cable may readily be varied as required, the portion of the cable intervening between the secured portions thereof engaging the driving-sheave and the idlers carried by the elevator-cars upon either side of the driving-sheave, substantially as described.

5. The combination with a driving-sheave, of a cable engaging the same, two elevator-cars, each having an idler by which it is suspended from the cable, means for engaging one of the ends of the cable and a stationary adjusting means to which the other end of the cable is attached, which adjustable means is adapted to vary the operative length of the cable, according to the vertical distance it is desired to have the corresponding elevator-car travel, substantially as described.

6. The combination with a driving-sheave, of a cable *b'*, two elevator-cars *g* and *h*, idler-sheaves *e* and *f*, carried by the cars and engaging the cable *b'*, a stationary adjustable means attached to each end of the cable, which adjustable means serve to vary the operative lengths of the cable according to the vertical distances the elevator-cars are to travel, so that the vertical travel of each car may be varied in range, substantially as described.

In witness whereof we hereunto subscribe our names this 14th day of October, A. D. 1899.

CARL KÖTTGEN.
GUSTAV MEYERSBERG.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.