

No. 765,752.

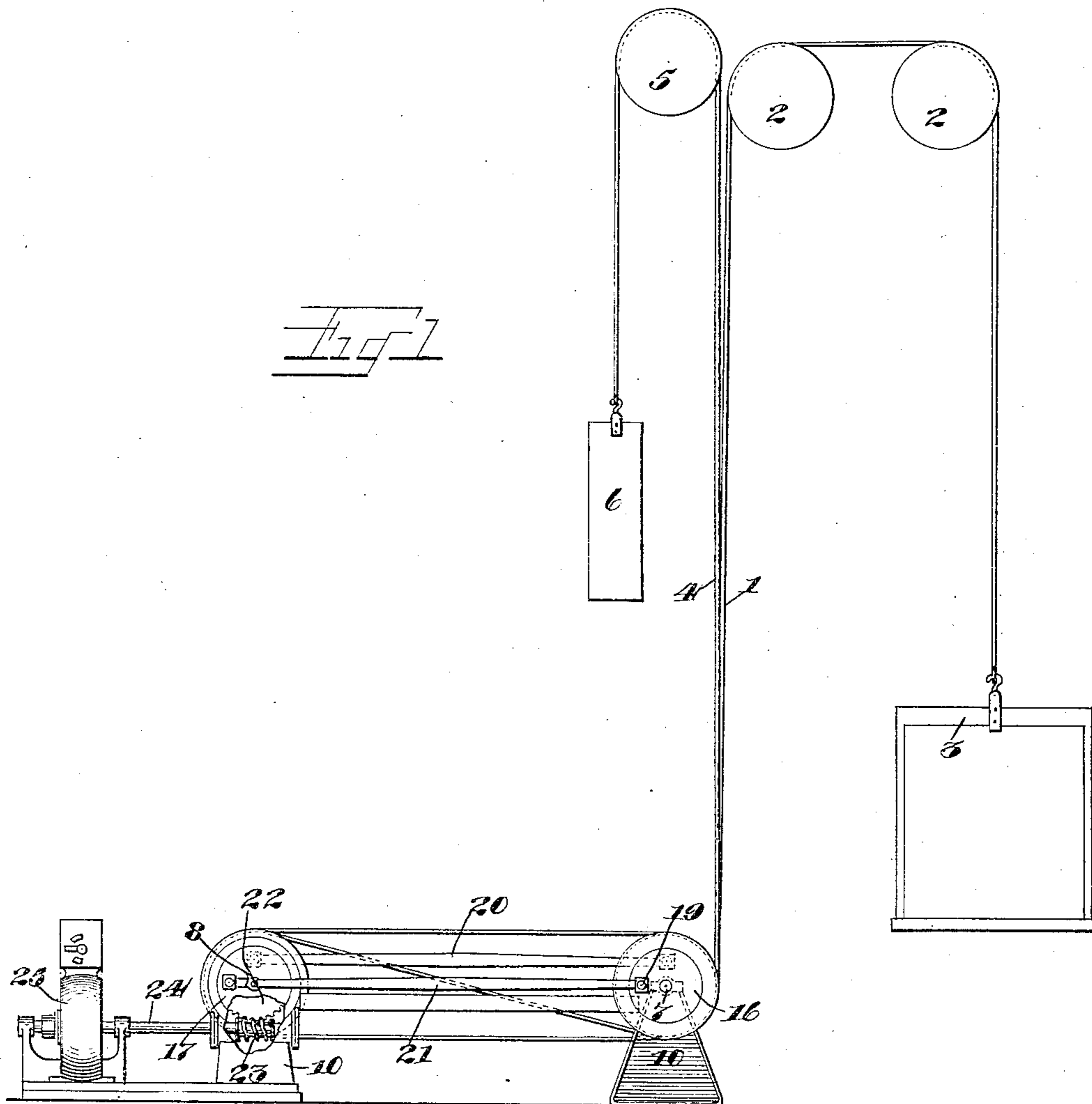
PATENTED JULY 26, 1904.

J. RICE.
ELEVATOR.

APPLICATION FILED SEPT. 11, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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Inventor
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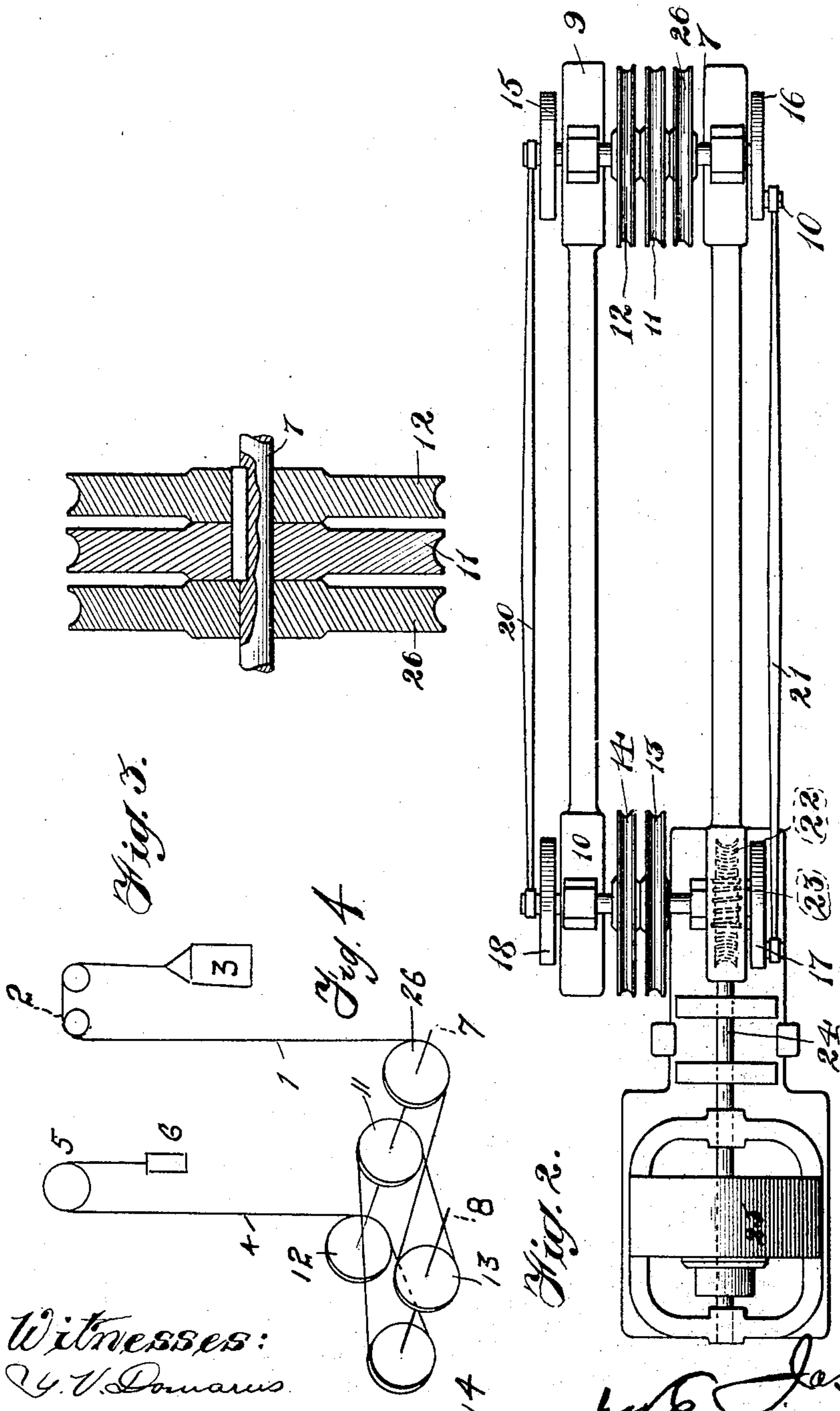
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH RICE, OF CHICAGO, ILLINOIS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 765,752, dated July 26, 1904.

Application filed September 11, 1902. Serial No. 123,035. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RICE, 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 Elevators, of which the following is a clear, full, and exact specification.

My invention relates to that class of elevators in which the car is raised by a hoisting-cable suspended from one end thereof, while the other end suspends a counterweight, and the cable is engaged at an intermediate point by friction sheaves or drums, which causes the cable to travel by frictional contact therewith.

The invention has for its primary object to drive the sheaves in unison positively and prevent the cable from gradually tightening upon the sheaves and drawing them together with such force as to destroy the bearings or materially retard rotation.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of my improved apparatus, the car and supporting-sheaves for the hoisting-cable being illustrated diagrammatically. Fig. 2 is a plan view thereof with the car and counterweight omitted. Fig. 3 is an enlarged longitudinal section of the series of three sheaves, and Fig. 4 is a diagrammatic illustration of the arrangement of the cable on the sheaves.

1 represents the end of the hoisting-cable which passes upwardly over supporting-sheaves 2 and suspends the car 3, while 4 is the end of the hoisting-cable which passes over the supporting-sheave 5 and suspends counterweight 6, all as usual in this class of elevators.

7 8 are two shafts mounted in any suitable standards or bearings 9 10 and each provided with one or more sheaves 11 12 13 14, which are rigidly secured to their respective shafts, so as to rotate in unison therewith. Both

ends of each of these shafts 7 8 are provided with cranks or crank-disks 15 16 17 18, whose crank-pins 19 are set on the quarter, and the pin of crank 17 on one shaft is connected to the pin of crank 15 on the other shaft by a connecting-rod 20, while a similar rod 21 connects the pin of crank 17 with the pin of crank 16, thus compelling one disk to rotate in unison with the other. These connecting-rods and cranks are shown as an efficient and convenient means of connecting the sheaves together so that they will rotate in unison when power is applied to one of them with but a minimum of lost motion. One of the shafts 7 8 may be rotated for thus driving the sheaves in unison by any suitable means—such, for example, as a worm-wheel 22, secured to shaft 8 and engaging a worm 23, connected to the shaft 24 of any suitable motor 25.

As shown in Fig. 2, the fixed sheave 14 is arranged diametrically opposite the fixed sheave 11, while the fixed sheave 13 is arranged diametrically opposite an idler 26, which, if desired, may be conveniently journaled loosely upon shaft 7, so that its periphery will be in line with the peripheries of sheaves 11 12. The end 1 of the hoisting-cable passes downwardly under idler 26 and thence over fixed sheave 13, whence it passes to the diametrically opposite sheave 11 and after passing halfway around the latter returns to the upper side of fixed sheave 14 and from the under side of this to the under side of fixed sheave 12, whence it ascends as end 4 over sheave 5 and is connected to and supports the counterweight 6, which serves to keep the cable tight on the sheaves and to counterbalance the car.

With the construction described it will be seen that the rotation of the sheaves 11 12 13 14 will impart positive motion to the hoisting-cable by virtue of their frictional contact therewith, and by employing two sets of sheaves arranged at a distance apart on non-coincident axes I obtain the same amount of friction against the cable as would be obtained if the cable passed entirely around a single set of sheaves, and while the two half-coils of the cable may be equal in friction to a single whole coil they do not subject the cable to the inju-

rious bends, inasmuch as they do not occur contiguous to each other or at the same point in the length of the cable. It will also be seen that with an elevator thus constructed the
5 counterweight may be of any desired proportion with relation to the weight of the car, and consequently, if desired, may be overweighted.

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

1. In an elevator the combination of sheaves arranged on non-coincident axes at a distance apart, an idler journaled with its periphery near the periphery of one of said sheaves, a
15 hoisting-cable passing under said idler and thence partially around an opposite one of said sheaves and back to the sheave adjacent to said idler, both ends of said cable being carried upwardly, a counterweight on one end of
20 the cable and a car on the other end, and means for driving said sheaves in unison, substantially as set forth.

2. In an elevator, the combination of two

shafts arranged side by side parallel, two sets of sheaves secured to said shafts respectively, 25 a crank at each end of each of said shafts, the crank at one end being set on the quarter with relation to the crank at the other end, rigid connecting-rods operatively connecting the said cranks of one shaft with those of the other, 30 an idle sheave journaled on one of said shafts, an elevator-car, a counterweight, a cable having one end attached to said elevator-car and passing downwardly under said idle sheave and thence over and partially around one of 35 the sheaves of the other set and thence back to and under one of the sheaves adjacent to said idler and passing upwardly therefrom and having its other end attached to and suspending said counterweight, and means for driving 40 one of said shafts.

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Witnesses:

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