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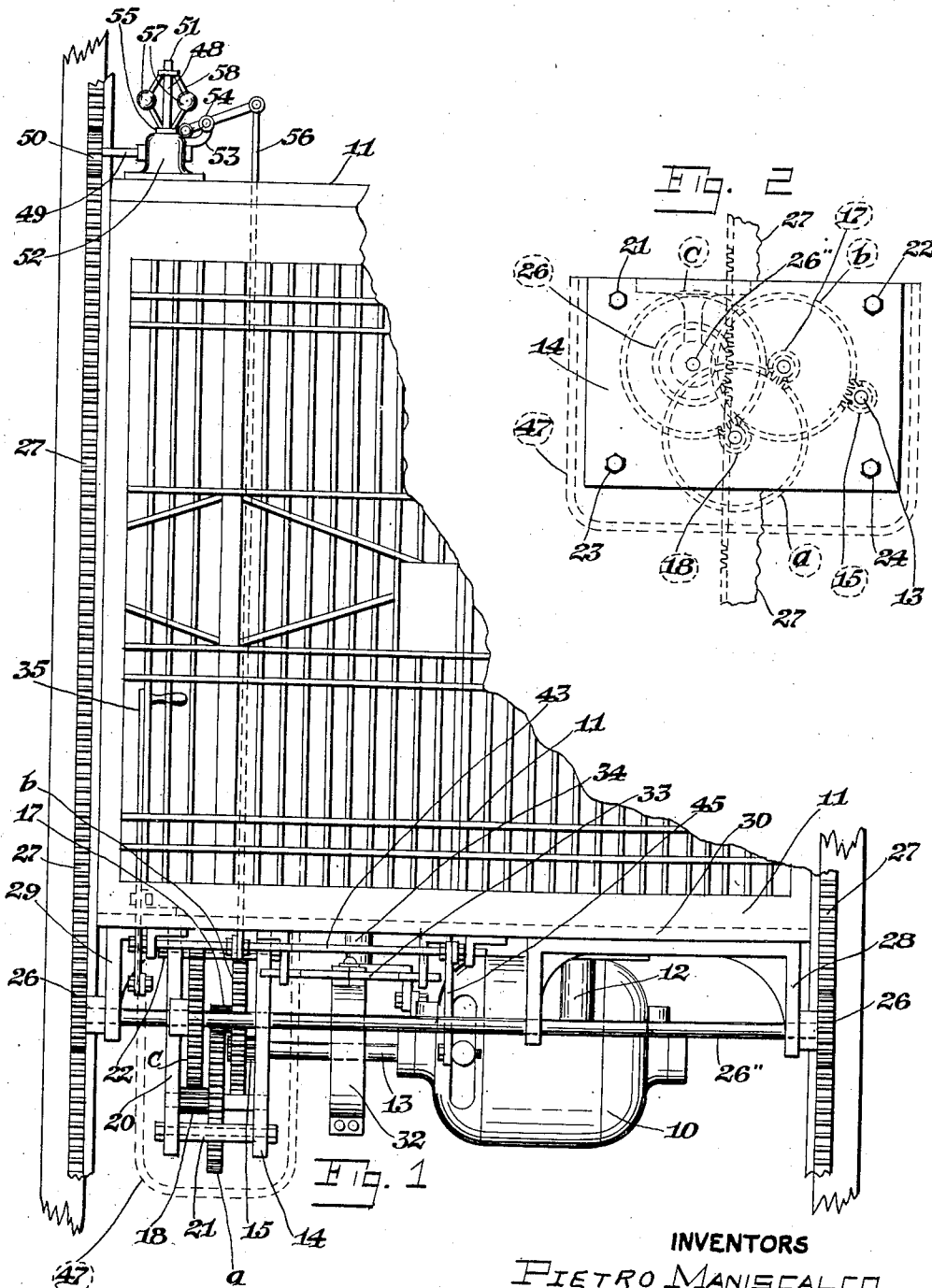
P. MANISCALCO ET AL

1,844,133

ELEVATOR

Filed Aug. 9, 1929

2 Sheets-Sheet 1



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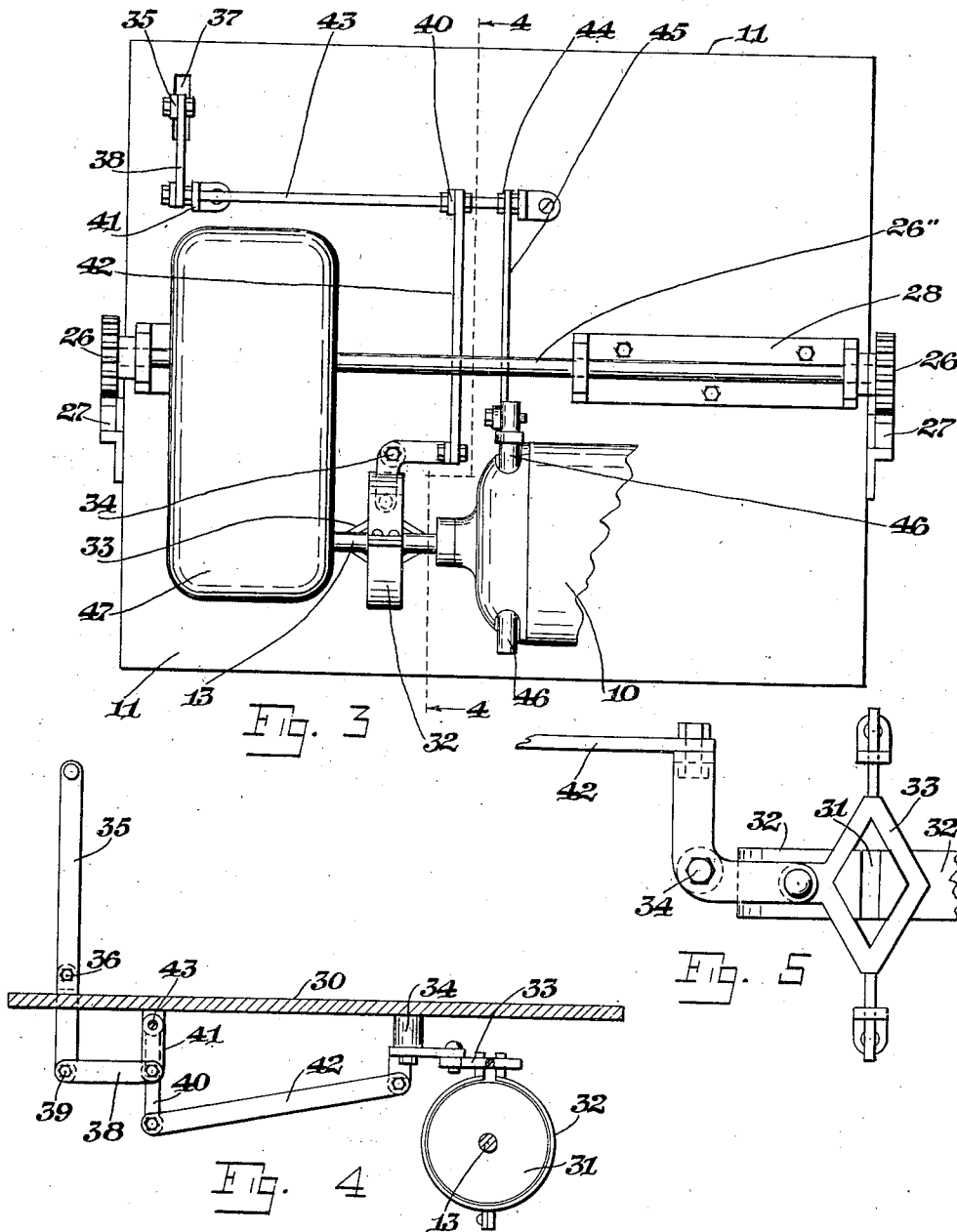
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UNITED STATES PATENT OFFICE

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ELEVATOR

Application filed August 9, 1929. Serial No. 384,544.

This invention relates to elevators, passenger and freight, and especially a cableless elevator in which the motive power driving the elevator car within the elevator shaft is
5 obtained from an electric motor and mechanism traveling with the car, and controlled by a human operator, the motor having suitable connections with a source of power.

The primary object of our invention is the
10 provision of a cableless elevator of this character providing simple but efficient means for raising and lowering the elevator car, giving maximum simplicity of construction, maximum efficiency of operation, a mechanically
15 balanced movement, and added safety.

Another object of our invention is the provision of a cableless elevator of this character wherein are means for lifting, lowering and counterpoising other than the customary
20 cables and counterbalances, thus simplifying the installation processes, obviating the use of crown blocks and sheaves, and various other heavy equipment peculiar to elevators of the cable type.

Another object of our invention is the provision of a cableless elevator of this character having the driving means mounted thereon and means mounted in the elevator
25 shaft interengaging with the driving means propelling the elevator.

Another object of our invention is the provision of an elevator of this character comprehending an electrically driven car, the driving mechanism being of the gear train
30 type, revolving cogged drive wheels engaging rack rails mounted in the shaft and of special design, as hereinafter disclosed.

Another object of our invention is the provision of a cableless elevator of this character having an electrical controlling apparatus of novel design, wherein means are provided
35 for disconnecting the electrical elements and applying the brake to the driving shaft in one operation.

Another object of our invention is the provision of a cableless elevator of this character having operating mechanisms that require no unusual safety devices because the break-
40 age of any part of the driving mechanisms or any of the complementary mechanisms will

not release the car and permit it to drop, but the entire equipment will be held in place by the remaining mechanism used to propel the car.

Another object of our invention is the provision of a cableless elevator of this character having a variable governor directly
55 mounted thereon which can be positively set to limit the maximum speed at which it is desired that car shall travel.

Another object of our invention is the provision of a cableless elevator of this character wherein the functioning of control and propulsion by means other than the regulation
60 cables is accomplished thus reducing opportunity for breakage, reducing quantity of equipment, moving parts, noise to a minimum; and all such means having a longer life than the standard swinging cables found
65 in elevators other than our own.

Another object of our invention is the provision of a cableless elevator of this character that is balanced mechanically to provide a new passenger and freight lifting device that
70 is to operate through a plurality of floors, and in which the applications thereof meet the requirements of insurance underwriters, ordinances governing safety devices, and which comprehend the accuracy and exactitude
75 demanded in modern building construction.

Another object of our invention is the provision of a cableless elevator of this character that is less expensive to manufacture, of compact formation, readily assembled, easily installed, easily applicable in the architectural
80 and building art, and of efficient and durable construction and of minimum expense in maintenance.

Another object of our invention is the provision of a cableless elevator of this character having special forms and constructions of the various parts employed, the provision of novel arrangements for standard applica-
85 tions, novel arrangements for holding and stopping the elevator car, novel arrangements for propelling the same, and means for automatically controlling its speed limits.

To these and other objects, therefore, the nature of which will be readily understood
90 100

as the invention is hereinafter disclosed, our invention consists in the novel arrangement and construction of the various parts of our improved elevator whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and facile for installation, use and employment, hereinafter more fully described and illustrated in the accompanying drawings and more particularly pointed out in the accompanying claims.

In the accompanying drawings, in which similar reference characters or numerals indicate similar parts in each of the several views, Figure 1 is an elevational view of a portion of the elevator shaft, showing the car with motor and driving mechanisms secured to the elevator car;

Figure 2 is a side elevational view of our improved driving mechanism for operating the car;

Figure 3 is a bottom plan view of the driving mechanisms secured to the bottom of elevator car;

Figure 4 is a vertical sectional view on the line 4-4 of Figure 3, omitting the gear mechanism; and

Figure 5 is an enlarged top plan view of the brake mechanism.

Referring now specifically to Fig. 1, elevator motor 10 is shown underslung on elevator car 11 by lug bolts 12.

Armature shaft 13 protruding from the cage of electric motor 10 penetrates stanchion plate 14 and by means of spur gear wheel 15 generates the movement of gear train 16 consisting of cog wheels A, B, and C intermeshed with spur wheels 17 and 18.

Gear train 16 is held in place by stanchion plates 14 and 20, stanchion plates 14 and 20 are held together by binder pins 21, 22, 23 and 24 (see Fig. 2).

Drive shaft 26 is disposed centrally through cog wheel C of gear train 16, and rigidly attached thereto, connects cog wheels 26 intermeshing with rack rails 27 which are disposed parallelly and perpendicularly in the elevator shaft.

Drive shaft 26 is held in place by brackets 28 and 29 and stanchion plates 14 and 20, all of which are attached to floor 30 of elevator car 11.

Brake drum 31 (see Fig. 2) is attached to armature shaft 13 and revolves therewith.

Brake straps 32 are suspended from diamond shaped lever 33 (see Fig. 5) which is attached and fulcrumed by lever bolt 34 attached to floor 30 of elevator car 11.

Referring now specifically to Fig. 4 in disclosure of the operative functions controlling independently the braking of the elevator car 11. Operator's controller 35 (see also Fig. 1) is fulcrumed by pin 36 protruding through hatchway 37 (see Fig. 3) in floor 30 of elevator car 11 and is hingedly connected to

reach rod 38 by pin 39. Reach rod 38 is rigidly attached to lever 40 and suspended from bracket 41. Lever 40 is hingedly attached to reach rod 42 connecting with diamond shaped lever 33 controlling brake straps 32, 70 as shown.

Referring now specifically to Fig. 3, is shown the single operative control of braking and powering the elevator car 11.

Connected to lever 41 (see also Fig. 4) is drive rod 43 rigidly engaging lever 40 to which is hingedly attached reach rod 42, as described.

Rigidly attached to reach rod 43 is lever 44 hingedly engaging reach rod 45 which in turn hingedly engages current contactor 46.

It is shown that when power is applied the brakes are simultaneously released; and, conversely, when power is cut off the brakes are simultaneously applied by the single operations of operator's controller 35.

Casing 47 protecting gear train 16 from dirt and other foreign matter is shown.

Referring again specifically to Fig. 1, Porter's type loaded governor 48 mounted on the top of elevator car 11 is shown connected to cog drive wheel 50 by drive rod 49. Cog drive wheel 50 intermeshes with rack rail 27. Governor stem 51 is revolved from bevel gears connected in jacket 52 at the base of Porter's type loaded governor 48.

Bracket 53 supports lever 54 connected to bell cranks connector 55. Hingedly connected to lever 54 is reach rod 56 joined to operator's controller 35, not shown in the drawings.

The function of Porter's type loaded governor 48 is to automatically regulate the speed of elevator car 11 controlling conjointly with the operator the functioning of controller 35 and complementary attachments.

Porter's type loaded governor 48 works by the centrifugal action of balls 57 attached to bell cranks 58 which fly away from or towards their axis of revolution according as their speed is increased or diminished, thus lifting or lowering bell cranks connector 55 and transmitting motion to lever 54 and complementary attachments as shown and described.

From the foregoing it will be seen that our invention attains all its objects and conceived intentions and designed purposes in a highly efficient and satisfactory manner. It is obvious that our invention is particularly well adapted for use in buildings, or wherever elevators may be particularly or generally required, by reason of the facility and convenience with which it may be used, assembled and operated. The construction, arrangement and relationship of the various parts may be varied in numerous particulars and within the equivalent limits without departure from the nature and principle

of the invention. We do not restrict ourselves unessentially, but

What we claim as new is:—

1. In combination with an elevator car, driving mechanism mounted on said car comprising an electric motor, a current controller for said motor, a manually operable lever on said car, a speed governor on said car, said lever and said governor being mechanically connected to said current controller whereby said current controller may be operated manually or automatically.

2. In combination with an elevator car, driving mechanism mounted on said car comprising an electric motor, a current controller for said motor, a brake for said driving mechanism, a speed responsive device on said car, a manual control means on said car, and means whereby said brake and said current controller may be operated simultaneously by said manual means or by said speed governor.

3. In combination with an elevator car, driving mechanism mounted on said car comprising an electric motor, a brake mechanism associated with the shaft of said motor, a current controller for said motor, a control lever on said car, mechanical connections from said control lever to said brake mechanism and said current controller whereby said brake mechanism and said current controller may be operated simultaneously, a speed responsive device on said car, and connections from said speed responsive device to said control lever whereby said speed responsive device is adapted to exert a control effect on said brake mechanism and said current controller.

In testimony whereof we affix our signatures.

PIETRO MANISCALCO.
JOSEPH MANISCALCO.