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C. E. GEIGER.

DRIVING MECHANISM FOR ELECTRIC ELEVATORS.

No. 521,160. Patented June 12, 1894.

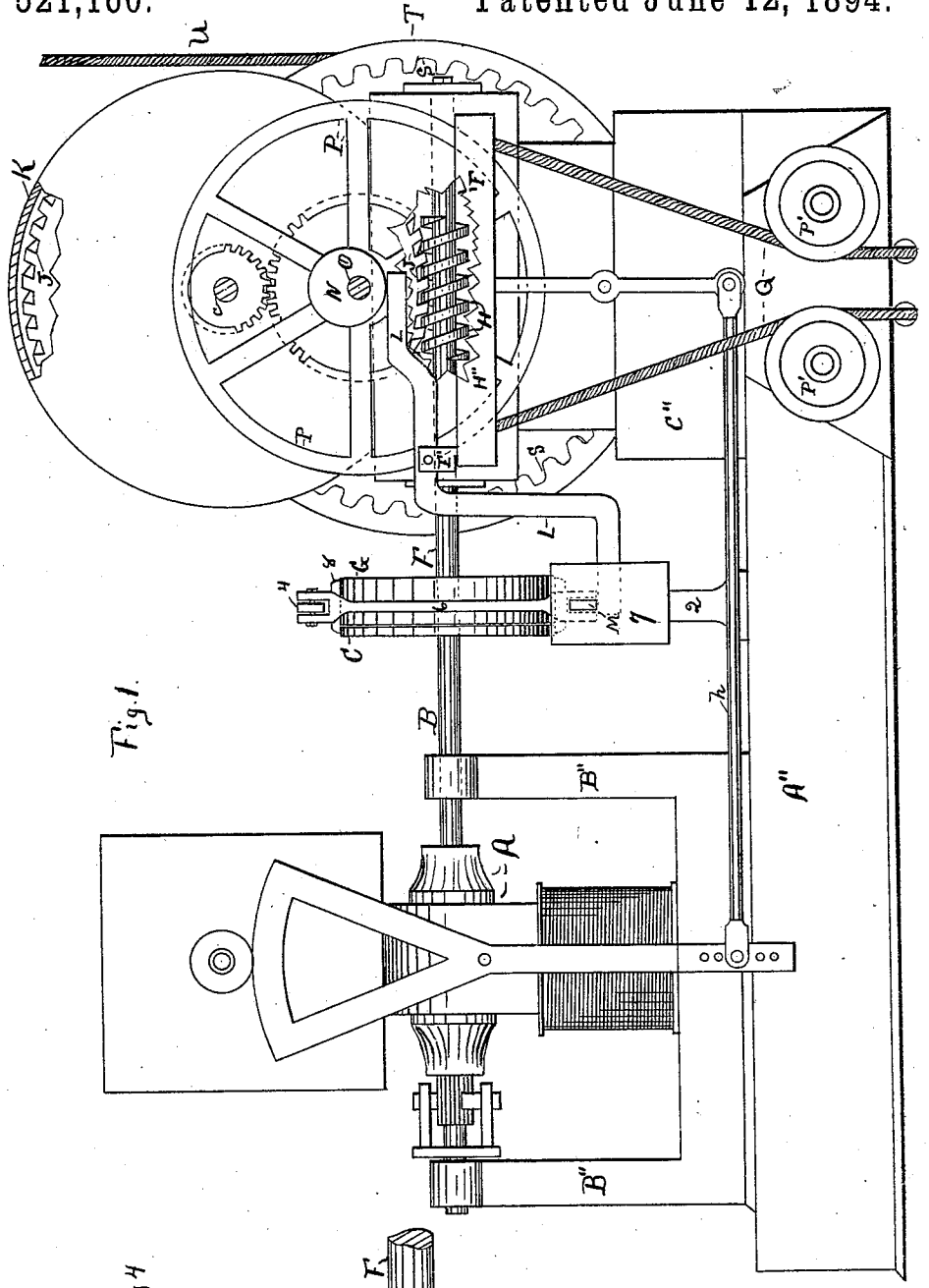

Fig. 1.

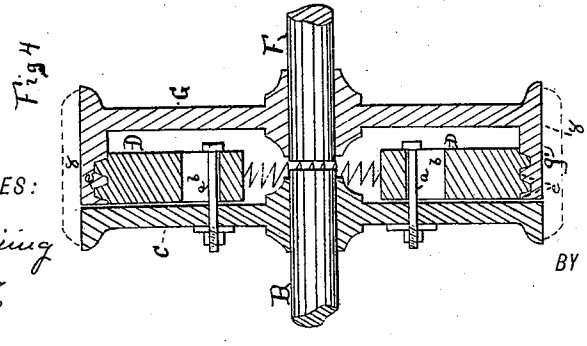

Fig. 4

WITNESSES:

Frederick E. Steiny

A. H. Seng

INVENTOR

Charles E. Geiger

BY

F. H. Gibbs

ATTORNEY.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

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Fig. 2

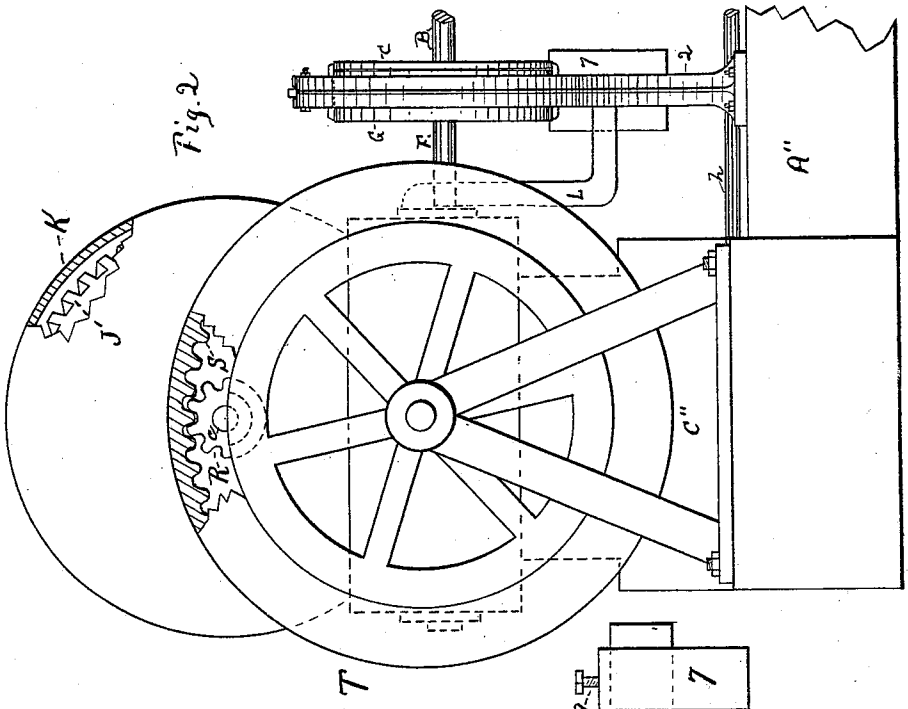
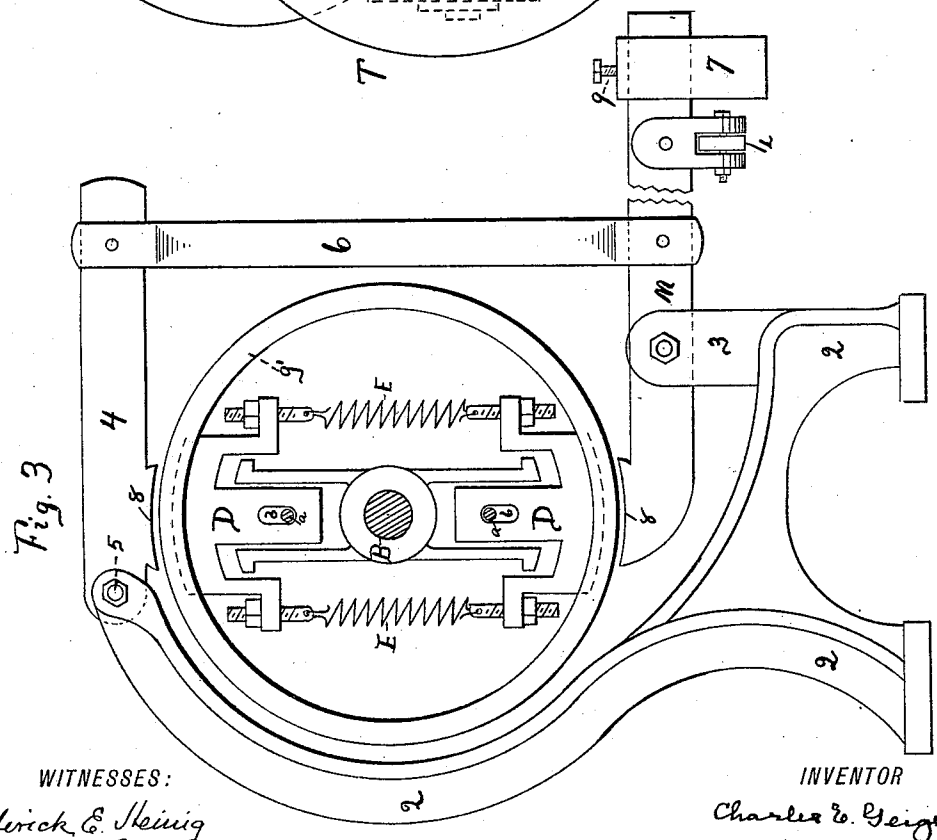


Fig. 3



WITNESSES:

Frederick E. Steinig

H. N. Seng

INVENTOR

Charles E. Geiger

BY F. A. Gibbs

ATTORNEY.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES E. GEIGER, OF LOUISVILLE, KENTUCKY.

DRIVING MECHANISM FOR ELECTRIC ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 521,160, dated June 12, 1894.

Application filed February 27, 1892. Serial No. 422,960. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. GEIGER, of Louisville, in the county of Jefferson, in the State of Kentucky, have invented new and useful Improvements in Driving Mechanism for Electric Elevators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in driving mechanism for electric elevators and attachments relating thereto, and it consists in certain details of construction and operation of parts, all as hereinafter more fully set forth and specifically pointed out in the claims.

In the annexed drawings similar letters of reference indicate corresponding parts in all the views wherein—

Figure 1 is a front elevation of an electric elevator provided with my improvements, a part of the casing being broken away for the purpose of better illustrating the details of construction. Fig. 2 is a rear elevation of the device shown in Fig. 1 with the electric motor omitted. Fig. 3 is an enlarged side elevation of the centrifugal clutch and brake operating device with one of the disks of the clutch removed to better illustrate the internal construction of said clutch. Fig. 4 is a vertical section of the clutch shown in Fig. 3.

In this class of elevators, I have found that it is desirable to permit the electric motor to gain considerable speed before starting the elevator car, as thus it will be more economical in use than where the power of the motor is applied immediately to the elevator car shaft and connections. For that reason I provide an ordinary electric motor —A— from which extends a motor shaft —B— at the end of which is attached a disk or clutch section—C— carrying two or more radially movable shoes —D— normally drawn toward the motor shaft —B— by the springs —E—. Said shoes are connected to the clutch section —C— by means of bolts —*a a*— passing through the slots —*b b*— in said segments. Immediately beyond the motor shaft —B— is a worm shaft —F— and upon the end of said shaft near the motor is provided a disk or companion clutch section —G— provided with an L-shaped flange —*g'*—, which incloses the shoes —D— attached to said clutch section —C—. Upon the opposite end of the shaft, —F— I provide a screw —H— which meshes with the worm wheel, —J— inclosed within the casing —K—. The portion of the frame within which the worm —H— is inclosed is used also as a support for the bent lever —L— one end of which connects with the lever —M— of the brake operating device herein more fully described, while the opposite end of said lever —L— lies beneath the cam —N— on the shaft —O— of the starting wheel —P— which latter is operated by the hand cable —Q— which is carried by any convenient and well-known plan to the elevator car for manipulation by the conductor.

As the current controlling device forms no part of this present application, a detailed description thereof will not be entered into, but any suitable device for the purpose of controlling the current of electricity of the motor may be used and may be connected in any suitable manner to the starting wheel —P— so as to be regulated from that point at the will of the conductor.

It will be noted that the worm wheel —J— is journaled on the shaft —*c*— and referring to Fig. 2, it will be seen that the shaft —*c*— carries a pinion, —R— which meshes with the internal gear —S— of the drum —T— upon which is wound the hoisting cable —N— by means of which the elevator car is raised and lowered.

Referring, now, to Figs. 3 and 4 it will be seen that the shoes —D— are held normally contracted away from the flange —*g'*— of the clutch section —G—, but said springs are only sufficiently powerful to retract the shoes —D— when no centrifugal force is exerted to throw them away from the central shafts —B and F—, but upon rapid rotation of the shaft —B— the radially movable shoes —D— are thrown by centrifugal force away from the center of the clutch casing, and are caused to bear upon the inner peripheral face of the clutch at —*g'*— so as to cause said disk —G— and its connected shaft —F— to be rotated with the shaft —B— running from the motor, and thus communicating power from the motor to said shaft —F— and the screw —H— thereon, which latter, meshing with the worm wheel —J—, causes the drum —T— to revolve

through the medium of the shaft —*c*—, pinion —R—, and the internal gear —S— within the drum. It will be noted that the clutch sections —C and G— are held on the shafts —B and F— at a point within the brake frame —2—, and that said frame is provided at its lower portion with the pivoted lever, —M— pivoted to the standard, —3— and that the lever, —4— is pivoted at —5— to the frame —2—. It will be noted that the arm —6— connects the lever —M— and the arm —4— in such manner in relation to their pivots that the weight —7— will depress the outer ends of both —M— and —4— and cause the brake shoes —8— of both levers to bear on the outer periphery of the clutch sections —C and G— except when the weight —7— is raised by means of the cam —N— bearing on the free end of the lever —L— and lifting the weight —7— above its normal position.

In operation, it will be found that a small amount of power will be sufficient to start the motor, and that when the motor is under way, the current may be increased at pleasure until a sufficient amount is turned on to cause the connection of the several parts of the clutch to turn the elevator drum and raise or lower the car as may be desired, and when the current has been shut off, the starting wheel —P— will rest in the position shown in Fig. —1— at which position the cam —M— will permit the lever —L— to rise at its free end, thus allowing the weight —7— to drop and cause the brake shoes —8— to bear with their full force upon the outer periphery of the clutch sections. It will also be noted that the weight —7— is adjusted by means of the set screw —9— in its position on the lever —M— so that a greater or less braking resistance may be obtained by shifting said weight out or in on said lever —M—.

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

1. In a device for operating an electric elevator, the combination of a motor, a motor shaft, a driven shaft, a centrifugal clutch connecting said shafts, consisting of a clutch section on the motor shaft having radially movable shoes and a companion clutch section on the driven shaft inclosing the radially movable shoes, and a friction brake bearing on the periphery of each clutch section, substantially as described.

2. In a device for operating an electric elevator, the combination of a motor, a motor shaft, a driven shaft, a friction clutch carried partly on each of said shafts at their adjacent ends and a friction brake bearing on the outer peripheral face of each section of said friction clutch, substantially as described.

3. In a device for operating an electric elevator, the combination of a motor, a motor shaft provided at its outer end with a clutch section, a series of radially movable shoes carried by said clutch section, a driven shaft, a companion clutch section on one end of said shaft embracing said radially movable shoes, and a brake bearing normally on the outer peripheral faces of said clutch sections, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Louisville, in the county of Jefferson, in the State of Kentucky, this 16th day of February, 1892.

CHARLES E. GEIGER.

Witnesses:
FREDERICK H. GIBBS,
FREDERICK E. HEINIG.