No. 730,955. PATENTED JUNE 16, 1903.

F. NATHER.

ELECTRIC HOIST.

APPLICATION FILED SEPT. 19, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

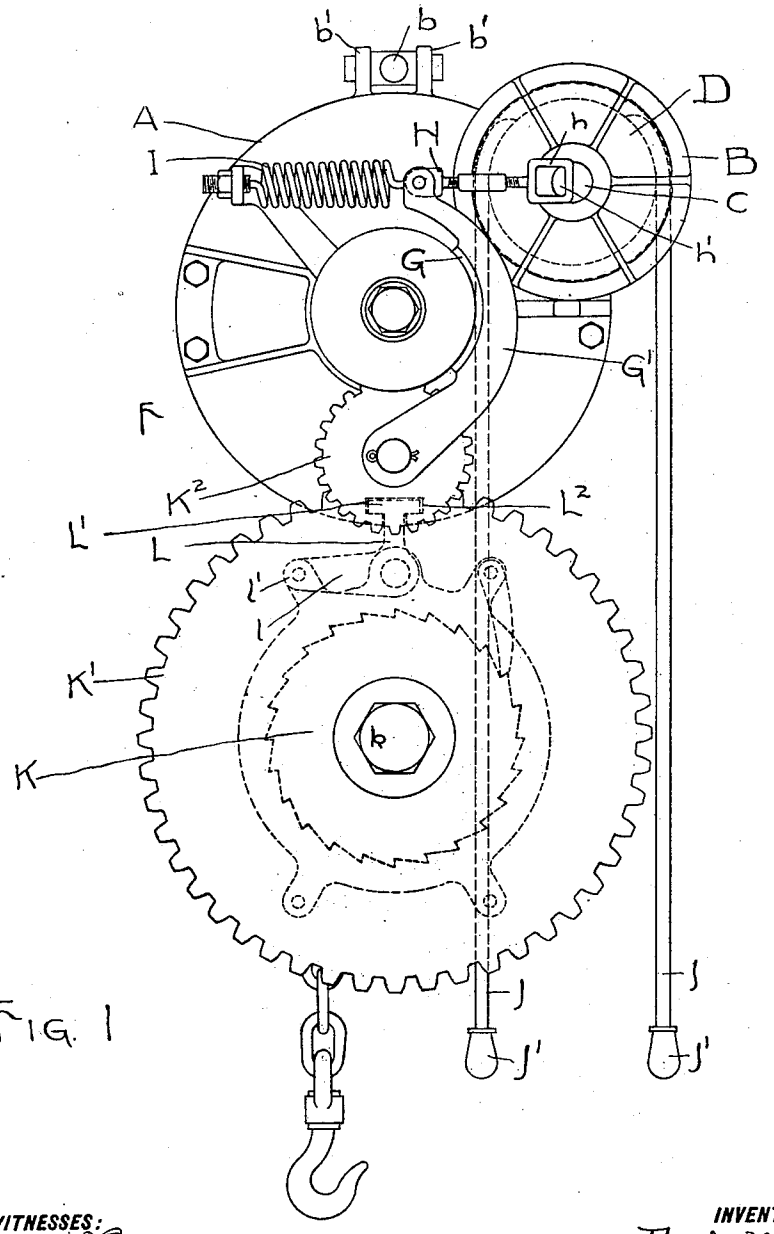

FIG. 1

WITNESSES:
A. V. A. B. McCauley.
Loretta O'Connell

INVENTOR
Frank Nather,
BY
Geo. H. Parmelee,
his ATTORNEY.

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NO MODEL. 2 SHEETS—SHEET 2.

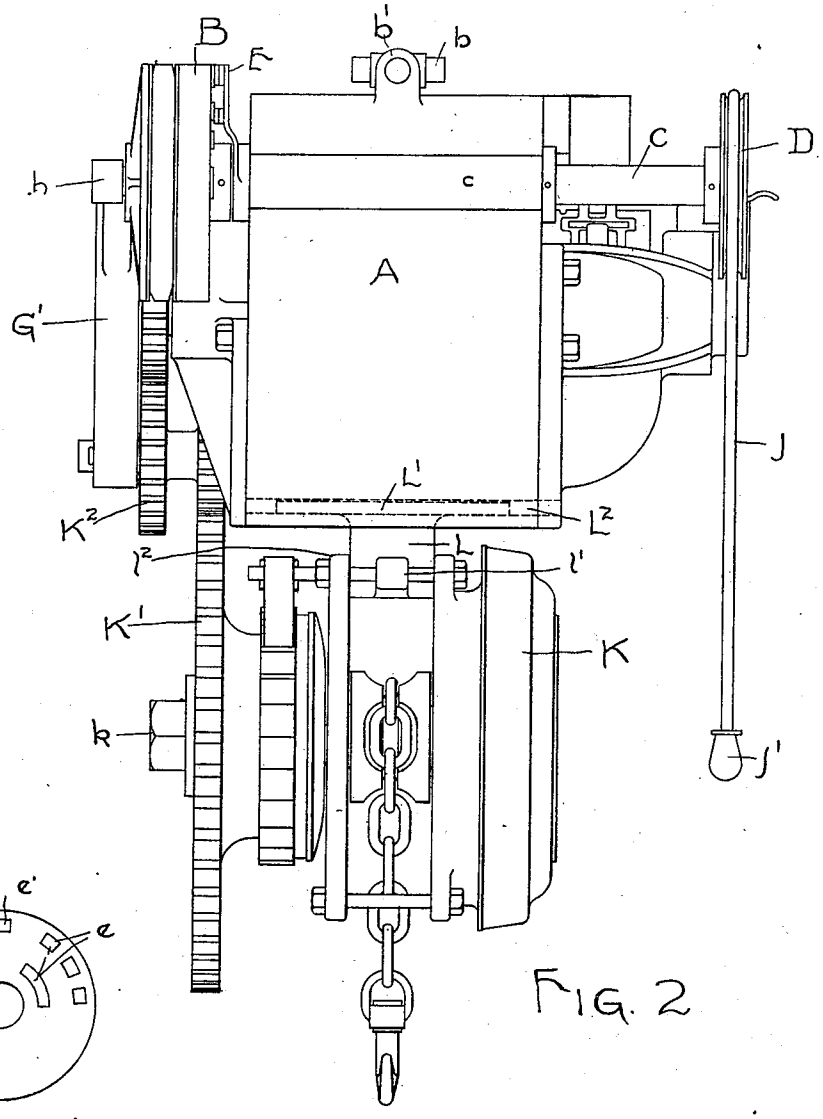

FIG. 2

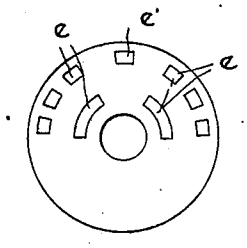

FIG. 3

WITNESSES:
A. V. A. B. McCauley.
Loretta O'Connell

INVENTOR
Frank Nather,
BY
Geo. H. Parmelee,
his ATTORNEY.

No. 730,955. Patented June 16, 1903.

UNITED STATES PATENT OFFICE.

FRANK NATHER, OF JOHNSTOWN, PENNSYLVANIA.

ELECTRIC HOIST.

SPECIFICATION forming part of Letters Patent No. 730,955, dated June 16, 1903.

Application filed September 19, 1902. Serial No. 124,108. (No model.)

To all whom it may concern:

Be it known that I, FRANK NATHER, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Electric Hoists, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to an improved electric hoist, and is designed to provide a hoist of this character which is simple and compact in construction, capable of being easily and conveniently operated, and in which the hoist and motor are so constructed and arranged that in case either becomes broken a new motor or hoist may be readily substituted or in case of injury to the motor is so arranged that the hoist can be readily operated by a chain in the usual manner.

With these objects in view my invention consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is an end view of a hoist embodying my invention; Fig. 2, a front view of the same, and Fig. 3 a detail view.

In the drawings the letter A designates the frame of an electric motor, which may be of any well-known or approved construction, controlled by a rheostat B and having its frame provided with a swiveled suspension attachment *b*, by means of which it may be connected to the usual overhead trolley-carriage. (Not shown.)

Journaled in bearings *c* on the motor-frame is a transverse rock-shaft C, which carries a grooved wheel or pulley D and also a contact-arm E, which coöperates with fixed contacts *e* (see Fig. 3) of the rheostat B. This rheostat is of any usual or suitable construction, and as it forms no part of my invention, except as an element of the novel combinations specified in the appended claims, it is not shown and described in detail.

F is a brake-wheel, which is rigidly secured to one of the projecting end portions of the motor armature-shaft F′, and G is a friction brake-block, carried by an arm G′, which is pivoted at *g* below the armature-shaft. The upper end portion of the arm G′ is pivotally connected to one end of an adjustable rod or link H, the other end of which is formed with a loop or stirrup *h*, which engages an eccentric projection *h*′ at one end of the rock-shaft C. A stiff spring I is also connected to the said rod or link and to the motor-frame and acts to normally hold the brake-block G in contact with the periphery of the wheel F.

J designates two cords or chains which are attached to and hang from opposite sides of the pulley D, with suitable handles J′ at their lower ends.

K designates the hoist proper. In the form shown this consists of the well-known "triplex" block or hoist; but I may use any suitable differential hoist-block by removing the usual chain-wheel and substituting therefor the spur-wheel K′, which is geared to the armature-shaft of the motor by means of the reducing-gear K^2. This hoist is suspended from the lower side of the motor-frame by means of a block L, having a T-shaped head L′, which engages a slideway L^2 in the lower portion of the motor-frame. To keep the hoist from swinging unduly, the block L may have an arm *l*, which is bolted to the frame of the hoist at *l*′.

The rheostat B above referred to is of that type in which movement of the arm E in one direction from the central contact *e*, Fig. 3, connects the motor for rotation in one direction, while the reverse movement of the said arm connects the motor for reverse rotation. By pulling on either one of the cords J the rock-shaft C is turned in its bearings, and by reason of the engagement of the eccentric projection *h*′ on the said shaft with the loop or stirrup *h* the brake-block G is moved out of contact with the brake-wheel F. At the same time the contact-arm E is moved in one direction or the other to connect the motor for rotation in the desired direction. To start the motor, therefore, all that is necessary is to pull on one or the other of said cords, according to the direction of rotation desired, and the motor will continue to rotate so long as this pull is maintained. As soon as the cord is released the spring I immediately acts to return the shaft C to its normal position, thus

cutting the motor out of circuit and applying the brake thereto.

The lugs b' on the motor-frame, to which the suspension attachment b is connected, are similar to the lugs l^2 on the hoist-frame to which the block L is attached, and the spur gear-wheel K^2 can be removed by removing the nut k. By these provisions in case of injury to or breakage of the motor the latter can be disconnected from the hoist and from the overhead carriage, and the hoist can be connected to the attachment b. Then by substituting the usual chain-wheel for the spur-wheel K^2 the hoist can be operated by hand until the motor has been repaired or a new motor has been provided.

I do not wish to limit myself to the precise construction and arrangement of parts herein shown and described, as various changes may be made in the details thereof without departing from the spirit and scope of my invention.

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

1. In an electric hoist, an electric motor having a slideway in its bottom portion, a hoist proper having a suspension-block detachably engaging said slideway, and thereby suspending the hoist from the motor, and reduction-gearing between the hoist-shaft and the armature-shaft of the motor.

2. In an electric hoist, the combination with an electric motor having its frame provided with suspension-lugs, and a hoist proper suspended from the frame of said motor and geared to the armature-shaft thereof, the suspension-lugs on the motor being constructed and arranged similarly to those on the hoist whereby either the motor or the hoist may be directly suspended from the same overhead carriage.

3. In an electric hoist, the combination with an electric motor, and a hoist proper suspended from the motor-frame and geared to the motor-armature, of a brake-wheel on the armature-shaft, a pivoted brake-block for engagement with said wheel, a spring normally maintaining such engagement, a rock-shaft journaled to the motor-frame and operatively connected with the brake-block, and means for manually operating said rock-shaft.

4. In an electric hoist, the combination with a hoist proper, and an electric motor for operating the same, of a brake-wheel on said motor, a pivoted arm carrying a brake-block which engages said wheel, a spring normally maintaining such engagement, a rod or link connected to said arm, a rock-shaft journaled to the motor-frame, and having an eccentric portion which engages a loop or stirrup of said rod or link, and means for manually operating said rock-shaft.

5. In an electric hoist, the combination with the hoist proper, an electric motor for operating the same, and a rheostat or switch for controlling said motor, of a rock-shaft to which the movable contact member of the rheostat or switch is connected, means for manually turning said shaft in either direction, and a brake for said motor operatively connected to said rock-shaft and released by the same movement thereof which actuates said contact member.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK NATHER.

Witnesses:
LORETTO O'CONNELL,
H. W. SMITH.