

(No Model.)

C. W. FOWLER.
ELEVATOR.

No. 511,417.

Patented Dec. 26, 1893.

Fig. 1.

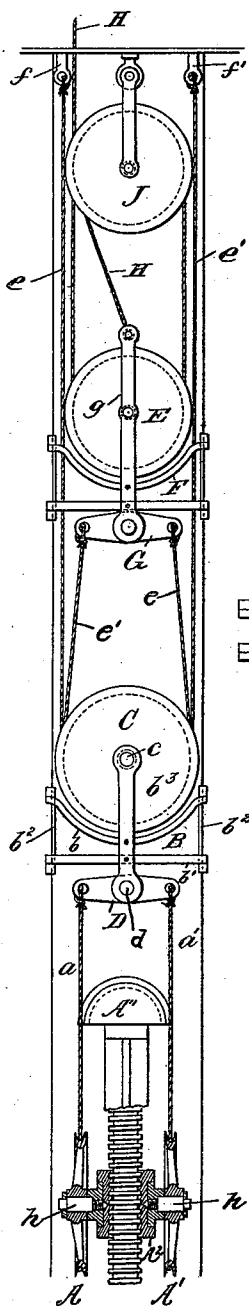


Fig. 2.

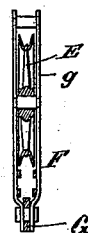
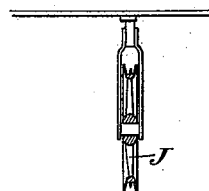
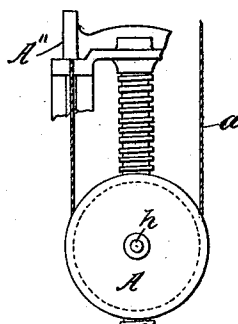
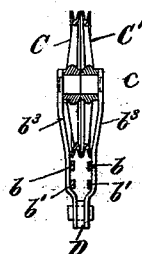
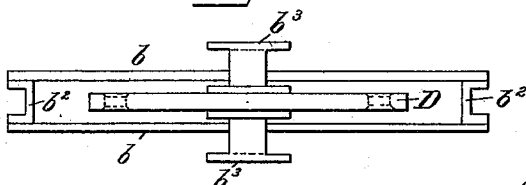


Fig. 3.



Attest:
Per Lewis.
A. A. Ord.

Inventor:
Chas. W. Fowler
by J. S. Edwards,
his attorney.

UNITED STATES PATENT OFFICE.

CHARLES W. FOWLER, OF BALTIMORE, MARYLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE STANDARD SCREW ELEVATOR MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 511,417, dated December 26, 1893.

Application filed March 29, 1893. Serial No. 468,120. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. FOWLER, of Baltimore, Maryland, have invented a new and useful Improvement in Elevators, which improvement is fully set forth in the following specification.

The present invention has reference to the construction of elevators or hoisting apparatus, and more particularly to the means for multiplying the speed of the primary sheaves, from which motion is transmitted to the car or platform.

The invention consists in a novel arrangement of the sheaves, and cables, through which movement is transmitted from the engine or prime motor to the car or platform, and the objects sought to be attained are increased simplicity, economy of construction and safety in such transmitting mechanism for high speed machines.

The advantages of the invention can be most conveniently explained in connection with the accompanying drawings, in which—

Figure I, is an elevation of mechanism for transmitting motion, constructed in accordance with the invention. Fig. II is a vertical section (the cables being omitted), and Fig. III is a bottom view of the sliding frame or carriage of one of the traveling sheaves.

The apparatus as represented in the drawings, is designed for use with an upright screw elevator or hoisting machine, such as shown in my Patent No. 439,647, granted November 14, 1890, A, A' representing the sheaves carried by the traveling nut A². In connection with the present invention, however, they represent merely the primary sheaves of the system, and may be carried by the piston rod of a hydraulic elevator, or actuated in any of the well known ways from a prime motor.

The cables *a a'* which pass around the primary sheaves, transmit the movement of the nut, or other device carrying said sheaves, to the carriage B of the traveling sheaves C C', the speed being doubled in this transmission. The connection is as follows: Cable *a* is fastened at one end to a part of the frame A'', substantially as in my said prior patent, carried under sheave A, and at its other end attached to one end of the pivoted or balance

beam D, cable *a'* being similarly connected with the other end of said beam, passing first around sheave A'.

The frame-work of the sliding carriage B is made up of wrought iron bars, the construction being evident from the drawings. It comprises the curved cross-bars *b*, the straight cross-bars *b'*, the vertical channel bars *b²* connecting the ends of the cross-bars, and adapted to engage and slide upon vertical rails in the shaft, and the vertical side-bars *b³*, in the upper end of which is the journal pin *c* upon which turn the intermediate traveling pulleys C C', and in the lower end of which is the pin *d* upon which beam D is pivoted.

From the carriage B, motion is transmitted by the intermediate cables *e e'* to a second carriage F, whose construction is substantially the same as that of carriage B. The cables *e e'* start at one end from fixed points, represented by the eye bolts *f f'* on opposite sides of the elevator shaft, and pass in opposite directions one around sheave C, the other around sheave C', the other ends of the cables being attached to the opposite ends of beam G, which is similar in construction to beam D. By this construction I bring the transmitting sheaves all directly in line, one beneath the other, economizing space, simplifying the construction and reducing the length of cable to a minimum. As in the case of the primary cables *a a'*, the secondary cables *e e'* are independent of each other, and it would require the breakage of both to release the car.

It will be understood that carriage F travels at twice the speed of carriage B, or four times the speed of the vertical movement of sheaves A A'. Carriage F, carries a single sheave E around which runs the hoisting cable H to which an elevator car or platform may be connected. The final multiplication of speed is given to this cable by the three-folding arrangement described in my said prior patent. The side bars *g* of the carriage F are carried up beyond the sheave E, and provided with an eye to which one end of the hoisting cable H is made fast. Thence the cable passes around the stationary sheave J, down and under sheave E, upward past sheave

J, which, as shown has a second groove, and thence over the usual head sheaves at the top of the shaft to the car or platform. Thus, by the multiplying arrangement shown, the hoisting cable transmits to the car or platform a speed twelve times that of the nut or support A² carrying the primary sheaves A A'.

The primary sheaves A A' are as shown, concave on the sides adjacent to each other, so that the groove of each sheave is thrown inward, toward its support. This detail is of importance in view of the great strain borne by the journal pins *h*, the liability of breakage being reduced by bringing the point at which the strain is applied as close as possible to the point of attachment of said pins to their support A². Another incidental advantage of this construction is that the same pattern can be used for the sheaves C C'. It will be seen that the rims of these sheaves, as well as their hubs are in contact, while the hubs remain of ample thickness. The arrangement moreover, is very compact.

It will be obvious that in applying the principle of my invention modifications may be made in the construction and arrangement of parts.

I claim as my invention—

1. In a speed multiplying apparatus for hoisting machines, the combination with a reciprocating carriage carrying two sheaves, of a second carriage to which motion is transmitted from the first at an increased speed, and two transmitting cables attached at one end to fixed supports on opposite sides respectively of the shaft or well, thence carried around said sheaves in opposite directions, and at their other ends attached to the second carriage, substantially as described.

2. In a speed - multiplying apparatus for hoisting - machines, the combination of the two reciprocating carriages transmitting mo-

tion one to the other, sheaves on the first carriage, a pivoted beam on the second carriage, and two transmitting cables attached to opposite ends respectively of said beam, thence passing each around one of the sheaves of the first carriage, and attached at their other ends to fixed points, substantially as described.

3. In a speed - multiplying apparatus for hoisting machines, the combination of the primary sheaves, and primary cables attached at one end to fixed points and passing around said primary sheaves, a sliding carriage to which the other ends of the primary cables are attached, two sheaves arranged side by side upon said carriage, two intermediate cables attached at one end to fixed points and passing each around one of said sheaves in opposite directions, a second carriage to which the other ends of said intermediate cables are attached, and means for transmitting the movement of the second carriage to a hoisting cable at an increased speed, substantially as described.

4. In a speed - multiplying apparatus for hoisting-machines, a sliding carriage for the transmitting sheaves, said carriage comprising a pair of straight cross-bars, a pair of downwardly curved cross-bars, vertical channel bars connecting the ends of all the cross-bars, vertical side-bars secured to the cross-bars and carrying at the upper end a journal pin for said sheaves, and a balance beam pivoted in the lower end of said side-bars, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES W. FOWLER.

Witnesses:

W. N. WAMSLEY,
WM. H. JONES.