

(No Model.)

C. W. FOWLER.
ELEVATOR.

No. 439,647.

Patented Nov. 4, 1890.

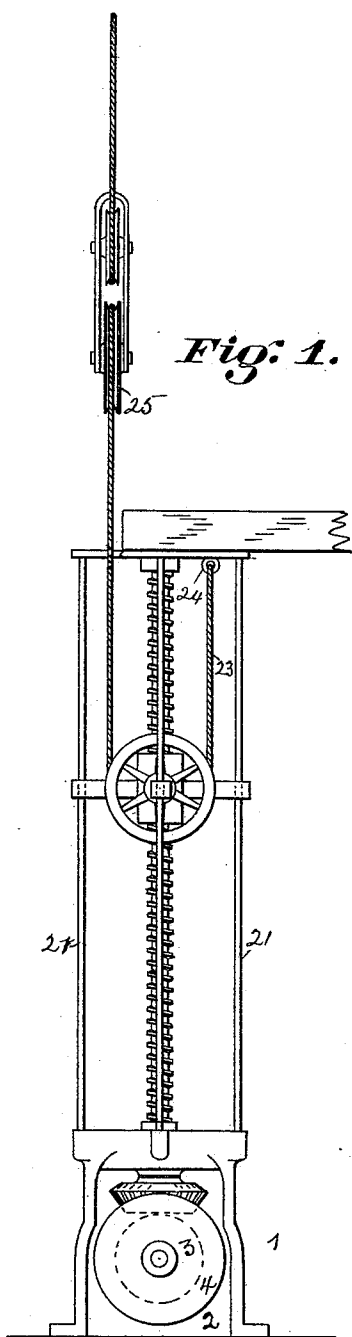


Fig. 1.

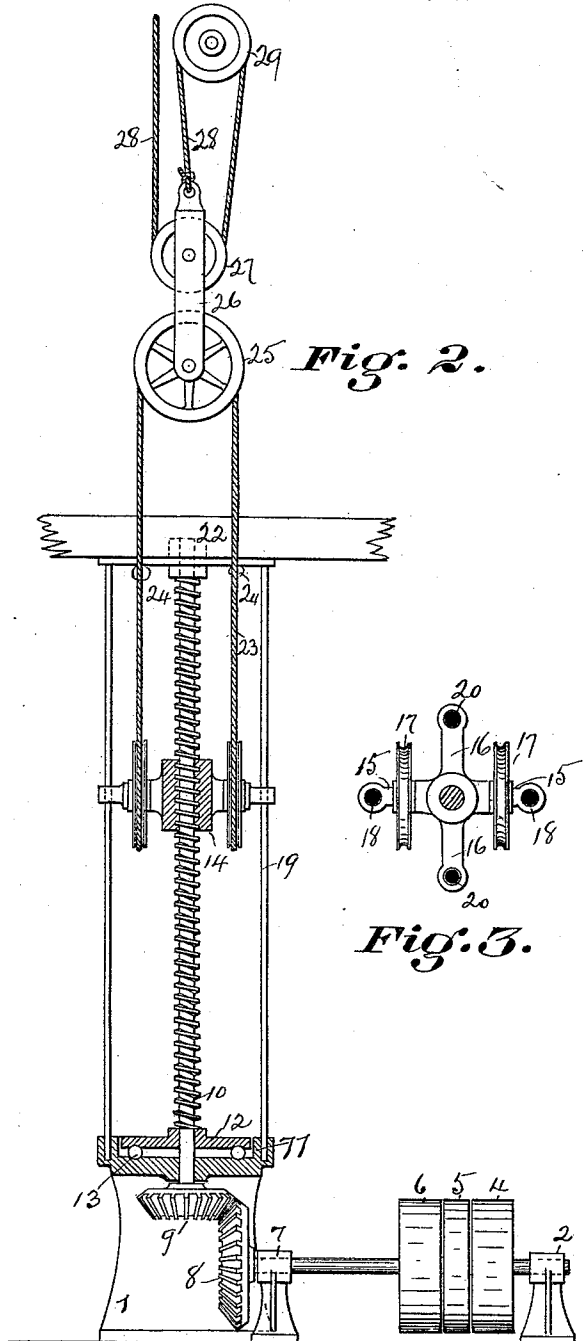


Fig. 2.

Fig. 3.

Witnesses:

J. K. E. Diffenduffer.
J. Henry Gough

Inventor.

Charles W. Fowler
by Price & Stuart
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES W. FOWLER, OF BALTIMORE, MARYLAND.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 439,647, dated November 4, 1890.

Application filed August 13, 1890. Serial No. 361,892. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. FOWLER, a citizen of the United States, and a resident of Baltimore city, State of Maryland, have
5 invented certain new and useful Improvements in Screw-Elevators, of which the following is a specification.

My invention relates to that class of devices which are used for raising and lowering elevators, and is designated as a "screw-elevator,"
10 in which the motion of the elevator is produced by a nut moved by a revolving screw. To the nut are secured sheaves and ropes, so arranged that a motion of the nut through a
15 short distance will cause any desired motion of the elevator.

My invention consists of a peculiar construction of screw-nut, sheaves, and ropes by which I accomplish peculiar and excellent results.
20

In the drawings, Figure 1 is a side elevation of my screw-elevator structure. Fig. 2 is a similar elevator turned at an angle of ninety degrees with former position and showing base
25 of screw and mounting in section. Fig. 3 is a section of a screw, showing top view of nut, guides, and sheaves.

In the drawings, 1 is a stand for a vertical screw.

30 2 is a pillow-block, upon which one end of shaft 3 rests and is journaled.

4, 5, and 6 are three pulleys mounted upon the shaft 3. 5 is keyed to the shaft, while 4 and 6 are loose.

35 7 is another pillow-block, sustaining the other end of the shaft 3, and in which it is journaled.

8 is a beveled gear keyed to the end of the shaft 3 and meshing with another beveled
40 gear 9, keyed to the lower end of the screw 10.

10 is the elevator-screw by which the lifting is done.

11 is a seat on the top of the screw-stand, which is in the form of a circular table having
45 a rim around its outer edge, and which is provided with a circular groove in its surface, in which rests a number of anti-friction balls 13 13.

12 is a disk keyed to the lower end of the
50 screw 10, and which rests upon the top of the anti-friction balls 13 13, and by which the weight of the screw is sustained. We have

not shown in the drawings a similar anti-friction device for receiving the upward thrust of the screw caused by the weight of the elevator, but it will be readily seen that a similar
55 structure to that below may be employed to the top of the screw.

22 is a beam, to which the upper end of the screw is secured.
60

14 is a nut meshing with the screw and traveling upon it, and having screwed to its sides four arms 15 15 and 16 16, which form a right-angle cross.

17 17 are two sheaves journaled upon the
65 arms 15 15.

18 18 are holes through the ends of the arms 15 15, and through which pass guide-rods 19 19, which are secured to the stand 1 at the lower end and to the beam 22 above.
70

20 20 are holes through the end of the arms 16 16, through which pass guide-rods 21 21, which are secured in the same manner as rods 19, and which serve, together with the rod 19,
75 to guide the nut 14 and the sheaves secured thereto as they move up and down on the screws.

23 is a cord secured to the beam 22 at 24, passing downward under one of the sheaves 17, up and over the hanging sheave 25, down and
80 under the second sheave 17, and up to the beam 22, where it is secured.

25 is a sheave journaled in a link 26.

26 is a link in which there are two sheaves journaled—one at each end 25 and 27. 25 has
85 been described, and 27 is a similar sheave, which may be of any desired size, and over which the rope 28 passes.

28 is a hoisting-rope. It is secured rigidly at the upper end to the link 26, passes up-
90 ward and over the fixed pulley 29, thence downward under the pulley 27, and up to the elevator.

The operation of the device is as follows: In the drawings I have shown the pulley used
95 to drive the apparatus; but I have not shown the shifter by which the belt is shifted from one pulley to another to raise and lower the elevator for the reason that this structure is old and well known to mechanics. It consists
100 of one straight and one cross-belt, both run by one counter-shaft. As before described, the pulleys 4 and 6 are loose on the shaft 3 and 5 is tight. The pulleys 4 and 6 are also

broader on the face than 5—twice the width. When, now, it is desired to shift the belts to cause the elevator to ascend or descend, they are moved simultaneously and either one or
 5 the other thrown upon the tight pulley 5, when it will turn backward or forward, as the case may be. When it is desired to stop the elevator, the shifter is thrown half-way and both belts remain upon the loose pulleys. The
 10 shaft 3 turns the gear 8, which meshes with the gear 9, turns it and the screw 10, which causes the nut 14 to ascend or descend, in accordance with the direction of the motion of the screw. The rope 23, being fixed to the beam
 15 22 at the points 24 24 and passing under the sheave 17, up and over the sheave 25, will cause said sheave to ascend or descend as the nut ascends or descends, but it will travel through twice the distance traveled by the
 20 nut in consequence of the double line of rope. The pulley 25, secured to link 26, will move with it the pulley 27 and cause that pulley to ascend or descend. In doing so it will draw the pulley 28 up and down, and thus draw the
 25 elevator rope and raise or lower the elevator. The number of pulleys and coils of the hoisting-rope made at this point may be varied at will to get any desired speed of elevator.

What I claim, and desire to secure by Letters Patent, is—

1. In an elevator, the combination of a screw, a nut mounted upon said screw and moved by it, two sheaves journaled to the nut, a cord secured at both ends to a beam and each end passing under one of the sheaves secured to the nut, and the loop passing up and over another sheave, which is suspended in a link, and an elevator-hoisting rope connected to said link, whereby an elevator-car may be raised or lowered.

2. In an elevator, the combination of a screw, a nut mounted upon said screw and moved by it, two sheaves journaled to the nut, a cord secured at both ends to a beam and each end passing under one of the sheaves secured to the nut, and the loop passing up and over another sheave, which is suspended in a link, in which are journaled two sheaves, the one over which the loop of the first rope passes and another, and a rope secured to the upper end of the link and passing over a sheave journaled at a fixed point, thence down under the upper sheave of the link, and then up to the elevator-car, substantially as described.

Signed at Baltimore, in the State of Maryland, this 12th day of August, A. D. 1890.

CHARLES W. FOWLER.

Witnesses:

NELSON HISS,

FELIX R. SULLIVAN.