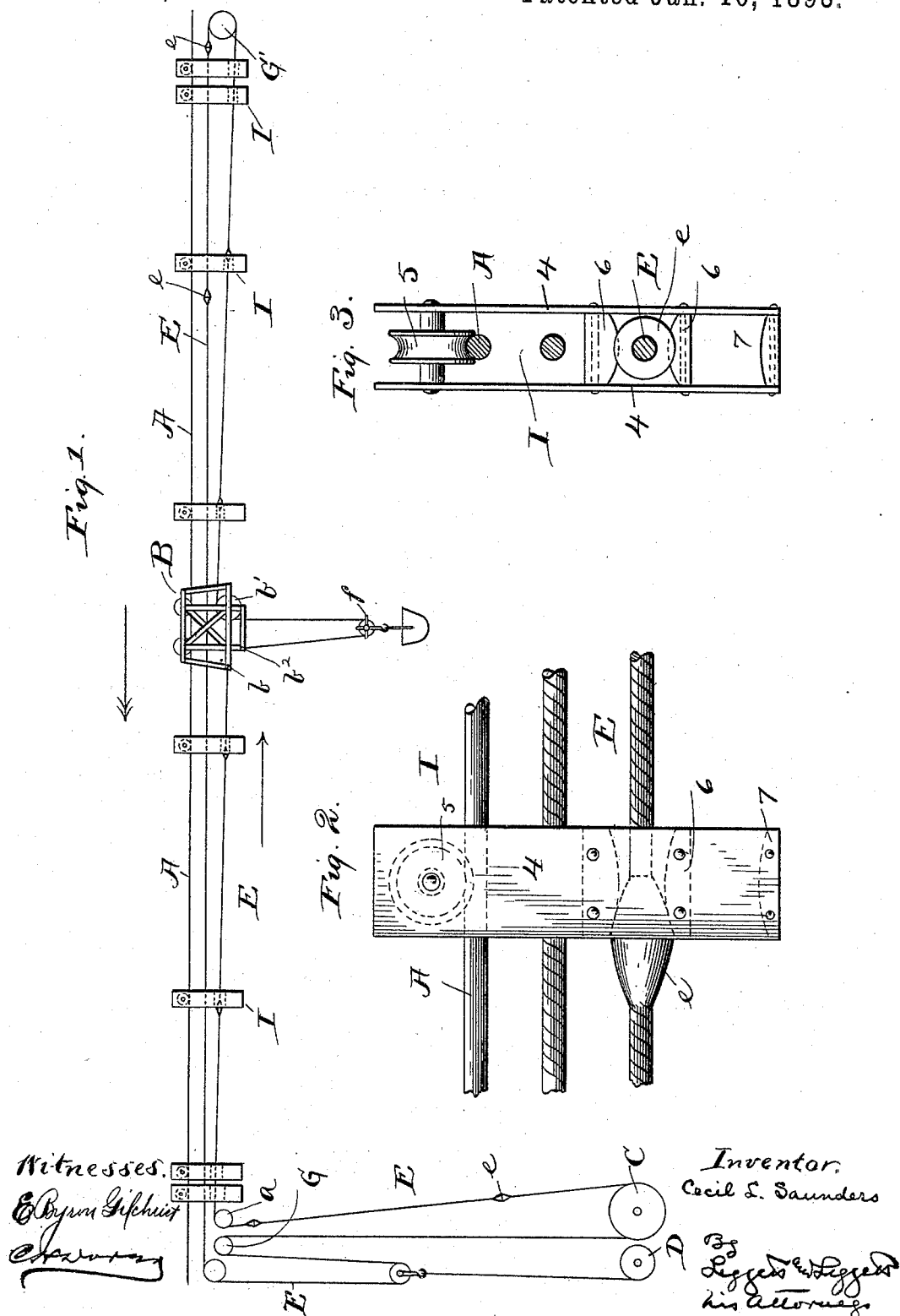


(No Model.)

C. L. SAUNDERS.
HOISTING AND CONVEYING APPARATUS.

No. 489,662.

Patented Jan. 10, 1893.



UNITED STATES PATENT OFFICE.

CECIL L. SAUNDERS, OF CLEVELAND, OHIO.

HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 489,662, dated January 10, 1893.

Application filed April 4, 1892. Serial No. 427,629. (No model.)

To all whom it may concern:

Be it known that I, CECIL L. SAUNDERS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hoisting and Conveying Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in hoisting and conveying apparatus; and it pertains more especially to an improvement in the apparatus for which Letters Patent of the United States No. 456,640 were granted to me July 28, 1891.

In the accompanying drawings, Figure 1 is a diagrammatic elevation of hoisting and conveying apparatus embodying my invention. Figs. 2 and 3 are, respectively, a side and an end elevation, exhibiting a suitable construction of an idle or cable-supporting carrier employed in my improved apparatus.

A represents the track, cable or whatever it may be, on which the load-carrier B and any desired number of idle-carriers I, hereinafter described, are adapted to travel.

C represents the drum on which cable E winds and unwinds in propelling the carriers.

D represents the hoisting-drum, and F represents the bucket for hoisting the load.

The two ends of cable E are attached to carriage B, one section being attached for instance at *b*, whence it leads from carrier B to and over sheave *a*, and thence leads to and around drum C, the cable being usually coiled once or twice around this drum to give the necessary friction. Thence the cable returns to and over sheave G, whence it leads to and over sheave G', sheaves G G' being located at the extremes of the route. From sheave G' cable E leads over sheave *b'*, with which carriage B is provided, and thence leads under sheave *f* of the fall-block that supports bucket F. From sheave *f* the cable returns and is secured to carrier B, for instance, as at *b*². With such construction it is obvious that carriage B will be drawn by the cable in one direction or the other, according as the drum C is rotated in one direction or the other.

The object of my present invention is to provide suitable means whereby cable E will

be prevented from sagging in case the route is comparatively long.

A number of idle or rather cable-supporting carriers, as at I, according to the length of the route, are provided, the same being adapted to travel on track A.

A simple construction of cable-supporting-wheel-carrier suitable for the purpose, is more clearly shown in Figs. 2 and 3. 4 represents the upright side-pieces of the said carrier. A suitable distance below wheel 5 of the carrier, side-pieces 4 are connected by a pair of transverse pieces or members 6, and side-pieces 4 are also preferably connected with each other at their extreme lower ends, as at 7. Cable E is provided at suitable intervals, of, for instance, fifty or seventy-five feet or more, according to circumstances, with protuberances or projecting-devices, as at *e*. Were the length of the route three hundred feet and were it desired to have protuberances or projecting-devices *e* seventy-five feet apart, cable E would be provided with eight of such protuberances or projecting-devices.

Protuberances or projecting-devices *e* and carriers I correspond in number; that is, as many projecting-devices or protuberances *e* are provided as it is required to have carriers I, the route being provided preferably with an equal number of such carriers at each end of load-carriage B, and protuberances or projecting-devices *e* are adapted, respectively, to engage the respective carriers I and actuate the latter in the direction in which cable E and load-carrier B travel bringing the respective carriers, in the route at either end of load-carriage B according to the direction of travel of the load-carriages into position to properly support cable E and prevent sagging of the latter. In the apparatus illustrated cable E is provided with eight protuberances or projecting-devices *e*, as already indicated, and as many cable-supporting-carriers I, are provided as aforesaid, and referring to the carriers I in the route at the respective ends of the load-carriage and to the protuberances or projecting-devices provided for said carriers, the open space between transverse members or pieces 6 of the respective carriers I, in dimensions, relative to the size of the protuberances or projecting-devices on the cable, is such that the free passage of all of said

protuberances or projecting-devices will be accommodated save to the one that is adapted to engage and actuate the respective carrier.

Referring to Fig. 1 of the drawings, suppose
 5 that the load-carriage has just traveled in the direction indicated by the single-headed arrow and arrived at the place shown and suppose the direction of the load-carriage were now reversed as indicated by the double-
 10 headed arrow, the dimensions of the space or opening between transverse members or pieces 6 of carriers I at the respective end of load-carrier B, in the present instance, the right-hand end, and the dimensions of the
 15 protuberances or projecting-devices left of load-carrier B, would be such, relative to each other, that protuberance or projecting-device *e* nearest the end of cable E attached to load-carriage B at *b*², will pass freely through the
 20 respective carriers I save the one nearest to load-carriage B; the next succeeding protuberance or projecting-device *e* will pass through all of said carriers save the carrier just excepted and the next succeeding one,
 25 and so on with the remaining two carriers I and the remaining two protuberances or projecting-devices of cable E adapted to engage and actuate said two last-mentioned carriers. In the meantime the load-carriage
 30 will engage the cable-supporting carrier nearest the other or opposite end of the load-carriage and move the same toward its place of beginning, said cable-supporting carrier in turn engaging and retaining the next ad-
 35 jacent cable-supporting-carrier and so on with the remaining two carriers at that end of the route, the protuberances or projecting-devices *e* of cable E adapted to engage and actuate the last-mentioned cable-supporting
 40 carriers bearing a corresponding relation to said carriers, as that hereinbefore described of the protuberances or projecting-devices and the cable-supporting carriers separated and brought into position by said last-men-
 45 tioned protuberances or projecting-devices when the load-carriage is propelled in the direction indicated by the double-headed arrow.

From the foregoing description, it will be observed that cable E is always adequately
 50 supported, whatever be the direction in which the load-carriage is traveling, and the simplicity and advantages of my invention, it is believed, are quite apparent. I desire, however, to have it understood that my invention
 55 is not confined to any particular construc-

tion of the devices indicated, but comprises broadly movable cable-supporting-devices and suitable devices or means attached to or connected with cable E and adapted to en-
 60 gage and move said cable-supporting devices as required to adequately support and prevent any objectionable sagging of the cable.

What I claim is:—

1. In hoisting and conveying apparatus, a track, a load-carriage, a single and continu-
 65 ous cable for hoisting the load and propelling the load carriage in either direction, said cable being provided, at suitable intervals, with protuberances or projecting-devices, one or more cable-supporting-devices in the route at
 70 each end of the load-carriage through which the cable passes in one direction and returns, said cable supporting devices adapted to travel on the track aforesaid and be engaged and actuated by a protuberance or project-
 75 ing-device secured to the propelling cable aforesaid, the arrangement and construction of the cable-supporting-devices and protuberances or projecting-devices in the line of the propelling-cable, relative to each other,
 80 being such that a sufficient number of cable-supporting-devices will always be in position to adequately support the cable, substantially as and for the purpose set forth.

2. In hoisting and conveying apparatus, a
 85 track, a load-carriage, a single and continuous cable for hoisting the load and propelling the load carriage in either direction, said cable being provided, at suitable intervals, with
 90 protuberances or projecting-devices, one or more cable-supporting-devices in the route at each end of the load-carriage and adapted to travel on the track aforesaid and be engaged and actuated by a protuberance or project-
 95 ing-device in the line of the propelling cable aforesaid, the arrangement and construction of parts being such that said protuberances or projecting-devices in the line of the cable are adapted to propel the carriers in the one
 100 direction and the load-carriages is adapted to propel them in the other or opposite direc-
 105 tion, substantially as and for the purpose set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this
 23d day of February, 1892.

CECIL L. SAUNDERS.

Witnesses:

C. H. DORER,
 WARD HOOVER.