

(No Model.)

3 Sheets—Sheet 1.

E. G. SPILSBURY.
CONVEYING AND HOISTING DEVICE.

No. 482,443.

Patented Sept. 13, 1892.

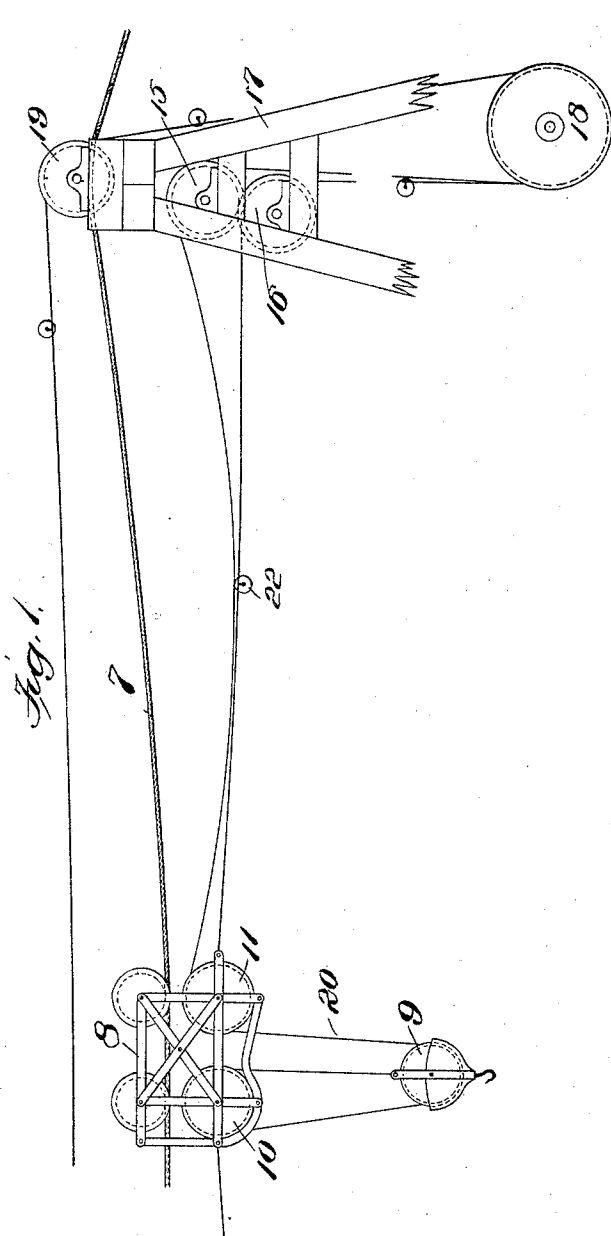
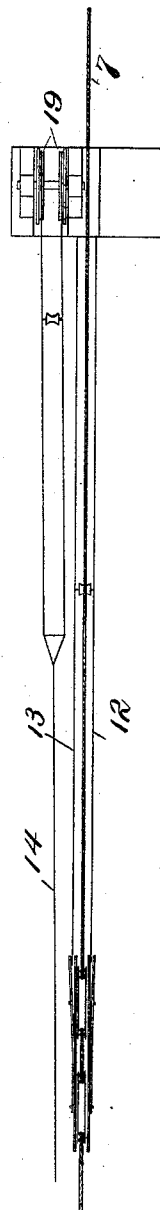


Fig. 1.



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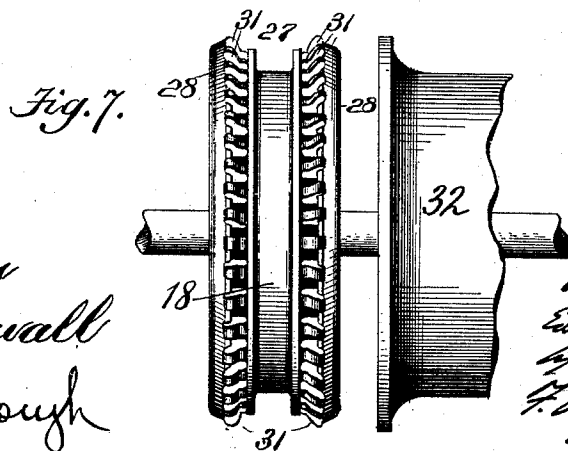
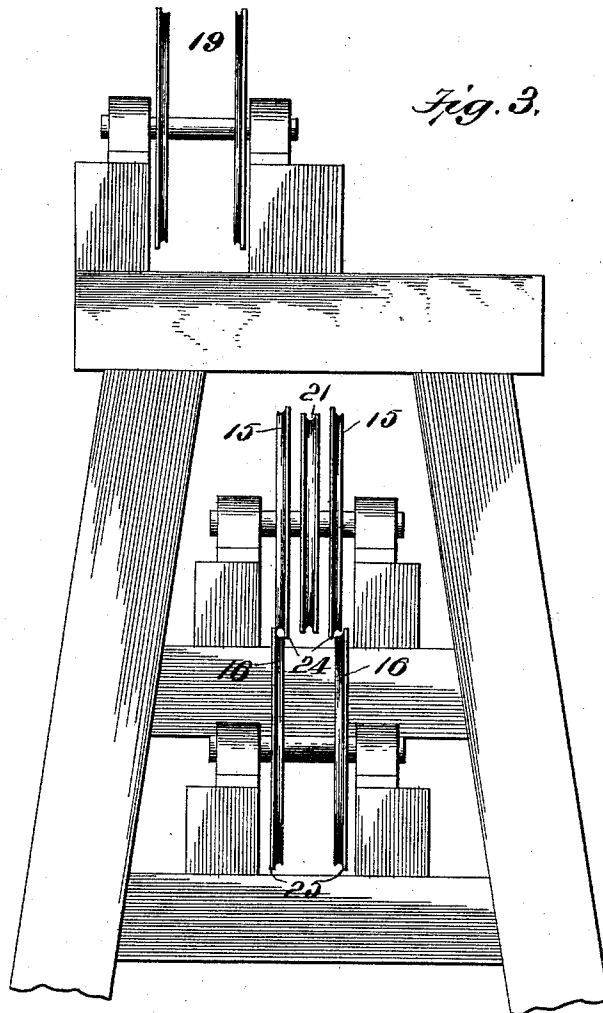
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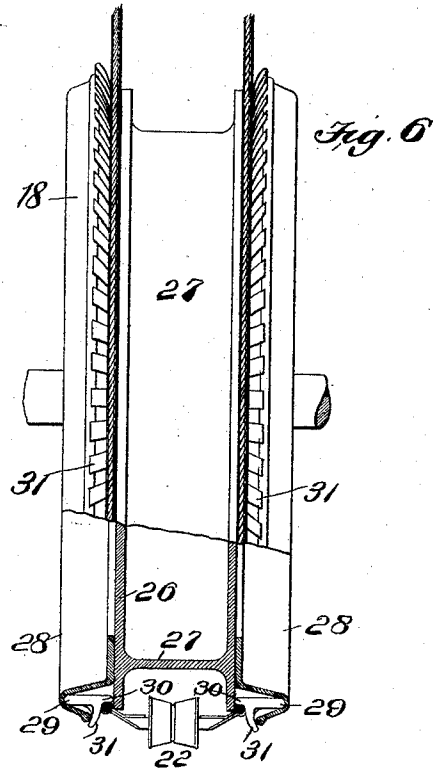
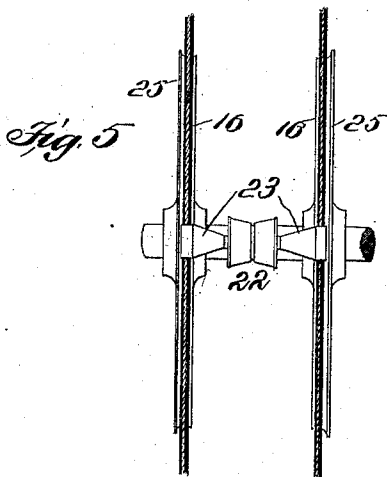
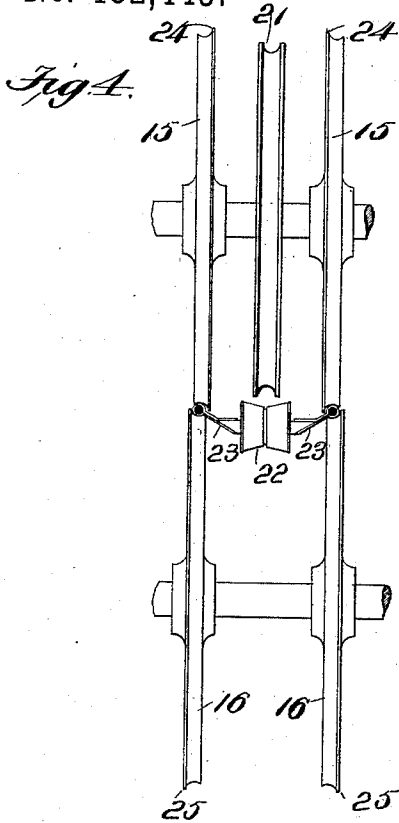
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3 Sheets—Sheet 3.

E. G. SPILSBURY.
CONVEYING AND HOISTING DEVICE.

No. 482,443.

Patented Sept. 13, 1892.



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UNITED STATES PATENT OFFICE.

EDMUND GYBBON SPILSBURY, OF TRENTON, NEW JERSEY, ASSIGNOR TO
THE TRENTON IRON COMPANY, OF SAME PLACE.

CONVEYING AND HOISTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 482,443, dated September 13, 1892.

Application filed April 19, 1892. Serial No. 429,732. (No model.)

To all whom it may concern:

Be it known that I, EDMUND GYBBON SPILSBURY, a citizen of the United States, residing at Trenton, in the county of Mercer and State
5 of New Jersey, have invented certain new and useful Improvements in Conveying and Hoisting Devices; 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 appertains to
10 make and use the same.

My invention relates to devices for conveying and hoisting, and more particularly to that class of conveying and hoisting devices
15 wherein a traveling carriage supported upon a cable trackway and provided with hoisting mechanism actuated from the terminal station is adapted to be propelled backward and forward upon the trackway by means of an
20 endless hauling-rope actuated or driven by a power-pulley.

In apparatus of this general character the tendency of the hoisting-rope as the carriage moves outwardly from the terminal point of the trackway is to sag considerably between
25 its point of attachment to the carriage and the end support of the trackway. This sagging is due to the weight of the hoisting-rope and increases in magnitude and importance
30 as the carriage recedes or moves outward from the end support of the trackway, so that if not compensated for or obviated by some auxiliary provision of the general conveying system its tendency is to interfere materially
35 with the prompt response of the hoisting-sheave to the action of the hoisting-drum at the terminal station, to obstruct the free space below the hauling-rope, and to be itself liable to come in contact with obstacles that
40 will subject it to injury.

The main object of my invention is to substantially obviate the sagging in question by such a construction and arrangement of parts that as the carriage, with its hauling-rope,
45 moves outwardly along the line the hoisting-rope paid out at the same time will be continuously supported from the hauling-rope, so as to occupy substantially the same horizontal plane during the forward and back-
50 ward movement of the carriage and to be

substantially taut at all times. To this end I make use of a divided hauling-rope consisting, in whole or in part, of two adjacent cables separated by an intervening space and
55 supporting between them at intervals a number of sheaves or rollers, upon which the hoisting-rope is adapted to rest.

It is a further object of my invention to provide a driving-pulley specially adapted to the actuation of the divided hoisting-rope
60 referred to and of such construction and arrangement as to exercise an effective gripping action upon both branches of the hauling-rope without, however, interfering in any
65 manner with the rollers carried between said branches.

My invention consists, furthermore, in certain other details of construction and general combinations of parts, as will be hereinafter described, and particularly pointed out in the
70 claims forming a part of this specification.

The preferred construction in which I have embodied my improvements is illustrated in the accompanying drawings, wherein—

Figure 1 represents, partly broken away, a
75 side elevation of a conveying and hoisting device organized in accordance with my invention. Fig. 2 represents a top plan view of the same with the driving-pulley omitted. Fig. 3 represents an end elevation of the upper
80 portion of one of the terminal standards, being the standard shown in Figs. 1 and 2. Fig. 4 represents on a larger scale a detached view of the guide-sheaves for the divided hauling-rope, illustrating, further, the
85 manner in which the rollers for sustaining the hoisting-ropes pass said guide-sheaves. Fig. 5 represents a top plan view of the parts shown in Fig. 4, with the upper set of guide-sheaves removed. Fig. 6 represents, partly
90 in section and partly in elevation, the driving-pulley, and illustrates the manner in which said driving-pulley clutches the divided hauling-rope. Fig. 7 is a detail showing the driving-pulley and the hoisting-drum in their
95 positions relative to each other.

Similar numerals of reference indicate similar parts throughout the several views.

Referring to the drawings, 7 indicates a trackway, which may consist, as shown, of a 100

wire cable supported in any suitable manner above the ground by means of appropriate standards. Upon the trackway is mounted to travel freely a conveying-carriage 8, provided with suitable hoisting sheaves or pulleys—as, for instance, the differential system 9 10 11.

The frame of the carriage 8 is connected with an endless hauling-rope divided into two branches 12 13 for a portion of its length and being continued as a single rope 14 for the remainder thereof. Guide-sheaves 15 16, mounted to revolve freely upon bearings within the terminal standard 17, direct the divided hauling-rope to the driving-pulley 18, from which it passes upwardly over the guide-sheaves 19 to the remote terminal standard of the line, thence returning and being connected to the opposite end of the carriage 8, as indicated.

The hoisting-rope 20 passes from the sheave 11 over the sheave 21, and thence to the winding or hoisting drum 32. Between the divided branches of the hauling-rope is arranged at intervals a series of supports consisting, preferably, of freely-revoluble rollers 22, mounted upon short shafts, which are rigidly held between the downwardly-inclined ends of stout metal clips 23, which are bent about and firmly attached to the branches 12 13 of the hauling-rope.

In order that the clips 23 may pass freely the guide-sheaves 15 16, the upper set of guide-sheaves is provided with flanges 24 upon their inner faces and the lower set of guide-sheaves is provided with flanges 25 upon their outer faces. By this expedient the hauling-rope branches are securely guided between the grooves of the sheaves, while at the same time provision is made for the unimpeded passage of the clips 23.

The driving-pulley is provided with two face-plates 26, preferably connected by an annular web 27 and carrying the outlying annular flanges 28. Between each face-plate 26 and its adjacent outlying flange 28 there exists an annular space or recess for the reception of an annular series of gripping-dogs. These gripping-dogs have their heel portions 29 located within the outer angle of the recess and at their forward ends or toes 30 are adapted to come in contact with the divided hauling-rope. They are, furthermore, provided with a rearwardly-inclined clamping projection 31.

The operation of the invention will be readily apparent. As the traveling carriage 8 moves outwardly from the standard 17 the hoisting-rope 20 is paid off from the drum 32 and rests upon the rollers 22, being thus continuously supported by the hauling-rope and sustained thereby against sagging. During the movement of the carriage the clips of the rollers 22 pass freely between the guide-sheaves of the hauling-rope, and as the driving-pulley revolves the rearwardly-inclined

projections 31 of the dogs force the branches of the hauling-rope against the face-plates 26, thereby firmly gripping or clamping the hauling-rope over a large portion of the periphery of the pulley and at many points simultaneously, so as to drive both branches of the hauling-rope with great uniformity and regularity. It will be noticed that the sheaves 19 at the top of the standard 17 are located at one side of the trackway 7. This is of course for the purpose of enabling the hauling-rope to avoid the trackway-cable, which is anchored in the usual manner beyond the standard 17.

Having thus described my invention, what I claim is—

1. In a conveying device, the combination, with a traveling carriage, of a hauling-rope for said carriage and a hoisting-rope supported by the hauling-rope and thereby being prevented from sagging, substantially as described.

2. In a conveying device, the combination, with a traveling carriage, of a hoisting-rope, a divided hauling-rope having its branches separated from each other by an intervening space, and supports suspended between the branches to prevent sagging of the hoisting-rope, substantially as described.

3. In a conveying device, the combination, with a traveling carriage, of a hoisting-rope, a divided hauling-rope having its branches separated from each other by an intervening space, and supporting-rollers suspended between the branches to prevent sagging of the hoisting-rope, substantially as described.

4. In a conveying device, the combination, with a traveling carriage, of a hoisting-rope, a divided hauling-rope having its branches separated from each other by an intervening space, clips secured to the branches, and supporting-rollers mounted between said clips, said rollers preventing the sagging of the hoisting-rope, substantially as described.

5. In a conveying device, the combination, with a divided hauling-rope having its branches separated by an intervening space, of clips secured to the two branches, said clips having inwardly and downwardly inclined bearings, rollers mounted within said bearings, and two pairs of guide-sheaves for the hauling-rope, the upper pair of said guide-sheaves having flanges on their inner faces and the lower pair having flanges on their outer faces, substantially as described.

6. In a conveying device, the combination, with a divided hauling-rope having supports for a hoisting-rope, of guide-sheaves separated by a space corresponding to that which separates the branches of the hauling-rope, a hoisting-rope, and a guide-pulley for the hoisting-rope, located in a plane between the hauling-rope guide-sheaves, substantially as described.

7. In a conveying device, the combination, with a divided hauling-rope and supports for a hoisting-rope, of a driving-pulley having

two independent sets of gripping devices, one for each division or branch of the hauling-rope, substantially as described.

5 8. In a conveying device, the combination, with a divided hauling-rope, of a driving-pulley provided with face-plates having outlying side flanges and gripping-dogs located within spaces intermediate the side flanges and face-plates, the branches of the hauling-rope

passing between the dogs and the face-plates, so substantially as described.

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

EDMUND GYBBON SPILSBURY.

Witnesses:

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F. C. LOWTHORP.