

C. E. ELM.
HOISTING AND CONVEYING APPARATUS.
APPLICATION FILED FEB. 24, 1912.

1,034,386.

Patented July 30, 1912.

2 SHEETS—SHEET 1.

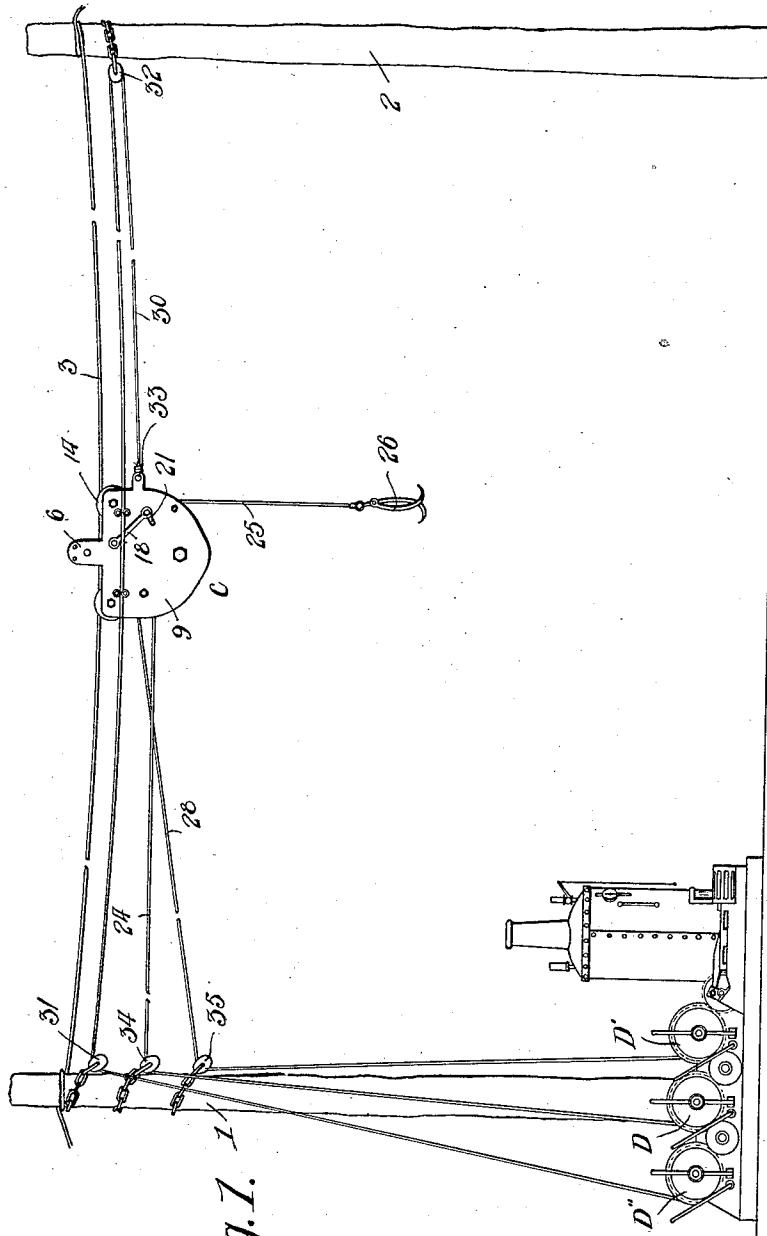


Fig. 1.

Witnesses

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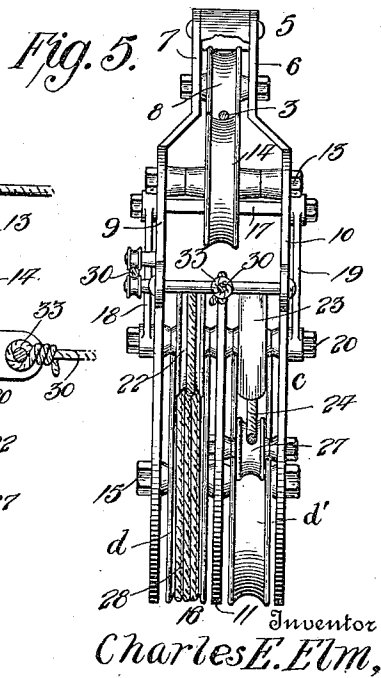
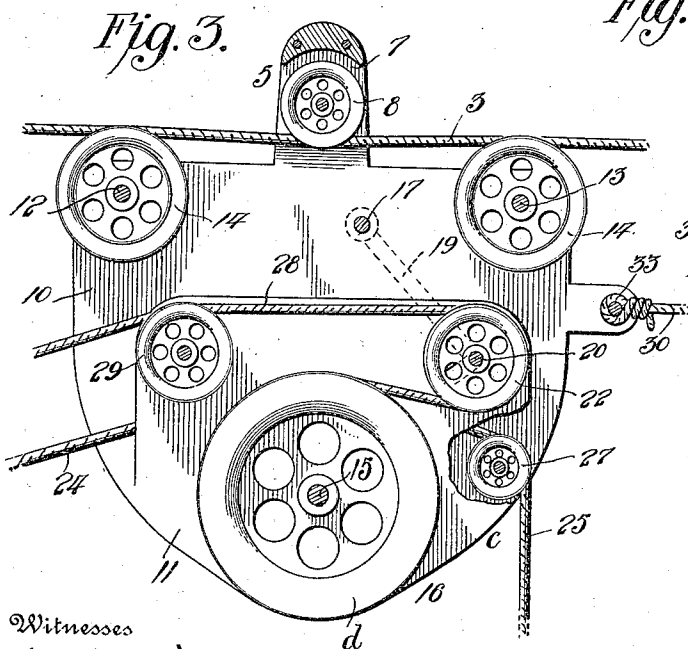
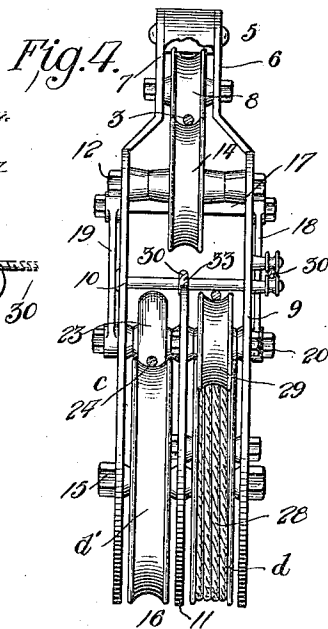
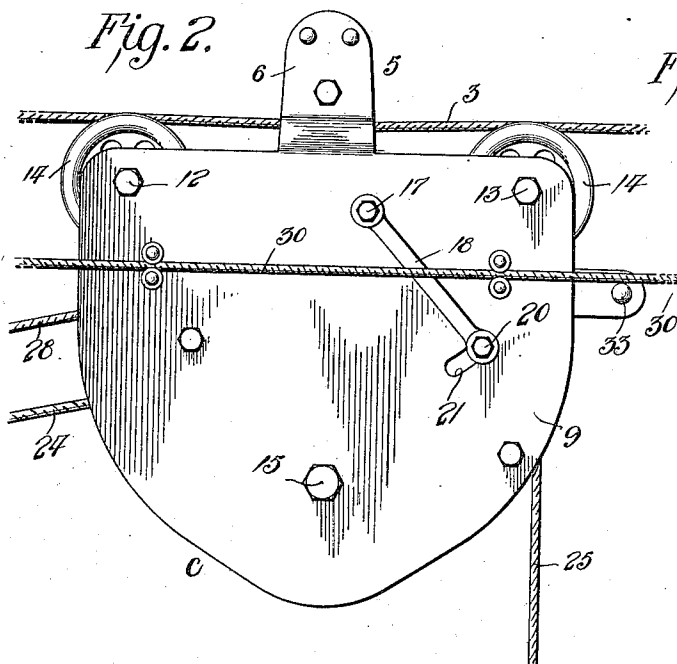
Attorney

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UNITED STATES PATENT OFFICE.

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HOISTING AND CONVEYING APPARATUS.

1,034,386.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES E. ELM, a citizen of the United States of America, residing at South Prairie, in the county of Pierce and State of Washington, have invented new and useful Improvements in Hoisting and Conveying Apparatus, of which the following is a specification.

My present invention relates to improvements in hoisting and conveying apparatus and has particular application to an overhead cable system for hauling or skidding logs.

In carrying out this invention, it is my purpose to provide an apparatus of this character wherein the hauling or skidding rope may be acted upon by a slack pulling line or rope to give out the necessary slack so that the fall-portion of the skidding rope may be attached to the logs to be hauled and inversely, the slack pulling line wound up or taken in in the inhauling of the fall-portion of the hauling or skidding rope.

Furthermore, I aim to provide an apparatus of that type employing among other features an outhaul rope, and skidding and slack pulling ropes, wherein the hauling or skidding rope may be paid out so as to facilitate connecting the fall rope with the logs to be hauled and vice versa the slack pulling line taken in upon the inhaul of the fall rope, movable means being employed to assist the slack pulling rope or line in paying out the hauling rope.

To these and other ends, the invention embodies among other features, a trackway and a carriage movable thereon and carrying a drum with which is engaged runs of the hauling and slack pulling ropes, and means movable on the carriage to engage said hauling rope in the movement of the slack pulling rope so as to assist the latter in paying out the fall rope, relatively stationary drums being connected to one end of each of said ropes so as to operate the latter.

With the above-recited objects in view and others of a similar nature, the invention consists in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the appended claims.

In the accompanying drawings wherein has been shown one embodiment of my invention; Figure 1 is a diagrammatic view of an apparatus containing my invention

adapted for logging. Fig. 2 is a detail side elevation of the carriage and load connections therewith. Fig. 3 is a longitudinal sectional view of the same, parts being broken away and other parts shown in elevation. Fig. 4 is an end elevation of the same partly in section, and Fig. 5 is an elevation of the opposite end partly in section.

In the accompanying drawings, I have shown the invention applied to an overhead logging system in which the load carriage travels upon a cable or trackway. Certain features of the invention, however, are applicable to hoisting and conveying apparatuses or systems of other types and it will be understood that the invention is therefore not limited to the specific form of apparatus as embodied in the drawings, as I contemplate certain modifications and changes which may be made in order to adapt the invention to the best advantage according to the circumstances or requirements in each particular case.

Similar reference characters designate like parts throughout the several views.

Referring now to the accompanying drawings in detail, the head and tail supports or trees are indicated by the numerals 1 and 2 respectively, while 3 designates the main cable or trackway connected at opposite ends to the head and tail supports and designed to support the load carriage denoted by C. The carriage C, in the present instance, includes a trolley 5 composed of companion brackets 6 and 7 between which is mounted a supporting sheave 8 designed to rest upon the main cable and facilitate the movement of the carriage upon the latter. The carriage proper includes spaced side plates 9 and 10 depending from the brackets 6 and 7 respectively, and an intermediate plate 11 spaced from the inner surfaces of the plates 9 and 10. It is conceivable, however, that this structure of the carriage may be varied if desired and without departing from the spirit of my invention. Fixed to the upper opposite ends of the plates 9 and 10 of the carriage are shafts 12 and 13 upon each of which is rotatably mounted a guide sheave 14 disposed between the plates and designed to cooperate with the supporting sheave 8 to hold the carriage upon the main cable and insure the stability or equilibrium thereof, the sheaves 14 being disposed in a plane below that of the supporting sheave so that the main cable may

be passed between such sheaves. Fixed upon a shaft 15 journaled in alining bearings in the plates 9 and 10, is a drum 16 composed, in this instance, of the two parts d and d' which parts are disposed upon the opposite sides of the center plate 11 of the carriage and confined between such plate and the side plates of the carriage. Secured to the opposite ends of a shaft 17 disposed in alining openings in the side plates of the carriage at an appropriate distance from the upper edges of such plates and exteriorly of the latter, are arms 18 and 19 provided adjacent their free ends with openings designed to receive a shaft 20 which shaft passes through alining arcuate-shaped slots 21 formed in the side and intermediate plates of the carriage and are designed to permit movement of the shaft 20 relative to the drum 16, as will presently appear. The shaft 20 is preferably revolubly mounted within the extremities of the arms 18 and 19 and fixed to this shaft upon the opposite sides of the intermediate plate 11 are sheave wheels 22 and 23, the former being disposed in proximity to the periphery of part d of drum 16, while the latter is disposed adjacent the periphery of the part d' of such drum.

The shaft 17, arms 18 and 19, shaft 20 and sheave wheels 22 and 23 form what I term the movable member on the carriage and, although I have described and shown one specific form of such movable member I desire to have it understood that I do not limit myself to the exact details of construction of such member, as the elements composing such member may be varied and the arrangement of such elements changed without exceeding the scope of my invention. Passing over the part d' of drum 16, is the hauling or skidding rope 24 terminating beyond said drum in a fall rope 25 to the free end of which latter is connected the tongs 26 adapted to grip the logs or other objects to be hauled, while rearwardly of the carriage with respect to the fall rope, the said skidding rope is wound about the hauling drum D of the hoist. If desired, a pilot sheave 27 may be connected to the carriage in advance of the drum 16 to accommodate the skidding rope intermediate the carriage and the tongs so as to facilitate the operation of the hauling or skidding rope.

Wound about the part d of drum 16 is one extremity of a slack pulling line or rope 28 which passes from part d of drum 16 around sheave wheel 22, thence over a guide sheave 29 upon a shaft journaled in suitable bearings in the plates 9 and 11 and disposed in alinement with the sheave wheel 22. From guide sheave 29, the slack pulling rope passes to the slack pulling drum D' of the hoist. The numeral 30 designates the out-

haul rope which, as shown, is connected at one end with outhaul drum D'' of the hoist, and passes over a guide sheave 31 secured to the head tree, thence to a guide sheave 32 secured to the tail tree, from which latter sheave a run of the outhaul rope is connected to the forward end of the carriage as at 33 so that in the operation of the outhaul drum D'', the carriage may be drawn along the main cable from the head tree toward the tail tree so that the tongs 26 on the fall-portion of the skidding rope may be engaged with the logs or other objects to be hauled. Suitable guide sheaves 34 and 35 are connected to the head tree 1 to receive the skidding rope and slack pulling line respectively between the connections of such rope with the carriage and their respective drums, as usual.

The operation of my improved apparatus may be briefly stated as follows: Assuming the carriage to be positioned upon the main cable adjacent the head support and it is desired to outhaul the carriage toward the tail tree, outhaul drum D'' is thrown into gear with the hoist engine whereby outhaul rope 30 may be wound about its drum to move the carriage toward the tail tree. Simultaneous with the winding up of outhaul drum, slack pulling drum D' and hauling drum D are permitted to unwind so as to carry the skidding rope toward the tail tree. The slack line drum is kept under more or less tension when unwinding and by virtue of the slack line passing over sheave wheel 22 it will be seen that sheave wheel 23 will be held in engagement with the run of the skidding rope on part d' of drum 16 thereby holding the tongs and the fall-portion of such rope in elevated position until the carriage has been located conveniently with respect to the objects to be hauled. At this time, outhaul drum is checked or rendered inoperative upon the outhaul rope and slack pulling drum D' thrown into gear with the hoist engine to inhaul the slack line, consequently turning part d of drum 16 and part d' of such drum and also sheave wheels 22 and 23, the latter assisting part d' of drum 16 to pull out the necessary slack in the hauling or skidding rope so that the fall-portion of such rope may drop to the ground under the weight of the tongs and be carried to the logs or other objects to be hauled. When the tongs are connected with the logs or other objects, slack pulling drum D' is thrown out of gear with the hoist engine and hauling drum D touched up with such engine so that the fall-portion of the skidding rope may be inhailed with respect to the carriage, and inversely slack pulling line wound about part d of drum 16, the slack line drum being disconnected from the engine and permitted to unwind in the operation of the hauling drum so that more or less of the slack pulling line may be wound about

the part *d* of drum 16. Upon the fall-portion of the skidding rope and the tongs with the log assuming the desired elevated position, the outhaul rope is released from the influence of its hauling drum, and hauling drum D and slack line drum D' operated simultaneously from the hoist engine to inhaul the carriage.

From the above description taken in connection with the accompanying drawings, it will be seen that I have provided a hoisting system wherein the skidding rope may be drawn out with the load carriage and the fall-portion of such rope held stationary with respect to the carriage in the outhaul of the latter. Furthermore, it will be noted that I have provided a load carriage wherein the slack pulling line may operate to pull out the necessary slack in the skidding rope and inversely, the skidding rope operate to rewind the slack line so that the latter may repeat its operation, means being carried by the carriage and movable thereon to assist in holding the skidding rope stationary in the outhaul of the carriage and the paying out of such rope to receive the logs, and while I have herein shown and described one embodiment of my invention, by way of illustration, I desire to have it understood that I do not limit myself to all of the details of construction and arrangement of parts herein delineated, as modification and variation may be made without departing from the spirit of my invention or exceeding the scope of the claims.

I claim:

1. In a hoisting and conveying apparatus, the combination with a trackway, of a carriage movable on the trackway, a drum on the carriage, a hauling rope and a slack pulling rope, each having a run in engagement with said drum, a stationary drum for each of said ropes, and means movable on the carriage to engage said hauling rope in the movement of the slack pulling rope.

2. In a hoisting and conveying apparatus, the combination with a trackway, of a carriage movable on the trackway, a drum on the carriage, a hauling rope and a slack pulling rope, each having a run in engagement with said drum, a stationary drum for each of said ropes, and means movable on the carriage to pay out said hauling rope in the movement of the slack pulling rope.

3. In a hoisting and conveying apparatus, the combination with a trackway, of a carriage movable on the trackway, a drum on the carriage, a hauling rope and a slack pulling rope, each having a run in engagement with said drum, a stationary drum for each of said ropes, and means movable on the carriage to pay out said hauling rope in the movement of the slack pulling rope and rewind said slack pulling rope upon the inhauling of said hauling rope.

4. In a hoisting and conveying apparatus, the combination with a trackway, of a carriage movable on the trackway, a drum on the carriage composed of two parts, a hauling rope and a slack pulling rope having a run in engagement with the parts of said drum respectively, a stationary drum for each of said ropes, and means movable on the carriage and operable from the slack pulling rope to grip said hauling rope.

5. In a hoisting and conveying apparatus, the combination with a trackway, of a carriage, a drum on the carriage, a hauling rope and a slack pulling rope each having a run in engagement with said drum, a stationary drum for each of said ropes, and means movable on the carriage and operable from said slack pulling rope to pay out said hauling rope and operable from said hauling rope to rewind the slack pulling rope.

6. In a hoisting and conveying apparatus, the combination with a track way, of a carriage movable on the track way, a hauling rope, a slack pulling rope for pulling out the hauling rope, and means movable on the carriage to engage said hauling rope in the movement of said slack pulling rope.

7. In a hoisting and conveying apparatus, the combination with a track way, of a carriage on the track way, a hauling rope, a slack pulling rope, and means movable on the carriage and adapted to maintain the hauling rope stationary in the movement of the carriage, pay out the hauling rope when the carriage is stationary and take up the slack pulling rope when elevating the fall portion of the hauling rope.

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

CHARLES E. ELM.

Witnesses:

AARON SLEIGH,
RODERIC SLEIGH.