Sept. 13, 1927. 1,642,568

L. L. TYLER

LOGGING SYSTEM

Filed July 23, 1923 2 Sheets-Sheet 1

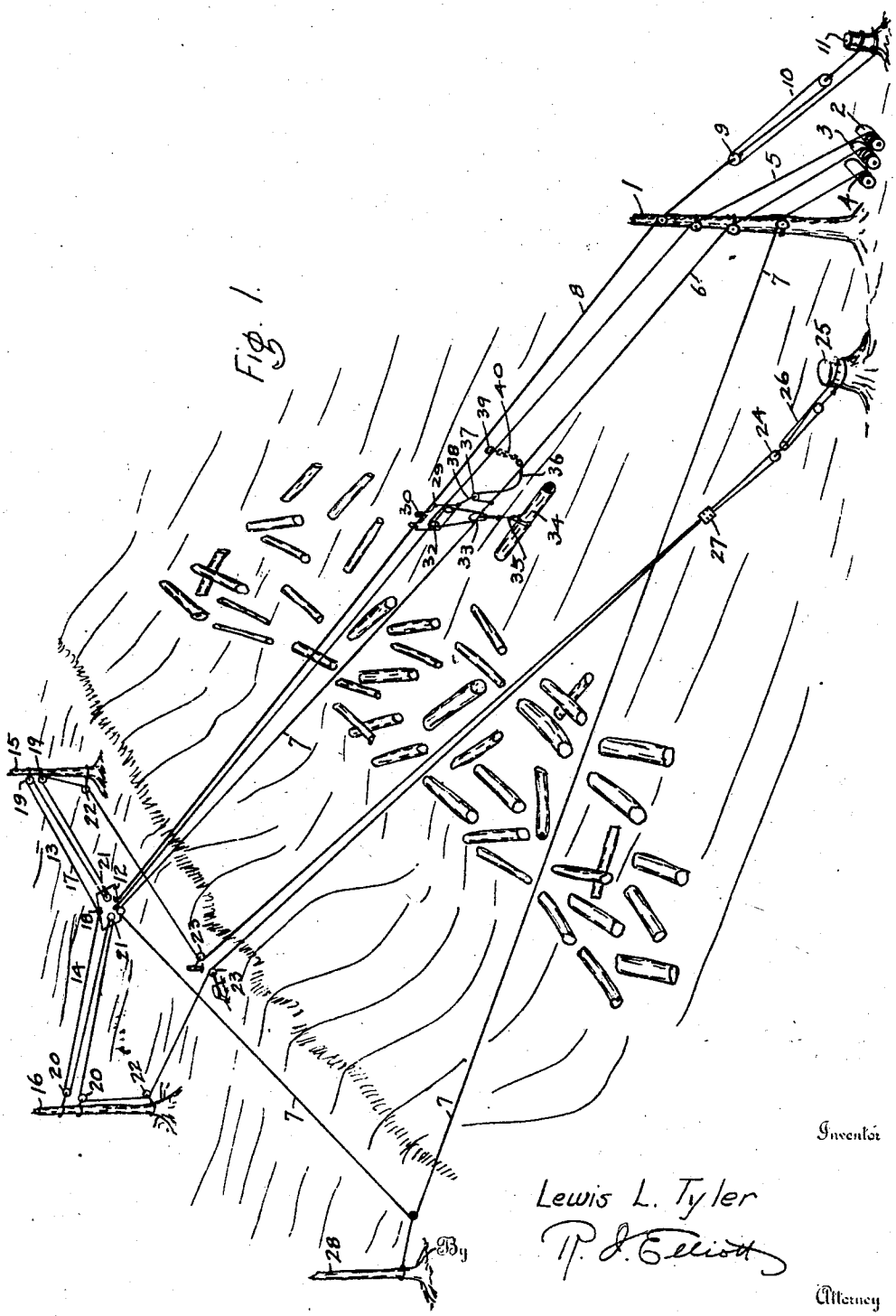


Fig. 1.

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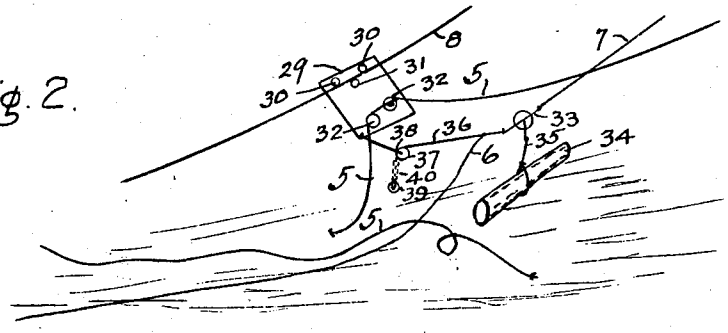
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Fig. 2.



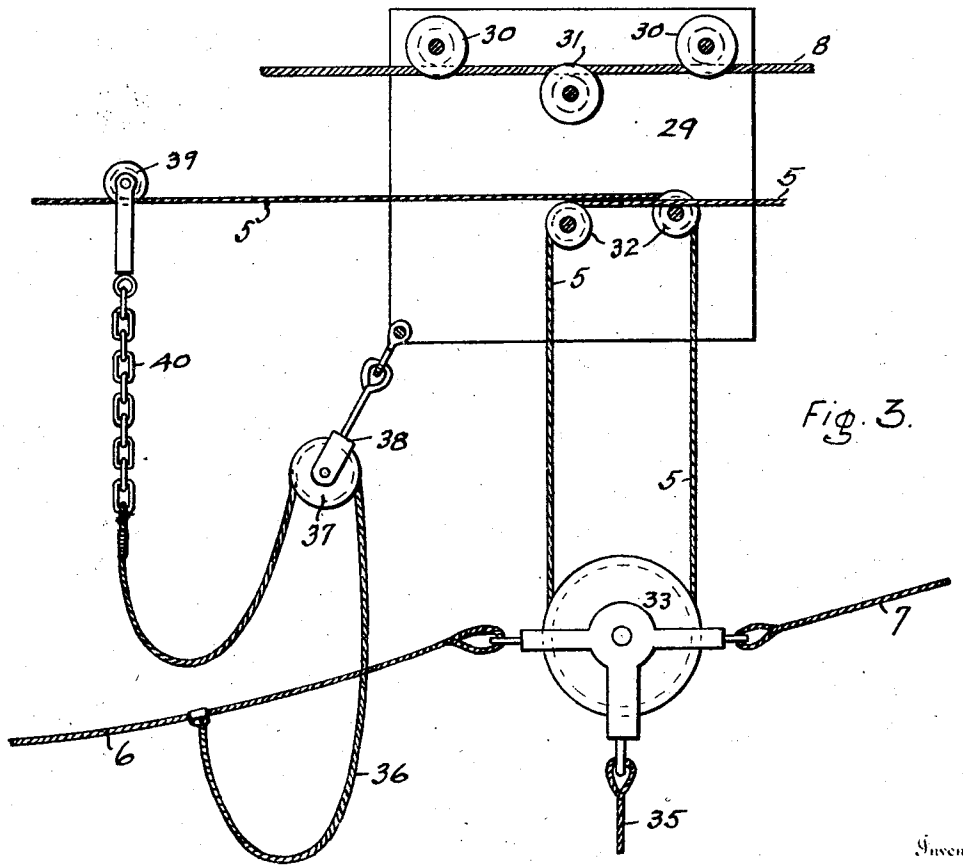


Fig. 3.

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UNITED STATES PATENT OFFICE.

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LOGGING SYSTEM.

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This invention relates to systems of cableways used in transporting logs and other heavy objects and has special reference to systems which transport the logs from a wide area to a fixed point. The objects of the invention are to provide a logging system by which a large area may be logged off with the minimum of expense; to provide means for shifting the track line of such a system to a series of positions radiating from a central point, whereby the logs may be picked up at any point in the area and carried to said central point; and to provide a safety means whereby the carriage is prevented from running away down the grade of the track line if the lifting line should break.

I attain these and other objects by the devices, mechanisms, and arrangements illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective view showing my logging system in operation; Fig. 2 is a similar view of a portion thereof showing the safety device in action; and Fig. 3 is a larger view of the carriage and its connecting parts. Similar numerals of reference refer to similar parts throughout the several views.

In clearing the timber from a tract of forest it is most convenient to transport and collect the logs at a single terminal but, in ordinary cableway systems, it is not possible to clear a tract at any great distance on either side of the track cable, or sky line, so that either the outer end of the track cable has to be taken down and re-erected a great many times or the outer fringe of the area is likely to be incompletely cleared. Further, in rough country it is quite common to have the sky line at a considerable grade, even as much as 3000 feet to the mile and, since the line may be from 1000 feet to 5000 feet long and the loads transported weigh up to 40000 pounds, it is evident that the lifting cable is under a heavy strain and continuous wear with the result that it may, at times, break. Now, the up-grade haul cable is usually attached to the load or rather to the load block, therefore, if the lifting line breaks, the carriage which travels on the track cable is free to run away down the grade. The carriage may weigh up to 5000 pounds and therefore, when the grade is steep, it may seriously damage or even destroy the spar tree and its apparatus at the lower end of the grade.

With these two conditions in mind I have invented the following described apparatus wherein the sky line may be shifted as much and as often as required without having to spend the time which would be necessary to dismantle it on one tree and re-erect it on another; wherein its length may be slightly adjusted; and wherein an emergency or safety device is provided which will prevent the carriage from running away when the lifting line breaks.

Referring to the drawings, it will be seen that the spar tree 1 forms the receiving terminal of the system, and the logging or donkey engine is located nearby. This engine is represented on the drawing by the three drums 2, 3 and 4 which actuate respectively the lifting cable 5, the haul-in line 6 and the out-haul line 7. All of these cables pass from their respective drums through suitable sheaves mounted on the central or terminal spar tree 1. The track cable 8 is also passed through a sheave secured to the said spar tree 1. The inner end of this cable 8 is secured to a block 9 and is tightened by means of a suitable tackle 10 anchored to a stump 11, or other object. This inner end is therefore adjustable and permits a slight change in the working length of the cable 8 as well as a change in tautness.

The outer end of the track cable 8 is secured to a hanging mechanism, represented diagrammatically by the plate 12, and the outer end of the lifting line 5 is also attached to the same plate 12. This plate is supported by two sets of tackles 13 and 14 connecting it to two outer spar trees 15 and 16. The tackle cables 17 are fastened to the plate 12 at 18 and pass in both directions therefrom through the sheaves 19 and 20 on the trees 15 and 16 respectively, and the sheaves 21 on the plate 12, to form both the said tackles 13 and 14, and pass therefrom through the base sheaves 22 and the guide sheaves 23 to a point near the spar tree 1. They are secured together to form one continuous cable which passes around the end pulley 24 which is anchored to a suitable stump 25, or other object, by a tackle 26. The two sides of the cable 17, near the pulley 24, are secured together by a suitable removable clamp 27. Thus it is seen that when the cable 17 is adjusted as to length and tautness and is clamped as above, the plate 12 occupies a relatively fixed position dependent on the adjustment of the cable 17

in the tackles 13 and 14 leading to the spar trees 15 and 16. Also, it is seen that it may be quickly shifted laterally to any point between the radii leading to the said trees by simply releasing the clamp 27 and pulling on the cable 17 on one side or the other of the pulley 24 thus drawing the plate 12 nearer to one or the other of said trees. Adjustment of the tautness of said cable 17 may be made by the tackle 26.

When the area between the radii to the two trees 15 and 16 is properly cleared, then the tackle 13 from the spar tree 15 may be removed and attached to some other spar tree, such as 28, and the area between the radii leading to the trees 16 and 28 may then be similarly cleared. However, no time is lost in the use of the track cable 8 while this change is being made because the tackle 14 then supports its outer end and it lies on the radius to the tree 16.

The load transporting system comprises the sky line 8, on which a carriage 29 rides, a lifting line 5, haul-in line 6 and out-haul line 7. The carriage 29 is provided with a pair of track sheaves 30 which travel on the cable 8 and with one or more keeper sheaves 31 engaging the under side of said cable to prevent the carriage from leaving the track. It also has a pair of lifting-cable sheaves 32, offset with relation to each other. The lifting cable 5 passes beside one said sheaves 32, turns down over the other said sheaves 32, passes around the main or block sheave 33 and up and around the first said sheave 32. Thus the said cable 5 is bent in the same direction as it engages the two sheaves 32 and the block sheave 33, thus eliminating a large amount of the wear on said cable which would occur if it were bent in the usual way in opposite directions on the sheaves 33 and 32. The load 34 is attached to the block sheave 33 by a suitable sling 35. The ends of the haul-in cable 6 and the out-haul cable 7 are also attached to the block sheave 33. It will therefore be understood that the position of the carriage on the track cable 8 is controlled by the said cables 6 and 7 and that the height of the load relatively to the carriage is controlled by the tension in the lifting cable 5.

I also provide a safety cable 36 which is attached to the haul-in cable 6 at a point somewhat removed from the block sheave 33 and which is threaded between the sheave 37 and its frame 38. This frame 38 is mounted on or attached to a convenient part of the carriage 29. The other end of the cable 36 is attached to a sheave 39 which rides freely on the lifting cable 5. I prefer to provide a weight, such as a length of chain 40, to keep the sheave 39 upright and to draw the cable 36 through the sheave 37 as the load 34 is raised. This safety cable is normally without function and is arranged as described in order to be kept out of the way as much as possible and yet be always ready for the emergency when it occurs. Now, should the cable 5 break, the load and the block 33 would immediately drop to the ground (Fig. 2) carrying the ends of the cables 6 and 7 with them. The cable 5, now broken, would be pulled out of the carriage 29 and the carriage would then be free to run away down the cable 8. But, with the safety cable in place as above described, the sheave 39 is dropped by the cable 5 when it breaks and the lower end of the safety cable 36 also drops with the load and the cables 6 and 7. Therefore when the carriage starts to run it draws the sheave 37 along the safety cable 36 until the sheave 39 or the chain 40 engages the frame 38 thereof. As neither the chain 40 nor the sheave 39 will pass through the opening between the frame 38 and the sheave 37 it is evident that the said safety cable 36 will hold the carriage 29 from further movement down the grade through the drag of the load on the ground and the tension of the out-haul cable 7 to which it is connected through the block and a short portion of the cable 6.

Having described my invention, what I claim is:—

1. In a cableway system, the combination of a central spar tree; two outer spar trees; a track cable supported at one end by the central spar tree and adjustably supported at the other end by both said outer spar trees, whereby said track cable may extend in any radial direction from the central spar tree towards the space between the outer spar trees; and means for adjusting the outer end of the track cable whereby the tension thereof is adjusted without altering its working length or position.

2. In a cableway system, the combination of a central spar tree; two outer spar trees; a track cable supported at one end by said central spar tree; and supporting cables attached to and leading from the outer end of the track cable to said two outer spar trees respectively, said cables being connected together to form one continuous cable whereby loosening one cable will tighten the other cable and move the outer end of the track cable towards said tightened cable.

3. In a cableway system, the combination of a central spar tree; two outer spar trees; a track cable supported at one end by said central spar tree; and supporting cables attached to and leading from the outer end of the track cable to said two outer spar trees respectively, and extending from the respective outer spar trees to a point adjacent the central spar tree and being connected together to form one continuous cable whereby the position of the outer end of the track cable may be adjusted.

4. In a cableway system the combination of a central spar tree; two outer spar trees; a track cable supported at one end by the central spar tree; a sheave anchored at a point adjacent said central spar tree; and adjustable means supporting the outer end of the track cable from both said outer spar trees, whereby said track cable may extend in any radial drection from the central spar tree towards the space between the outer spar trees, said adjustable supporting means comprising cables leading from said outer end to said spar trees respectively, said cables being connected together to form one continuous cable which extends from both said spar trees to and around said anchored sheave.

5. A cableway system as set forth in claim 4, together with means for clamping the last named cable together on each side of said sheave, whereby the accidental adjustment of the supporting means is prevented.

6. A cableway system as set forth in claim 4, together with an adjustable means connecting the sheave to its anchor.

LEWIS L. TYLER.