

Aug. 18, 1953

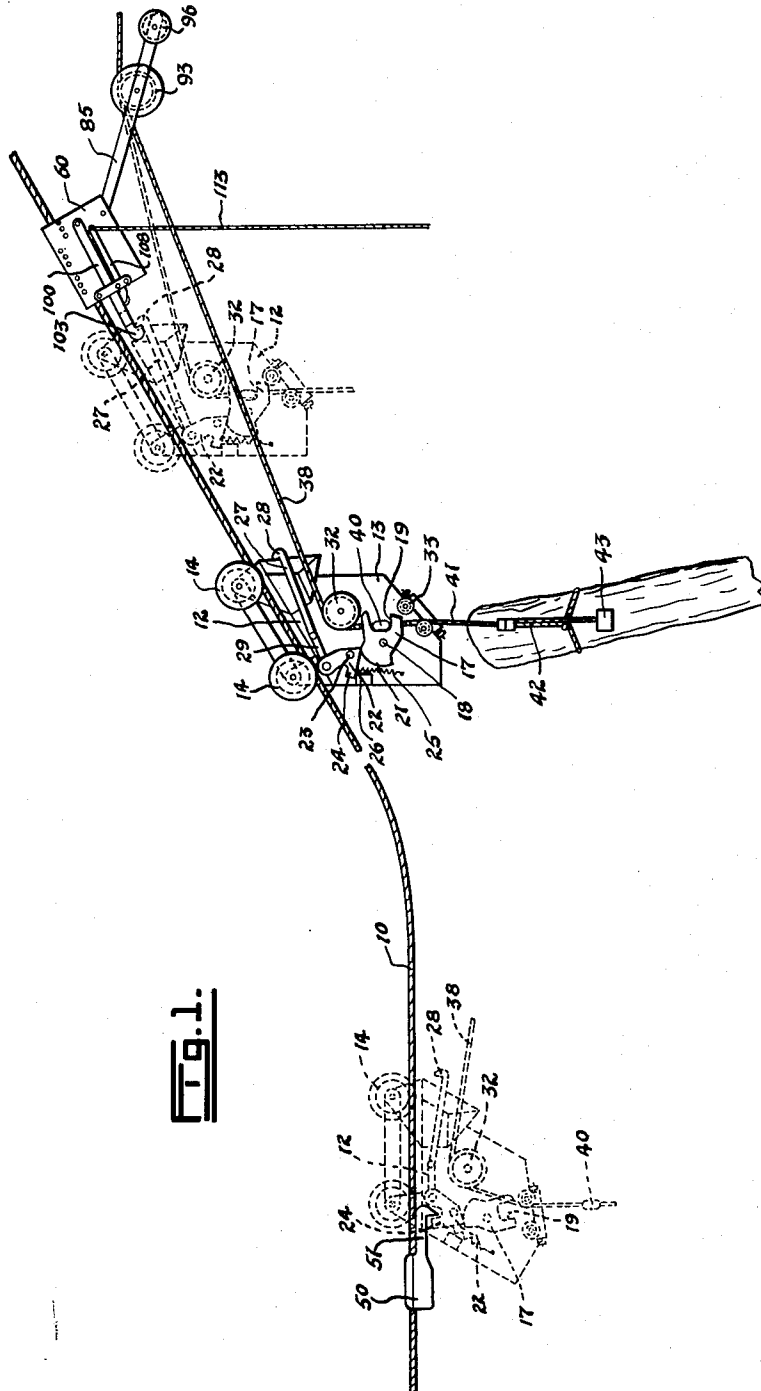
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2,649,209

MOVABLE SKYLINE TERMINAL.

Filed March 27, 1950

4 Sheets-Sheet 1



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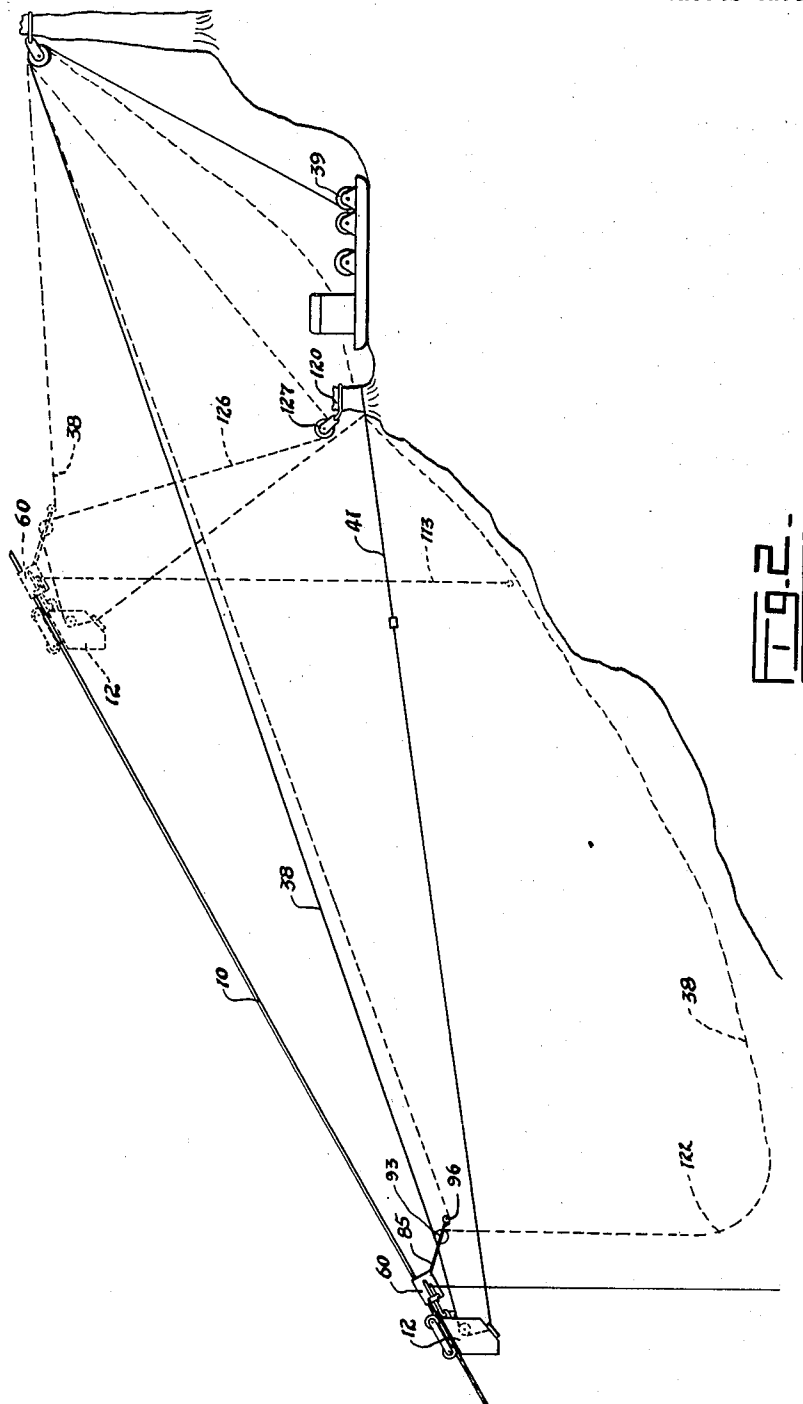
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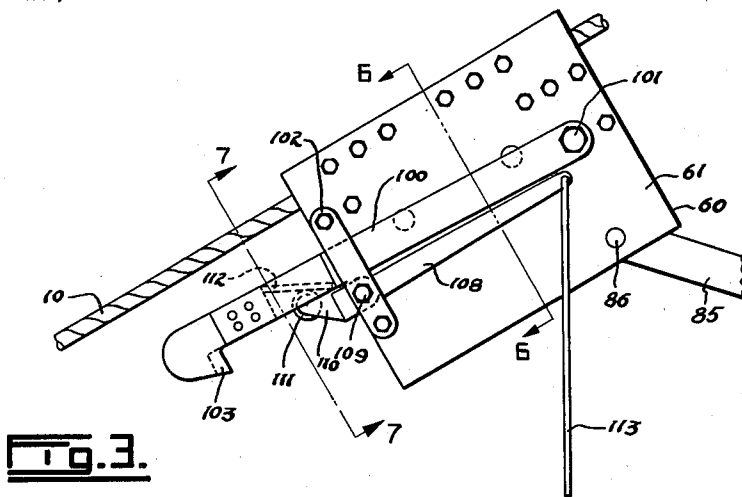


Fig. 3.

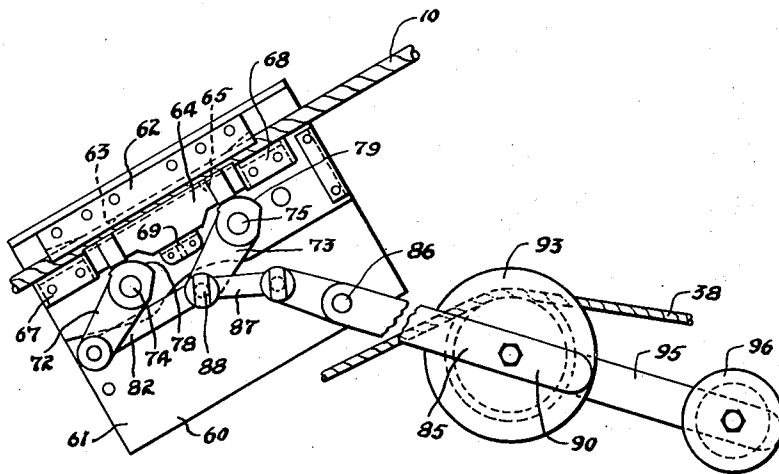


Fig.4.

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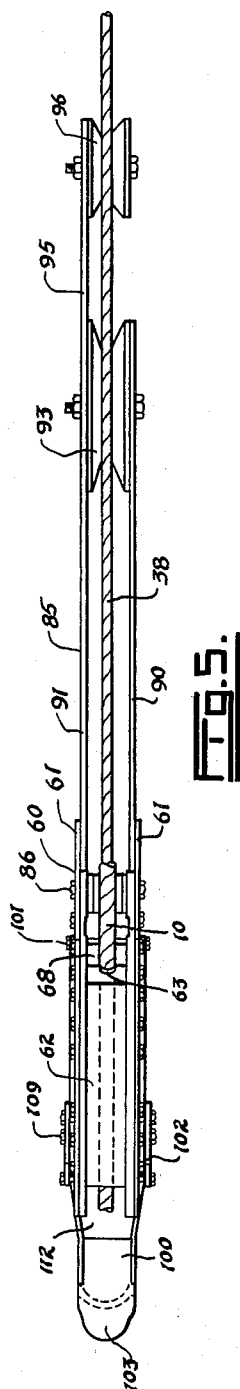
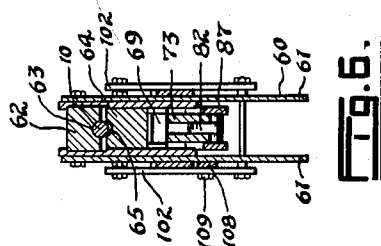
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MOVABLE SKYLINE TERMINAL

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Application March 27, 1950, Serial No. 152,073

9 Claims. (Cl. 212-92)

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This invention relates to a terminal which may be moved to different positions along a skyline used in logging and other industries.

In the logging industry, a skyline is a cable which is set up to enable logs to be drawn from a certain area to a desired point which may be on land or water. A skyline carriage is moved along the line in any convenient manner. A load line extends from suitable winch mechanism through the carrier and is adapted to be dropped to the ground where one or more logs are secured thereto and hoisted up to the carrier. The carrier is then moved to the point where the logs are to be deposited. A terminal is fixedly secured to the skyline at a point above the position where the logs are to be deposited. Up to the present time, a second terminal has been fixedly secured to the skyline above the point where the logs are to be picked up by the load line. With this arrangement, when it is desired to move along the skyline to another position to pick up logs, it has been necessary to lower the heavy skyline and remove the second terminal therefrom in order that it may be moved to the new position. This is a comparatively difficult job and it takes up a great deal of time.

It is the main purpose of this invention to provide a terminal which may be moved along the skyline by the skyline carriage, and including means for removably securing said terminal to the line at any desired point without the necessity of lowering the skyline.

Another object is the provision of a movable skyline terminal which will retain the skyline carriage in position while the load line is lowered to receive a log and to hoist it to lift a log above the ground.

While this apparatus is particularly designed for a skyline which slopes upwardly, that is, logs are moved from a high point, such as a mountain side, to a lower point, and it is so described herein, it is to be understood that the skyline may be substantially horizontal. With a sloping line, a skyline carriage is drawn upwardly by means of the load line, and moved downwardly under its own weight. If the skyline is substantially horizontal or the slope is not great enough, the carriage may be moved downwardly or outwardly by means of a cable connected to a suitable winch mechanism. The terminal forming part of this invention is referred to as an upper terminal, but this is intended to indicate the terminal at the point where the logs are to be picked up regardless of whether or not it is above the stationary or outer terminal.

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The movable terminal according to this invention consists of a suitable framework having clamping means therein for positioning it on and securing it to a skyline at any desired point. A locking arm adapted to lock and unlock the clamping means is carried by the terminal frame. This arm has a pulley over which the load line from the hoisting winch extends to the skyline carriage. The locking arm normally holds the clamping mechanism in a locked position, but it includes another pulley adjacent the first pulley under which the load line may pass so that tension thereon will move the locking arm to release the clamping means. The terminal also includes hook means for holding the carriage while the load line is lowered to pick up a log, then move in the opposite direction to lift said log above the ground.

An example of this invention is illustrated in the accompanying drawings, in which,

Figure 1 diagrammatically illustrates a skyline with a skyline carriage between the fixed and movable terminals, part of the carriage being removed to show the working mechanism thereof,

Figure 2 diagrammatically illustrates the carriage at the upper terminal and ready to move the latter to a new position along the skyline,

Figure 3 is a side elevation of the movable terminal alone,

Figure 4 is a side elevation of the movable terminal with the near side thereof removed,

Figure 5 is a plan view of the terminal,

Figure 6 is a section taken on the line 6-6 of Figure 3, and,

Figure 7 is a section taken on the line 7-7 of Figure 3.

Referring to Figure 1 of the drawings, 10 is a skyline which in this example, slopes upwardly, and is supported at its opposite ends in any suitable manner, not shown. A skyline carriage 12 shown in this figure is of well-known construction and in itself does not form part of this invention. This carriage consists of two spaced side plates 13, the near side plate being removed in this drawing, secured together in any suitable manner and having a plurality of sheaves 14 at the top thereof adapted to ride on the skyline which passes between the side plates. A lower tumbler 17 is pivotally mounted at 18 between the side plates and has a substantially U-shaped jaw 19 on one side thereof which normally projects downwardly, see the carriage shown in dotted lines at the left of Figure 1. This tumbler has a projection 21 which just clears the lower por-

tion of a locking tumbler 22 pivotally mounted at 23 when the jaw 19 hangs downwardly. The tumbler 22 has a latch 24 projecting towards the lower edge of the carriage, and a spring 25 tends to draw said latch against a stop block 26. A hook 27 is slidably mounted in the carriage and has an upwardly-projecting prong 28 at its upper end, and is pivotally connected to the locking tumbler 22 by a link 29. A pulley 32 is rotatably mounted in the carriage above the lower tumbler, and a fair lead 32a is located below said tumbler. A load line 38 extends from a suitable winch mechanism 39, see Figure 2, over the pulley 32 of the carriage and has a line ball 40 connected thereto. A tag line 41 extends from the line ball and has a choker line 42 connected thereto in any well-known manner. A slack puller weight 43 may be detachably connected to the tag line in any suitable manner.

A lower or outer terminal 50 is fixedly secured to the skyline 10 above the point where it is desired to deposit the logs. This terminal has an outwardly projecting hook 51 which is adapted to engage the locking tumbler 22 of the carriage when the latter reaches the lower terminal, as shown in dotted lines at the left of Figure 1.

The skyline carriage and its mechanism functions in the usual manner. Assuming that a log has just been released from the choker line 42, the load line 38 is reeled in by the winch mechanism 39. The engagement of the hook 51 with the tumbler 22 retains the carriage at the lower terminal during the first part of this movement. When the line ball 40 passes through the fair lead 33 and enters the jaw 19 of the lower tumbler 17, the latter is pivoted so the jaw is in a substantially horizontal position. This moves the projection 21 clear of the locking tumbler 22 to allow the spring 25 to pivot said tumbler into position to release the hook 51. At the same time, the bottom of this tumbler engages the side of the projection 21 to prevent the jaw thereof from swinging downwardly. Further movement of the load line draws the carriage up the skyline.

The mechanism of the carriage is released by drawing the hook 27 outwardly in a manner described later. This pivots the tumbler 22 to disengage the lower end thereof on the side of the projection of the lower tumbler, thus permitting its jaw to swing downwardly to allow the line ball to drop to the ground. The slack puller weight 43 unreels the load line. When the choker line is placed around a log, the load line is reeled in until the line ball is locked in the carriage by the lower tumbler 17, as shown in Figure 1. When the hook 27 is released and the load line freed, the carriage runs down the skyline to the lower terminal.

An upper or movable terminal 60 is illustrated in Figures 3 to 7 of the drawings. This terminal consists of a frame made up of a pair of spaced side plates 61 connected together in any suitable manner. A clamping block 62 is removably positioned between these plates near the top thereof and has a groove 63 along its lower surface which is adapted to fit over the skyline 10. Another clamping block 64 is movably mounted beneath the upper block 62 and has a groove 65 in its upper edge adapted to fit against the skyline. The lower block is mounted for vertical movement between guides 67 and 68 and the downward movement thereof is limited by a stop 69. A pair of cam levers 72 and 73 are pivotally mounted between the plates at 74 and 75 respectively adjacent their upper ends. These levers have cam

surfaces 78 and 79 formed on their upper ends adapted to bear against the underside of the clamping block 64. The lower ends of these levers are connected by a link 82 so that said levers move in unison. A relatively long locking arm 85 is pivotally mounted at 86 near the bottom of the side plates of the carriage and its upper end projects a short way into the carriage. This upper end is connected by a link 87 to the lever 73 and the connecting link 82 at 88.

The locking arm 85 is actually formed by spaced side members 90 and 91 as clearly shown in Figure 7. A line sheave 93 is mounted between the side members 90 and 91 adjacent their outer ends. The locking arm is provided with an extension 95 from one side thereof which has a disengaging sheave 96 at its outer end. The load line 38 also extends between the side members of the locking lever and over the line sheave 93, and it sometimes passes under the disengaging sheave 96, and at other times it passes above it without coming into contact with it.

A locking hook 100 is pivotally mounted on the outer surface of one of the sides 61 of the carriage at 101. This hook extends along the side of the carriage through a guide 102 and beyond the lower edge of said carriage. This hook has a downwardly projecting prong 103 at its outer or lower end. An operating arm 108 is pivotally mounted on the side of the carriage at 109 adjacent the lower edge thereof and immediately below the hook 100. A lug 110 projects from this arm under the hook and has a roller 111 which bears against a plate 112 secured to the hook. A lanyard 113 extends from the free end of the operating arm 108 down to the ground. When this lanyard is pulled downwardly, the roller of the locking arm presses against the hook 100 to lift the prong 103 thereof upwardly. When the lanyard is released, the weight of the hook is sufficient to cause it to move downwardly to its lowermost position.

When the carriage is drawn up the skyline, as previously described, to the upper terminal, its hook 27 engages the hook 100 of the upper terminal to raise the latter sufficiently to allow the prong 28 to get behind the prong 103. This retains the carriage at the upper terminal so that the load line may be released. When this line is released, the weight of the carriage is sufficient to cause it to run down the skyline within the limits of the movement of the hook 27. This operates the locking tumbler 22 to allow the lower tumbler 17 to pivot downwardly and release the line ball 40. The slack puller weight 43 pulls the load line out until said weight reaches the ground. When the choker line has been looped around a log, the load line is reeled in until the line ball is again locked in the carriage by the tumbler 17. When it is desired to allow the carriage to run down the skyline, the lanyard 113 is pulled downwardly to raise the outer end of the hook 100 to disengage its prong 103 from the prong of the carriage hook 27. If necessary, the carriage may be pulled up the skyline a little at this time by the load line in order to take the weight off the hooks 27 and 100 to allow them to operate freely. When the load line is slackened, the carriage runs down the skyline to the lower terminal.

Figure 2 illustrates the carriage 12 hooked to the terminal 60. If it is desired to move this terminal up the skyline, the load line is slackened until the tag line 41 drops to the ground. The slack puller weight 43 is detached from the tag

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line. The latter is pulled up to a point approximately below the new position for the terminal, and the line is secured to any suitable object, such as a stump 120. The load line is now slackened to allow a bight 122 of line 38 to drop to the ground. The line which extends over the sheave 93 of the locking arm 85 is now flipped into a position between said sheave and the disengaging sheave 96. When the load line is reeled in, it comes up beneath the sheave 96 to raise the outer end of the locking arm which moves the cam levers 72 and 73 of the terminal to release the clamping block 64 from the skyline. Further movement of the load line draws the carriage and the terminal up the skyline to the new position indicated in dotted lines in Figure 2. When the load line is slackened, the outer end of the locking arm drops downwardly to pivot the cam levers 72 and 73 to press the block 64 against the skyline and the latter against the outer block 62. The weight of the locking arm is sufficient to retain the terminal in its new position on the skyline for the time being. The load line is now slackened to allow another bight 126 of line to drop to the ground. The load line is passed through a snatch block 127 secured to suitable anchoring means, such as a stump 120. This line is now reeled in sufficiently to pull the outer end of the locking arm 85 downwardly firmly to clamp the terminal on the skyline. When the load line is released from the snatch block, and the tag line freed from the stump 120, the apparatus is now ready to function in its normal manner.

The terminal may be moved down the skyline in a similar manner by attaching the tag line to a stump downhill approximately under the new position to be taken by the movable terminal.

The apparatus functions in the same manner on a substantially horizontal skyline, excepting that it is necessary to attach a line to the skyline carriage to pull it in a direction opposite to that in which it is pulled by the load line.

What I claim as my invention is:

1. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, means on the frame for clamping the terminal on a skyline, a locking arm movably mounted on the frame, means connected to the arm for operating the clamping means upon movement of said arm, and means on said arm engageable by a load line from a carriage on the skyline for moving the arm, whereby the load line may be used to move the arm to operate the clamping means.

2. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, a clamping block fixedly mounted in the frame, another clamping block movably mounted in the frame in line with the fixed block, said blocks being normally spaced apart sufficiently to allow a skyline to pass therebetween, a locking arm movably mounted on the frame, means connected to the arm for moving the movable block towards the fixed block upon movement of said arm to clamp the skyline therebetween, and means on said arm engageable by a load line from a carriage on the skyline for moving the arm whereby the load line may be used to move the arm to clamp and release the skyline.

3. A movable skyline terminal for removably holding in a desired position a skyline carriage

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through which a load line from a winch mechanism extends, comprising a frame, means on the frame for clamping the terminal on a skyline, a locking arm movably mounted on the frame, means connected to the arm for operating the clamping means upon movement of said arm, a sheave on the arm over which a load line from a carriage on the skyline extends, and another sheave on the arm beneath which the load line may selectively be placed.

4. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, a clamping block fixedly mounted in the frame, another clamping block movably mounted in the frame in line with the fixed block, said blocks being spaced apart sufficiently to allow a skyline to pass therebetween, cam means for pressing the movable block towards the fixed block, a locking arm pivotally mounted on the frame, means connecting the arm to the cam means, and means on said arm engageable by a load line from a carriage on the skyline, whereby the load line may pivot the arm to move the cam means to clamp and release the skyline between the clamping blocks.

5. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, a clamping block fixedly mounted in the frame, another clamping block movably mounted in the frame in line with the fixed block, said blocks being spaced apart sufficiently to allow a skyline to pass therebetween, cam means for pressing the movable block towards the fixed block, a locking arm pivotally mounted on the frame, means connecting the arm to the cam means, a sheave on the arm over which a load line from a carriage on the skyline extends, and another sheave on the arm beneath which the load line may selectively be placed.

6. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, means on the frame for clamping the terminal on a skyline, a hook pivotally mounted on the frame adapted removably to engage a hook on a carriage on the skyline, means connected to the hook and extending towards the ground for pivoting said hook, a locking arm movably mounted on the frame, means connected to the arm for operating the clamping means upon movement of said arm, and means on said arm engageable by a load line from the carriage on the skyline for moving the arm, whereby the load line may move the arm to operate the clamping means.

7. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, means on the frame for clamping the terminal on a skyline, a hook pivotally mounted adjacent one end on the frame, said hook being adapted removably to engage a hook on a carriage on the skyline, an operating arm pivotally mounted on the frame adjacent the hook, said arm being positioned to engage and pivot the hook when the arm is moved, a lanyard extending from the operating arm to the ground by means of which said arm may be pivoted to pivot the hook, a locking arm movably mounted on the frame, means connected to the arm for operating the clamping means

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upon movement of said arm, and means on the locking arm engageable by a load line from the carriage on the skyline for moving said arm, whereby the load line may move the locking arm to operate the clamping means.

8. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, means on the frame for clamping the terminal on a skyline, a hook pivotally mounted adjacent one end on the frame, said hook being adapted removably to engage a hook on a carriage on the skyline, an operating arm pivotally mounted on the frame adjacent the hook, said arm being positioned to engage and pivot the hook when the arm is moved, a lanyard extending from the operating arm to the ground by means of which said arm may be pivoted to pivot the hook, a locking arm movably mounted on the frame, means connected to the arm for operating the clamping means upon movement of said arm, a sheave on the locking arm over which a load line from a carriage on the skyline extends, and another sheave on the locking arm beneath which the load line may selectively be placed.

9. A movable skyline terminal for removably holding in a desired position a skyline carriage through which a load line from a winch mechanism extends, comprising a frame, a clamping block fixedly mounted in the frame, another

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clamping block movably mounted in the frame in line with the fixed block, said blocks being normally spaced apart sufficiently to allow a skyline to pass therebetween, a hook pivotally mounted adjacent one end on the frame, said hook being adapted removably to engage a hook on a carriage on the skyline, an operating arm pivotally mounted on the frame adjacent the hook, said arm being positioned to engage and pivot the hook when the arm is moved, a lanyard extending from the operating arm to the ground by means of which said arm may be pivoted to pivot the hook, a locking arm movably mounted on the frame, means connected to the arm for moving the movable block towards the fixed block upon movement of said arm to clamp the skyline therebetween, a sheave on the locking arm over which a load line from the carriage on the skyline extends, and another sheave on the locking arm beneath which the load line may selectively be placed.

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