AN ILLUSTRATED DESCRIPTION OF APPROVED DEVICES

LOGGING BY STEAM

EMPLOYING IMPROVED SYSTEMS UNDER THE
PATENTS OF BAPTIST, BEEKMAN
MILLER, DICKINSON AND OTHERS

Published by

THE LOGGING MACHINERY DEPARTMENT

of the

LIDGERWOOD MANUFACTURING COMPANY

96 LIBERTY STREET, NEW YORK, N. Y., U. S. A.

Logging Branch Offices

ATLANTA, GEORGIA SEATTLE, WASHINGTON

1905

VIEW OF THE BROOKLYN WORKS

A WORD TO THE LUMBERMAN

WHETHER contemplating the purchase of logging machinery or not, this book should prove of interest to all engaged in the manufacture of lumber. It is devoted to the subject of logging by steam, and fully illustrates and describes the different systems that have been perfected and are past the experimental stage. Only those systems that have been tested under the most trying conditions are considered.

Lumber manufacture, so far as saw mill, yard and planing mill are concerned, has long since been brought nearly to an exact science, but not until recent years have appliances for logging been given the attention they deserved. Until lately lumbermen have given the logging branch of the business only secondary consideration, but they are recognizing more and more the importance of having improved methods of logging. The wrong method may mean an additional one or two dollars per 1000 feet in the cost of getting the timber out of the woods, and where extensive logging operations are carried on too careful consideration cannot be given to the method employed.

There is little doubt that in a few years the primitive method of logging with teams will be succeeded entirely by modern steam methods. The first cost of a steam logging plant causes some to hesitate in adopting it, but it will be found that final results justify the outlay. The most inexpensive plant, so far as the initial cost is concerned, generally proves the most expensive in the long run.

Steam logging machinery has now been brought to such a high state of perfection that experimenting is no longer necessary. The machines have been standardized, and the conditions surrounding the operations decide the type of plant to be used. These conditions vary greatly, and a machine well adapted for one section of the country may not be employed with economy in another. Only an experienced man can specify the proper method to be pursued, and before installing steam logging machinery we prefer always to have one of our logging men visit the site of operations that there may be

no question as to the proper method being used. For this purpose we have a corps of practical logging men, who, before entering our employ were engaged in the logging business and have had long experience in operating steam logging machinery.

The kind of timber, stumpage to the acre, character of the soil, topography of the land, cost of building logging railroads, and many other equally important matters must be considered. Where the timber runs 10,000 to 20,000 feet to the acre the problem will be altogether different from where the stumpage is 3000 to 6000 feet. Logging in the mountains offers a problem entirely different from logging in the swamps. Logging pine in the South is one proposition; logging cypress another. Methods employed on the Pacific Coast may not be adapted for New England, and so on.

Our logging plants may be found throughout the country operating under almost every conceivable condition, and those interested in modern logging methods, and desiring to make a personal inspection of our machines in practical operation, may ascertain the location of plants operating under conditions similar to theirs by addressing any of our offices, and giving full particulars of their problem.

LIDGERWOOD MANUFACTURING COMPANY.

LOGGING BY STEAM

THE LIDGERWOOD CABLEWAY SKIDDER

(PATENTED)

ESPECIALLY DESIGNED FOR RAPID SKIDDING AND LOADING OPERATIONS

OF the many different systems of logging, none can be employed more advantageously and with better results than the Cableway Skidder, provided the conditions are such as to allow of its operation. The Cableway Skidder of to-day is not a complicated affair, nor an experiment. It is in extensive use by all the large cypress concerns in the country, who are dependent upon it entirely for their daily supply of logs; and in the mountains it is being used more and more extensively every day. The universal use of the machine testifies to its merits. The

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Cableway Skidder is most profitable where the timber runs over 8000 feet to the acre, but it is often used where the stumpage is considerably less, and may be employed anywhere without regard to the character of the land. However inaccessible the timber may appear, the Cableway Skidder can get it out, from the fact that when necessary the log may be lifted clear of all obstructions.

WHERE THE CABLEWAY SKIDDER IS USED

There are three types of the Cableway Skidder now in use, designed to meet the conditions found in different sections of the country, as follows:

The *Southern Type*, as used extensively in the cypress, pine and hardwood swamps of the South.

The *Mountain Type*, as used in the mountainous countries in the Eastern section of the United States.

The *Pacific Type*, as built especially for the conditions to be found on the Pacific Coast.

The three types of Cableway Skidders in general features are similar, and it is only in minor details that they differ, such as the sizes of the engines, manner of mounting them, lengths of cables, sizes of carriages, blocks, rigging, etc. The modern Cableway Skidder should not be confounded with some of the primitive types of cableway skidders found in many sections of the South, known as the "Butters-Miller" type, and other machines similarly rigged.

The principal features of the 1905 model Cableway Skidder are the Interlocking and Reversing Devices, and the Power-multiplying Slackpuller, to be found only on the Lidgerwood Cableway Skidder of latest design, general description of which is given on the following pages.

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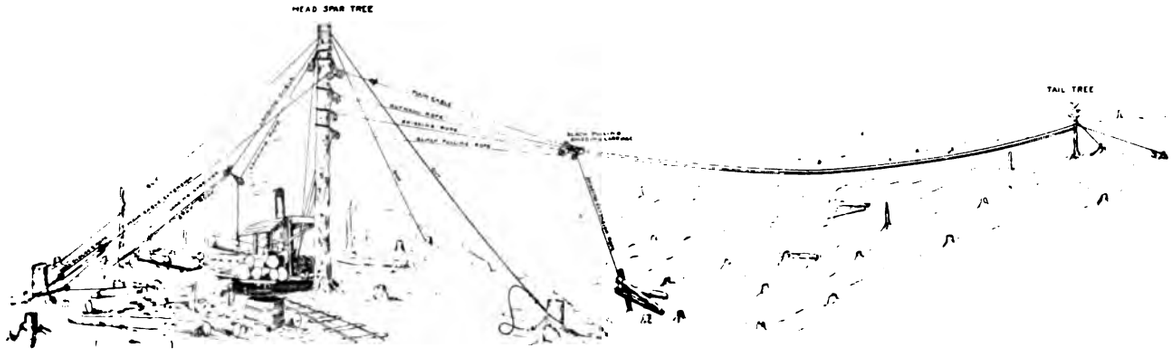


GENERAL DESCRIPTION OF THE CABLEWAY SKIDDER

THE Lidgerwood Cableway Skidder and Loader, as shown in the above outline drawing, and further illustrated on these pages, consists of a main cable suspended between two supports, known as the head spar and the tail tree, situated from 700 to 1500 feet apart. Upon this travels the slackpulling skidding carriage. The outer end of the main cable passes around the tail tree and is carried down to a stump, to which it is made fast and thus serves as a guy. The other end of the main cable is shackled at the head spar to a main cable extension, the latter being connected to a stump by a block and fall outfit, by which, with the aid of the engine, the main cable is tightened.

Three running ropes are required, namely: the outhaul rope, to draw the carriage out into the woods; the skidding rope, to draw the carriage in with its load of logs; the light slackpulling rope, to lower the tongs or slings and pay out slack to the tongman. These ropes lead from their respective drums on the engine up through blocks rigged on the head spar and thence to the slackpulling skidding carriage. In addition, a short skidding extension rope is used, to the end of which the tongs or slings are attached, and this rope drops from the skidding carriage.

OPERATION

In operation, the outhaul rope draws the carriage out along the main cable. Upon arriving at the point where a log or logs are to be picked up, the tongs or slings are lowered to the ground automatically by the engine, and the skidding extension rope, to the end of which the tongs or slings are attached, is thus paid out to the man who hooks on the logs.

When the tongs or slings have been fastened to the ends of the logs the carriage is held stationary until the logs are elevated sufficiently at one end to clear obstructions.

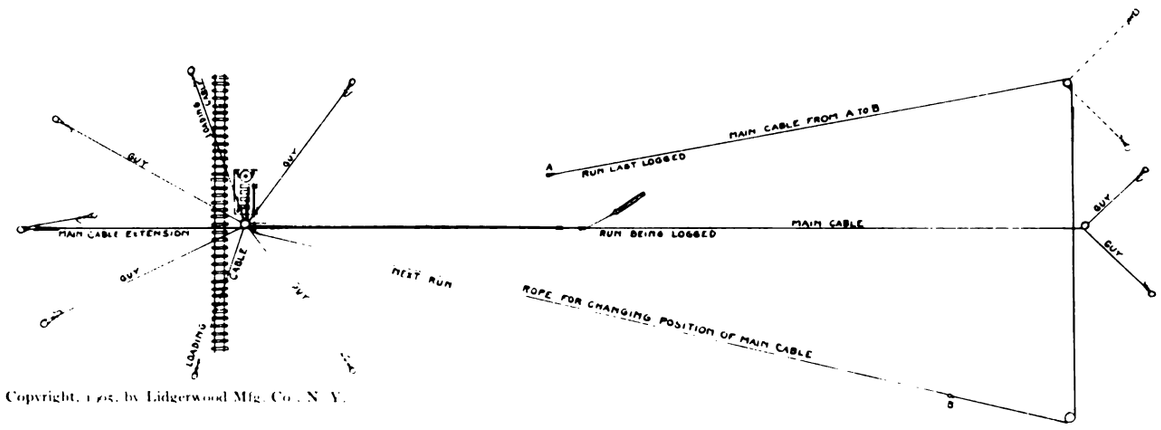
The skidding rope is then drawn in, the outhaul rope paid out, and the log or logs are skidded to the end of the cableway, where they are dropped, ready to be loaded upon the cars.

The carriage is then drawn out again by the outhaul rope, other logs are attached, and the operation repeated.

METHOD OF CHANGING CABLES

It must not be supposed that with this system it is necessary to be continually moving the skidding engine from one place to another and rigging up a new head spar. On the contrary, one head spar is deserted for another only after the entire setting has been cleared.

The machine can log an area taking in everything within a distance varying from 700 to 1500 feet in every direction from the head spar, where the engine is located, and clearing at each setting from 30 to 50 acres, according to the length of the cables used.



SHOWING METHOD OF CHANGING LINES

The tail tree, however, is changed for each run, but very little rigging is here required, as will be seen from the sketch on opposite page.

The method of shifting the outer end of the main cable from one tail tree to another is quite simple and is shown in the sketch above. Two main cables are always employed. While one is being operated the rigging crew is at work getting the other in position on the next run. When all the timber adjacent to one main cable is skidded that cable is dropped by disconnecting from the main cable extension, and the other main cable, which has already been placed in position by the riggers, is connected to the main cable extension and tightened up. This requires ten to thirty minutes.

The next tail tree is now selected. A light rope, provided especially for the purpose, is drawn out on the new run from the head spar up to and around the newly selected tail tree, and thence to the tail tree that has just been deserted. This light rope is then made fast to the main cable now lying upon the ground, and by means of a winchhead or a drum on the engine, is drawn in, thus dragging the main cable entirely around the newly selected tail tree, and it now lies upon the ground between the head spar and tail tree on the new run, ready to be connected up when required.

It will thus be seen the main cable is shifted to one tail tree after the other as fast as the logs are cleared from each run, and that all shifting of cables is accomplished by the riggers without interrupting the logging operations.

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LOADING AND SKIDDING

CABLEWAY SKIDDER

LOADING OUTFIT

THE loading outfit consists of a cable suspended from the head spar on one side of the railroad track to a stump on the other side of the track, thus spanning the railroad. This cable supports a loading carriage, the latter being guyed directly over the railroad track. The loading rope passes from its drum on the loading engine through

a block on the head spar and thence through a second block depending from the loading carriage, from which block it hangs. The logs after being brought in by the skidder are grappled by the loading tongs, and are drawn from under the main cable over to the car, where they are hoisted and deposited upon the car.

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LOADING CYPRESS

The operations of loading and skidding are carried on at the same time and are entirely independent of one another.

CREW

The crew required for a Cableway Skidder is from seven to nine men in the regular skidding and loading gang, and from two to three men in the rigging gang, or a total of nine to twelve men. The crew required for a skidder having no automatic slackpuller is from three to five men in addition to the above.

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THE SLACKPULLING SKIDDING CARRIAGE

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POWER-MULTIPLYING SLACKPULLER

THE accompanying photograph shows the *Power-multiplying Slackpulling Skidding Carriage*, the latest development in automatic slackpullers.

The slackpuller accomplishes three things, any one of which should recommend its use.

It dispenses with the services of three to five men who were formerly required for the purpose of pulling slack

It increases the capacity of the skidder from ten to twenty-five per cent.

It solves the problem of mountain logging with the suspended system.

LABOR SAVER

Usually with the skidder from three to five men are required for the sole purpose of pulling slack in the skidding line so as to lower the tongs to the tongman. In the past without their assistance it was not possible for the tongman to carry the tongs (which are fastened to the end of the skidding line) to the log in order to grapple it, on account of the great length of wire rope to be dragged, the weight of the rope causing it to sag on the ground between the head spar and the skidding carriage. The slackpulling is now accomplished without employing any men whatever for this purpose, it being under complete control of the leverman.

INCREASED CAPACITY

The slackpuller may be considered the greatest improvement made in logging machinery for some time, as it not only solves the problem of logging in the moun-

tains with the cableway system, and dispenses with the services of three to five men, but at the same time it gives an increased capacity of ten to twenty-five per cent.

SKIDS OVER LOGS

SOLVES THE MOUNTAIN LOGGING PROBLEM

Previous to the introduction of the slackpuller the skidder could not be used to advantage in the mountains, as in many places it was impossible to pull slack by hand. With the slackpuller the Cableway Skidder may be employed in the mountains as advantageously as elsewhere, and timberlands practically inaccessible before are now logged with little difficulty.

SIMPLE IN OPERATION

Aside from being a labor saver, and increasing capacity of machine, an important feature is its simplicity both in construction and in operation.

The power-multiplying slack-pulling skidding carriage can be used on any of our improved interlocking cableway skidders.

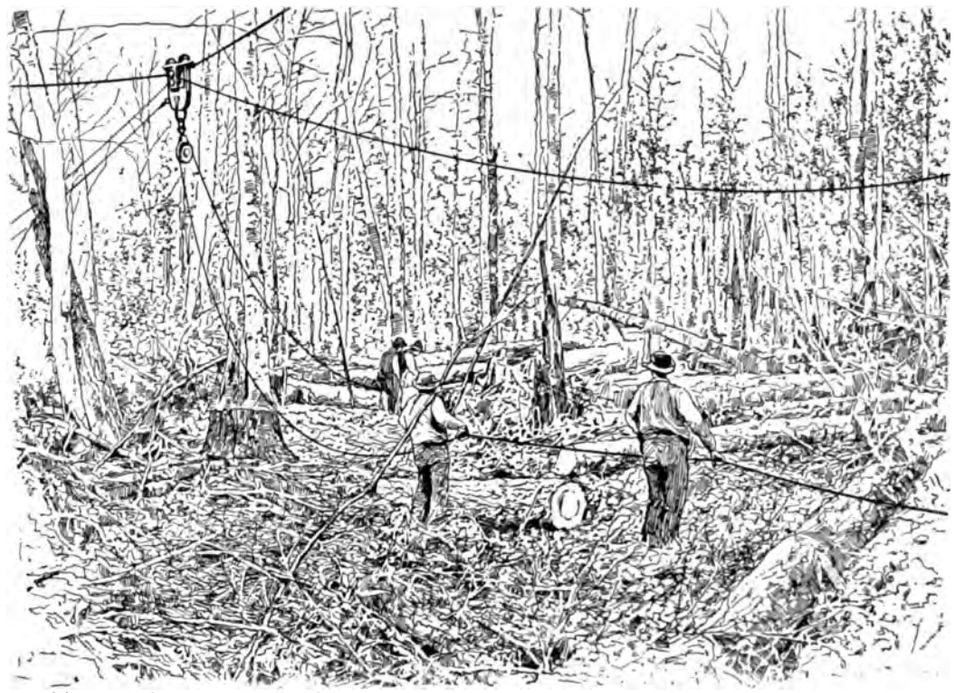
With this outfit the skidder leverman has complete control of the skidding line, and when the carriage has reached the desired point on the main cable he can lower the skidding extension line to the "hooker-on" and pay out the amount of slack he requires to reach his logs.

SAVES MONEY

It will be seen that the saving in wages alone by using the slackpuller amounts to from one hundred to two hundred dollars per month, depending upon the price of common labor. This, together with the greatly increased capacity, makes the slackpuller a most valuable accessory to the Cableway Skidder.

OLD METHOD

In the illustration below is shown the old method of pulling slack by hand.

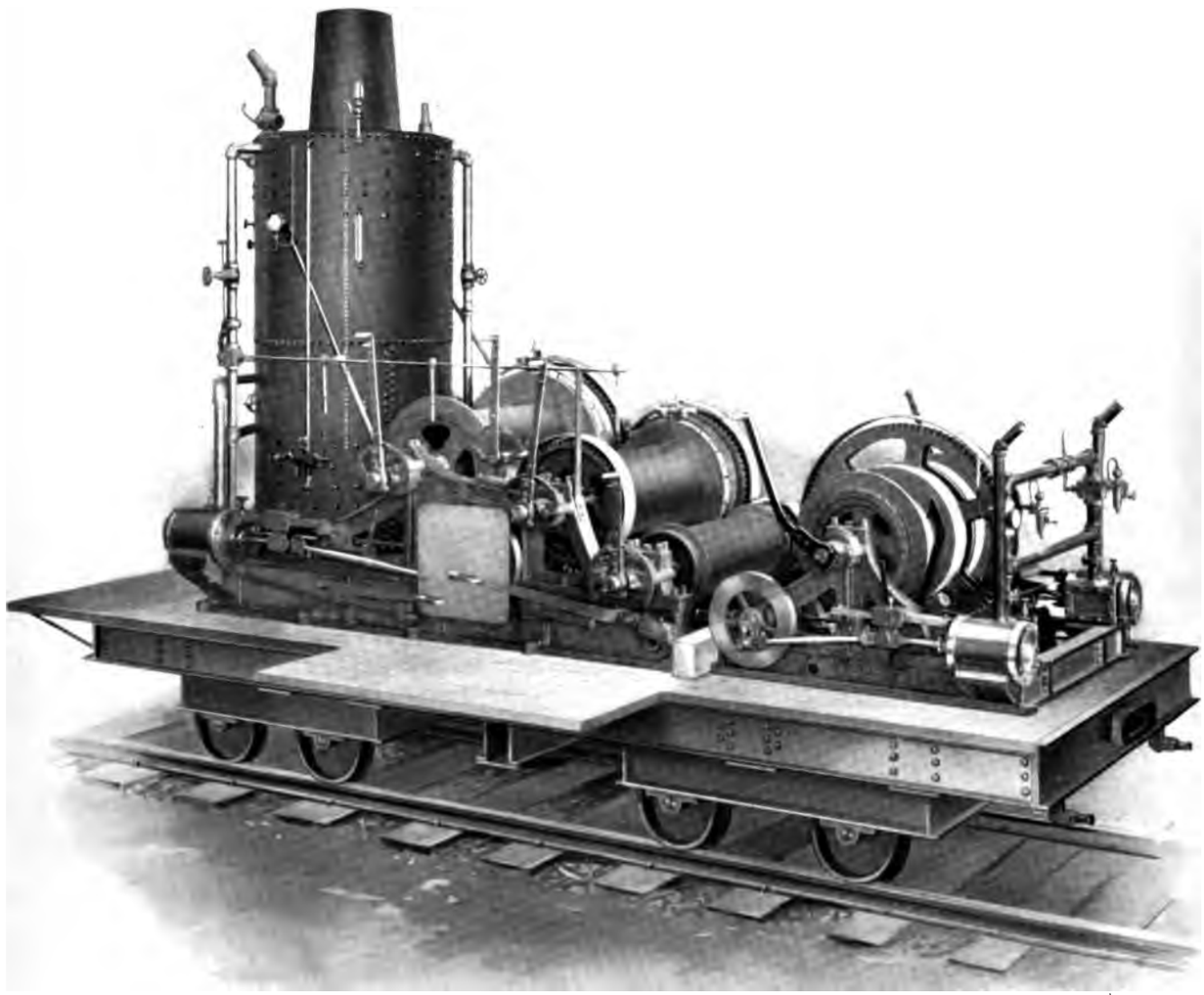


PULLING SLACK BY HAND

IN contrast with the method of pulling slack by the power-multiplying slackpuller, the illustration above shows the pulling of slack by hand. In addition to the "hooker-on" engaged in fixing the tongs to the log, it will be noticed there are three men pulling the skidding rope to give the "hooker-on" slack. As a rule three to five men are required, depending upon the distance from the head spar. The Lidgerwood automatic slackpuller entirely dispenses with these men.

THE LIDGERWOOD CABLEWAY SKIDDING AND LOADING ENGINE, 1905 MODEL

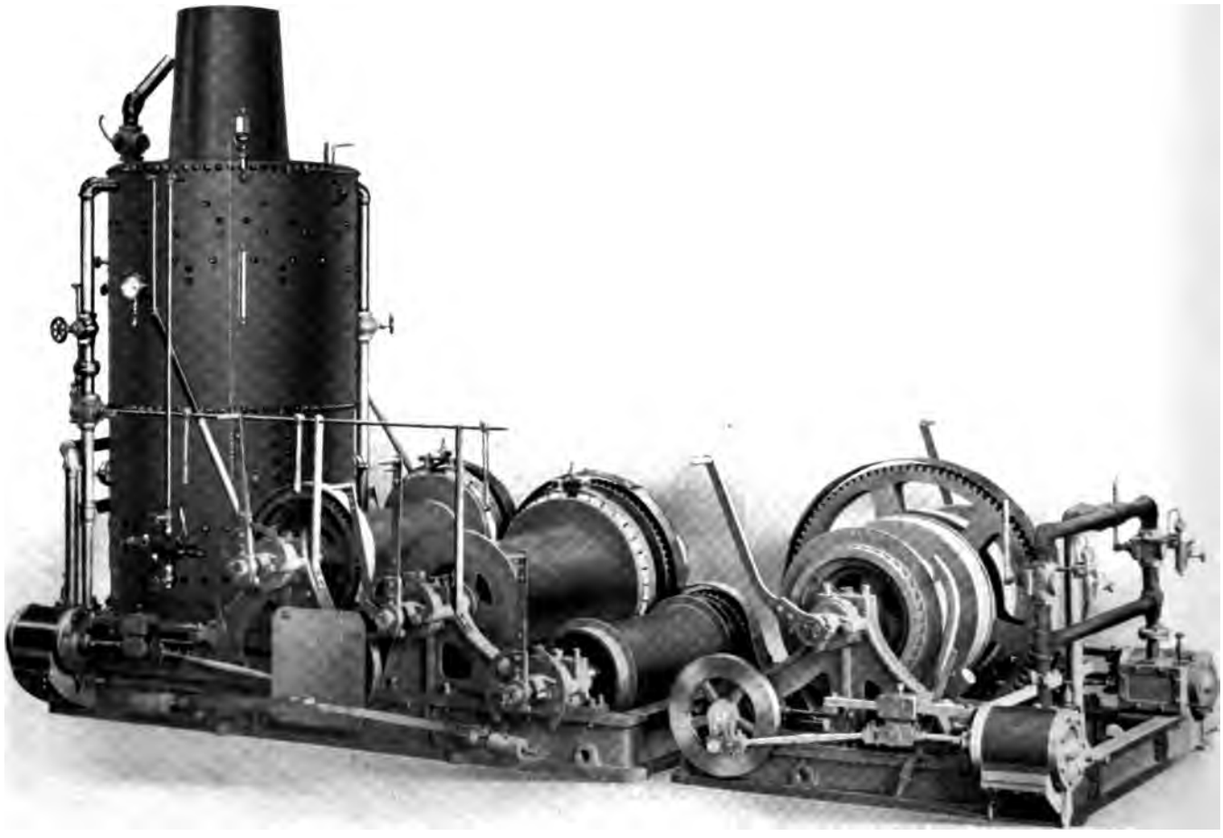
(PATENTED)



The above illustration shows our 10 x 12 Interlocking Slackpulling Cableway Skidding Engine together with 9 x 10 Loading Engine, mounted on steel skidding car

THE LIDGERWOOD CABLEWAY SKIDDING AND LOADING ENGINE, 1905 MODEL

(PATENTED)



The above illustration shows our 10 x 10 Interlocking Slackpulling Cableway Skidding Engine together with 8¼ x 10 Loading Engine

wear on the brake of the receding drum, as required on the older types, known as the "Butters-Miller," and other designs of skidders, is eliminated.

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The interlocking device permits the end of the log or logs to be suspended at any desired elevation while being skidded without the necessity of applying the brake to the receding drum. To hold the end of a log suspended while it is being skidded without this interlocking device it is necessary that the brake be applied to the receding drum, and as the log is drawn in the receding drum is allowed to slip under the brake. This in turn makes it necessary to exert at least double the power on the pulling line, for the reason that the foot brake on the receding drum is exerting a back pull which must be overcome before the log will move forward. In other words, a log that will require a pulling force of say 5000 pounds to skid when using the interlocking device, will require a force of at least 8000 pounds if the log is to be suspended by the foot brake, as by the latter method a back pull of about 3000 pounds is exerted in holding the end of the log suspended.

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It is, therefore, quite evident, when this back pull is eliminated, as is done by employing the interlocking device, a great saving of steam is accomplished. Not only is there a saving in steam, but there is practically no wear on the brake of the receding drum, the brake being applied only when it is desired to hold the carriage stationary at any point on the main cable for the purpose of breaking out a log from the side and bringing it into position under the cable.

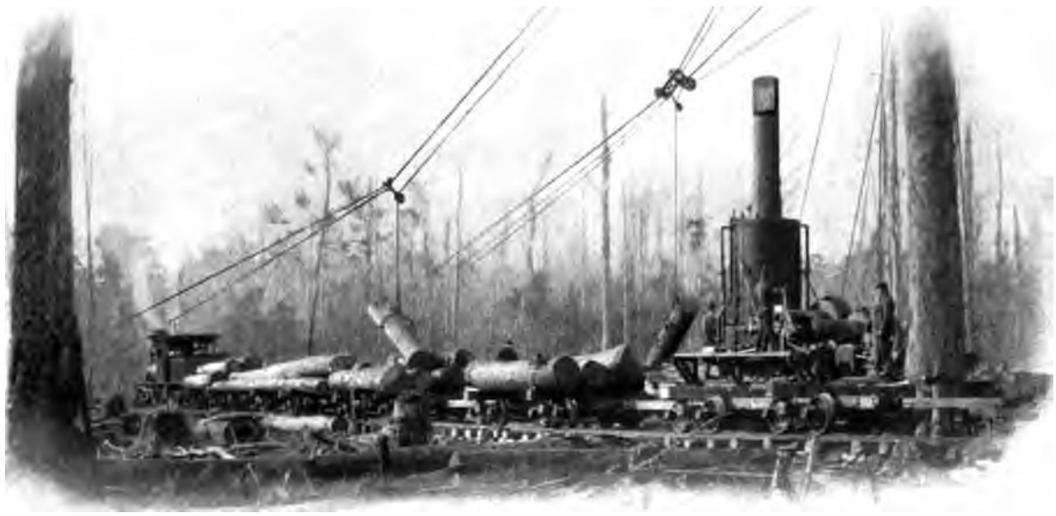
LOADING ENGINE FOR CABLEWAY SKIDDER

The type of loading engine used on the Cableway Skidder is shown in the illustrations on pages 20 and 22 mounted in front of the skidding engine. It usually has two friction drums on the same shaft geared down for power. While one drum is loading logs the other may be used to either spot the cars or change lines. The object, however, in having two drums on this engine is that the loading leverman may be always on the same side of the engine where the loading is being done.

LOADING LONG LOGS

The engines have steel gears throughout and in every detail are built in the most substantial manner.

For twelve years the skidding and loading engines for the Cableway Skidder have been undergoing constant improvement, and the parts that from time to time showed evidence of weakness have been redesigned and strengthened, until now they are capable of performing the heaviest work assigned engines carrying cylinders of their size.



DESCRIPTION OF SKIDDING CAR

As a rule, the engines used with the Cableway Skidder are mounted upon a steel car, as shown on page 20. The lighter type of engines, however, quite frequently are mounted on cars, the frame of which is wood.

The skidding cars have swiveling running gear, so that the trucks may revolve, and are provided with four jackscrews, one at each corner of the car. After being brought in on the regular track to the point in the woods where operations are to begin the car is raised slightly off the tracks by means of the jackscrews, the trucks are turned at right angles and the machine lowered again on temporary tracks that have been placed under the car at right angles on top of the regular tracks. The car is then moved sideways to its position beside the head spar, and there remains until the entire setting of from thirty to fifty acres has been cleared of timber.

If desired, the skidding engines may be mounted upon an ordinary flat car. When so mounted, however, it requires the building of a short spur upon which the car may be run off to one side, so that the trackway may be kept clear for

SKIDDING ENGINE MOUNTED ON SKIDDING CAR

logging trains. Engines mounted in this manner are shown on the preceding page. They are also sometimes mounted upon runners or a sled, and when so mounted may be taken practically anywhere, as shown in accompanying photograph; and in rough, mountainous country, where the grade is frequently 40 to 50 degrees, the engine has little more difficulty in pulling itself around than in level country.

SKIDDING ENGINE MOUNTED ON SLED

L O G G I N G B Y S T E A M

SIDE LINING CLOSE TO SKIDDER

STEAM logging methods should be investigated by all lumbermen who are engaged in logging, and especially by those who have extensive logging operations.

Modern steam logging methods greatly reduce the cost of getting the timber out—one-half in many cases, and frequently even more.

L I D G E R W O O D M A N U F A C T U R I N G C O M P A N Y

ILLUSTRATING MANNER OF ATTACHING SHAW SLING CHAINS

SEVERAL LOGS MAY BE SKIDDED AT A TIME

THE operation of the Cableway Skidder is not affected by the character of the land, as is the case with ground methods, and the skidder should average about the same number of trips per day if the conditions are at all alike. It is, therefore, quite important that the machine bring in its maximum load of logs every trip, and for this purpose the Shaw log slings have been designed. Timber frequently will vary considerably in size in the same woods, and by means of these slings a number of small logs may be brought in at the same time, as shown in the illustration. The Shaw slings have at one end a patent eye bolt, and on the skidding extension line a number of couplings are carried. When the slings have been attached to the logs the eye bolts are placed in the sockets of the couplings,

and when working in small timber a number of small logs may be brought in at one time as readily as a single large log. (See illustration on opposite page.)

Other attachments have been designed for this purpose, but none have been altogether satisfactory. The illustration on this page shows hooks being used.

HOOKING SEVERAL LOGS

CABLEWAY SKIDDER WITH "A" FRAME SPAR ON SCOW

THE Cableway Skidder is here shown mounted upon a scow, the rigging being carried on an "A" frame tower. The machine was about to be moved to the site of operations when the photograph was taken, and therefore the cables are down and the skidder not shown at work. Notice the house arrangement for the accommodation of the logging crew.

CABLEWAY SKIDDER WITH TREE SPAR ON SCOW

ON this page is shown another method of mounting the Cableway Skidder upon a scow. Here a spar is used for the rigging. The loading outfit is sometimes dispensed with when the machine is applied to a scow in this manner, and the logs are dropped into the river direct from the skidding line.

LOG ELEVATED AT ONE END

IN the illustrations on this and the following page the Cableway Skidder is shown operating in dense underbrush. The logs are merely elevated at one end and then skidded along the ground.

LOG CARRIED SUSPENDED

WHEN necessary the log may be raised clear of the ground and kept suspended at any height desired. The operator has full control and can elevate or lower the log at will, by means of the interlocking device, described on page 21. As a rule, however, the log is not carried suspended, but with one end raised off the ground, as shown on opposite page.

THE LIDGERWOOD CABLEWAY SKIDDER AND LOADER
(Butters-Miller Type)

THE LIDGERWOOD CABLEWAY SKIDDER AND LOADER
(The '99 Type with double carriage slackpuller)

OUT OF CARS

THERE are times when the pond is full of logs and it is desirable to suspend loading logs. At other times the loading crew are out of cars. The skidding, however, may proceed as usual and the logs be piled ready for loading when wanted.

SKIDS AND LOADS AT SAME TIME

THE Cableway Skidder is provided with a loading outfit capable of loading all the logs skidded by the machine. The operations of skidding and loading may be carried on simultaneously and independently of one another.

LOADING LOGS

GENERALLY speaking, where the country is adapted for the Cableway Skidder, it is invariably the cheapest method of handling the logs. The ground methods appeal to a great many loggers on account of the seeming simplicity and the smaller investment in first cost of plant, but wherever it is possible to use the cableway system it is invariably the cheapest in the end.

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SKIDDING IN LOG

TO DETERMINE THE BEST METHOD

WE send our logging engineers throughout the country to investigate the conditions where it is proposed to install steam logging machinery. They are men of long experience and thoroughly understand the various methods of logging.

Upon looking over the ground they can better determine the system adapted to the conditions and the one that may be used most economically and give the best results.

Although it is not essential in all cases that a logging engineer go over the ground, it is in most cases quite advisable that he do so, that there may be no question about the proper system being specified.

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DAILY SUPPLY OF LOGS TO MILL ASSURED

PREVIOUS to the introduction of the Lidgerwood machines large cypress mills were seldom profitable. They were dependent entirely upon the floating out of logs, which made it necessary to at all times have a large stock on hand at the mill, and this meant tying up a small fortune in logs. By the introduction of the Lidgerwood skidders a daily supply of logs was assured, large mills were built and many fortunes made in their operation.

L O G G I N G B Y S T E A M

REACHING LOGS BEYOND TAIL TREE

LOGS BEING DROPPED AT HEAD SPAR

L I D G E R W O O D M A N U F A C T U R I N G C O M P A N Y

L O G G I N G B Y S T E A M

LOCATION OF LIDGERWOOD PLANTS

THE location of Lidgerwood logging plants operating under conditions similar to yours may be ascertained by giving us particulars of your operations.

L I D G E R W O O D M A N U F A C T U R I N G C O M P A N Y

LOGGING HARDWOODS

THE portable feature of the Cableway Skidder is bringing it into use for hardwood logging, especially in the hardwood flats, where the ground is more or less covered with underbrush, and partly swampy.

THE CABLEWAY SKIDDER IN OPERATION IN THE MOUNTAINS

LIDGERWOOD CABLEWAY MOUNTAIN SKIDDER AND LOADER

(PATENTED)

ESPECIALLY DESIGNED FOR RAPID SKIDDING AND LOADING OPERATIONS IN THE MOUNTAINS

THIS is the latest development in mountain logging machinery, and the result of many years' experience in mountain logging operations.

Recognized as the standard of its class, it is rapidly being introduced in the big mountain logging operations. Timber

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LOADING LONG TIMBER

The Cableway Skidder, equipped with our improved power-multiplying slack-puller, has worked a revolution in mountain logging.

heretofore considered inaccessible is gotten out with little difficulty.

The Cableway Skidder built for mountain work is similar in design to that employed in the swamps of the South, differing only in minor details. But it must not be considered that the skidder designed for the mountains is adapted only for very rough country, for, like other yarding devices, the smoother the surface and the more favorable the surrounding conditions the better work will be done. Yet, when it comes to canyons and ravines, and very rugged sections, the Cableway Skidder has every advantage over other systems, and it is in such places that the great utility of such a machine is apparent.

No expensive log landings are required. In loading, the logs are picked up bodily and placed upon the cars.

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CABLEWAY SKIDDER AND LOADER MOUNTED ON SLED

THE Cableway Skidder is provided with a regular loading outfit, capable of loading the logs as rapidly as they are skidded.

IF desired, steam loaders may be employed in conjunction with the Cableway Skidder in place of the regular loading outfit with which the machines are generally equipped.

LOGGING ROUGH SLOPES BY CABLEWAY SKIDDER

REACHES LONG DISTANCES

IT will be seen from the illustration above that the distance reached by the Cableway Skidder is by no means limited to the length of the suspended cable, but, after spanning the rugged mountain side, where it is impossible to work mules or horses, the latter may be used to yard logs to the outer end of the cableway system.

SPANS THE ROUGH PLACES

The above characteristic mountain scene shows the Cableway Skidder working under conditions frequently found in mountainous regions. From the crest of the

mountain to the railroad in the cove the ground is rough, rocky, and in some places precipitous, and here the hemlocks are generally found. This timber on the rugged mountain side can easily be gathered by the skidder. On the high ground, farther back, and over the crest of the hill, the hardwoods grow, and the character of the ground becomes smoother and freer from rocks, and is well adapted for animal logging.

It is at times desirable to have a yarding or snaking engine instead of horses to yard logs within reach of the tail end of the cableway system, especially where the timber is large.

Conditions such as these offer an opportunity for cheap logging with the suspended system. The main cable may be suspended from the railroad to the crest of the hill, or sufficiently far back to span the rougher ground, and the hemlock and other timber there may be readily gathered and loaded upon the cars. While this section is being cleared, the hardwoods farther back, and on the summit of the mountain, or beyond the rugged section which is out of reach of the suspended system, may be yarded to the end of the cableway by mules or horses, and there deposited. From that point it is an easy matter to convey them down the mountain side and over the rougher ground to the railroad with the skidder.

RE-YARDING LOGS A LONG DISTANCE BY THE CABLEWAY SKIDDER

LOGGING BY STEAM

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LOGS arrive at the mill free from sand, grit, stones and mud, making a great saving in band saws.

LIDGERWOOD MANUFACTURING COMPANY

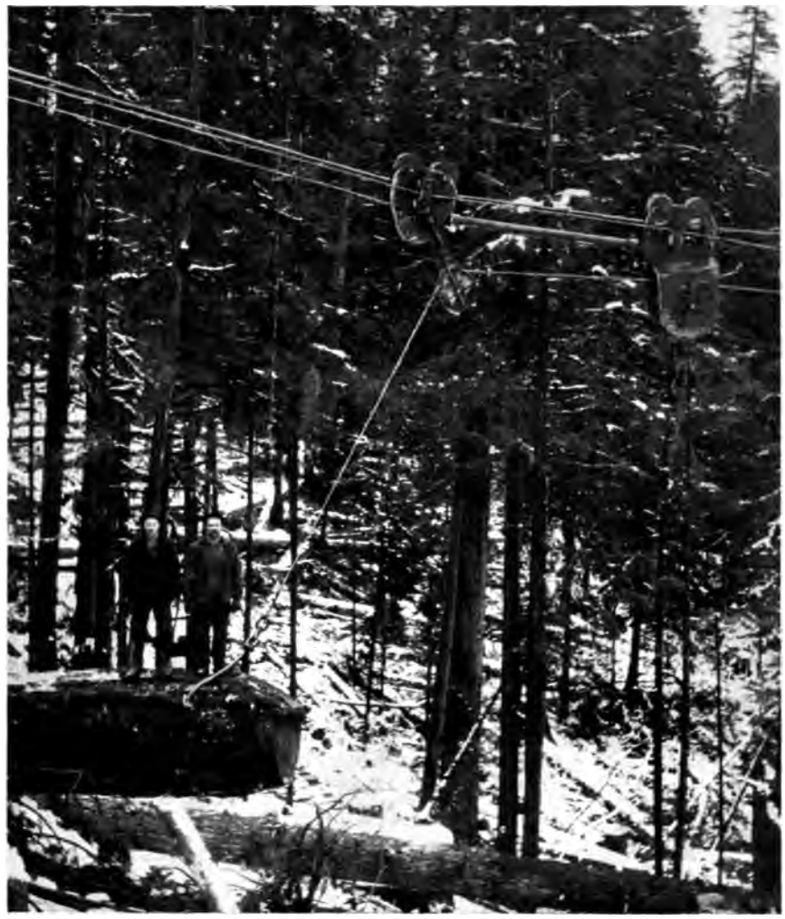
LOGGING BY STEAM

NO swamping. No sniping. No blocking out from behind stumps. No log landings.

LIDGERWOOD MANUFACTURING COMPANY

AN IDEAL YARDING MACHINE

FOR the majority of the Pacific Northwest timber no better machine could be used than the Cableway Skidder and Loader. It makes an ideal yarding machine for that country and especially for the rougher sections. On the Pacific Coast, where the system is now being introduced, it is expected that before long it will largely supplant the yarding engine now so generally used in that section.



YARDING PACIFIC COAST TIMBER WITH CABLEWAY SKIDDER

BY the use of the Cableway Skidder clean logs are delivered at the mill.

Some millmen have discontinued the use of ground methods for this reason alone.

NO snatch blocks are used when yarding with the Cableway Skidder.

This saves rope.

YARDING PULPWOOD WITH CABLEWAY SKIDDER

CABLEWAY SKIDDER OPERATING IN THE MOUNTAINS

LOGGING RAILROAD BUILT ON MOUNTAIN SIDE

MOUNTAIN LOGGING

WHEN lumbering operations are being planned in the mountains, it is highly advisable that before locating the railroad the subject of logging machinery be considered. If the Cableway Skidder is to be used for

getting out the timber the railroads should be built on the contours or on the side of the mountains, and the skidder may be used to pull the logs either up or down the mountain side to the railroad. This, of course, is not absolutely necessary but it materially cheapens the cost of logging.

SHOWING SKIDDER ON TEMPORARY TRACKS AT SIDE OF RAILROAD

A BUNCH OF LOGS GOING IN

L O G G I N G B Y S T E A M

WHERE conditions are to be met with that are unusual and peculiar to the locality we build special plants for the work.

WE have logging plants in operation throughout the United States under almost every conceivable condition.

BY means of a special coupling and sling-chain provided for the purpose, several small logs may be brought in at one time as readily as one large log.

A NUMBER OF LOGS ATTACHED READY TO BE SKIDDED. ANY LOGS MAY BE SELECTED FOR LOAD

AS SKIDDING LINE IS DRAWN IN LOGS BUNCH TOGETHER

LOGGING FROM GULCHES

THE Cableway Skidder brings bark, pulpwood and logs down the mountain side, or up the mountain side, out of hollows and gulches, across rivers and ravines.

BARK AND PULPWOOD

THE Cableway Skidder is admirably adapted for bringing in the bark and pulpwood, transferring one and one-half to two cords at a time, and placing it on board the cars without rehandling, materially reducing the cost of getting it out of the woods.

THE LIDGERWOOD PULL-BOAT SYSTEM IN OPERATION IN CYPRESS SWAMPS

LIDGERWOOD PULL-BOAT SYSTEM

(PATENTED)

THE pull-boat method of logging cypress was the first steam logging system that was tried in the cypress swamps of Louisiana. It originated from simply placing a hoisting engine upon a scow and dragging the cypress logs out of the swamps. But the condition of most cypress swamps, being more or less covered with the cypress knee, made it almost impossible to get out the logs in this rude way, and the result was the design of special pull-boat engines and equipment so as to make it a practical method of logging.

WM. BAPTIST, FATHER OF PULL-BOAT LOGGING

TWO TYPES

There are two types of pull-boat engines; one designed for the tight-rope system of logging and the other for the slack-rope or tail-rope system.

TIGHT-ROPE SYSTEM

The original type of pull-boat engine was designed for the tight-rope system. It has reversible link motion and two large drums of the same diameter. The pulling cable passes around the drums from four to six times (or enough to secure the proper friction) and the ends of the cable are coupled together with a small messenger rope which passes through a block placed out in the woods, thus forming an endless line. When one side of this endless line is pulling in one or more logs, the other side is carrying the empty tongs and cones to the woods.

SLACK-ROPE SYSTEM

The type of pull-boat engine designed for the slack-rope system of haulage has two friction drums. These engines are

LOGS AT LEFT GOING IN. CONE AT RIGHT COMING OUT

RAFTING LOGS. PULL-BOAT IN BACKGROUND

either built with both drums for pulling, or with one drum for pulling and the other for returning the pulling line quickly into the woods.

SLACK-ROPE PULL-BOAT

PULLING LINES

If the reaches are always the same distance, that is, if the tail block in the woods can always be located about the same distance from the engine, two pulling lines may be used and their ends connected together by a smaller rope known as the messenger rope, which is about the same length as the pulling lines. Where the reaches are constantly varying in length, and

PULL-BOAT LOGGING. ILLUSTRATING SIDE PULLING

the tail block cannot always be located the same distance from the engine, it is customary to dispense with the small messenger rope and use only two ropes, one being the pulling and the other a lighter rope for returning the pulling rope into the woods. The return line must always be twice the length of the pulling line. This is

PULL BOAT LOGGING. VIEW TAKEN FROM ENGINE

the method most generally used, as the reaches may vary in length, and it has been found to be far the most satisfactory. As a rule in the South the cypress follows streams and covers an area varying in width along the streams, at some places being very wide, at others quite narrow, and under such conditions the tight-rope system cannot be used.

DISTANCE REACHED

The distance the pull-boats reach depends entirely upon the size of the engines used and the equipment, and may vary from 1000 to 5000 feet.

PULL-BOAT AND FLOATING CAMP

LOG BEING SIDE LINED WHILE ANOTHER IS BEING DRAWN OUT TO PULL-BOAT

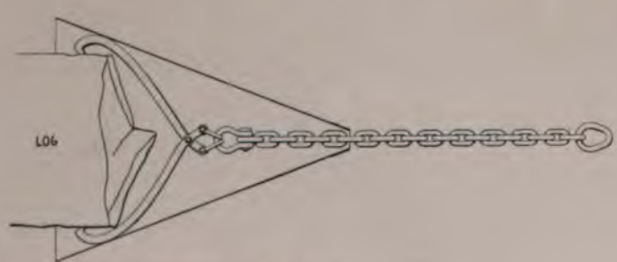
SIDE LINE PULLING LOG

USING TREE INSTEAD OF BLOCK FOR SIDE LINING

THE STEEL CONE

AN important feature in pull-boat equipment for dense cypress swamps is the steel cone to cap the end of the log. It enables the log to be drawn in without embedding in the soft ground or catching against obstructions.

Whole trees may be pulled out over stumps, tree tops, cypress knees, around trees and through the soft mud to the river, bayou or railroad.



THE BAPTIST CONES (Patented)

STRING OF LOGS COMING IN

IN order to hook on at several points so as to bring in a string of logs, as shown in illustration, short connections are made between the main pulling line and the messenger line.

FOUR PULLING LINES

PORTABLE SNAKING AND LOADING MACHINES

(PATENTED)

ESPECIALLY DESIGNED FOR SNAKING AND LOADING, AND FOR RAPID MOVEMENT OF SKIDDING OPERATIONS IN PINE AND HARDWOOD FORESTS

THE peculiar necessities of lumbering in pine and hardwood forests, especially where the timber is somewhat scattering, have resulted in our producing several different forms of portable logging machines, chief among which are the following:

Swan Patent Type
Baptist Patent Type
Dequede Patent Type
Miller-Dickinson Patent Type

The three first mentioned were designed to cover special conditions peculiar to certain sections of the country. The latter (Miller-Dickinson Type) is the one generally used, and is described somewhat at length in these pages.

MILLER-DICKINSON TYPE

THE Miller-Dickinson type of portable snaking and loading machine is self-contained and substantially built, and arranged to be carried on an ordinary flat car to its position in the woods.

Upon arriving at the point in the woods where logging operations are to be commenced the machine is jacked up on blocks placed at each side of the railroad track, by means of four special high-speed jacks, so designed as to lift the machine clear of its car in about a minute. On the larger machine of this type a form of hydraulic jack is used.

After the machine has been raised off the car and lowered upon the blocks at each side of the track, thus leaving the trackway clear, the logging cars are backed through and underneath the machine ready for loading operations.

PULLING BOOM

The portable snaking and loading machine is provided with two booms: one, known as the pulling boom, is arranged to carry at its top either two, three or four skidding blocks, from which the snaking lines lead. These lines are taken out into the woods and used on either side of the track in any direction to pull in the logs anywhere within a radius of from 800 to 1200 feet.

The pulling boom is provided with a set of guys so arranged that they may be run out and attached to trees and set up to the proper tension, by means of the engine, with the least possible delay.

LOADING BOOM

The other boom is used for loading the logs which have been snaked in by the lines from the pulling boom.

The boom may be made sufficiently long to load logs 70 to 80 feet in length. The heels of the loading boom are attached to a turntable provided with a special loading and swinging engine, the boom itself being swung by means of guy lines passing from the swinging drums of the loading engine through blocks on the outer end of the loading boom to trees or stumps at the side.

SNAKING AND LOADING ARE INDEPENDENT OPERATIONS

The operation of the loading boom is entirely independent of the pulling boom, and, therefore, each boom may be used to its full capacity simultaneously. The respective engines are independent in operation and handled by separate operators. In operation, a train of empty cars is backed through and under the machine, and the logs are rapidly loaded on the first car of the train, which has been left under the loading boom.

ATTENDANCE OF A LOCOMOTIVE NOT REQUIRED

As fast as cars are loaded the entire train is moved forward, one car length at a time, by a special drum known as the spotting drum, and therefore the attendance of a

SNAKING LONG TIMBER

locomotive is not required except to take cars away to the mill after the entire train is loaded. The snaking of logs is done by two, three or four drums, each drum working independently of the others. In addition to the drums for snaking and loading logs and for spotting the cars, there is one for raising and lowering the pulling boom, which enables the quick tightening of guys. The loading engine, together with the loading boom, is mounted on a steel turntable, and the turning arrangements are novel and exceedingly efficient.

QUICKLY MOVED FROM SETTING TO SETTING

The portable feature of the machine is clearly shown in the illustrations. To be moved from one location in the woods to another simply involves the detaching of guys and the lowering and raising of the machine, with a total delay in logging operations of from twenty to thirty minutes. The fact that the machine may be readily and quickly moved from setting to setting makes it well adapted for thin and scattering timber.

On all the portable snaking and loading machines, the tongs and the snaking lines, to the ends of which they are attached, are returned into the woods by mules or

SHOWING HORSES TAKING LINES INTO THE WOODS AND HOW CARS PASS UNDER MACHINE

horses. Each line is operated entirely independent of the others. At times when a particularly boggy or swampy place is encountered the tongman will carry the line to the log. If he is a long distance out from the machine and unable to pull the slack-rope the horse may be hitched at some point on the line to pull the slack so that the tongman can get into the swampy places with the tongs.

SWAMPY PLACES

In very swampy places the machine may be rigged on the slack-rope system, if necessary, that is, having one drum pulling in the logs and another returning the snaking line into the woods. This, of course, reduces the capacity of the machine

and the method is used only when it is impossible for a horse to pull out the lines.

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SNAKES LOGS FROM ALL DIRECTIONS

Logs may be brought up from any direction to the portable snaking and loading machine by the snaking lines; and the loading boom, being a swinging boom, can readily load them from where they are left by the snaking lines.

LOADING LONG LOGS

The loading boom swings under its own guys by the Lidgerwood patent method of swinging long booms, and the longer the boom the greater is the control in swinging. This feature permits the machine to load the longest logs with ease.

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SWINGING OF LOADING BOOM

Owing to the method of swinging the loading boom there is no more power required to swing a long boom than a short one, as all the strains are carried directly by the swinging guys running from the end of the boom to stumps on either side of the track.

L O G G I N G B Y S T E A M

NOTICE the clear trackway under machine, permitting the empty logging cars to be backed underneath.

LOGGING BY STEAM

THE above illustration shows the logs being pulled in from either side of the track in tree lengths and cut into logs at the skidder before being loaded on the cars.

ATTENDANCE OF A LOCOMOTIVE NOT REQUIRED

FROM setting to setting the machine moves itself. It is lowered on whatever empty car may be under it. One of the pulling lines is taken out ahead and in this way it pulls itself along, at the same time moving the empty and loaded cars with it, and the attendance of a locomotive is not required. However, when the machine is to be moved long distances it is desirable to have a locomotive, as shown above.

PILING LOGS (SHORT OF CARS)

THE high lead of the pulling lines on the snaking and loading machine enables the snaking crew to pile up a great number of logs when the loading crew is delayed for want of cars. As the loading crew can always load more logs than the snaking crew can pull this is an important feature.

L O G G I N G B Y S T E A M

IN THE DISMAL SWAMP

A TEMPORARY BRANCH AS BUILT FOR THE PORTABLE SNAKING AND LOADING MACHINE

PORTABLE SNAKING AND LOADING MACHINES

THE illustrations on this and the following page show the Baptist type portable snaking and loading machine, which has many advantages for pine logging, and especially adapted for certain sections.

The machine, like the Miller-Dickinson type, during transportation rests upon an ordinary flat car. By means of a locomotive it is pulled upon a slightly raised auxiliary track, where it rests ready for service, and is entirely clear of the logging cars, which may move freely underneath the platform.

The ends of the auxiliary track are curved downward so that the machine can ascend and descend from its resting place easily and without jolting.

The machine has three pulling cables, operated by one engine, and as fast as the logs are pulled in they are loaded upon the cars by means of the loading boom, which swings towards either side of the track.

The loading boom is operated by a direct-acting steam cylinder, which is independent of both the pulling and loading engines. The loading engine has two drums, one for loading the logs and the other for spotting the cars.

The pulling lines are drawn out into the woods by horses or mules.

PORTABLE SNAKING AND LOADING MACHINES

ANOTHER design of the portable snaking and loading machine is the Dequede type. This machine differs from those before described principally in the manner of swinging the boom, a special arrangement of ropes at the foot of the boom being employed for this purpose. A set of jacks operated by chain belting is provided for raising and lowering the machine. The Dequede, like the other snaking machines, straddles the empty cars which may be backed through and under it, and it also spots the cars as fast as they are loaded.

SPECIAL SNAKING MACHINES

WE are frequently called upon to design special logging engines for snaking and loading plants to be operated under conditions peculiar to certain sections and to conform with the views of a logger requiring a special plant. During the past few years we have designed many such engines for these special snaking machines, all of which, however, cannot be described for want of space. One of these machines is the Swan type, used for the lighter work in flat, piney woods.

There are also other types some of which pull and load the logs from the same boom, as shown in illustration at bottom of this page. On some of these small machines hand jacks are used for raising and lowering, but generally, as on the Swan type, the jacks are operated by the engine.

We shall be glad to have full particulars of your logging operations, with a view to submitting you a proposition upon a steam logging plant adapted for your special work.

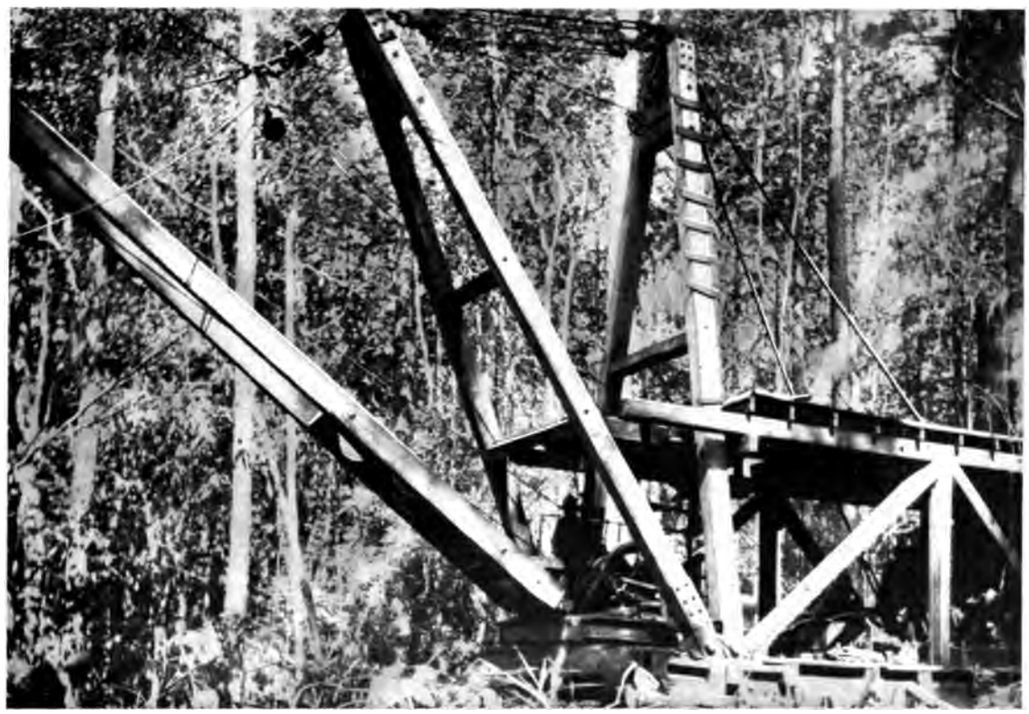
LIGHT TYPE WITH RIGID BOOM

LOGGING BY STEAM

SPECIAL types with one, two or three pulling lines.

May be equipped with either swinging or rigid loading booms.

High leads allow piling of logs.



LIGHT TYPE PORTABLE SNAKING AND LOADING MACHINE WITH SWINGING BOOM

LIDGERWOOD MANUFACTURING COMPANY

LIDGERWOOD LOG GATHERER

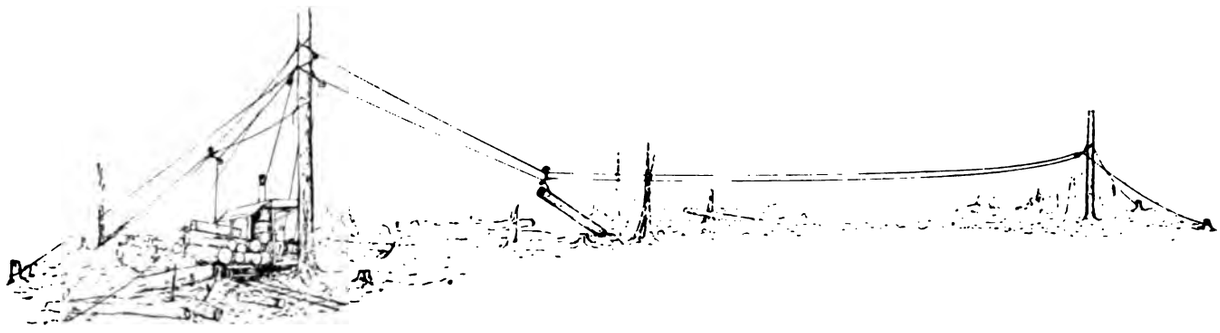
(PATENTED)

THE system illustrated in the outline drawing on this page, and further shown in the accompanying illustrations, consists of a log-gathering line and a loading outfit. The gathering line consists of two wire ropes, known as the hauling or skidding rope, and the outhaul or tail rope.

Upon the tail rope travels a log-gathering carriage. These two ropes are suspended between trees situated from 600 to 800 feet apart, as shown below. At the end of the hauling or skidding rope is carried a pair of tongs for grappling the logs.

OPERATION

In operation, the tongs are fixed to the end of log, which is hoisted sufficiently at one end to clear obstructions. The drums are then interlocked to run together, the pulling drum taking in the skidding line as fast as the tail-rope drum pays off the tail rope, no foot brakes being applied while the log is coming in. The logs are thereby



ILLUSTRATING LOG-GATHERING SYSTEM

dragged or skidded and deposited ready for loading. After the log has been brought in and the tongs are released the engine is reversed, again the drums are interlocked to run together and the carriage is held suspended sufficiently to clear obstructions while being returned into the woods for another log.

The loading outfit is operated by an independent loading engine carried upon the same car. It receives steam from the same boiler that supplies the log gatherer.

The loading cable spans the railroad track, and the operation of loading is similar to that employed with the Cableway Skidder, described on previous pages. The gathering or skidding of the logs and the loading are carried on at the same time, but independently.

In general operation the system is similar to the slack-rope system, inasmuch as only a pulling and an outhaul rope are used. In the slack-rope system, which as a rule is used only for long distances, the pulling line and the outhaul rope are connected one to the other, and at this connection the log is attached and dragged along the ground. In the log-gathering system a log-gathering carriage is used, and the ends of the cable

are elevated on supports some distance above the ground, so as to be able to lift one end of the log slightly when being brought in. The accompanying photograph illustrates the position of the carriage when traveling back and forth. At the instant the photograph was taken the machine was tightening upon the tail rope and holding the skidding rope, so as to not only elevate the front end of the log, but also to swing it clear of an obstruction. As soon as the end of the log is sufficiently elevated to clear all obstructions the drums of the logging engine are locked together, and the logs come in at a high speed, being held at a constant elevation without the use of foot brakes.

For re-yarding logs the log-gathering system is used by attaching a short tong line carrying chain slings to the log-gathering carriage, and omitting the use of the skidding block on the carriage. In this case the hauling or skidding line is fastened directly to the carriage. This is known as the log-gathering re-yarding system.

ILLUSTRATING SNAKING LOGS OUT OF SOFT OR BOGGY PLACES

PORTABLE SNAKING MACHINE MOUNTED ON WHEELS OR SKIDS

IN many sections of the Southern pine belt are found ponds, creeks and bayheads, where timber such as swamp pine and small cypress of good quality grows luxuriantly, and it has always been the case that the operators, when logging with teams, have had to leave a great deal of this class of timber untouched, for the reason that the ground was too boggy and soft for their teams to get near enough to the logs after being cut to enable them to drag them out and haul them to the tram road. The result has been that to-day numerous tracts have been cut out and this fine timber left standing in these ponds and bayheads, and the tram roads long since been taken up and moved, or the operation abandoned.

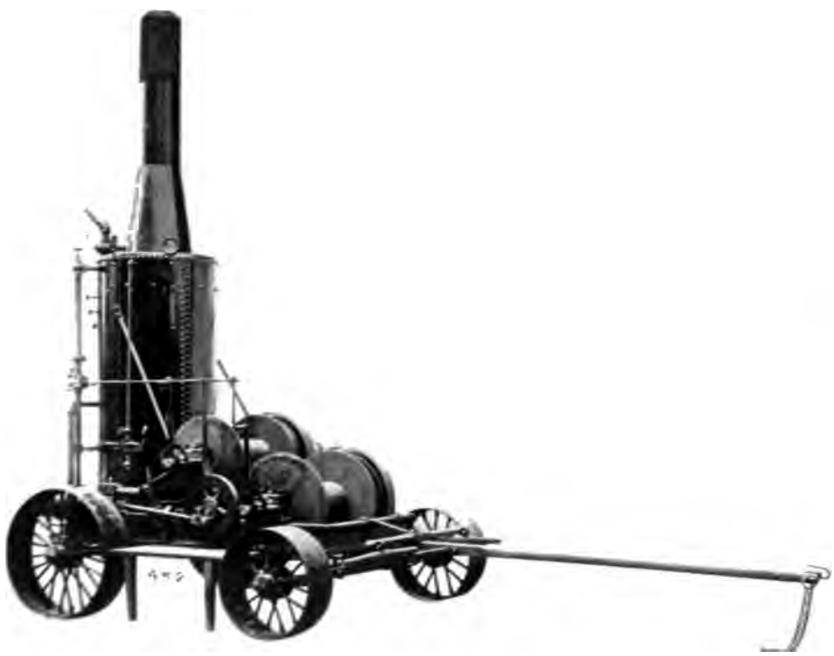
A LIGHT, POWERFUL MACHINE

We have designed a small, light, yet powerful machine, to be mounted on skids, so that it may drag itself around through the woods by its own power, and when taken to the edge of one of these bayheads it is anchored to a stump, and the cables taken

out into the pond or swamp either by hand, by mules, or by using a slack-rope system of haulage; that is, one drum of the machine is used to pull the cable and tongs back to where the log is cut, and the other drum to pull the log out to high ground where a team can take it and haul it to a tram, or if the tram is anywhere near the pond the engine not only pulls the logs out but loads them on the cars as well.

MOUNTED ON WHEELS

The machine is also built to be mounted on axles with special roller-bearing wheels, having draught gear to enable team to be properly hitched for hauling from place to place.



EFFECTIVE AND CHEAP METHOD OF LOGGING

The plant is adaptable where a reasonably cheap outfit is required, and where an effective and cheap method of logging is very necessary to the small operator. It pulls logs from 500 to 1500

feet away from the machine. There are a large number of them in use, and they are the means of saving a great amount of valuable timber that otherwise would be lost.

FOR SMALL OPERATORS

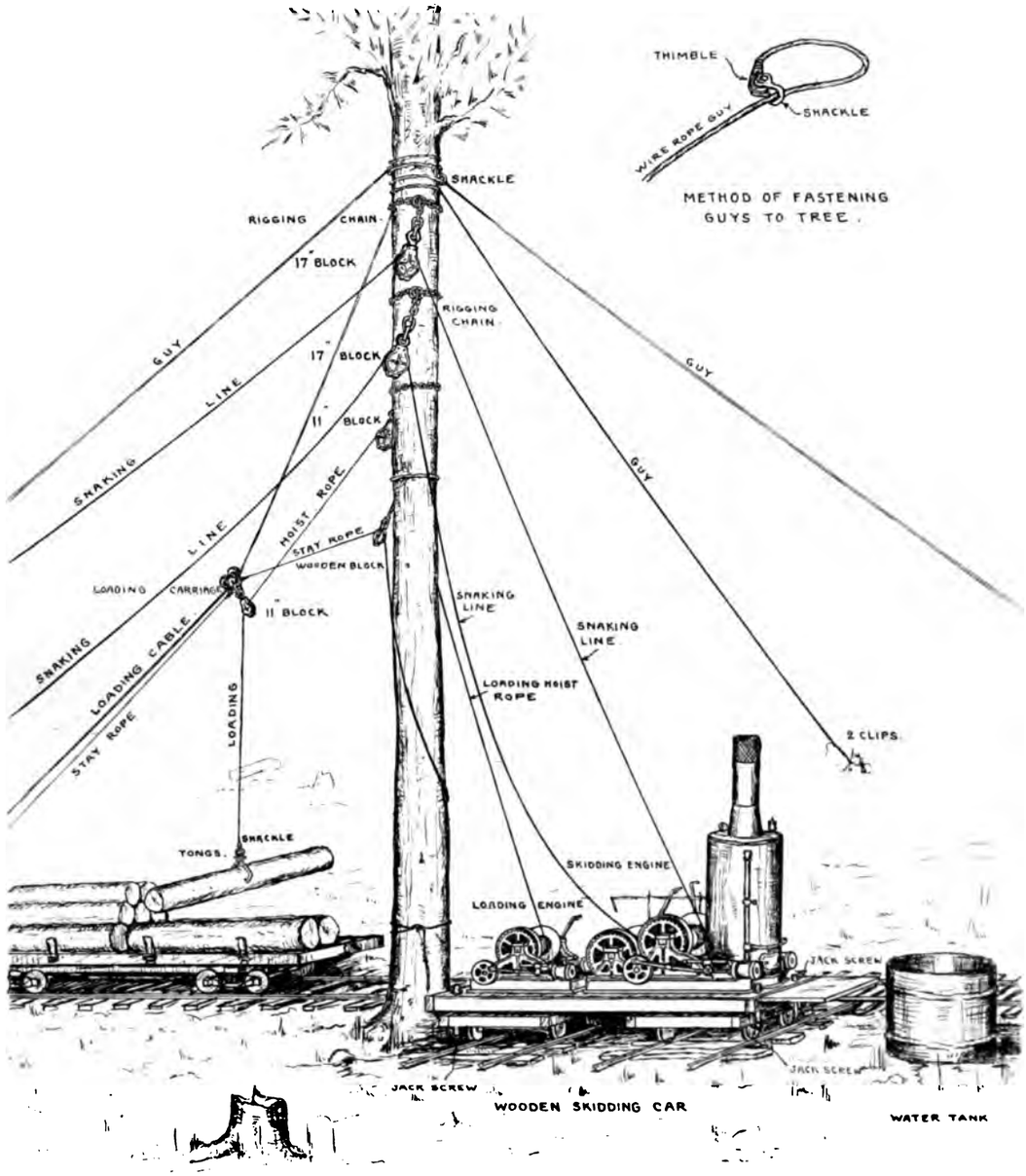
One of these machines makes it possible for an operator with a small portable saw mill to go through the swampy country where pine and cypress predominate, and contract to get the timber and saw it into lumber, making a handsome profit. Many saw mill operators, who leave valuable timber for the reason that it appears to them impossible to get it, should investigate the machine and its effective work.

HORSES USED TO PULL LINE BACK TO LOGS

LIDGERWOOD SEMI-PORTABLE SNAKING AND LOADING MACHINE

(PATENTED)

THE illustration above and those immediately following show the Lidgerwood semi-portable snaking and loading machine. This type of machine is extensively used in many sections. As a rule the engines are mounted upon a skidding car. Sometimes, however, they are mounted upon a sled in the same way as the cableway skidding engine shown on page 26. The snaking or pulling lines lead from the drums on the engine through skidding blocks rigged on the spar tree. The illustration on the opposite page shows the manner of rigging the machine. The skidding blocks serve to give the pulling lines a universal lead in any direction from the spar tree.



SEMI-PORTABLE SNAKING AND LOADING MACHINE FOR YARDING AND LOADING LOGS

This feature does away with the cumbersome snatch blocks, and at the same time permits of the use of two or more pulling lines without their interfering with each other. The leverman also is thus given a better view of the log as it is being drawn

SNAKING FROM BOTH SIDES OF TRACK AT SAME TIME

DROPPING LOG FROM SNAKING LINE

in to the landing, and the loading and snaking operations do not interfere with each other. It will be observed that the method of loading the logs is similar to that employed with the Cableway Skidder as described in the forepart of the book.

In all essentials the semi-portable is similar to the portable snaking and loading machine with the exception that it may not

ILLUSTRATING SNAKING LINE BEING USED FOR SHORT DISTANCES, SLACK-ROPE SYSTEM FOR LONG DISTANCES

be so easily moved from one place to another. So far as the snaking of the logs is concerned the system is the same.

The plant is admirably adapted for logging where the operations are not very extensive, but where operations are to be conducted on a large scale or where it is necessary to be changing the location of the machine frequently the portable

HORSE STARTING BACK WITH SNAKING LINE

snaker and loader is recommended. On the foregoing page we show the snaking or yarding ropes connected, so that one line may return the other to the logs, by using a tail block out in the woods. A snaking line is also being used from the same engine and a horse carries it into the woods. This latter line is used in the higher and drier places.

When it is desired to reach long distances, or when the ground is too boggy for horses, the return line is generally used. The latter method is also used where the logs are bunched in one place. On the Pacific Coast this outhaul rope is generally known as a trip line when used upon a logging engine.

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SNAKING OR YARDING ENGINE WITH LINES LEADING THROUGH SKIDDING BLOCK RIGGED ON TREE

Copyright, 1905, by Lidgerwood Mfg. Co., N.Y.

Copyright, 1905, by Lidgerwood Mfg. Co., N.Y.

SNAKING OR YARDING ENGINES USING SNATCH BLOCKS FOR LEADING LINES, AND A TRIP LINE TO RETURN PULLING LINE INTO THE WOODS

SLACK-ROPE SYSTEM OF LOGGING WITH SEMI-PORTABLE LOADING OUTFIT

THE cuts on this and the two following pages illustrate the slack-rope system of logging with the semi-portable loading outfit. This is similar to the Pacific Coast yarding method using trip line. In loading, however, the logs are picked up bodily instead of being rolled upon the cars. The slack-rope system of logging (using a trip line to return the pulling line into the woods) is used when necessary to go long distances, where the timber is large and there are a great many logs, and where the conditions will not permit of the use of horses to return the lines. This method of gathering the logs is similar to that employed in pull-boat logging, described on pages 60 to 69.

SLACK-ROPE SYSTEM OF LOGGING, ILLUSTRATING THE USE OF TWO TAIL BLOCKS, AND SHOWING METHOD OF SIDE LINING

YARDING TO ROADING ENGINE (SLACK-ROPE SYSTEM)

SNAKING OR YARDING ENGINE WITH LINES LEADING FROM SNATCH BLOCKS

SLACK-ROPE SYSTEM

ILLUSTRATING a snaking or yarding engine yarding logs in reach of the roading engine, operating the slack-rope system of re-yarding logs. The regular semi-portable loading outfit is loading the logs brought in by the roading engine.

ILLUSTRATING ROADING ENGINE WITH TWO OUTHAUL OR TRIP LINES

A cableway skidding yarding engine without loading engine is sometimes mounted upon a sled, as shown below, and used for yarding logs to the roading engine, instead of a regular yarding engine, as shown to the right in the illustration above.

The cableway skidding engine is so arranged as to make an excellent ground yarding engine when necessary, the back drum being used for the trip line, and the middle drum for pulling line. The middle drum carries the customary winch.

CABLEWAY YARDER ON SLED

YARDING ENGINE ON SLED

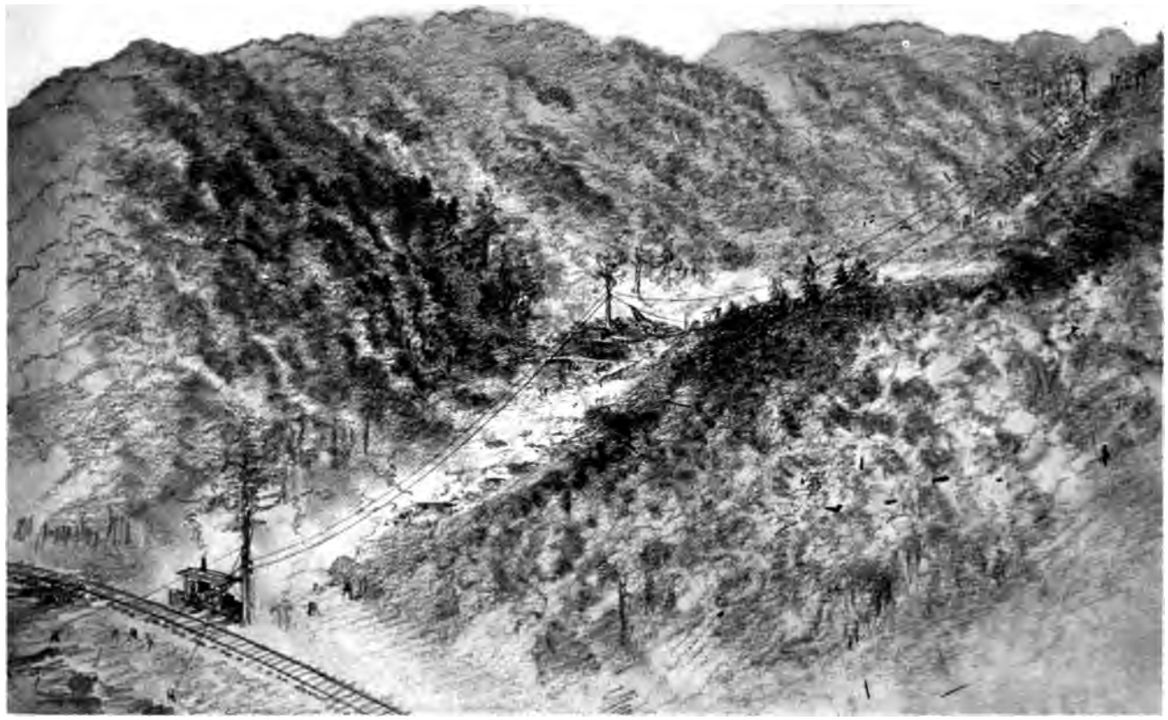
BULL DONKEY HAULING CALIFORNIA REDWOOD

THE illustration above shows in the foreground the tail sheave of the bull donkey log-hauling system. To the right in the picture is shown a road engine bringing logs from two yarding engines located nearly 3000 feet away, and delivering the logs to the tail end of the bull donkey system.

The bull donkey is located about 7000 feet from its tail sheave shown on opposite page. Very large loads are handled in this manner, especially where the skid road has been carefully prepared. Notice in picture on preceding page the load of logs attached

TREE "BOOL," CLAIMED TO BE THE LARGEST TREE IN THE WORLD. IT IS LOCATED IN THE SECTION REFERRED TO

ready to be hauled the 7000 feet by the bull donkey. The engine hauling the load is claimed to be one of the largest bull donkeys yet constructed, being a 14 x 18-inch double cylinder Lidgerwood special bull donkey engine, and it is being used in the largest timber in the world.



TRANSFERRING LOGS OUT OF GULLY TO RAILROAD

IN narrow ravines where it is possible to shoot or yard the logs to the gully, the illustration above shows a system that can be used to advantage to transfer the logs out of the gully to the railroad. The cut illustrates the system working under rather awkward conditions, a ledge of rocks protruding directly in the course of the endless cable, necessitating the rigging of idler blocks on a tree (shown in the center of illustration) to raise the lines clear of the rocks. If a great deal of timber was to be transferred it would be advisable to make special preparation at this point, somewhat similar to that shown on page 100 in combination with ground idlers, but in this case there was not sufficient timber to warrant this. The logs are first carried down the gully and deposited at this intermediate tree, and after a considerable pile of timber has been deposited at this point the tongs are shifted to the other side of the idler block and the logs transferred to the railroad. It will be seen in this case a double handling of the logs is required, whereas, with no intervening rocks or obstructions one handling only would be necessary.

LOG LOADING METHODS

THIS book being devoted to logging by steam, only a brief outline of methods for loading logs will be given. Our book on "*Log Loading and Log Handling*," now in preparation, will fully illustrate and describe Lidgerwood log loading machinery.

TYPES OF LOG LOADERS

A variety of machines may be used for loading logs, and the type to be used depends entirely upon the conditions under which it will be operated and the general requirements. They may be grouped as follows:

Loading logs by steam power by rolling them up skids as illustrated on page 105.

The semi-portable machine shown on pages 106 and 107 and further illustrated in the forepart of book as being used with the Cableway Skidder.

The Lidgerwood Universal Log Loader, illustration of which is shown on page 104. The machine is built with swinging or stationary boom.

Special types of portable and semi-portable log loading machines. These are designed for special conditions and requirements. See pages 108 and 109.

In addition to the regular and special log loading machines, the portable snaking and loading machines described on pages 70 to 85 are usually equipped with separate loading engines and attachments.

The Lidgerwood patent type of guyed swinging boom is not only especially adapted for loading long timbers but is always ready for snaking logs when not required for loading.

LIDGERWOOD "UNIVERSAL" LOG LOADING MACHINE

(PATENTED)

THE Universal Log Loader is built with either swinging or rigid boom. It has a large capacity and loads small and large logs alike. The machine is self-propelling and runs either on top of the cars or on the railroad track. It spots the cars, switches them and takes them to the main line. The cars pass the machine on the same track and it loads from either side of the track.

SWINGING OR RIGID BOOM

When logs are yarded or skidded by animals they are usually placed parallel to the track, as shown above. When so placed, and especially if the logs are short, a rigid boom is preferable. When the logs are pulled by steam power (especially in long lengths) and when they are dumped in piles, as is frequently done in mountain logging operations, the swinging boom may be most efficient. However, the general conditions surrounding operations enables one to decide whether a swinging or a rigid boom should be used.

ROLLING LOGS ON CARS BY HORSES

THE above illustration shows method of rolling logs up skids to car by horses. This is the old method of loading logs in the Eastern, Southern and Central sections of the United States. In the illustrations below the same method of loading logs is shown, only steam power being used instead of horses for rolling the logs on car. In loading logs from yarding and roading engines, especially on the Pacific Coast, this method is generally employed.

ROLLING LOGS ON CARS BY STEAM

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SEMI-PORTABLE LOG LOADER

SEMI-PORTABLE LOADING OUTFIT

THE semi-portable log loading outfit consists of a cable stretched between a tree on one side of the railroad track and a stump on the other side of the track. The cable carries a loading carriage, which is guyed directly over the center of the railroad track. The loading rope passes from the drum of the engine through a block rigged on the tree and thence to the loading carriage, and to the end of this rope the tongs are attached.

This makes a very simple rig for loading logs, especially where the logs are yarded irregularly in piles as is generally done in the mountains. It is inexpensive and simple and can be used to advantage in many places.

The loading engine and boiler may be mounted upon a regular skidding car and moved sideways off the track to permit the logging cars to pass, as shown in accompanying photo.

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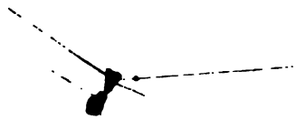
LOADING LOGS



Nearly all our cableway skidders, semi-portable snaking machines and log-gathering machines are equipped with this type of log loading outfit.

OTHER SEMI-PORTABLE LOG LOADERS

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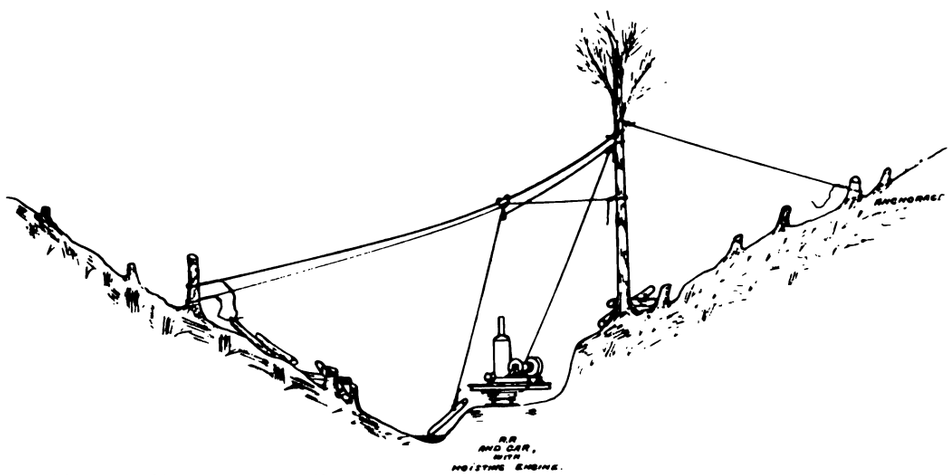
TOP AND GROUND LOADER

OTHER forms of semi-portable log loaders are shown on the following page. Some of these machines have the boom swung by guys, and for small operations, where large capacity is not required, they are very desirable.

When not required for loading they may be used for snaking logs to the railroad track. These machines have loaded as high as 100,000 feet per day of long timber, but as such plants are designed for pulling as well as for loading, the regular Lidgerwood log loader should be used when high loading capacity is required.



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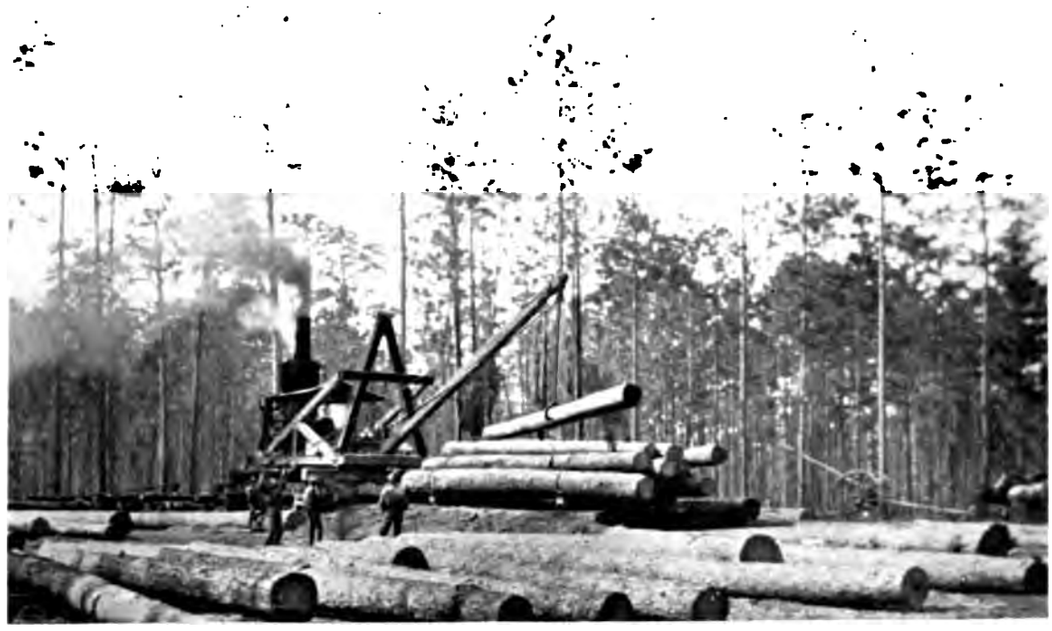
L O G G I N G B Y S T E A M



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SPECIAL TYPE SEMI-PORTABLE LOG LOADER

[illegible] N.Y.

GUYED SWINGING BOOM

LOG-HANDLING DERRICKS

SWINGING DERRICK ON SCOW FOR UNLOADING LOGS

WE build many forms of log-handling derricks, some of which are shown on this page. These machines, as a rule, are built for special conditions and are generally mounted on derrick boats or scows. They may also be mounted upon wheels and readily moved from place to place as shown in illustration at bottom of page. They are often used around logging yards and for transferring logs from logging cars to standard railroad cars. They are generally equipped with the special Lidgerwood swinging gear. If mounted upon a track or firm foundation the ordinary swinging gear may be used. When mounted upon a scow the latter may be moved up and down the wharf and logs stored at any desired point. The derrick scow may accompany the fleet of log scows, and after the logs have been unloaded at the wharf it returns to the woods landing and loads the logs upon the scows.

For full details and description of derricks see our derrick catalogue.

TRAVELING LOG-HANDLING DERRICK FOR WHARF OR LOG YARD

LOGGING INCLINE RAILWAYS

LOGGING incline railways may be used to advantage in many places, and particularly when it is desired to reach isolated mountain coves, etc., and avoid building many miles of railroad around the mountain. A tram road is run over the intervening ridge, a hoisting engine placed on top of the divide, and the logging cars pulled up one side and lowered down the other, as shown in illustration. We employ practical logging engineers, whose duty it is to make careful examination of proposed logging operations. They are familiar with the different methods for logging, and having been loggers before entering the employ of the Lidgerwood Company, are well posted; and their long experience enables them to make valuable suggestions for getting the timber out of the woods.

PILE DRIVERS FOR LOGGING RAILROADS

OUR logging department during the past few years has made a careful study of the building of logging railroads, and we are prepared to figure on special forms of derricks, cableways and pile drivers for this work.

The illustration above shows a double pile driving machine used in building swamp roads.

LIDGERWOOD LOG-HANDLING CABLEWAYS

PATENTED

THE Lidgerwood log-handling cableways are used for many purposes, principal among which are the following:

For unloading and transferring logs across rivers. (See pages 112 to 115.) For unloading, piling and assorting logs. (See pages 116 and 117.) For unloading and supplying mill. (See pages 122 and 123.) For storing logs and pulpwood. (See pages 118 to 121, and 125.) For handling piles and telegraph poles. (See page 124.)

Unless the span is very short, it is necessary that the cableway have either fall rope carriers, as illustrated on the page opposite, or be equipped with a slackpuller, as shown above. The short span cableways, however, may at times be equipped with an endless rope, and in this case, although the fall rope carriers or the slackpuller is dispensed with, it is necessary to have a special cableway engine to prevent the fouling of lines in the log pile. The cableway when equipped with the power-multiplying slackpuller is well adapted for long side pulling, and this is a desirable feature when unloading logs from cars located some distance to one side of the cableway. This feature is shown on page 123.

LIDGERWOOD LOG-HANDLING CABLEWAY

WITH FALL ROPE CARRIERS

THIS cableway is used for transporting logs from logging cars on one side of the river to the mill located on the other side. The logs are picked up in special slings bodily, a carload at a time, and transported across the river, where they are automatically discharged into the mill pond. One of the illustrations shows a logging car being taken across to the forest for the logging equipment.

The great advantage of our Miller button rope fall rope carriers on long spans is clearly shown by the photograph at top of page.

HEAD TOWER AND MILL POND

[illegible] LOG-HANDLING CABLEWAY

THE cableway shown on this and the opposite page is used for transporting logs from cars of the railroad on the bank of the river to the mill on the opposite bank. The logs are picked up in special slings and thus conveyed across. When necessary, an unusually large load may be handled by allowing the load to rest partly in the water when passing the center of the span, as shown in small photograph.

The slackpulling cableway system of log handling across rivers is used in preference to the cableway system with fall rope carriers (as shown on page 113) when the river is navigable and when the conditions are such that the cableway cannot be suspended high enough to allow vessels to pass under the cableway.

LOWERING LOGS ON SCOW

CABLEWAY LOWERED TO ALLOW BOAT TO PASS

Three and one-half minutes after the load of logs shown in picture at top of page was deposited, the cableway was lowered and ready for the boat to pass over the wire ropes, which due to their weight go to bottom of river.

The slackpulling skidding carriage is shown lowered on incline in front of mill, while the boat is shown about to pass over the ropes lying at bottom of river.

RIVER BOAT PASSING OVER CABLEWAY

LIDGERWOOD UNLOADING, ASSORTING AND PILING CABLEWAY

(STATIONARY TYPE)

MANY of the new mills are adopting the cableway for handling logs in log yard instead of constructing the pond. Where a large storage is not required the stationary form of cableway is used, while for large storage the cableway should have traveling towers, as shown on opposite page. These are built either to supply car on log haul-up, as shown in above illustration, or are rigged as shown on this and opposite pages and also on page 122. In hardwood operations where several kinds and classes of logs are brought in, the cableway not only serves to unload, assort and place the logs in piles, as illustrated in picture at top of page, but also permits logs from any part of yard being selected.

CABLEWAY SUPPLYING LOG HAUL-UP

LIDGERWOOD TRAVELING LOG HANDLING AND PILING CABLEWAY

THIS interesting traveling cableway unloads from cars, stores in piles and supplies the log haul-up; covering in its range an extensive yard stocked with mahogany, walnut and other varieties of valuable hardwoods which it is necessary to assort into piles. The towers travel freely along their tracks so that any part of the yard may be reached by the cableway. The heaviest logs are readily handled from car to stock pile, or loaded on a log haul-up car. The cableway crosses switches of the Louisville & Nashville Railroad and the Southern Railway, as well as the main line of the latter.

UNLOADS FROM TWO RAILROADS—STORES LOGS AND SUPPLIES MILL

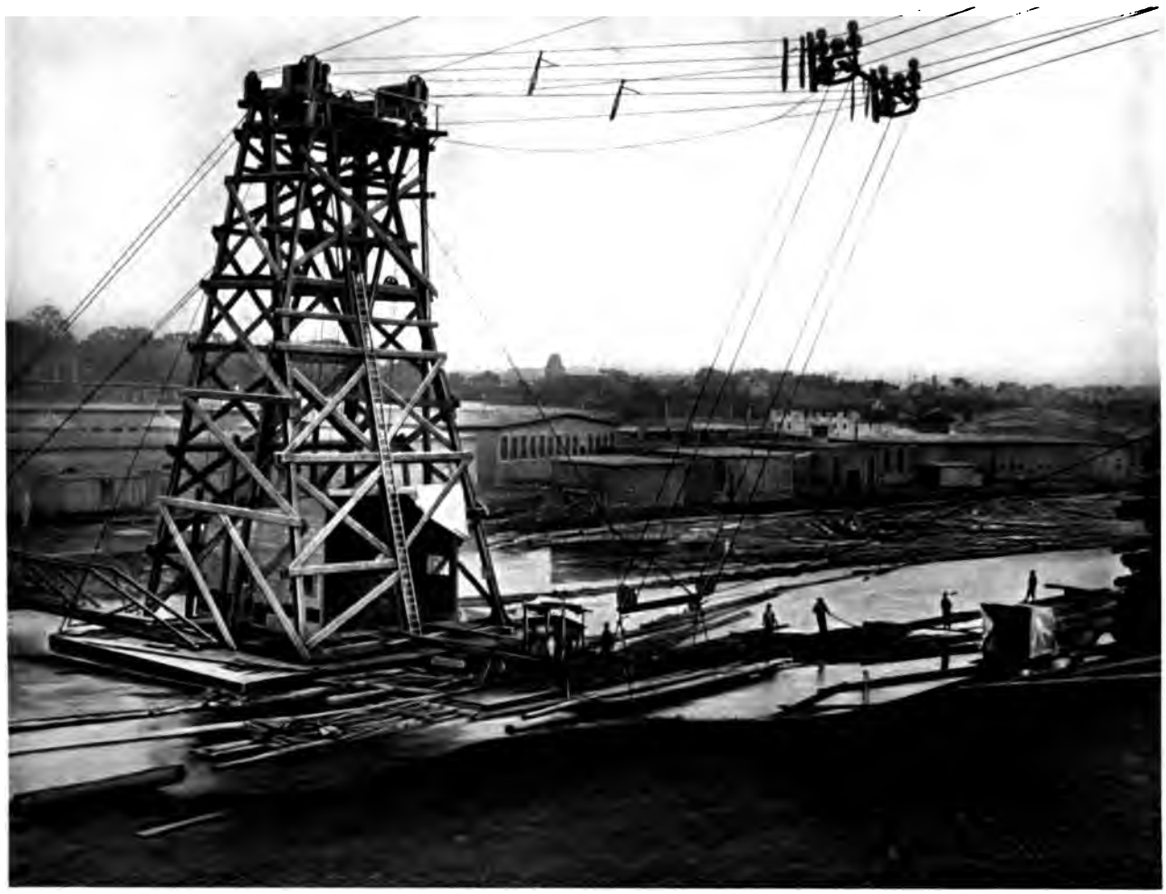
LIDGERWOOD DUPLEX TRAVELING LOG PILING CABLEWAY

THE cableway illustrated above was installed for the purpose of piling upon a rising slope along side of the canal and close to the pulp mill the Winter supply of logs, which come down the river during Summer. The quantity of logs is so great that an extensive storage must be provided close to the mill on account of the freezing up of the river, which prevents storing the logs in the stream.

The cableway consists of a 70-foot duplex head tower and a 90-foot duplex tail tower.

LIDGERWOOD DUPLEX TRAVELING LOG PILING CABLEWAY

THIS traveling cableway has the cables arranged so as to be readily lowered or relieved of sufficient tension to enable the towers to be moved to a new position. The tackle is operated by a special shifting engine. The storage ground being of such shape that the head and tail towers do not move parallel, the span varies somewhat in length for each re-location of the towers. By the special tackle arrangement all the lines may be dropped, and the towers moved along their tracks as desired.



SPECIAL DUPLEX FLOATING LOG PILING CABLEWAY

THE cableway is operated by a special double cylinder tandem drum Lidgerwood engine; each drum is wide enough to take respectively the two hoisting ropes and the two traversing ropes. This duplex cableway is operated by a single engine, the carriages and fall blocks always moving in unison, the purpose being to pick up bundles of logs from six to eight tons in weight, the logs averaging 40 feet in length, and handle them so that they will always be carried and deposited without swing and with regularity on the piles. The main cableway engine is fitted with a special set of steam cylinders for operating the frictions and brakes of the two drums as well as the link motion for reversing, so that the operation of the levers is very easily and quickly controlled, and the brakes and frictions are handled with great power.

STEAM BUNDLER FOR LOADING

(DUMPS BY AUTOMATICALLY RELEASING)

THE logs are floated down the canal from the boom, and as they pass in front of the loading raft, they are stopped by pike poles and two slings are passed around the logs by a steam bundling device operated by a small vertical engine mounted on the raft and shown in small cut at the right. In the operation of this bundling device one end of each chain sling is attached to a stanchion on the raft and the other end to a long boom which is run out by the engine by means of a rack and pinion gear, which allows the sling to hang in a loop in the water. The logs are floated in over this loop, the engine on the raft reversed, pulling in the two booms with the outboard ends of the slings; the sling ends thus brought together are attached to the hooks of the fall block by hand.

It will be noticed that all of the operations of this plant are controlled by steam. The logs are automatically released when they are lowered in contact with the pile. Loads of eight tons are regularly handled, and from four to five thousand logs may be piled in a day. Single trips have been made in twenty to twenty-five seconds.

LOADING RAFT WITH STEAM BUNDLER

CABLEWAY SUPPLYING MILL WITH LOGS

CABLEWAY FOR TAIL END OF MILL

ON this page is illustrated a log-handling cableway for feeding mill. The device is simple in operation and dispenses with expensive and cumbersome log haul-up chains. By it the logs may be fed to mill as fast as required, thus insuring a constant supply at all times at tail end of mill. The apparatus consists of a suspended cable, upon which travels back and forth a slackpulling skidding carriage, and from this drops a wire rope, to the end of which is attached a pair of tongs. The carriage is drawn out by an endless rope and the tongs lowered by the slackpulling rope.

The accompanying illustration shows the 300 feet of log haul-up chain used before cableway was installed.

LOG YARD BEFORE AND AFTER BEING EQUIPPED WITH CABLEWAY

UNLOADING LOGS FROM CARS

THERE are many uses to which the cableway may be put in a log yard. The illustrations below show the cableway unloading logs from cars. A sling is carried around the logs and to this the tongs are attached, the tong rope is pulled in and the whole carload of logs rolled off in one operation.

READY TO UNLOAD

CAR BEING UNLOADED

There are many of these machines in use and they are giving entire satisfaction.

SEMI PORTABLE PILE-HANDLING CABLEWAY

FOR UNLOADING, RELOADING, STORING AND HANDLING TELEGRAPH POLES AND PILES

We show on this page a form of cableway designed for unloading and storing piles and telegraph poles. It also conveys the piles from the storage and loads them upon the cars.

With this outfit several tail masts are employed, and the cable is shifted from one to the other as required. They are also built with movable tail and head towers.

These cableways are a great convenience in handling piling and telegraph poles around yard. They are labor savers and materially reduce the cost of handling the poles.

PILING PULPWOOD IN STOCK PILE

SPECIAL LIDGERWOOD LOG-HANDLING SEMI-PORTABLE CABLEWAYS

SPECIAL light, short-span cableways are used for unloading pulpwood from cars, or taking it out of the river and stocking it up in piles for use during the Winter. The spans vary from 200 to 400 feet, and average loads of one to three tons are handled, the logs being slung in bundles with slings.

Cables, carriage, and all parts are very light, and no fall rope carriers or slack-pullers are used. For this style cableway a special cableway engine must be used. The supports generally consist of poles guyed, or very often as shown above, an "A" tower. The cable and guys are anchored in the ground. In some cases light traveling towers are used.

INDEX

ESTIMATES

FOR Logging Machinery will be furnished upon receipt of detailed information as to requirements. It is necessary for us to have full particulars of the conditions surrounding logging operations, and wherever possible, we prefer to have one of our practical logging men make a personal inspection of the ground and consult with parties contemplating using the machinery. Our men have had wide experience and understand thoroughly the different methods of logging by steam, and after looking over the ground are better able to determine the system of logging that should be installed. For this service no charge is made. It is, however, desirable that we receive beforehand as full information as possible concerning the conditions and requirements, as it may enable us to determine whether steam logging is practicable in your case, and thus save your time and ours in further investigation.

LIDGERWOOD PUBLICATIONS

Hoisting Engines and Boilers
Lidgerwood Cableways
Lidgerwood Derricks
Logging by Steam
Lidgerwood Rapid Unloader
Coaling at Sea
Temperley Transporter
Contractors' Methods on Chicago Drainage Canal

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