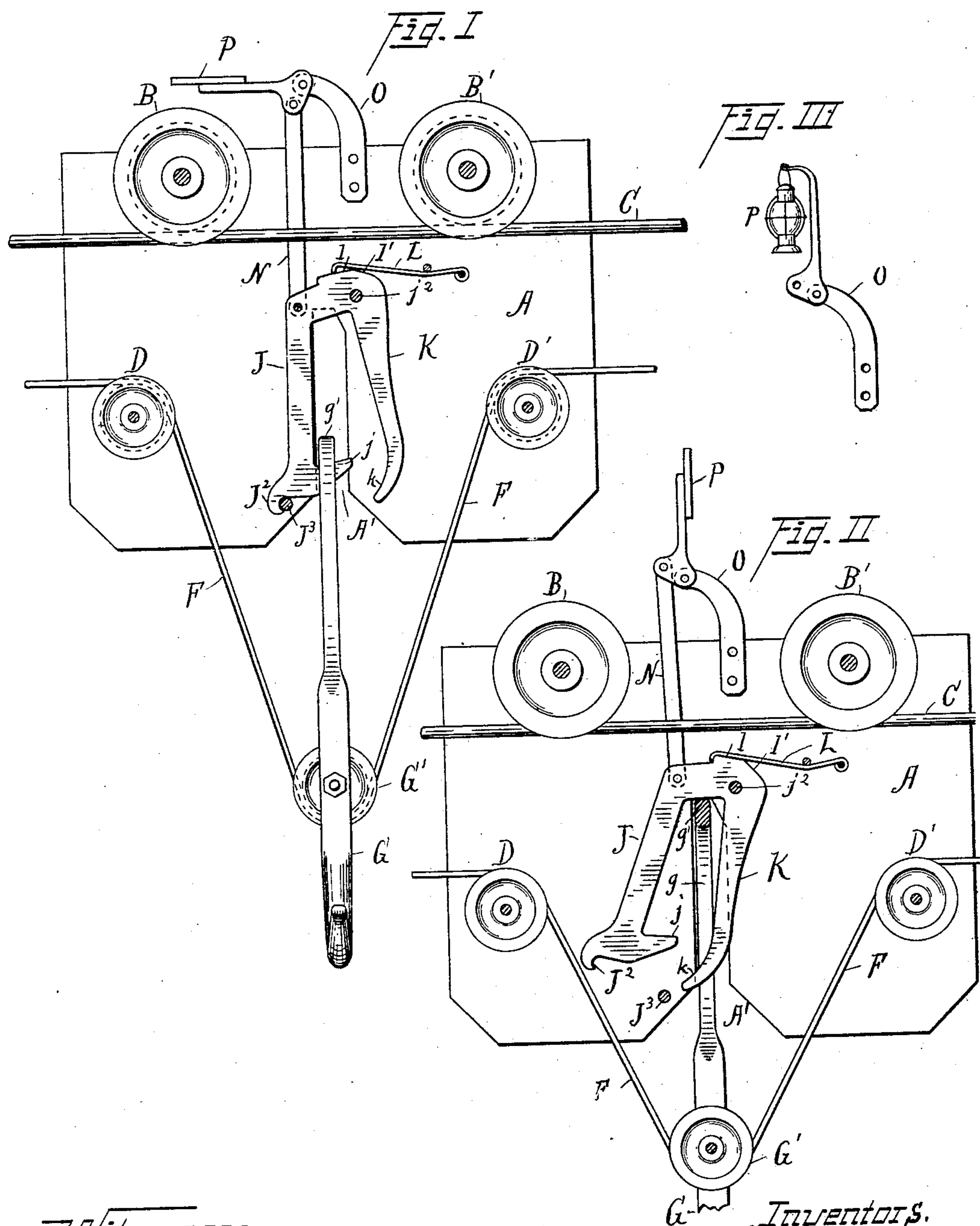


**Patented Oct. 14, 1902.**

(Application filed Mar. 5, 1901.)

(No Model.)



Witnesses:

A. L. Lord.  
E. B. Donnelly.

G. W. INVENTORS.  
Mark A. Callahan &  
Owen W. Callahan  
by  
W. E. Donnelly Atty



# UNITED STATES PATENT OFFICE.

MARK A. CALLAHAN AND OWEN W. CALLAHAN, OF CLEVELAND, OHIO.

## HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 710,948, dated October 14, 1902.

Application filed March 5, 1901. Serial No. 49,921. (No model.)

*To all whom it may concern:*

Be it known that we, MARK A. CALLAHAN and OWEN W. CALLAHAN, citizens of the United States, residing at Cleveland, in the  
5 county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hoisting and Conveying Apparatus; and we hereby declare the following to be a full, clear, and exact description of the in-  
10 vention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to carriages for cable-carriers, such as are employed for transport-  
15 ing, elevating, or lowering sand or other rough material by means of a bucket or otherwise.

Our invention consists in the peculiar construction of the carriage, whereby the hoist-  
20 ing, lowering, and transporting cable may be employed for the purpose of releasing the grapple-hook from the carriage after it has been automatically locked thereto.

Our invention also consists in other features of construction, which will be herein-  
25 after fully set forth and claimed.

In the drawings, Figure I is a view in side elevation of a cableway-carriage, illustrating the same in vertical sectional view and mount-  
30 ed on a cableway with the grapple-hook locked in position. Fig. II illustrates the position of the parts when the engaging hook of the carriage is automatically released from the locking-hook, and it also shows a signaling device in the position it assumes when the  
35 lock is open, so as to allow of the descent of the hook. Fig. III is a modified form of signaling device which may be used in certain weather or at night-time.

40 The object of our invention is to provide means whereby the engineer has at all times control both of the hoisting and lowering and transporting of the carriage or load through the hoisting and lowering cable and to provide  
45 a locking device for securing the grapple-hook and its load to the carriage after it has been hoisted, thus making the carriage receive the load and carrying it independent of the hoisting-cable.

50 It is a well-known fact that in many of the cableways employed in transporting sand and like material in the building of sewers

and like work, owing to the fact that the carriage is called upon to hoist and lower at any part of the cableway, the employment of  
55 locking devices has been discarded, inasmuch as most, if not all, of them are dependent upon their stops, located at a predetermined part of the cableway for engaging trip devices for releasing the grapple-hook from the carriage,  
60 or in some of the cableways a trip device was employed, whereby the grapple-hook is released from the carriage through the medium of a rope which extends far enough from the carriage to be grasped and manipulated by a  
65 laborer. When it is desired to disengage the grapple-hook, this rope is tightened or pulled upon, and being at its upper end connected to the locking mechanism it will thus act to re-  
70 lease the same from the grapple-hook. As heretofore stated, both these methods are objectionable, the first because it cannot be pre-  
determined where it may be desired to take up or deliver the load, and hence no tripping or stop devices are practical on the cableway.  
75 The second method necessitates a constant employment of an attendant to manipulate the rope, and in some cases the rope itself trailing is apt to get caught in the sheathing or scaffolding and releases the locking device  
80 before such action is desired or foreseen and render an accident very liable. However, the employment of the hoisting and lowering cable alone is also objectionable, inasmuch as  
85 the weight is entirely sustained by such cable after the load has been hoisted and while it is being carried and transferred along the cableway. This brings a stress upon the engine-drums and friction mechanism and a constant stress upon the cable, and the jerking  
90 of the load as it is being transferred is apt to snap the cable if it is in any way weak, and thus the load is dropped.

In our invention all the above difficulties are obviated by the following construction,  
95 which is the one we prefer to employ to carry out our invention.

A represents a framework of the carriage, which may be of any suitable construction capable of mounting and retaining the oper-  
100 ative parts of the carriage.

Mounted at the upper part of the frame A are two cable-sheaves B and B', which are journaled in the frame A and are grooved so



as to run on the cableway C, whereby the carriage may be transferred from place to place along the way.

D D' represent sheaves also mounted in the frame A and grooved to receive the hoisting-cable F.

G represents a grapple-hook which is provided with a sheave G', through which the hoisting-cable F passes and by means of which the hoisting-cable engages the grapple-hook to manipulate the load.

The grapple-hook G is formed hook-shaped at its lower end and is provided with an opening *g*, which is elongated in shape and serves to admit the locking-hook of the carriage to engage at its lower end with the grapple-hook as the load is hoisted (see Fig. I) and at the same time allows of the grapple-hook being elevated quite a distance for the purpose of automatically engaging the locking device to open it, as illustrated in Fig. II of the drawings.

J represents our improved locking device, which consists, essentially, of a pivoted hook-shaped lever J, having a nose *j*, adapted to engage in the slot *g*, as illustrated in Fig. I, thus sustaining any load that may be attached to the grapple-hook. The locking-lever J is pivoted at one side, as at *j*<sup>2</sup>, thus giving a tendency to said lever when engaged by the grapple-hook to retain its locked position, the weight of the load being on one side of the pivotal point *j*<sup>2</sup>.

J<sup>2</sup> represents a stop projection which engages with a pin J<sup>3</sup> for the purpose of preventing the further advancement of the locking-lever and also acts, in connection with the pin J<sup>3</sup>, as an auxiliary support to the pivot *j*<sup>2</sup> in holding the load. Depending downward from the pivotal point *j*<sup>2</sup> is an arm K, which is preferably formed in one piece with the lever J, or integral therewith. This arm K extends downward beneath the nose *j* of the locking device J and is curved sufficiently toward the same at its lower end to just allow for the passage of the eye portion provided with the opening *g*.

The thickness of the arm K is such that it will freely enter the slot *g* at the upper end of the grapple-hook G, as illustrated in Fig. II of the drawings. Above and contiguous to the pivotal portion *j*<sup>2</sup> we provide a cam having the faces *l l'*, upon either of which rests a spring L, the tension of said spring being toward the face of the cam and its function being to hold the lock closed when it presses on face *l* and to hold the lock open when it presses on face *l'*. (See Fig. I and II, respectively.)

At the upper end of the lock-arm J and to one side of the pivotal point J<sup>2</sup> is pivotally secured a vertically-reciprocating rod N. This is reciprocated by the movement of said locking-arm J as the same moves from locking to unlocking positions, or vice versa. To the upper end of the reciprocating rod N is secured a signaling device, which we prefer

to construct, as illustrated in the drawings, by pivoting the said signaling device to a bracket-piece O, secured to the upper end of the carriage, and also pivoting it to the upper end of the rod N, whereby the movement of the locking-arm J and its connective parts will cause the signal to assume either the position shown in Fig. I or that shown in Fig. II, accordingly as the locking device is open or closed. To the upper end of the signaling device a suitable target P is preferably secured. This target, however, may be replaced by a lantern, as illustrated in Fig. III, if desired, for use in dark weather or at night-time.

The operation of our device is as follows: Assuming the position of the grapple-hook to be as illustrated in Fig. I of the drawings, the carriage is moved along the way C to the desired position where it is intended to lower said grapple-hook G. The cable F is now wound up until the grapple-hook assumes the position illustrated in Fig. II. This throws the locking-arm J to one side and at the same time throws the arm K to one side with said locking-arm J. The spring L comes into play on the face *l* and holds the lock open and in such position that the curved portion *k* of the arm K is directly beneath the upper end of the grapple-hook and within the slot *g*, closing the opening or mouth A' of the carriage A. At the same time that the locking device assumes this position the target is raised, as illustrated in Fig. II, and indicates to the engineer that the locking device is open, upon which the action of the cable F is reversed, or, in other words, the hoisting-drum is allowed to unwind, and the grapple-hook passing downward clears the nose *j* of the lock J and engages the curved portion *k* of the arm K, thus throwing the lock back to the position shown in Fig. I and, lowering the target, the spring L comes into play upon the face *l'* and keeps the lock in this position. The hook G being meanwhile lowered with its load or without its load, reaches its predetermined position for engaging or discharging a load, and when either function is performed and it is desired to again hoist the grapple-hook the cable F is wound up until the hook reaches the mouth A' of the carriage A, and its upper end *g'* engages the tapering lower side of the nose *j* of the lock-arm J, throws the lock-arm back and at the same time slightly raising and agitating the target B as a signal to the engineer that the grapple-hook is locked to the carriage. Immediately after the upper end *g'* of the grapple-hook has thrown the nose *j* sufficiently to one side to effect its entrance into mouth A', the nose *j*, owing to gravity enters the slot *g* beneath the end *g'*, and the rope F being lowered end *g'* will be supported on the nose *j*. Thus it will be seen that the engineer is at all times notified of the position, and has control of the grapple-hook and its load and can manipulate the same by means of a hoisting-cable F alone. It will



also be seen that the grapple-hook is locked to the carriage A, as illustrated in Fig. I of the drawings, that the load is supported by the carriage without straining the cable F or  
5 relying upon it for support, thus obviating accidents and increasing the life of the cable.

We have illustrated in the drawings and set forth in the specification hereinbefore certain preferred details of construction and  
10 their consequent operation; but we do not wish to be limited to these details, inasmuch as they may be modified without departing from our invention.

What we claim is—

15 1. In a hoisting and conveying apparatus of the type set forth, the combination with the carriage, of a locking device secured to said carriage, a signaling device operated by said locking device to indicate its locked and  
20 unlocked position, and a hook adapted to be engaged by said locking device with means for raising and lowering said hook.

2. In a hoisting and conveying apparatus of the type set forth, the combination with  
25 the carriage, of a locking mechanism secured to and operating in said carriage, an indicator or signaling device also secured to the carriage and operated by the locking mechanism, of a grapple-hook adapted to be raised  
30 and lowered in relation to the carriage and to be locked by the locking device when in its raised position, with means for raising and lowering said grapple-hook.

3. A hoisting and conveying apparatus of  
35 the type set forth, comprising a way, a carriage adapted to travel on said way a load-engaging device adapted to be raised and lowered in relation to said carriage, means connected with the carriage for raising and  
40 lowering the engaging device, means also connected with the carriage for locking the load-engaging device to said carriage, means

operated by the load-engaging device for automatically opening said locking device and signaling means for indicating the position of  
45 the locking device.

4. In a hoisting and conveying apparatus of the type set forth, the combination with a carriage, of a locking mechanism adapted to engage and lock a load-engaging device and  
50 a signaling device adapted to be operated by the locking mechanism for the purpose set forth.

5. A hoisting and conveying apparatus of the type set forth, which comprises a carriage  
55 carrying a load-engaging device with means for locking the load device and a signal indicating the various positions of the locking means, substantially as described.

6. In a hoisting and conveying apparatus  
60 of the type set forth, the combination with the carriage carrying the load-engaging device, of means for locking the load-engaging device, and a signal connected to the locking means and actuated by the load-engaging de-  
65 vice for indicating the various positions of the latter, substantially as described.

7. In a hoisting and conveying apparatus of the type set forth, the combination with the carriage and the load-engaging device  
70 carried thereby, of means for locking the load-engaging device and having a signal connected thereto, said means and the signal being actuated by the load-engaging device and means for operating the load-engaging device,  
75 substantially as described.

Signed by us at Cleveland, in the county of Cuyahoga and State of Ohio, this 6th day of February, 1901.

MARK A. CALLAHAN.  
OWEN W. CALLAHAN.

Witnesses:

E. B. DONNELLY,  
W. E. DONNELLY.