

No. 646,984.

Patented Apr. 10, 1900.

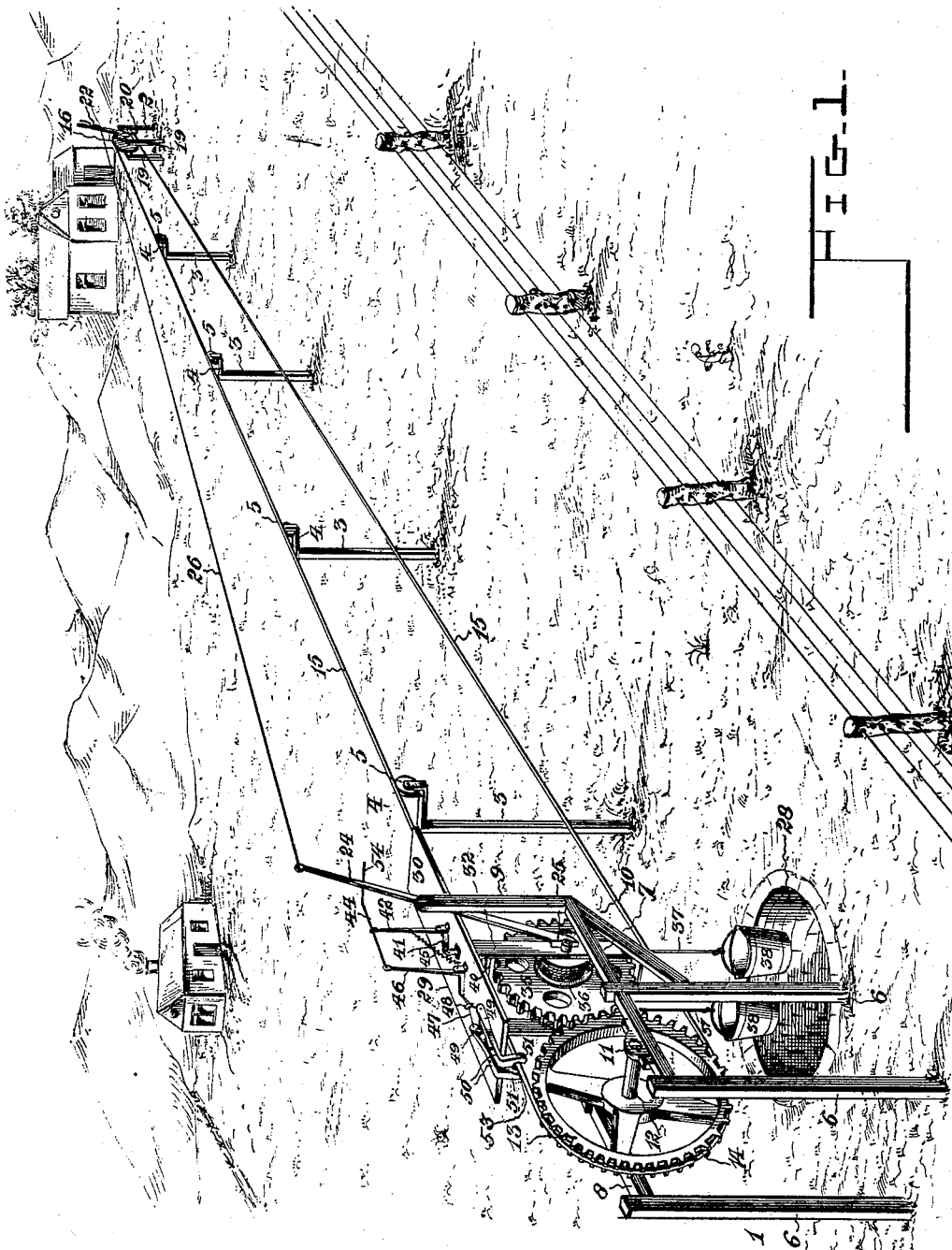
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WATER ELEVATING AND CARRYING APPARATUS.

(Application filed Aug. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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Chas. S. Hoyer

By his Attorneys,

Henry H. Harless, Inventor

C. A. Snow & Co.

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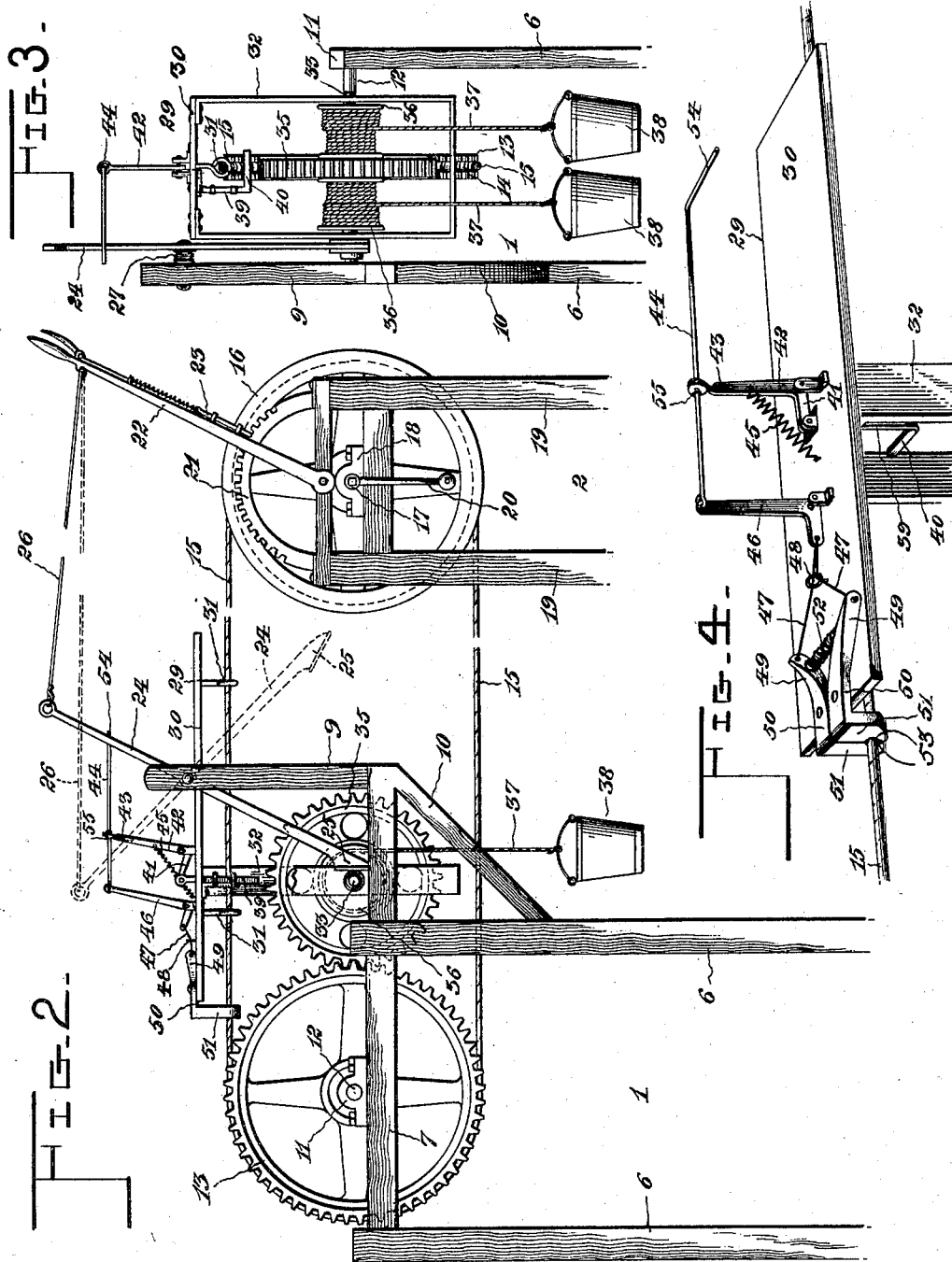
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UNITED STATES PATENT OFFICE.

HENRY H. HARLESS, OF GOOD HOPE, MISSOURI.

WATER ELEVATING AND CARRYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 646,984, dated April 10, 1900.

Application filed August 4, 1899. Serial No. 726,155. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. HARLESS, a citizen of the United States, residing at Good Hope, in the county of Douglas and State of Missouri, have invented a new and useful Water Elevating and Carrying Apparatus, of which the following is a specification.

This invention relates to water elevating and carrying apparatus, and is designed more particularly to elevate water from a source of supply and convey it in containing-receptacles to a distant point and control the entire operation by shifting a controlling device located at the point of delivery of the transported water, which may be exterior to or within an inclosure, and thereby save the expense of time and labor necessary in direct manual conveyance and also avoid the cost incident to a pipe line or conduit and the accompanying disadvantages, especially freezing.

The invention consists, essentially, of a movable or traversing rope or cable disposed in an operative manner between two points of any desirable interval and actuated at one point by a drive-wheel and traversing a gear at the other point, combined with a carriage having a suspended winding-drum provided with a pinion to mesh with the gear traversed by the conveying rope or cable, together with means for holding said pinion in mesh with the gear, a locking device to prevent movement of the pinion during transportation, and grip mechanism, all simultaneously operable at the delivery-point.

The invention further consists of the details of construction and arrangement of the several parts, which will be more fully hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of an apparatus embodying the features of the invention and shown set up in operative position. Fig. 2 is a side elevation of parts of the improved mechanism, the greater portion of the device being shown or broken through to permit an illustration on a larger scale. Fig. 3 is an end elevation of a part of the apparatus looking toward the elevating end of the same. Fig. 4 is a detail perspective view of the carriage and a part of the rope or cable.

Similar characters of reference are em-

ployed to indicate corresponding parts in the several views.

In the accompanying drawings numerals 1 and 2 respectively designate the frames at the water elevating and delivering points or ends of the apparatus, which have arranged between them at regular intervals a series of posts 3, carrying inwardly-extending angular arms 4 at their upper ends, to which are fixed vertically-disposed terminal brackets which afford bearings for grooved rollers 5. The frame 1 comprises opposite pairs of uprights 6, which are connected at their upper ends in separate pairs by longitudinal adjusting bars or braces 7 and 8, the bar or brace 7 being extended and has thereon a standard 9, the extended end of the said bar of brace 7 being reinforced by an angular brace 10, attached to said bar or brace and the adjacent upright 6. On that part of the bars or braces 7 and 8 which is located between the uprights 6 journal-boxes 11 are secured and receive a shaft 12, extended across from one pair of bars to the other, and on which is keyed a gear 13, having each of the teeth thereof centrally grooved in a transverse direction, as at 14, to provide a peripheral guide for the conveying rope or cable 15, which traverses the said gear. The grooves 14 of the several teeth are circumferentially in alinement and may be constructed in any suitable or well-known manner. The upper part of the rope or cable 15 bears on and moves over the grooved rollers 5, supported by the arms 4, and at the delivery end of the apparatus said rope or cable traverses a grooved wheel 16, (more clearly illustrated in Fig. 2,) which is keyed on a shaft 17, journaled in opposite boxes 18, held on the cross-ties of opposite pairs of uprights 19. Said shaft 17 is supplied with a handle 20, by which it and the grooved wheel 16 may be rotated. On the upper portion of one pair of uprights 19 a toothed segment 21 is mounted, and relatively coacting therewith is an adjacently-situated shifting lever 22, having a spring-controlled dog 23. The rope or cable 15 has considerable tension given it primarily by a well-known means and is prevented from sagging by in part bearing upon the rollers 5 on the arms 4.

On the standard 9 a holding-lever 24 is ful-

crummed and has a lower extended abutting end 25. To the upper end of said lever 24 a pull-wire 26 is connected and from thence extends to the delivery-point, where it is attached to the upper portion of the shifting lever 22. At the fulcrum-point of the said lever 24 a coiled or analogous spring 27 is attached thereto and to the adjacent portion of the standard 9, so that when the shifting lever 22 is thrown into a position reverse to that illustrated by Fig. 2 the lever 24 will be thrown over in an opposite direction and, as shown by dotted lines in Fig. 2, to take up the slack and prevent sagging of the latter to an appreciable extent. This spring attachment also holds the lever 24 out of the path of movement of parts which will be presently described and with which it is intended to cooperate.

The frame 6 is erected adjacent a source of water-supply, which in the present instance is shown as a well 28. It will be understood in this connection that the operation of the apparatus is not dependent upon any particular arrangement or form of source of supply of the water, and, furthermore, that the device may be used for conveying other materials, and in the description of its application to the one use shown the length of interval between the elevating and delivery ends may be varied indefinitely, and, furthermore, the direction of travel of the rope or cable need not necessarily be straight, as a curved disposition of the intermediate supports could be provided and such well-known additional devices used in connection therewith as might be necessary to a practicable adaptation of the rope or cable for movement in a curved line.

A carriage 29 is actuated by the rope or cable 15 and comprises a top platform 30, having guide-eyes 31, which receive the upper run or portion of said cable. A hanger-frame 32 also depends from about the central portion of the said platform 30, and journaled in the said frame is a drum-shaft 33, (see Fig. 3,) which has one end 34 projecting beyond the adjacent portion of the said hanger-frame. To this drum-shaft is keyed a pinion 35, which is about centrally located thereon and has on opposite sides winding-drums 36, which are adapted to receive ropes or chains 37, connected to receptacles or pails 38. The pinion 35 meshes with that portion of the gear 13 not traversed by the rope or cable 15, and through two winding-drums 36 are shown to properly arrange the center of gravity and assist in supporting the platform 30 in a horizontal position it will be understood that the duplication of the winding-drums may be changed without departing from the invention and replaced by a single drum so arranged relative to the center of gravity of the carriage as to hold the latter in the desired position. The extended end 34 of the shaft 33 may be supplied with any suitable form of buffer or cushion, and thereagainst the ex-

tended end 25 of the lever 24 has bearing when the shifting lever 22 is moved to the angle shown by Figs. 1 and 2 for the purpose of holding the pinion 35 in mesh with the gear 13. It is also necessary to hold said pinion 35 against movement during the transportation of the carriage from the water-elevating to the delivery end of the apparatus. To accomplish this, a locking-arm 39 extends downwardly from the platform 30 and partially through an opening in the latter and has at its lower end an angular extension 40, which is thrown in between the teeth of the pinion 35, and thus locks the latter and prevents the ropes or chains 37 from having an unwinding movement after the receptacles or pails 38 have been filled and during the movement of the carriage over the cable. This locking-arm 39 has its upper end connected to the short limb 41 of a bell-crank lever 42, fulcrumed upon the said platform and having the upper end of its longer arm 43 connected to a pull-rod 44. The movement of the bell-crank lever 42, which will be in the present instance toward the right, to throw out the lower angular extension 40 from the teeth of the pinion 35 will be against the resistance offered by a spring 45, connected to the long arm 43 of said bell-crank lever and the platform 30. Near the bell-crank lever 42 a second bell-crank lever 46 is also fulcrumed on the said platform, and to the lower shorter arm thereof a pull cord or wire 47 is connected and is adapted to be drawn through an eye 48 also held on said platform. The ends of the cord or wire 47 are secured to divergent rear terminals 49 of the horizontal members 50, preferably formed integral with depending gripping-jaws 51, that extend over the rear end of the platform 30. The horizontal members 50 are fulcrumed on the said platform, and between the rear terminals 49 and bearing against the inner opposing edges of the latter is a coiled or other repellent spring 52, secured in any suitable manner. This spring 52 tends to close the jaws 51, and the latter have semicircular recesses 53 therein, which when brought together are intended to be located against opposite portions of the rope or cable 15. The longer arm of the bell-crank lever 46 also has its upper end attached to the rear end of the pull-rod 44, and the latter has its opposite end extending inwardly at an angle, as at 54, and ahead of the lever 24, being close enough to the latter to be operated thereby, as will be presently set forth.

While the carriage 29 is at the water-elevating end of the apparatus the pinion 35 is held in close mesh with the gear 13 by means of the lower end 25 of the lever 24, which is brought to bear firmly against the extended end 34 of the drum-shaft 33, said lever 24 being adjusted in this manner by the shifting lever 22, which is pulled in the direction illustrated by Figs. 1 and 2 and correspondingly draws on the said lever 24 through the pull-wire 26. When the lever 24 is so operated,

it strikes the angular end 54 of the pull-rod 44 and draws the latter in the same direction and at the same time throws the upper ends of the bell-crank levers 42 and 46 to the right against the resistance of the spring 45, attached to the bell-crank lever 42, and such movement of the bell-crank levers elevates their short arms and releases the angular extension 40 of the depending arm 39 from the teeth of the pinion 35 and also draws on the wire or analogous device 47, which separates the gripping-jaws 51 against the repellent resistance of the spring 52. These parts are held in such position as long as the lever 24 engages the angular end 54 of the pull-rod 44, and the drums 36 are free to act, because the rope or cable 15 is liberated from the gripping-jaws 51, and by turning the gear 13 through an initial rotation of the grooved wheel 16 at the delivery end of the apparatus the receptacles or pails 38 are free to be lowered and raised into and upwardly through the well 28. After the receptacles or pails have been filled and lifted a sufficient distance to clear the ground-surface the shifting lever 22 is moved in a direction opposite to that shown, and the lever 34 is thereby permitted to be influenced by the spring 27, connected thereto, and the lower end 25 is cleared or thrown away from the extended end 34 of the drum-shaft 33 at the same time the spring 45 resets the bell-crank lever 42 to the position shown in Fig. 3, thus forcing the arm 39 and the angular extension 40 thereon, as shown, in between the adjacent teeth of the pinion 35 to prevent the supports of the receptacles or pails 38 from unwinding from the drums. Simultaneously with this latter operation the spring 52 between the terminals of the gripping-jaws 51 is free to act, and said jaws firmly bite the near-by portion of the rope or cable 15. The carriage is now ready to be moved from the elevating to the delivery end of the apparatus, and by rotating the grooved wheel 16 in the proper direction the rope or cable 15 is actuated, and the carriage, with its load, correspondingly travels with said rope or cable and toward the delivery end of the device. In the movement of the carriage, with its weight, over the upper portion of the rope or cable 15 it is balanced, and said rope or cable is prevented from sagging owing to the regular interposition of the posts 3, supporting the guide-rollers 5. After the loaded carriage has arrived at the delivery end of the apparatus the contents of the receptacles or pails can be removed, and for a similar subsequent operation the said carriage is returned to the elevating end of the apparatus by reversing the movement of the grooved wheel 16 and the rope or cable 15, the pinion 35 being locked up against the gear 13 through the medium of the lever 24, actuated by the shifting lever 22, as hereinbefore set forth.

A suitable projection or button at 55 can be fixed to the pull-rod 44 to operate with the

upper end of the longer arm 43 of the bell-crank lever 42, and it may be found necessary to make additions to other parts within the scope of the invention or to change the proportions and size of the different parts.

Such changes will be adopted as are allowable and without sacrificing any of the advantages of the present construction, which is the preferred form.

Having thus described the invention, what is claimed as new is—

1. In an apparatus of the character set forth, the combination of a rope or cable traversing end wheels at a distance apart, one of said wheels being toothed, a carriage movable on the rope or cable and having a drum supported thereby, a pinion for actuating said drum adapted to be thrown into mesh with the toothed wheel, and means for simultaneously throwing and holding the pinion in mesh with the toothed wheel and releasing the carriage from movable relation with the rope or cable.

2. In an apparatus of the character set forth, the combination of a rope or cable, wheels traversed by said rope or cable located a distance apart and one of which is toothed, a carriage movable on the said rope or cable and having a drum provided with an operating-pinion, a grip on the said carriage, and means for simultaneously throwing the said pinion into mesh with the toothed wheel and releasing the grip from the rope or cable which is adapted to be controlled from the delivery end of the apparatus.

3. In an apparatus of the character set forth, the combination of a rope or cable, wheels at a distance apart adapted to be traversed by said rope or cable, one of said wheels having teeth, a carriage movable on the rope or cable having a drum with an operating-pinion, a depending adjustable arm adapted to engage the teeth of the said pinion to hold the same against movement, a grip on the said carriage, and means for simultaneously moving the pinion into mesh with the toothed wheel, relieving the said arm from the pinion, and clearing the grip from the rope or cable.

4. In an apparatus of the character set forth, the combination of a rope or cable, wheels at a distance apart traversed by the said rope or cable, one of said wheels being toothed, a carriage movable on the rope or cable and supporting a drum having an operating-pinion, an adjustable device for locking the pinion against movement, a grip on the carriage, and means for simultaneously releasing the pinion from mesh with the toothed wheel, holding said pinion by the locking device and causing the grip to bite the rope or cable.

5. In an apparatus of the character set forth, the combination of wheels rotatably mounted at a distance apart, one of said wheels being toothed and having a groove circumferentially extending through the teeth, a rope or cable traversing the said wheels, a carriage having means for holding it in engagement

with the rope or cable, and a drum having an operating-pinion supported by the said carriage, said pinion being adapted to mesh with the toothed wheel.

- 5 6. In an apparatus of the character set forth, the combination of rotatable devices at a distance apart, a cable traversing said rotatable devices, a carriage adapted to move with said cable, and means supported by the said carriage adapted to be operated by one of the
10 rotatable devices for elevating purposes.

7. In a device of the character set forth, the combination of rotatable devices at a distance apart, a rope or cable traversing said rotatable devices, a carriage adapted to move with
15 the rope or cable, a drum on said carriage having a rotatable element to bear against one of said rotatable devices, and means for controlling the movement of said parts.

- 20 8. In a device of the character set forth, the combination of wheels located at distances apart, one of said wheels being toothed and circumferentially grooved, a rope or cable traversing said wheels, intermediate devices
25 over which the rope or cable runs, a carriage provided with a drum having a pinion to mesh with the said toothed wheel, a lever for holding the pinion in mesh with the toothed wheel, a grip on the carriage having connections operable to release the said grip by the move-
30 ment of the said lever, and a shifting lever for controlling the movement of the first-mentioned lever in one direction.

9. In an apparatus of the character set forth,
35 the combination of wheels located a distance apart, one of said wheels being toothed, a rope or cable traversing the said wheels, a carriage

movable with the rope or cable and having a grip to engage the latter, a drum supported by the said carriage and provided with a pinion to mesh with the toothed wheel, a spring-actuated lever to hold the pinion in mesh with the toothed wheel and simultaneously release the grip from the rope or cable, and a shifting lever at a distance from and connected
45 to the said spring-actuated lever.

10. In an apparatus of the character set forth, the combination of frames at a distance apart, wheels supported by said frames, one of which is toothed, a rope or cable traversing said wheels, intermediate supporting devices for the rope or cable, a carriage having drums and a pinion supported thereby, said pinion being adapted to mesh with the toothed wheel, containing devices having elevatable
55 connection with the said drums, a spring-actuated locking-arm to engage the teeth of the pinion, a spring-actuated grip, the said locking-arm and grip being connected for simultaneous operation, a spring-actuated lever for
60 holding the pinion in mesh with the toothed wheel and simultaneously releasing the grip and locking-arm and a shifting lever at a distance from the spring-actuated lever and connected to the latter, the said cable being moved
65 by the rotation of one of the wheels which it traverses.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HENRY H. HARLESS.

Witnesses:

J. F. PATTERSON,
A. L. HARLESS.