

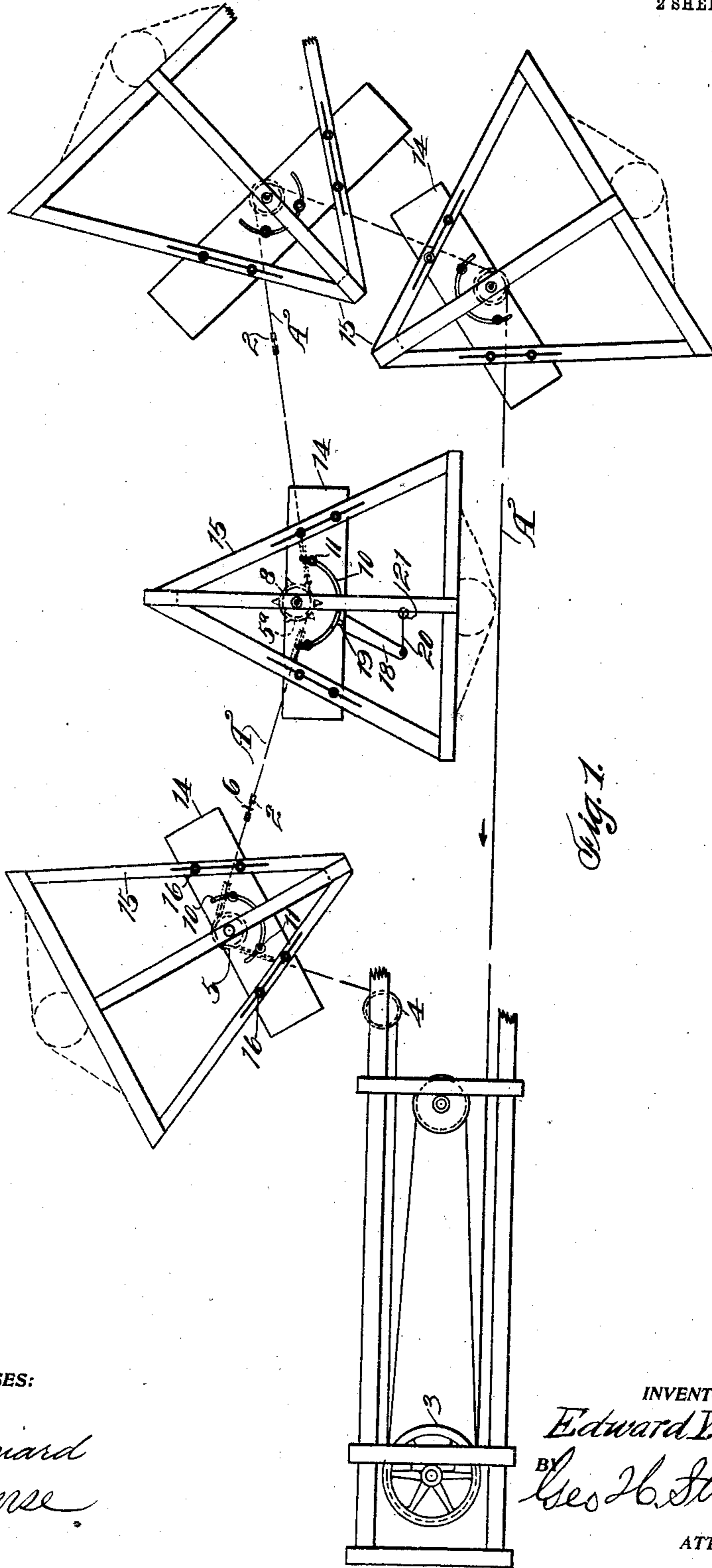
No. 859,670.

PATENTED JULY 9, 1907.

E. Y. KNAPP.  
WIRE ROPE TRANSMISSION DEVICE.

APPLICATION FILED JAN. 11, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

*F. E. Maynard*  
*James*

INVENTOR:

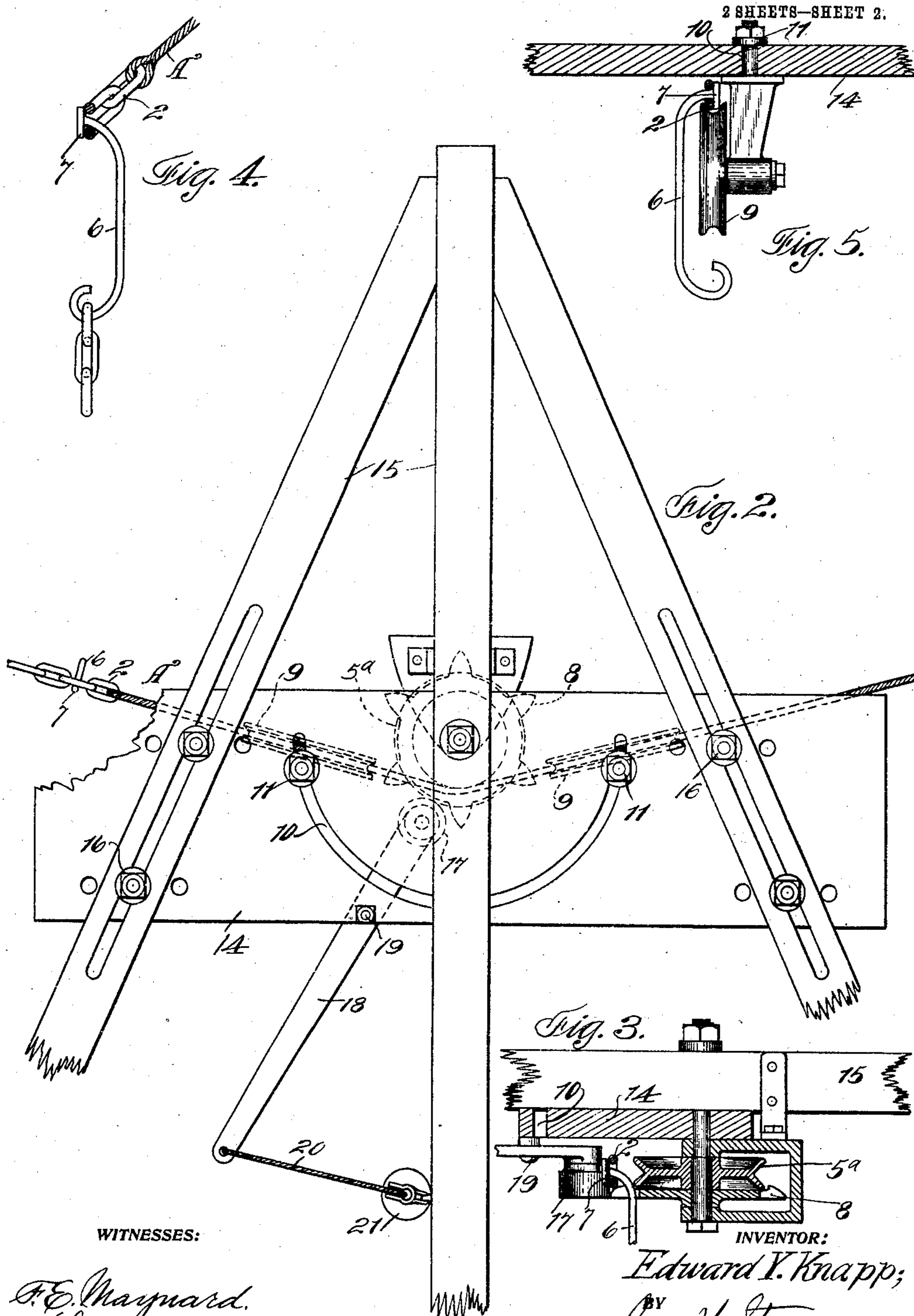
*Edward Y. Knapp;*  
BY *Geo H. Strong*  
ATTORNEY

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# UNITED STATES PATENT OFFICE.

EDWARD YOUNG KNAPP, OF EUREKA, CALIFORNIA.

## WIRE-ROPE-TRANSMISSION DEVICE.

No. 859,670.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed January 11, 1907. Serial No. 351,793.

*To all whom it may concern:*

Be it known that I, EDWARD YOUNG KNAPP, a citizen of the United States, residing at Eureka, in the county of Humboldt and State of California, have invented new and useful Improvements in Wire-Rope-Transmission Devices, of which the following is a specification.

My invention relates to wire rope transmission, and especially of that class in which an aerial traveling rope is employed to transmit articles which may be temporarily attached to the rope.

It consists of the combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a diagrammatic view of the transmission. Fig. 2 is a plan view of one of the sheave stations. Fig. 3 is a sectional view of the sprocket-sheave. Fig. 4 is a perspective view of a carrying hook. Fig. 5 shows a vertical sheave and hook.

For the transmission of materials, such as logs, shingles, bolts and other products, in the woods, it is customary to employ an endless traveling cable, with means for changing the direction so that the cable may be led to the point where the load is obtained and discharged, provision being made for turning corners and generally changing the direction of motion of the cable to suit the exigencies of the case.

In my invention A—A represent lengths of cable, each of which may be 100 feet more or less. These lengths are united by chain links 2 interposed between the contiguous ends of the cable lengths, so that as great a length of cable may be made up as is necessary. Thus, if at the commencement of the work the material to be transported is within a short distance of the place of deposit, only a sufficient number of these cable lengths will be employed to complete the circuit. As the receiving station is moved farther away, additional lengths may be inserted until the receiving station is at as great a distance from the discharge point as is found necessary.

The cable passes around a sheave as at 3 to which power is applied in any usual or suitable manner to propel the cable.

4 and 5 represent direction pulleys around which the cable is adapted to pass; these pulleys being fixed to trees or other natural or artificial supports so that any change in the direction of travel of the cable may be made for the purpose of avoiding obstructions, or in order to reach points where the material to be moved is located.

In order to support the material I have shown hangers constructed as at 6 having a hook or attachment for a rope at the lower end, and at the upper end a short bar 7 which when the hanger is in position, stands vertical. The length of this bar is such that by turning the hanger into a position parallel with the chain links, the bar may be inserted in the direction of the length

of the opening of the chain link, and when afterwards allowed to turn into the vertical position it is interlocked with the link by reason of the shorter transverse diameter of the opening.

The body of the hanger is curved outwardly so as to allow it to clear the direction pulleys when passing around them, with the hanger on the outside.

When the hanger passes around an interior curve, it is necessary to make provision by which the cable will not be forced off the horizontal guide pulley, and this is effected by means of a sprocket as at 8, this sprocket being formed with teeth which project below the grooved pulley or sheave over which the cable passes. The points or teeth of this sprocket are adapted to enter or support the chain links so that while the hanger is passing around the sheave, the cable will not drop away from the sheave.

The construction of the sheave and sprocket are well shown in the sectional elevation, Fig. 3.

When passing over the vertical supporting sheaves it will be seen that the curvature of the shank of the hanger carries it well outside of the sheave or pulley over which the cable is passing.

The supports for the vertically journaled sheaves are fixed in slotted segments as at 10; the curvature of the segment being sufficient to allow of any desired change of direction so that when the cable passes around the horizontal sheave 5<sup>a</sup> it arrives at and departs from this sheave over the direction pulleys and the plane of these pulleys on each side of the horizontal sheave, is substantially in the line of travel of the cable to and from the horizontal sheave.

When by any other change of direction, the angles of arrival and departure of the cable are changed, the supports for the sheaves 9 may be changed so that these sheaves will stand in the new line of travel in the cable. This change is made by loosening holding nuts and bolts as at 11, and moving the sheaves in the slotted segment 10 until the new line of travel is reached when the sheaves are again fixed in place.

The sheaves 8 and 9 and the segment 10 are mounted upon a suitable board or support as at 14, and this is supported upon a slotted A-shaped frame 15 which may be fixed to a conveniently located stump, tree, or other fixed object.

The frame timbers 15 have longitudinal slots in them, and bolts 16 pass through holes in the part 14 and through these slots nuts upon the ends of the bolts may be tightened sufficiently to lock the parts 14 and the sheaves supported thereby, at any point.

If it be desired to change the angle at which the part 14 stands, it is effected by means of holes bored through it into which the bolts 16 may be changed, so that the part 14 may be moved nearer to or farther from the support, and the holes allow the bolts to be moved to suit the diverging slots in the frame 15.

In order to prevent the cable from being forced off the horizontal sheave 5<sup>a</sup> I have shown a roller 17 carried at the end of a lever arm 18, which arm is fulcrumed to the support 14, as shown at 19, and this lever arm holds the roller 17 normally in such position that when the hanger passing around the sheave, tends to force the rope away from the sheave, this roller will prevent its dropping off the sheave and the sprocket 8.

The outer end of the lever arm is connected by the flexible rope 20 with the counterweight 21 so that when the passing hanger has temporarily moved the roller 17 and turned the lever 18 in unison with such movement, as soon as the hanger passes and the rope is released, the roller 17 will be returned to its normal position by the action of a counterweight 21.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. The combination in an aerial transmission apparatus, of sections of wire cable, interposed connecting chain links uniting the sections, and hangers with means for detachably attaching them to the chain links.

2. In an aerial transmission apparatus, an endless carrier comprising wire rope or cable sections, chain links by which sections are united, hangers with means for detachably attaching them to the chain links, and means for attaching the load, direction sheaves around which the cable passes, with means for changing the position of the sheaves to coincide with the line of travel of the cable.

3. In an aerial transmission device, a carrier consisting of lengths of wire rope or cable, interposed chain links uniting the ends of said rope sections, hangers detachably connected with the chain links, horizontally journaled guide sheaves around which the carrier passes, said sheaves having in connection toothed sprockets projecting beyond the lower periphery of the sheave and adapted to engage and support the chain while the hangers are passing around the sheave.

4. In an aerial transmission apparatus, an endless carrier comprising wire rope or cable sections and intermediate chain links, hangers or load carriers with means for detachably connecting them to the chain links, direction sheaves around which the rope passes, a support upon which such sheaves are carried, a fixed slotted frame, means for securing the support to the frame and adjusting it thereon.

5. In an aerial transmission device, an endless carrier comprising wire rope sections and intermediate chain links, hangers or load carriers, with means for detachably connecting them to the chain links, horizontal and vertical sheaves around and over which the rope passes to change the direction of travel, an adjustable support upon which said sheaves are carried, a roller and a counterweighted lever upon the inner end of which the roller is journaled contiguous to the horizontal sheave and sprocket.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

EDWARD YOUNG KNAPP.

Witnesses:

CHAS. H. ELSNER,  
J. E. TIERNEY.