

1,259,620.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

J.J.R. HAALCK

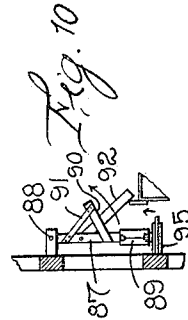
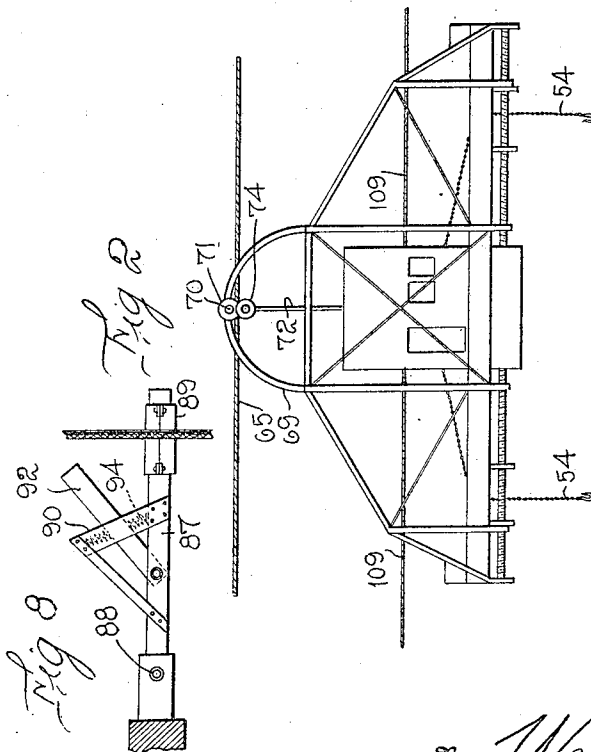
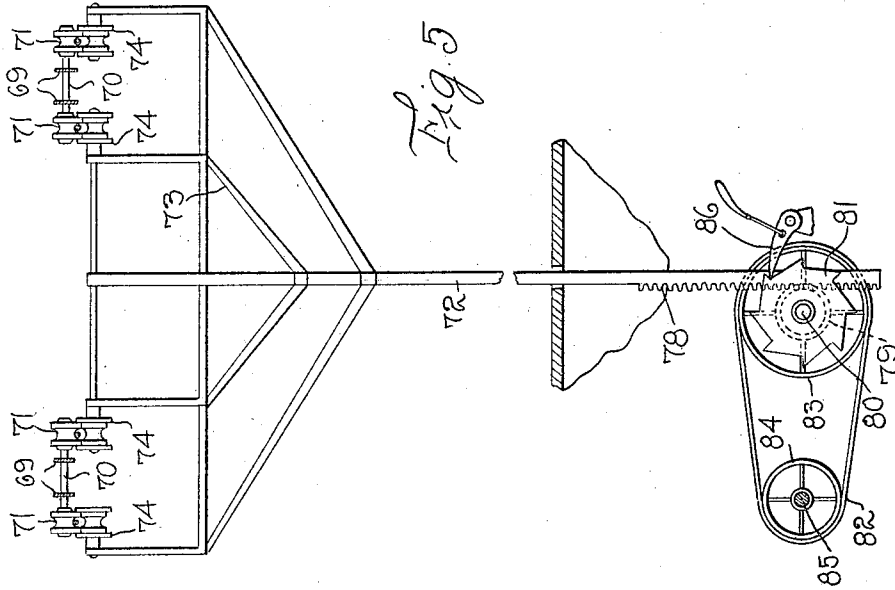
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TRANSPORTING APPARATUS.
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Patented Mar. 19, 1918.

3 SHEETS—SHEET 2.



Inventor

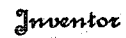
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOHANN JURGEN RICHARD HAALCK, OF SALT LAKE CITY, UTAH.

TRANSPORTING APPARATUS.

1,259,620.

Specification of Letters Patent.

Patented Mar. 19, 1918.

Original application filed September 19, 1917, Serial No. 192,151. Divided and this application filed December 10, 1917. Serial No. 208,512.

To all whom it may concern:

Be it known that I, JOHANN JURGEN RICHARD HAALCK, a citizen of Germany, who has declared his intention to become a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Transporting Apparatus, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to a transporting apparatus and more particularly to an apparatus of the character shown and described in my pending application for patent, filed September 19, 1917, Serial No. 192,151, and of which this application constitutes a division.

It is the primary purpose of the present invention to provide in an apparatus for transporting boats or other vessels over high or low dams and waterways, a crane having means for carrying the vessel in suspended relation, and cable means for moving said crane.

It is also another one of the objects of my invention to provide cable means for moving the transporting crane between spaced towers, and means for preventing the sagging of the cables when the crane is moving between the towers.

And it is a further general object of the invention to provide an apparatus for the above purpose which will be positive and reliable in its operation and capable of manufacture at relatively small cost.

With the above and other objects in view the invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawings in which similar reference characters designate corresponding parts throughout the several views, and wherein—

Figure 1 is a side elevation illustrating one embodiment of my invention;

Fig. 2 is an enlarged elevation of one of the cranes;

Fig. 3 is a fragmentary plan view;

Fig. 4 is a section taken on the line 4—4 of Fig. 3;

Fig. 5 is a detail elevation of the vertically movable cable guide;

Fig. 6 is a transverse section showing the

supporting means on the towers for the cables;

Fig. 7 is a detail perspective view of the bridge for the cable sheaves or rollers;

Fig. 8 is a detail plan view of the cable support;

Fig. 9 is a fragmentary elevation thereof;

Fig. 10 is a view similar to Fig. 8 showing the normal position of the cable supporting arm;

Fig. 11 is a detail view of the latch device for said arm;

Fig. 12 is an enlarged elevation of the trip device on the crane which actuates the cable support;

Fig. 13 is a plan view showing the operating mechanism for said trip device; and

Fig. 14 is an elevation of the operating gearing for the cable winding drum.

Referring in detail to the drawings, D indicates a dam upon which a tower or superstructure 66 is erected. Additional towers designated 67 and 68 are arranged at opposite sides of the central tower 66. Between these towers the crane supporting cables 65 extend. The crane, as shown in Fig. 2 of the drawings, is provided with curved vertically and upwardly extending frame bars 69 arranged in pairs and in each pair of said bars, a shaft 70 is rotatably mounted. Upon the ends of each shaft peripherally grooved rollers 71 are secured. These rollers travel upon the spaced cables 65. An upright or standard 72 is vertically movable through the top wall of the operator's compartment on the crane, and upon a suitable frame structure 73 fixed to the upper end of this standard the peripherally grooved rollers 74 are mounted in opposed relation to the rollers 71. The rollers 74 serve to retain the cables in position in the grooves of the rollers 71. The cables 65 are secured upon the spaced horizontal beams of the central tower 66 above the dam, and in order to permit the passage of the crane through this tower, it is necessary that the lower rollers 74 shall move vertically downward with respect to the rollers 71. To this end, I provide a bridge secured upon each of the cables 65, one of these bridges being illustrated in detail in Fig. 7, wherein it will be noted that the same consists of upper and lower parallel cylindrical rods 75 to the ends of which the convergently disposed arms 76 are fixed, said arms being secured to opposite sides of

a collar or sleeve on the cable 65. The rods 75 are connected at intervals by the vertical brace bars 77. The lower end of the standard or upright 72 is provided with rack teeth 78 which mesh with the pinion 79 fixed on a shaft 80, said shaft having a ratchet disk 81 secured thereon and being driven by an endless belt 82 engaged upon a belt wheel 83 on said shaft and a belt wheel 84 in a power transmission shaft 85 which is driven from any suitable source of power carried by the crane. A suitable locking dog 86 is engaged with the teeth of the ratchet 81, whereby the standard 72 may be retained in its elevated position with the rollers 74 engaged with the cables 65. When, however, the crane approaches the tower 66, the operator disengages the dog 86 from the ratchet 81 and the rollers 74 riding upon the inclined arms 76 of the several bridge frames on the cables 65, act to force the standard 72 downwardly, the belt wheel 83 slipping upon the belt 82. After the crane has passed through the tower 66, rotation is transmitted by the belt 82 to the shaft 80 to again raise the standard 72 and return the rollers 74 to their operative positions. The rollers are held in such position by engaging the dog 86 with the ratchet 81.

109 designates the cables whereby the crane is moved between the several towers upon the relative stationary cables 65. The cables 109 are respectively connected at one of their ends to the spaced drums 110 and 111, to be wound in relatively opposite directions thereon. Each of these drums is provided with a gear 112 and 113 respectively for engagement by an intermediate driving gear 114. The other ends of the cables 109 are suitably secured to the towers 67 and 68 respectively. It is of course manifest that each cable section 109 is of a length equivalent to the distance between the towers 67 and 68 and as one cable section is unwound from one drum, the other cable section is wound upon the other drum. The crane is further equipped with lifting cables 54 and a suitable mechanism for operating said cables whereby the vessel is elevated from the water and held in suspended relation from the crane during the travel thereof. Means are provided upon the crane for adjustably positioning these lifting cables in accordance with the length of the vessel, but as this adjusting means is fully shown and described in my prior application for patent above referred to and constitutes no part of the present invention, it will not be herein set forth in detail.

In order to support the cables 109 and prevent them from sagging too greatly when the crane is disposed upon one side of the central tower 66, I provide the device illustrated in Fig. 8 of the drawings. One of these devices is mounted upon the tower 66

at each side of the dam, and includes a cable supporting bar 87 which is suitably pivoted at one of its ends, as at 88, upon the tower structure, and is provided upon its other end with a metal sleeve or collar 89 upon which the cable engages. An obliquely disposed guide 90 is fixed at one of its ends to the bar 87 and is suitably braced by the strut 91 fixed to the other end of said guide and to the pivoted bar. An arm 92 is pivoted to the bar 87 as at 93, and extends through the loop 90. Coil springs 94 are arranged in said loop on either side of the arm 92 and serve to yieldingly hold the latter in a central position within said loop. The bar 87 is held in an inoperative position at right angles to the position shown in Fig. 8 by a yieldable latch device 95 illustrated in Fig. 11.

The cable supporting arm 87 is actuated by a trip device mounted upon the wall of the operator's compartment on the traveling crane. This trip device consists of a rod 96 fixed at its ends in the integrally connected diverging arms 97, said arms being provided with parallel longitudinal extensions 98 disposed through the wall of the operator's compartment and supported in suitable guides 99 fixed to the compartment wall. The ends of the extensions 98 are connected by a bar 100, to which one end of a rack bar 101 is secured. The teeth of a pinion 102 engage the teeth on each rack bar and a bearing roller 103 is engaged with the opposite edge of the rack bar. It will be understood that the pinions 102 are fixed to the opposite ends of a common shaft 104 which is geared as at 105 to a power transmission shaft 106 driven by the chain connection 107 from the shaft of an operating motor. Between the outer ends of the arms 97, an anti-friction roller or sleeve 108 is mounted upon the rod 96.

It will be understood from the above description, that as the crane approaches the central tower 66, the mechanism is actuated to shift one of the rods 96 carrying the roller 108, outwardly from the wall of the operator's compartment and into the path of the drum cable 109 so that the cable between the central tower and the other tower 67 or 68 as the case may be, will be supported and prevented from sagging between said towers, this operation will be clearly understood from reference to Fig. 10. The roller 108 striking the arm 92 swings the bar 87 outwardly and beneath the cable, such swinging movement being limited by a stop shoulder on the bracket in which the bar 87 is mounted. The movement of the arm 92 continues against the action of the spring 94 so as to permit the roller to pass beyond said arm, whereupon the arm is returned to its normal position in the loop 90. Thus upon the return movement of the crane, the

said arm will be in position to be engaged by the other roller 108 and thereby return the supporting bar 87 to its normal position in engagement with the latch device 95. This operation of the cable supporting device is entirely automatic and serves to insure the proper support for the driving cable above the surface of the water.

In Figs. 3 and 4 of the drawings, I have illustrated the mounting of the shiftable carriages for the hoisting or lifting chains or cables, which is quite similar to that disclosed in my prior application. The wheels of the carriage are mounted to travel upon the rails 115 each of which is suitably fixed to a bed plate 116 secured to the bottom face of the I-beam constituting the side wall of the crane. The carriage is also provided with bars 117 of T-shaped form in cross section which are engaged between opposed guide plates 118 fixed to the opposite side walls of the crane. Upon spaced arms 119, additional upper guide rails 120 are secured between which the peripheral flanges on the carriage wheels are engaged.

From the foregoing description, taken in connection with the accompanying drawings, the construction, manner of operation and several advantages of the apparatus will be clearly and fully understood. My improved transporting means for the vessels may be installed at comparatively small cost either in instances where the closed dam is used or where a dam of the lock type is employed. The towers or superstructures may be built of various heights in accordance with the particular conditions or circumstances encountered in the erection of the apparatus. It will be understood that the tower and dam construction illustrated in the accompanying drawings is simply conventional, and the present invention is in no manner limited to such construction. The construction of the traveling crane, as well as the specific means provided for supporting this crane for traveling movement between these superstructures can likewise be considerably varied, and the form, construction and relative arrangement of the detail parts of the apparatus are also susceptible of many modifications. It is therefore, to be understood that I reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I claim is:—

1. The combination with spaced towers, of flexible members extending between said towers, a crane mounted to travel upon said members, cables fixed at their ends to certain of the towers, means carried by the crane to which the cables are operatively connected whereby the crane is moved upon said flexible members, supporting devices

for the cables mounted upon one of the towers to prevent sagging of the cables, and means for automatically moving said supporting devices to operative or inoperative position.

2. The combination with spaced towers, of flexible members extending between said towers, a crane mounted to travel upon said members, cables fixed at their ends to certain of the towers, means carried by the crane to which the cables are operatively connected whereby the crane is moved upon said flexible members, supporting devices for the cables mounted upon one of the towers to prevent sagging of the cables, and trip means carried by the crane to move the supporting devices to operative or inoperative positions.

3. The combination with spaced towers, of a traveling crane, supporting means for the crane extending between the towers, cables fixed at their ends to certain of the towers, means on the crane to which the other ends of the cables are operatively connected, pivotally mounted arms on one of the towers to support said cables and prevent the same from sagging, and a trip device carried by the crane to coact with means on said arms and move the arms to operative or inoperative positions.

4. The combination with a plurality of spaced towers, of fixed cables extending between said towers, a crane, rollers mounted upon the crane to travel on said cables, means carried by the crane coöperating with the cables to retain said cables in engagement with the rollers, and means for bodily displacing said retaining means in the movement of the crane through the intermediate tower.

5. The combination with a plurality of spaced towers, of fixed cables extending between the towers, a crane, rollers mounted upon the crane to travel on said cables, additional bodily movable rollers carried by the crane and coacting with the cables to retain the same in engagement with the first named rollers, and means for displacing said lower rollers in the passage of the crane through the intermediate tower.

6. The combination with a plurality of spaced towers, of fixed cables extending between said towers, a crane, rollers mounted upon the crane to travel upon said cables, additional bodily movable rollers coöperating with the respective cables to retain the same in engagement with the first named rollers, and means fixed to each of the cables to coact with the lower rollers in the passage of the crane through the intermediate tower and move the same out of engagement with the cables.

7. The combination with a plurality of spaced towers, of fixed cables extending between said towers, a crane, rollers mounted

- upon the crane to travel upon said cables, additional bodily movable rollers cooperating with the respective cables to retain the same in engagement with the first named
5 rollers, and a bridge fixed to each of the cables in the intermediate tower and including upper and lower track rails over which the respective sets of rollers ride in the passage of the crane through said tower.
- 10 8. The combination with a plurality of spaced towers, of fixed cables extending between said towers, a crane, rollers mounted upon the crane to travel on said cables, additional rollers cooperating with the respective
15 cables to retain the same in engagement with the first named rollers, and a bridge fixed upon each of the cables in the intermediate tower and including track rails spaced above and below the cables and having convergently disposed end portions, the
20 respective sets of rollers being adapted to travel upon said rails, the latter set of rollers being bodily movable upon the crane with respect to the first named rollers, and
25 means for returning the second named rollers into engagement with the cables after the passage of the crane through the intermediate tower.
- In testimony whereof I hereunto affix my signature in the presence of two witnesses. 30
- JOHANN JURGEN RICHARD HAALCK.
- Witnesses:
DAVID WOLF,
B. L. LIBERMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."