No. 858,530. PATENTED JULY 2, 1907.

J. McMYLER.

HOISTING AND CONVEYING APPARATUS.

APPLICATION FILED OCT. 29, 1906.

3 SHEETS—SHEET 1.

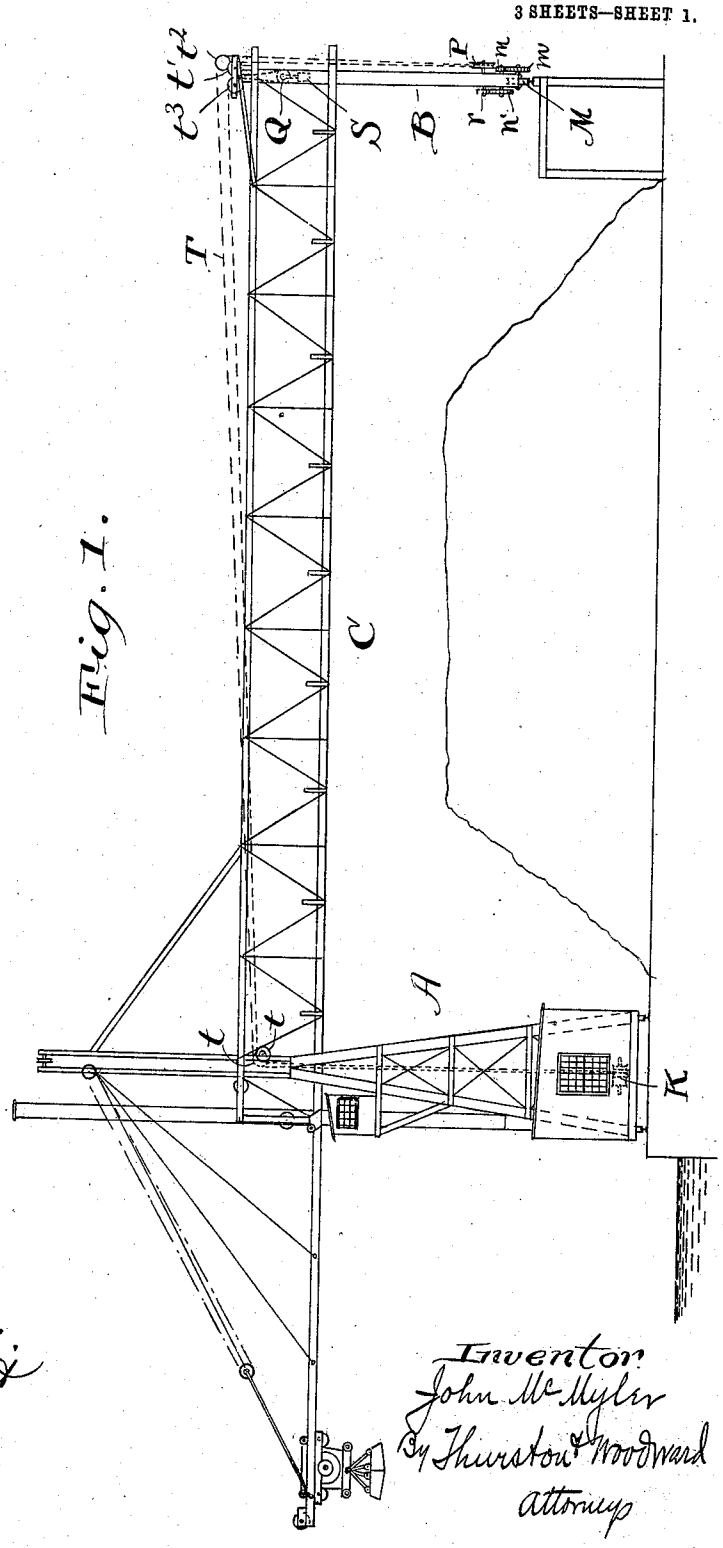

Fig. 1.

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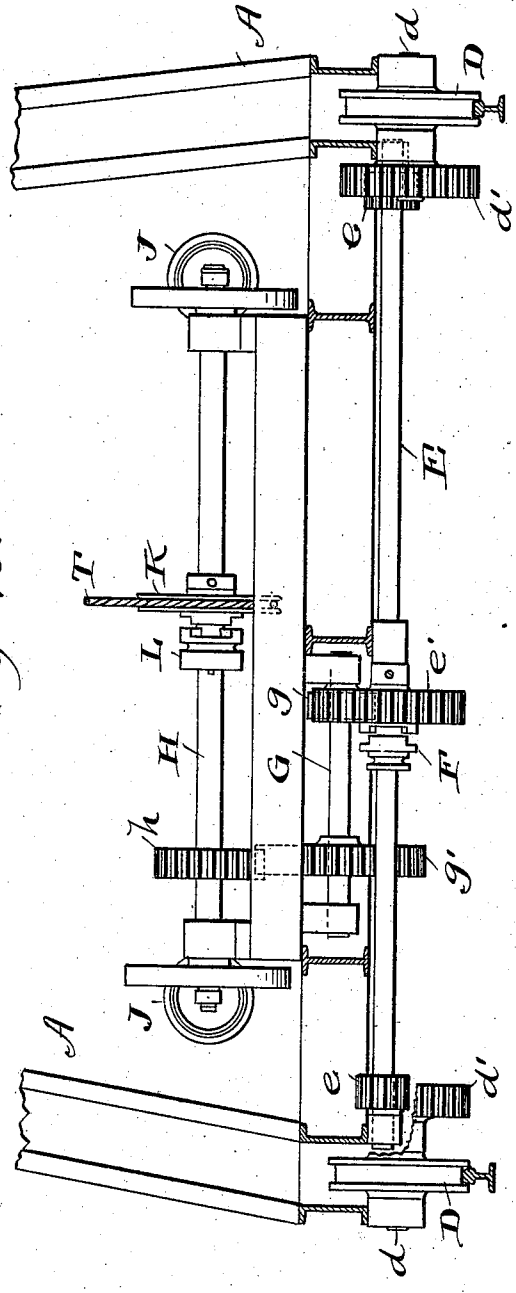
3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

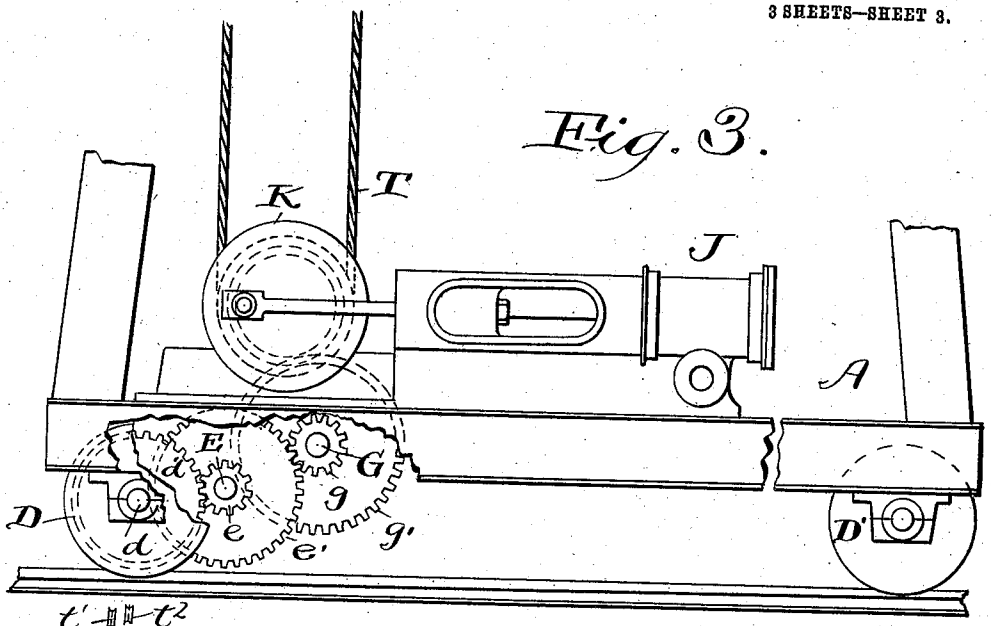


Fig. 4.

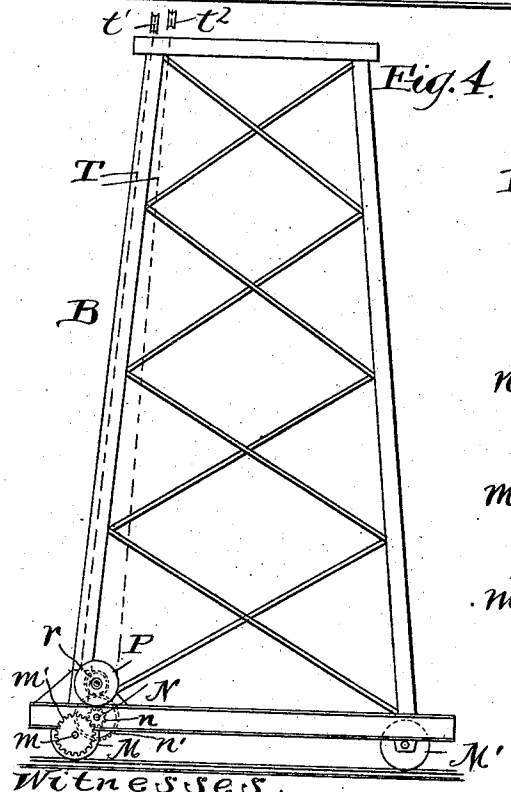
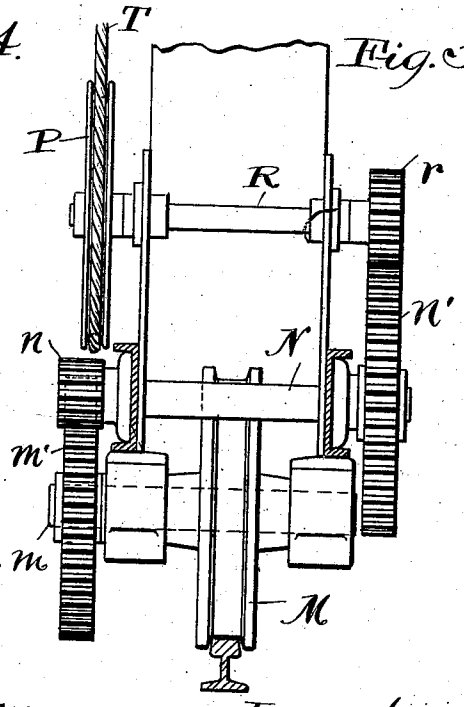


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN McMYLER, OF CLEVELAND, OHIO, ASSIGNOR TO THE McMYLER MANUFACTURING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

HOISTING AND CONVEYING APPARATUS.

No. 858,530. Specification of Letters Patent. Patented July 2, 1907.

Application filed October 29, 1906. Serial No. 340,977.

To all whom it may concern:

Be it known that I, JOHN McMYLER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Hoisting and Conveying Apparatus, of which the following is a full, clear, and exact description.

This invention is an improvement in the class of hoisting and conveying apparatus which includes a front and rear tower provided respectively with traction wheels which run on fixed tracks, and a bridge which extends between and is supported by said towers. In using apparatus of this kind, it is desirable that the two towers be movable upon their tracks simultaneously or independently at will.

The economical operation of the apparatus requires that the motor and the means for controlling the various mechanisms operated thereby be grouped at some convenient point upon the structure; and the prevailing practice is to locate the same upon the front tower. The bridges are sometimes as much as 175 feet long, and the problem of satisfactorily transmitting power from a motor on the front tower to traction wheels on the rear tower has not heretofore been satisfactorily solved.

The present invention is a practical solution of that problem. The apparatus in which it is embodied includes the front and rear towers having traction wheels, the bridge extending between and supported by said towers, a motor supported on the front tower, a train of mechanism, including the clutch for transmitting motion from the motor to the traction wheels of the front tower, a sheave mounted on the front tower, mechanism including a clutch for transmitting motion thereto, a sheave mounted on the rear tower, a train of mechanism on the rear tower for transmitting motion from said sheave to the traction wheels on said tower, and an endless rope passing under the two sheaves mentioned and up to the tops of the respective towers and over sheaves and thence along the bridge.

The invention resides in the combinations, set forth in the claims, of the above mentioned parts constituting the mechanism shown in the drawing.

In the drawing, Figure 1 is a side elevation of a hoisting and conveying apparatus embodying the present invention. Fig. 2 is a side view, partly sectioned, of the lower part of the front tower, showing the supporting traction wheels and the mechanism on the tower for driving them. Fig. 3 is a front elevation of the mechanism by which said traction wheels are driven. Fig. 4 is a rear view of the rear tower; and Fig. 5 is a view partly in vertical section showing the mechanism for driving the traction wheel of said rear tower.

Referring to the parts by letters, A represents the front tower, B the rear tower, and C the bridge, supported by these towers. These parts may be constructed and connected in any ordinary or suitable manner. The front tower is supported by four wheels D, D, and D′, D′. The two wheels D, D, which are mounted in the same axial line, are the traction wheels. Each of these wheels is secured to a short shaft d, which is mounted in bearings on the tower. To each of these shafts a gear d' is secured.

E represents a shaft parallel with the two shafts d, which shaft is mounted in suitable bearings on the tower. Two pinions e are fast to this shaft, and they mesh with the two gears d' d'. Loosely mounted on the shaft E is a gear e'. A clutch F, which may be of any suitable construction, is provided for connecting and disconnecting this gear e' and the shaft E. The gear e' meshes with a pinon g attached to a shaft G which is mounted in bearings on the lower part of the tower A. A gear g' is also secured to the shaft G, and it meshes with a pinion h secured to a driven shaft H. This shaft may be the prime motor shaft and may be driven directly from engine J secured upon the tower. When the clutch F connects gears e' to shaft E, both traction wheels D will be driven through intermediate mechanism by shaft H at a very much reduced rate of revolution.

K represents a rope sheave, which is loosely mounted upon shaft H. A clutch L of any suitable construction is provided for connecting and disconnecting said sheave K and shaft H. The two clutches L and F, are shown as jaw clutches of familiar form.

The rear tower is supported upon two wheels M, M′. The wheel M, which is the traction wheel, is secured to a shaft m mounted in bearings on the lower part of the tower; and a gear m' is secured to this shaft. A pinion n secured to the shaft N, which is also mounted in bearings on the tower, engages with the gear m'. A gear n' secured to shaft N meshes with a pinion r secured to a shaft R, which is also mounted on the tower, and a sheave P is secured to shaft R.

An endless rope T, which is shown by dotted lines in Fig. 1, extends the entire length of the bridge and passes down in the front tower over two sheaves t, t, at the upper end thereof,—the depending loop of said rope passing under and engaging with the sheave K. At the rear end this rope passes down over two sheaves t' t^2, mounted on the top of tower B, and the downwardly extended loop passes under and engages with the sheave P. A third sheave t^3 may be mounted on top of the rear tower and a loop or bight of one strand of the rope may pass down between the sheave t' t^3, and a sheave Q which supports a tension weight S may be suspended in this bight or loop.

When it is desired to cause both of the bridge supporting towers to travel simultaneously and equally, the sheave K and the gear e' are severally connected

with shafts H and E by the clutches L and F. When it is desired to cause the rear tower alone to travel, the gear e' is disconnected from shaft E and the sheave K is connected with the shaft H. The rotation of this sheave K is transmitted by the endless rope the entire length of the tower, irrespective of the positions of the two towers relative to each other, and then down to sheave P and thence through the described train of mechanism to the traction wheel M.

As is well understood by those familiar with this art, one tower may travel quite a distance without requiring any movement of the other tower, so that the bridge instead of being at right angles to both of the towers will stand at quite a considerable angle to said towers. The described mechanism of transmitting motion from the front tower to the rear tower is not rendered inoperative or ineffective to any degree by such relative movements of the two towers, and consequently changed relative positions of towers and bridge. So far as I know, the only mechanism which has heretofore been employed for transmitting motion for a prime mover on one tower and a traction wheel on the other has included a vertical shaft mounted on each tower, a horizontal shaft mounted on the bridge and intermeshing beveled gears. This mechanism is expensive, and heavy and liable to get out of order; and its efficiency is lessened in proportion as one tower is moved relative to the other, so as to cause the bridge to occupy a position relative to the towers which is not a right angle.

Having described my invention, I claim:

1. In hoisting and conveying mechanism, the combination of a bridge, two towers which support the same and are provided with traction wheels, a motor supported upon one tower, a sheave supported upon said tower, mechanism, including a clutch, for transmitting motion from said motor to the sheave, a sheave on the other tower, a train of mechanism for transmitting motion therefrom to the traction wheel of said tower, and an endless rope passing under the two sheaves and up to the tops of the respective towers, guide sheaves mounted on said towers over which said rope runs.

2. In hoisting and conveying apparatus, the combination of a bridge, two towers by which it is supported which are respectively provided with traction wheels, a motor supported on one of said towers, a sheave mounted on said tower, mechanism, including a clutch, for connecting said sheave with the motor, a sheave mounted on the other tower, a train of speed reducing mechanism for transmitting motion from said sheave to the traction wheel on said tower, an endless rope passing under the two sheaves, guide sheaves mounted on the tops of said towers over which said endless rope passes from one tower to the other.

3. In hoisting and conveying mechanism, the combination of two towers, each provided with traction wheels, a bridge supported thereby, a motor mounted on the front tower, a train of speed reducing mechanism including a clutch transmitting motion from said motor to the traction wheels of the front tower, a sheave mounted on the front tower, mechanism including a clutch for transmitting motion from the motor to said sheave, a sheave mounted on the rear tower, speed reducing mechanism transmitting motion from said sheave to the traction wheels on the rear tower, an endless rope passing under said two sheaves, and guide sheaves mounted on the tops of said two towers over which said rope passes from one tower to the other.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOHN McMYLER.

Witnesses:
E. B. GILCHRIST,
H. R. SULLIVAN.