G. F. ROUGHAN.

CABLE RAILWAY.

APPLICATION FILED JULY 22, 1908.

940,825.

Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.

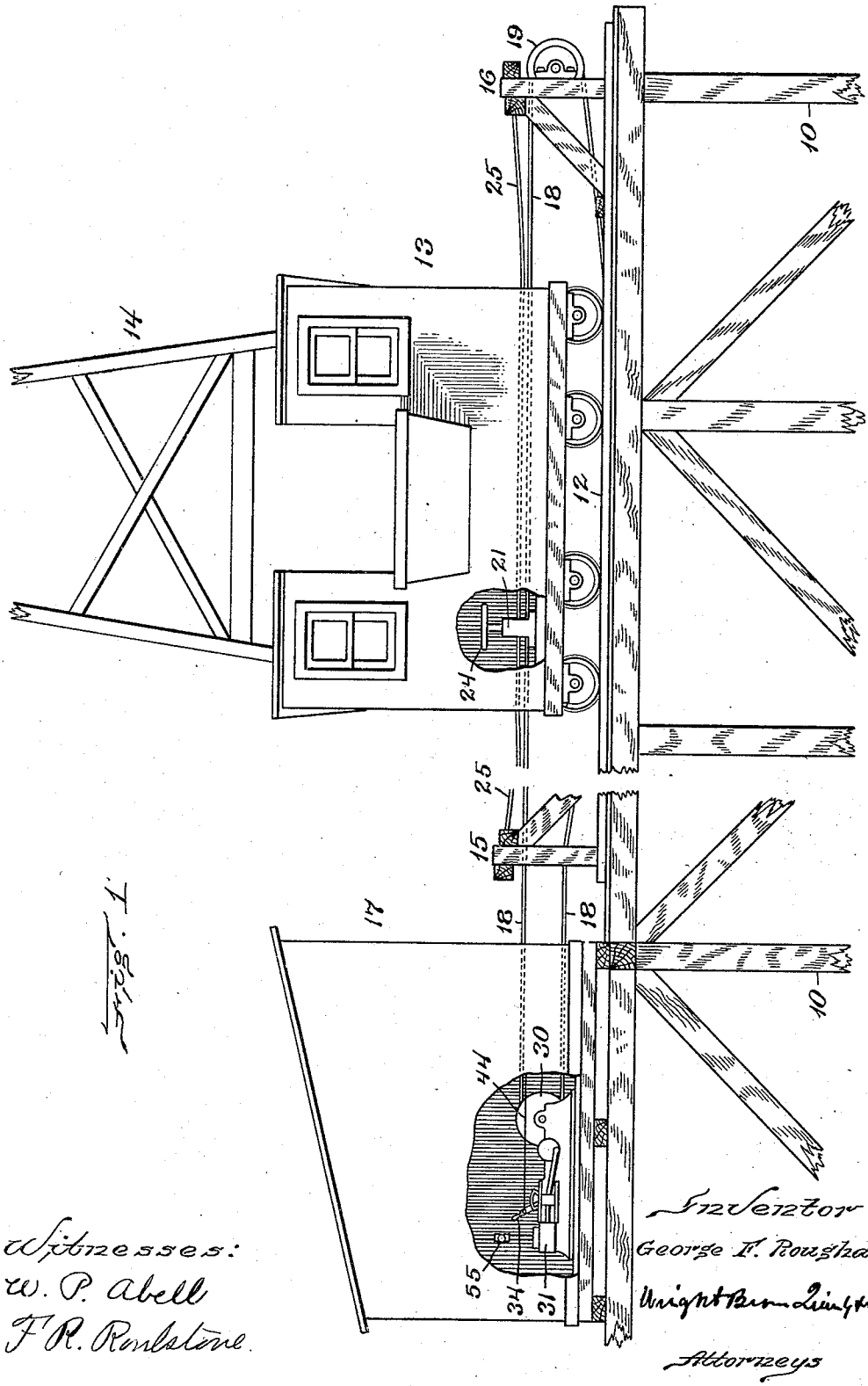

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 6

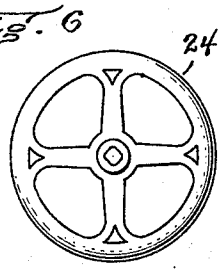
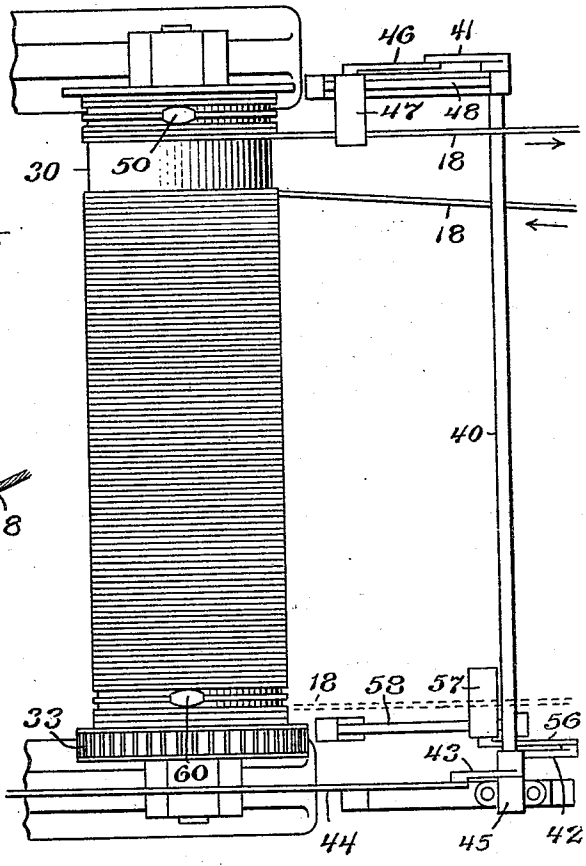


Fig. 3



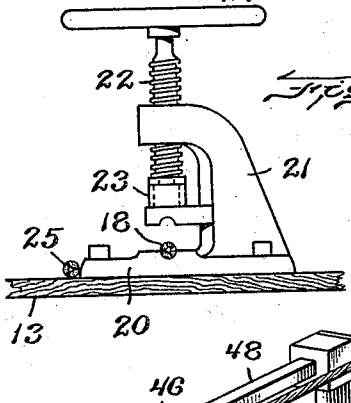


Fig. 5

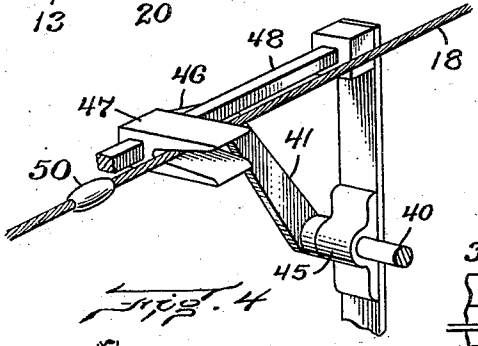


Fig. 4

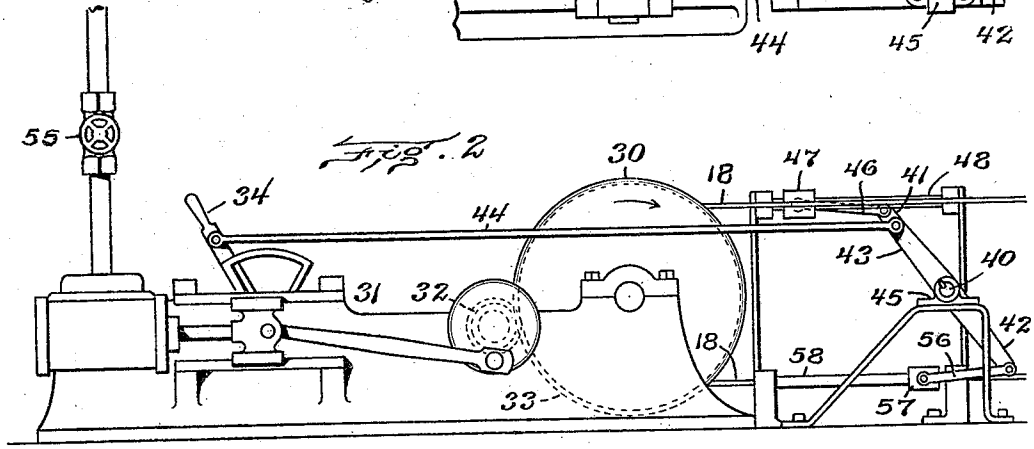


Fig. 2

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UNITED STATES PATENT OFFICE.

GEORGE F. ROUGHAN, OF BOSTON, MASSACHUSETTS.

CABLE-RAILWAY.

940,825. Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed July 22, 1908. Serial No. 444,776.

To all whom it may concern:

Be it known that I, GEORGE F. ROUGHAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Cable-Railways, of which the following is a specification.

This invention relates to hauling apparatus in which a stationary driving mechanism is adapted to be reversed so as to haul a car in either direction. It is especially adapted to a railway having a limited range such as that employed in a coaling station or in excavating, or as illustrated on the accompanying drawings, in an unloading apparatus for vessels.

It has hitherto been the custom to move a coal tower by means of a movable motor installed therein and connected to a stationary cable whose outlying end is attached to a fixture. Such means is not entirely efficient and furthermore is not adapted to arrest movement of the tower. By providing a stationary motor and a movable cable for a tower having a grip, as in the present invention the movement of the tower is subject to the control of the operative at all times.

Of the drawings forming a part of this specification, Figure 1 is a front elevation of fragments of the superstructure of an unloading apparatus. Fig. 2 is a similar elevation of the cable driving mechanism equipped with reversing mechanism. Fig. 3 is a top plan view of the cable drum and controlling mechanism. Fig. 4 is a perspective view of a portion of the controlling mechanism. Fig. 5 is an elevation of a grip by which a car may be made fast to the cable. Fig. 6 is a plan view of the grip actuator.

The same reference characters indicate the same parts in all the figures.

Referring first to Fig. 1, 10 represents fragments of an elevated structure such as the trestlework of a coal pocket. The structure is provided with a track 12 upon which one or more cars 13 may be mounted. The car in the present instance supports a tower 14 adapted for purposes of hoisting, and it may contain machinery for operating the hoisting apparatus. The car is movable between two bumping posts 15, 16 one at each terminus of the track.

Beyond the terminus 15 is a power house 17 equipped with the machinery for driving a cable 18 of which both ends remain in the power house, the intermediate portion extending along the track and over a sheave 19 at the terminus 16. The upper stretch of the cable is employed to move the car and the lower stretch is left unused. A suitable grip for attaching the car to the cable appears in Figs. 1 and 5 and comprises a base 20, an overhanging arm 21, and a screw jack 22 threaded therein and provided with a swiveled gripping block 23 and hand wheel 24. The grip is, in this case attached to the floor of the car and the cable 18 passes through the car in order to be gripped. In Fig. 5 the grip is open in which case the cable may be set aside if desired. A dead cable 25 may be inserted in the grip instead of the cable 18 and when gripped may serve to hold the car in one position. The ends of the dead cable are attached to the posts 15 and 16.

The machinery provided for driving the cable includes a winding drum 30 for the cable 18, a reversible engine or motor 31 therefor, and controlling mechanism hereinafter described. A pinion 32 on the power shaft of the motor serves to drive a gear 33 affixed to the drum 30. The motor, as already stated, is reversible and is provided with a reversing lever 34 which controls it.

The usual method of attaching the cable 18 to the drum 30 is shown in Fig. 3. One end of the cable is fastened at one end of the drum and coiled about the same in a single layer covering the greater part of its perimeter. The other end of the cable is then fastened to the other end of the drum leaving a short portion of the drum uncovered for clearance for the two coils. When the drum is rotated one end of the rope is paid out and the other end drawn in at equal speed. In this way the cable may be moved in either direction within its limits.

The means for controlling the motor includes a rock-shaft 40, arms 41, 42 and 43 affixed thereon, and a rod 44 connecting the arm 43 with the reversing lever 34. The rock-shaft extends between the upper and lower stretches of the cable 18 in parallelism with the axis of the drum and its ends are mounted in stationary bearings 45 45. One end of a link 46 is pivotally connected to the arm 41, and the other end to a bifurcated block 47 mounted and adapted to slide upon a stationary rod or bar 48. See Fig. 4. Said bar is in alinement with one end of the

drum in the horizontal plane of the upper stretch of the cable. The fork of the block 47 extends toward the opposite end of the drum and is adapted to bestraddle the cable when the latter moves into its vertical plane. An actuator 50 in the form of an ellipsoid is affixed upon the upper stretch of the cable near its end, and is adapted, when it leaves the drum, to strike the block 47 and move it away from the drum. The movement is transmitted to the rock-shaft 40 and in turn to the reversing lever 34.

The lower stretch of the cable is provided with a second actuator 60 near its end. This actuator is adapted to give motion to a bifurcated block 57 mounted on a stationary bar 58 in the same way as the block 47. The bar 58 however is at the other end of the drum and in the horizontal plane of the lower stretch. The arm 42 is connected to the block 57 by means of a link 56 and the relation between the two opposite blocks is such that they move upon their respective bars in opposite directions whenever either one is actuated.

The principle of operation may be seen by reference to Fig. 3 in which the drum is drawing in the lower stretch and giving off the upper. The upper stretch is here bestraddled by the block 47 and is nearly exhausted. A few more revolutions of the drum will cause the actuator to leave it and approach the block as shown by Fig. 4. The effect of the actuator in moving the block is to reverse the motor as previously explained, thereby causing the cable to wind in the opposite direction. A continuation in the latter direction causes the two stretches of the cable to move laterally toward the opposite block 57 into the open end of which the lower stretch passes in approaching the position shown by dotted lines. By means of the actuator 60 and block 57 the reversing lever may be moved again to its former position. It may be seen therefore, that if the motive power should be neglected when turned on, the cable mechanism would move first in one direction and then in another without damage. If the car 13 should meanwhile be gripped to the cable it would simply travel back and forth on the track without striking the termini. In practice however, the motive power may be turned on or off by means of a handle or wheel 55 (Fig. 2) and the lever 34 may be moved manually to direct the power in either direction. The motor herein shown is a steam engine, but the controlling mechanism is equally adaptable to an electric or other reversible motor.

It should be understood that the mechanism and arrangement shown and described are subject to various modifications without departing from the spirit and scope of the invention. For example, the controlling mechanism may be connected to the throttle handle 55 instead of to the reversing lever, so as to effect a stoppage of the motor when actuated.

I claim:—

1. The combination with a movable coal tower of a remote stationary winding drum, a cable operable by the drum for hauling the tower, means on the tower for gripping the cable, a motor for the drum, controlling mechanism for the motor, and means on the cable for actuating the controlling mechanism.

2. The combination with a movable coal tower of a movable cable, a stationary cable, and gripping means on the tower for gripping either of the cables.

In testimony whereof I have affixed my signature, in presence of two witnesses.

GEORGE F. ROUGHAN.

Witnesses:

P. W. PEZZETTI,

MARGUERITE M. TAYLOR.