(No Model.) 2 Sheets—Sheet 1.

E. A. LELAND.

LOCOMOTIVE FOR TOWING CANAL BOATS.

No. 594,832. Patented Nov. 30, 1897.

Fig. 1.

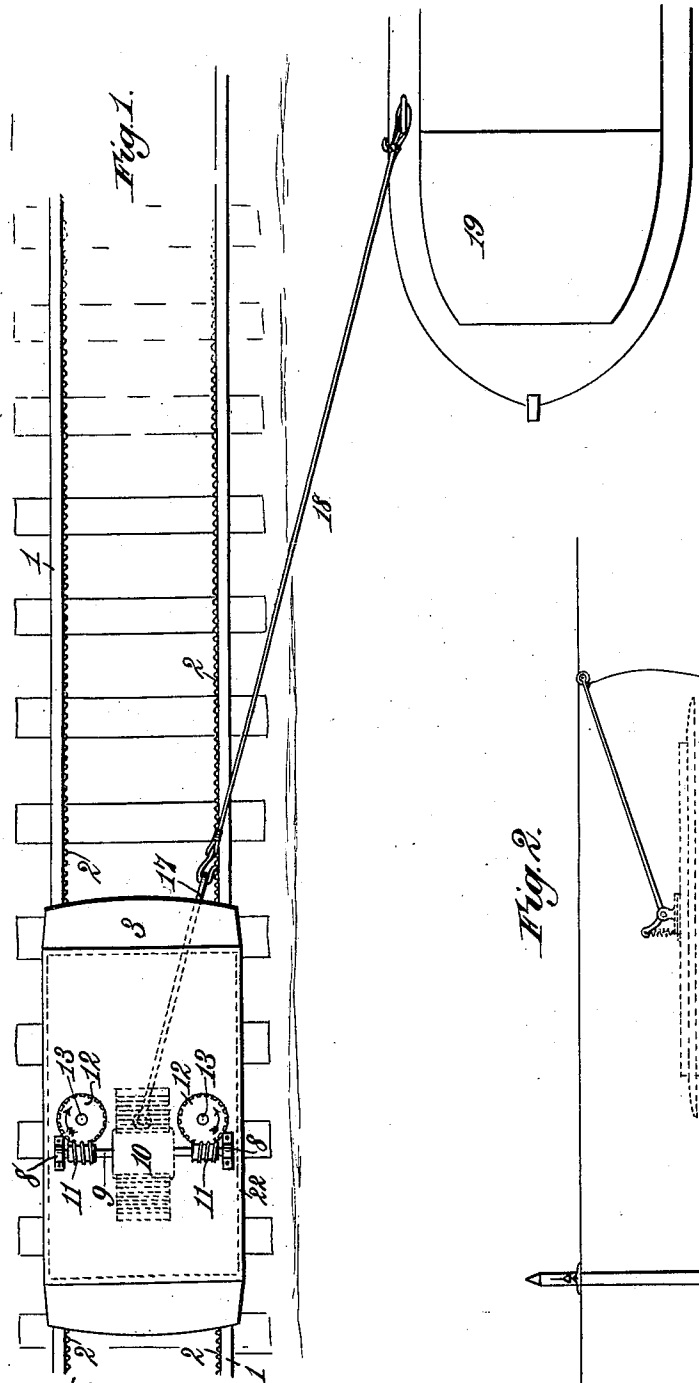
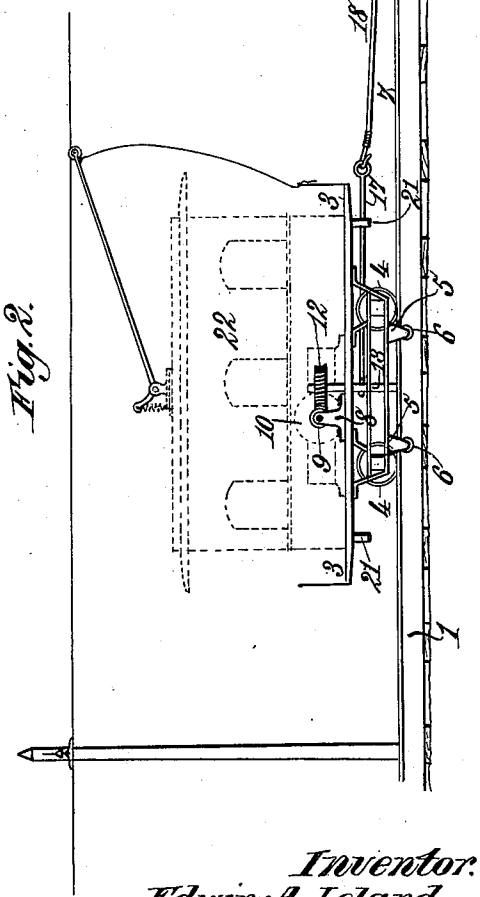


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

E. A. LELAND.

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Fig. 3.

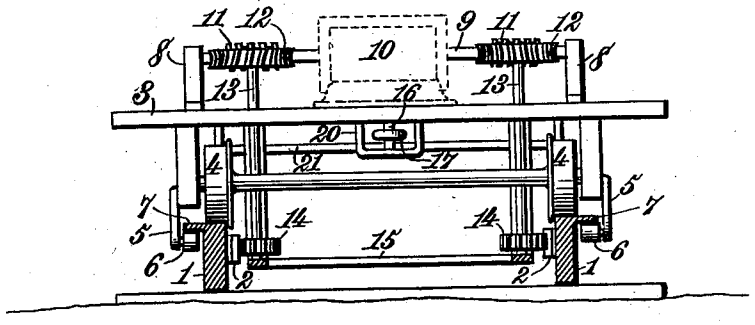
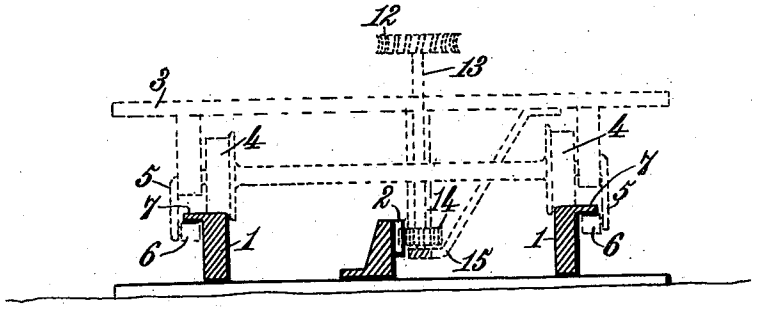


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWIN A. LELAND, OF GREAT BARRINGTON, MASSACHUSETTS, ASSIGNOR TO THOMAS GREENWOOD AND FRANK H. WRIGHT, OF SAME PLACE.

LOCOMOTIVE FOR TOWING CANAL-BOATS.

SPECIFICATION forming part of Letters Patent No. 594,832, dated November 30, 1897.

Application filed February 20, 1897. Renewed November 6, 1897. Serial No. 657,702. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. LELAND, a citizen of the United States, residing at Great Barrington, in the county of Berkshire and State of Massachusetts, have invented new and useful Improvements in Electrically-Propelled Cars or Locomotives for Towing Canal-Boats, of which the following is a specification.

This invention relates to an electrically-propelled car or locomotive for towing canal-boats, and has for its object to provide an improved car or motor to be propelled along a railway on the tow-path of a canal for drawing canal-boats.

The invention consists in features of construction and novel combinations of devices in a railway track and car or motor for the propulsion of canal-boats, as hereinafter more particularly described and claimed.

For the purposes of this description reference will be had to the details of construction illustrated in the annexed drawings, in which—

Figure 1 is a plan illustrating the towing of a canal-boat by the means provided in my invention. Fig. 2 is a side elevation of the same. Fig. 3 is an enlarged view of the invention in vertical cross-section. Fig. 4 illustrates a modification.

Referring to the drawings, the numeral 1 designates the rails of a railway-track extended along the tow-path of a canal. At the inner side of one of the track-rails, or preferably each rail, as shown, there is securely placed a rack 2, having its teeth projecting laterally, so that they will not become clogged with dirt, the lateral projection of the teeth being most favorable to the dropping off of any dirt and its free passage to a point below the rack.

The truck of the motor-car 3 is provided with flanged wheels 4, and depending from the truck on each side are brackets 5, carrying rollers 6 to run on the under side of the rail-flange 7 to hold the car onto the track.

There is mounted on the car in bearings 8 a horizontal transversely-arranged shaft 9, to which rotary motion is imparted through an electric motor 10, supplied with current from an overhead trolley-line.

On the rotary shaft 9 there is carried a worm 11, preferably one at each end, gearing with a worm-wheel 12 on the upper end of a vertical shaft 13, the lower end of which carries a pinion 14 in gear with the rack 2, so that by rotation of the shaft 9 the action of the pinion on the rack will cause the car to be propelled steadily and without any liability of slipping backward on an upgrade, as in mounting a lock. As a support for the pinion shaft or shafts 13 suitable bearings 15 will be provided beneath the car. While I have shown two worm-wheels 12 geared with the rotary motor-shaft 9 through the two worms 11, it will be obvious that a single worm-gearing will in many cases be sufficient, and then of course only one rack 2 and one pinion 14 will be needed. This single rack and pinion may be arranged adjacent to either track-rail, or it may be located midway between the two track-rails, a corresponding central arrangement of the worm-gearing on the car being provided.

By means of a coupling-pin 16 there is attached to the motor-car a draft-rod or draw-bar 17 for attaching the tow-line 18 of a canal-boat 19, and the said draw-bar is reversible, so that the tow-line can be connected with either end of the car. The inner end of the rod or bar 17 is preferably supported in a bracket 20 beneath the car and has an eye for engagement with the coupling-pin 16, by withdrawing which the rod 17 can be detached and again connected to project in an opposite direction. Under the opposite ends of the car are guide-brackets 21 to support the outer portion of the draft-rod.

There may be erected on the car-platform a cab 22 for protection of the motorman from the weather.

By reason of the rack-and-pinion gearing for propelling the car the railway-track may have any grade required, and on heavy upgrades, as in mounting canal-locks, the movement of the car will be steady and without any tendency to backward slipping. With the usual means for reversing the electric motor the car can be propelled with equal facility in either direction.

What I claim as my invention is—

1. The combination with a railway-track

having its rails provided with lateral flanges, and a rack continuous with said track and provided with laterally-projecting teeth, of a motor-car having wheels running on the track-rails, brackets depending from the car-truck on each side and carrying rollers to run on the under side of the rail-flanges, a vertical shaft mounted on said car and provided at its upper end with a worm-wheel and at its lower end with a pinion in mesh with said rack, a horizontal shaft mounted on the car and provided with a worm in mesh with the worm-wheel of said pinion-shaft, and a motor for rotating the said worm-shaft, substantially as described.

2. The combination with a railway-track located on the tow-path of a canal, and a rack continuous with said track and provided with laterally-projecting teeth, of a motor for towing a canal-boat, a horizontally-arranged shaft mounted on said car and carrying a worm, an electric motor for rotating said shaft, a vertical shaft carried by the car and having on its upper end a worm-wheel in mesh with the worm on the horizontal shaft, and a pinion on the lower end of said vertical shaft in mesh with the horizontal teeth of the rack, substantially as described.

3. The combination with a railway-track located on the tow-path of a canal and having on each track-rail a rack provided with laterally-projecting teeth, of a motor-car for towing a canal-boat, vertical shafts carried by said car on each side and each provided at its upper end with a worm-wheel and having on its lower end a pinion in mesh with one of the racks on the track-rails, a horizontally-arranged shaft mounted on the motor-car and provided with worms in mesh with the worm-wheels of the vertical pinion-shafts, and an electric motor for rotating said worm-shaft, substantially as described.

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

EDWIN A. LELAND.

Witnesses:
O. O. BIDWELL,
J. C. FREIN.