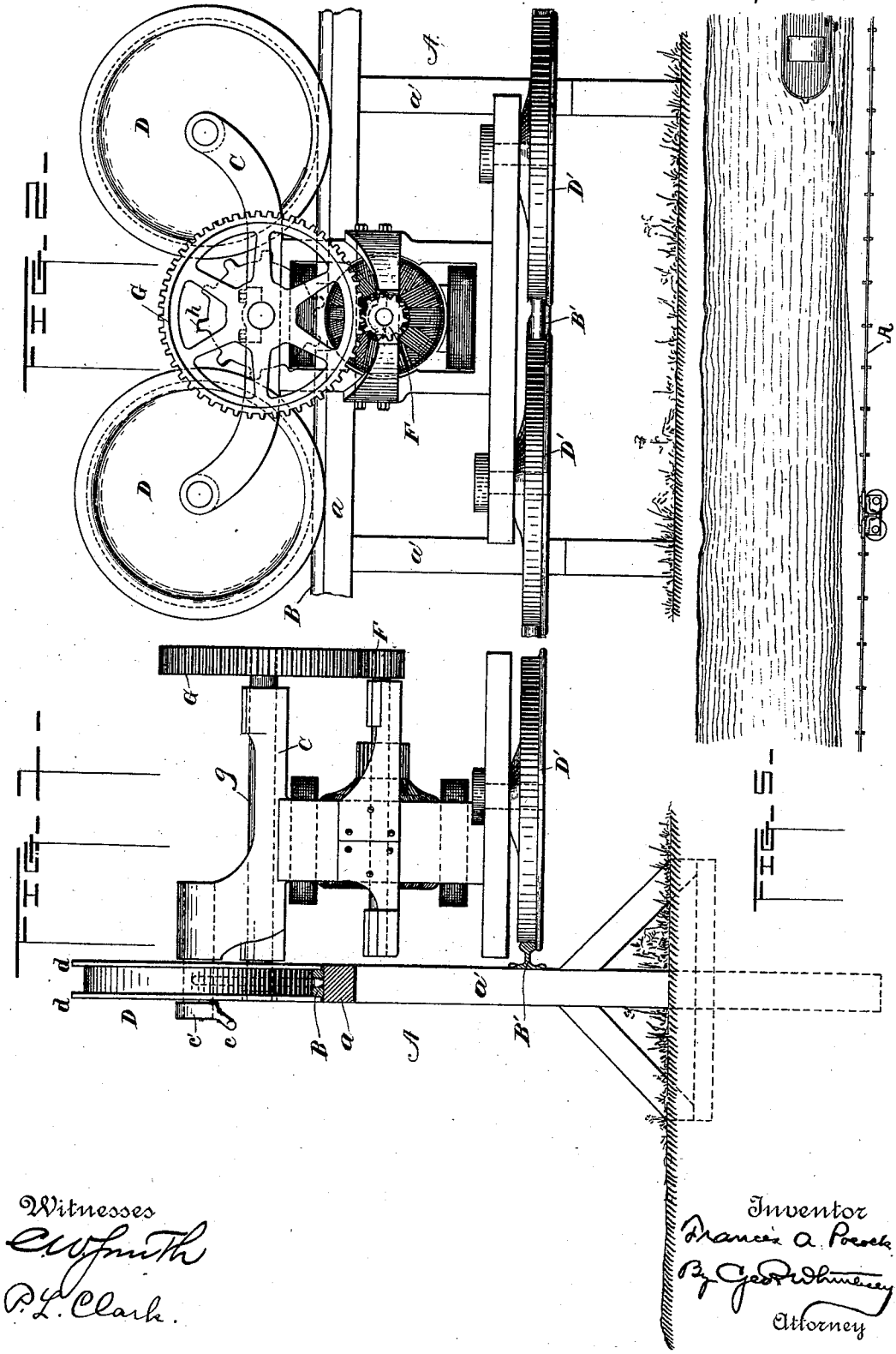
(No Model.) 2 Sheets—Sheet 1.

F. A. POCOCK.

TRACTION DEVICE FOR CANALS.

No. 521,865. Patented June 26, 1894.



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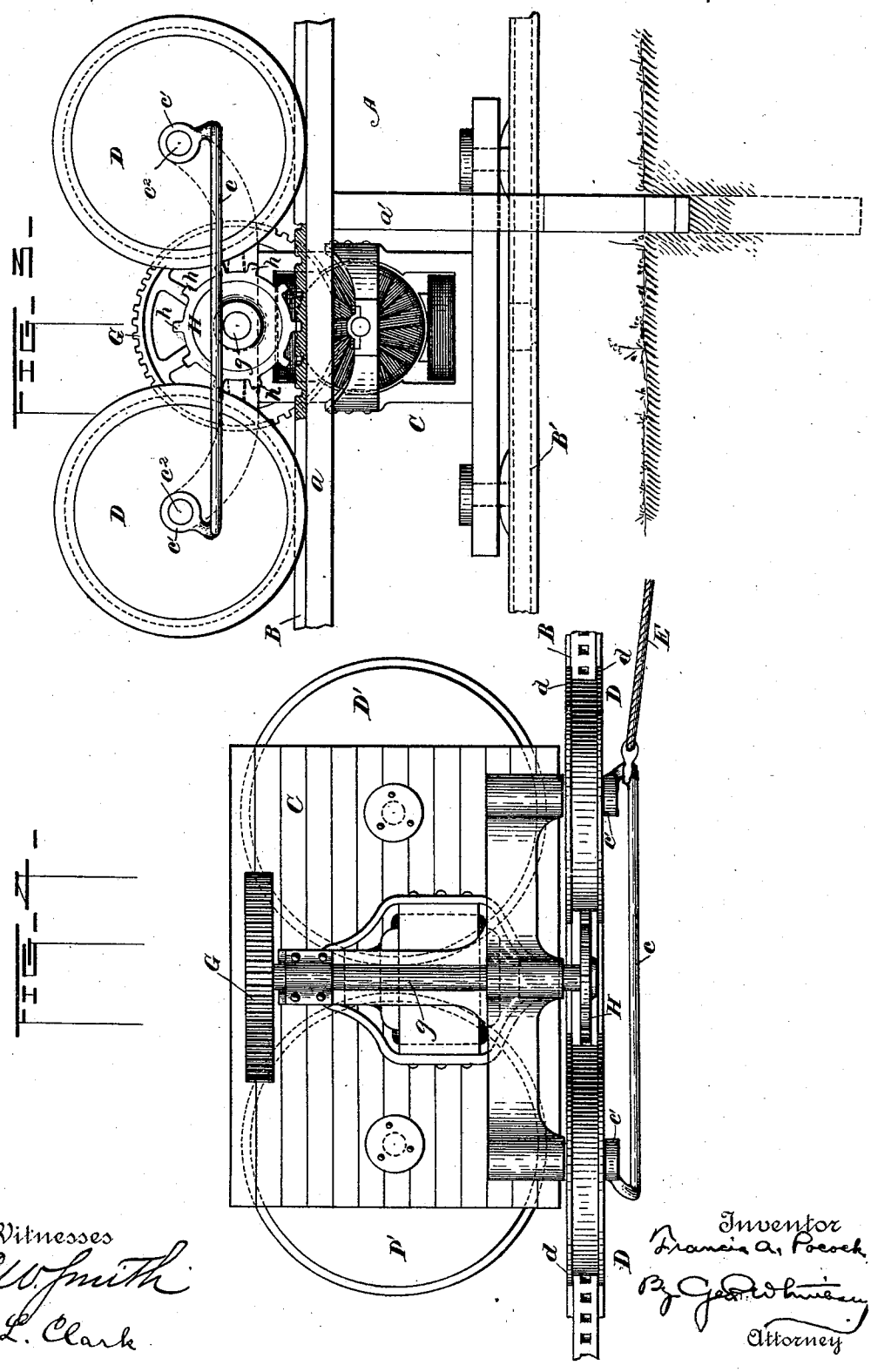

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UNITED STATES PATENT OFFICE.

FRANCIS AGNEW POCOCK, OF SCRANTON, PENNSYLVANIA.

TRACTION DEVICE FOR CANALS.

SPECIFICATION forming part of Letters Patent No. 521,865, dated June 26, 1894.

Application filed February 13, 1893. Serial No. 462,175. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS AGNEW POCOCK, a subject of the Queen of Great Britain, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Traction Devices for Canals; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to towing and its object is to further develop canals as means of transport, by placing them more nearly on the footing of the railroads which have so generally supplanted them.

The invention consists in certain appliances enabling the use of an electric locomotive to haul the canal boat or boats, a suitable track being built for the locomotive to run on alongside the waterway.

I am aware that it has been proposed to drive a canal boat by means of a propeller, actuated by an electric motor on the boat, the motor taking its current from a trolley wire erected above the canal. But this method is objectionable for several reasons, among which are the destructive wash from the propeller; the difficulty of keeping the canal boat within the narrow limits of the trolley, especially in a wind; the high resistance of the circuit if the return wire is laid in the bottom of the canal, and the constant danger of breaking it if it is lifted off the bottom by an under-running contact wheel on the boat. I prefer, therefore, to place the motor on a truck of special construction traveling along a railway by the side of the canal, and towing the boat by the ordinary tow line, in short, to substitute an electric locomotive for the mule.

In the drawings, Figure 1 is a sectional elevation of an elevated track and an electric locomotive suitable for the purposes of my invention. Figs. 2 and 3 are side elevations of the same. Fig. 4 is a plan view, and Fig. 5 is a plan of a portion of a canal equipped with my invention.

The track A is laid along the line of the canal, preferably about six feet from the bank, but this distance will vary with circumstances. When necessary, the track may be built out over the water. It is preferably an elevated track, having a single rail B, laid along the top of a stringer *a*, which is supported on posts *a'* set in the ground and suitably braced. A side bearing rail B' is fastened to the posts a suitable distance below the rail B, the bearing rail being on the outside of the track, that is, the side away from the canal.

The locomotive truck consists of a suitable frame C in which are journaled upright suspension wheels D resting on the top rail B, and horizontal or inclined guide or bearing wheels D', resting against the side rail B'. The suspension wheels D have double flanges *d*, to prevent their leaving the rail, and to resist the derailing tendencies on the one hand of the heavy motor and frame, and on the other hand of the drag of the tow line E, which is attached to the drawbar *c* on the water side of the locomotive. The drawbar is provided at each end with a boss *c'* fastened upon the ends of the stationary journals c^2 of the suspension wheels D.

In the truck frame is mounted the electric motor, whose armature shaft is connected preferably by reduction gearing, such as the pinion F meshing with a spur gear G, with a shaft *g* journaled in the frame C. The outer end of the shaft *g* lies over the top rail B, and carries a wheel H having teeth *h* which mesh with a rack forming part of or attached to the top rail B. In the drawings, the top rail is shown as provided with a series of holes or recesses into which the teeth of the wheel H enter.

The motor may be either a continuous current, alternating current, or multiphase current motor, and of any suitable make and size. The rails B B' preferably form the supply and return conductors for the electric current, which is taken off either by the wheels D D' or by special collecting devices, as desired. When necessary, separate conductors are used. The motor is controlled by the usual switches and rheostat, operated by a man who rides on the motor. These controlling devices are of the ordinary make, and have not been shown, to avoid obscuring the drawings. Their arrangement and connections offer no difficulty to a person familiar with electric

railways. The locomotive hangs on the outside of the track, so that the strain on the tow rope tends to pull the locomotive over toward the canal. This tendency however is lessened by using a long tow rope—say two hundred feet or more—so that the angular pull will be quite small, at least on tangents. On sharp curves, there is more danger, but the drawbar hangs low enough to have at least but a small tilting movement. If, however, an abnormal strain on the tow rope should tilt the locomotive enough to cause the wheels D′ to leave the side bearing rail, the electrical circuit will be broken and the motor will instantly stop, thus relieving the pull on the tow rope and preventing the locomotive from being tipped off the track.

To permit the boats to pass each other, turn outs are provided at convenient points: or in lieu of turnouts, the locomotives on meeting exchange tow lines, and then each returns to its starting point or until another locomotive is met.

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

1. A traction device for a canal or other water way, consisting of an elevated structure adjacent thereto, an upper supporting rail and a side bearing rail carried by said structure but insulated from each other and electrically continuous, so as to serve as working conductors, and an electric locomotive hung upon the upper rail and steadied by the side rail, and comprising current collecting devices bearing upon said rails, substantially as described.

2. A traction device for a canal or other water way, consisting of an elevated structure adjacent thereto, an upper supporting rail thereon, a side bearing rail on the side farther from the water, said rails being electrically continuous and serving as working conductors, and an electric locomotive hung upon the upper rail with the greater part of its weight on the side farther from the water, and comprising current collecting devices bearing upon the rails, substantially as described.

3. A traction device for a canal or other waterway, consisting of an elevated structure adjacent thereto, an upper supporting rail thereon, a side bearing rail on the side farther from the water, said rails being electrically continuous and serving as working conductors, an electric locomotive hung upon the upper rail with the greater part of its weight on the side farther from the water, and comprising current collecting devices bearing upon the rails, and a draw bar located above the supporting rail on the side nearer the water, substantially as described.

4. In a traction device for a canal or other water way a locomotive adapted to run on a track adjacent to said canal, and a longitudinal draw bar arranged on that side of the locomotive next the canal with its ends symmetrically disposed on each side of the driving wheel, in combination with a tow rope adapted to be attached to either end of said draw bar, substantially as described.

5. A traction device for a canal or other water way, consisting of an elevated railway adjacent thereto, rigid working electric conductors incorporated in said railway, an electric locomotive supported on said railway, and comprising current collecting devices bearing against said conductors, and a drawbar on said locomotive arranged above said railway and at one side of the supporting wheels, whereby an abnormal strain on said drawbar will separate one of said collecting devices from its rigid conductor, and thus automatically break the electrical circuit, substantially as described.

6. A traction device for a canal or other water way, consisting of a single rail elevated railway adjacent thereto, rigid working electric conductors incorporated in said railway, an electric locomotive supported on said rail and capable of being tilted laterally thereon, and comprising current collecting devices bearing against said conductors, and a drawbar on said locomotive arranged above said rail and at one side of the same, whereby an abnormal strain on said bar will tilt the locomotive and separate one of said collecting devices from its rigid conductor, thereby breaking the electrical circuit, substantially as described.

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

FRANCIS AGNEW POCOCK.

Witnesses:

M. F. SANDO,

JOHN M. CORBETT.