

(No Model.)

2 Sheets—Sheet 1.

C. N. DUTTON.
TROLLEY POLE.

No. 586,809.

Patented July 20, 1897.

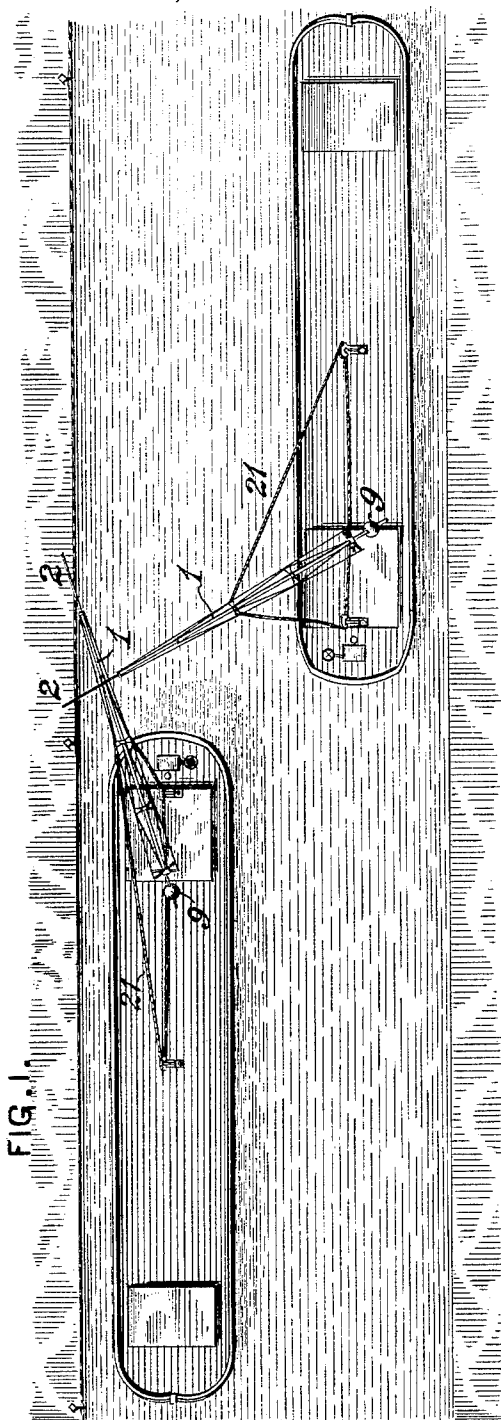


FIG. 1.

WITNESSES:

T. J. Hogan.
J. C. Gailner

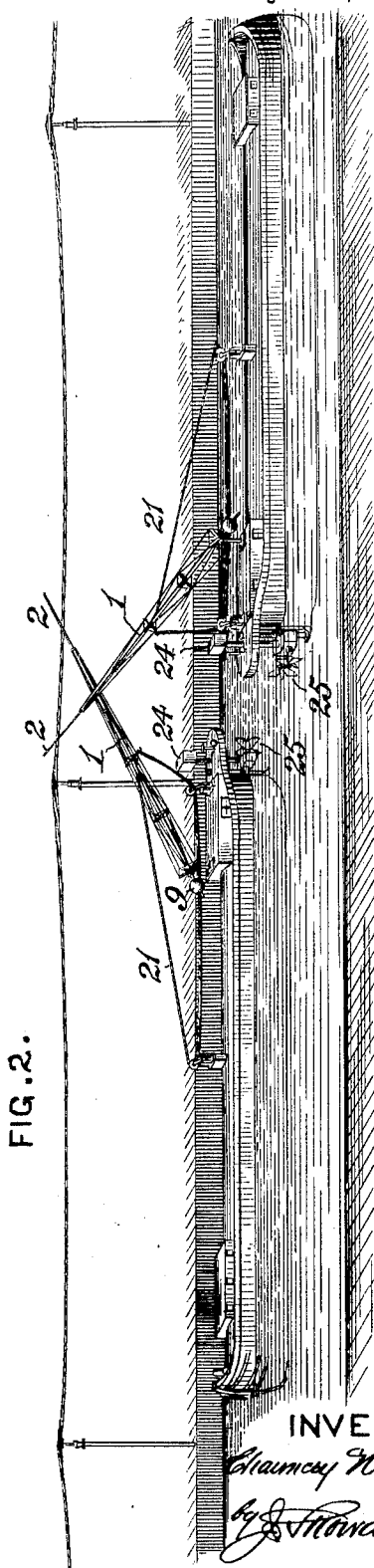


FIG. 2.

INVENTOR:

Chauncey W. Dutton.
J. H. Andrew Bell
att'y

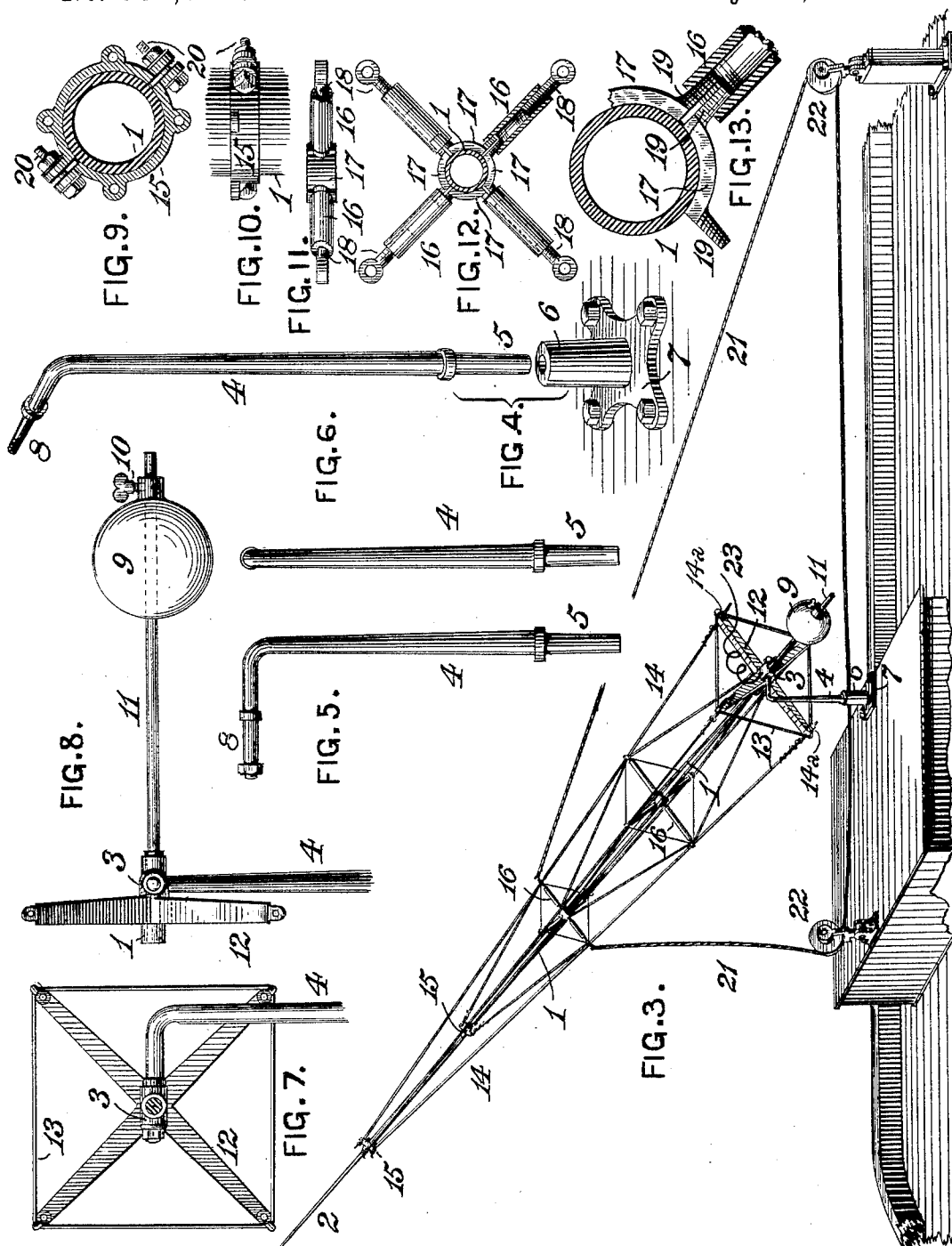
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No. 586,809.

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WITNESSES:

T. J. Hogan.
J. C. Gaither

INVENTOR:

Chauncey N. Dutton,
by J. Howard Bell
att'y.

UNITED STATES PATENT OFFICE.

CHAUNCEY N. DUTTON, OF NEW YORK, N. Y.

TROLLEY-POLE.

SPECIFICATION forming part of Letters Patent No. 586,809, dated July 20, 1897.

Application filed July 27, 1896. Serial No. 600,648. (No model.)

To all whom it may concern:

Be it known that I, CHAUNCEY N. DUTTON, of the city, county, and State of New York, have invented a certain new and useful Improvement in Trolley-Poles, of which improvement the following is a specification.

The object of my invention is to provide a trolley-pole which shall be specially and desirably applicable in connection with the electrical propulsion of vessels upon canals or other water-courses in order that vessels using the same trolley wire or conductor may pass freely when going in opposite directions and that a vessel may vary its position relatively to a trolley-wire, so as to follow such course on the canal as may be best adapted for navigation.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a plan view of a portion of a canal, showing two electrically-propelled canal-boats having my invention applied traversing in opposite directions; Fig. 2, a view in perspective of the same; Fig. 3, a similar view, on a larger scale, of a trolley-pole embodying my invention as applied to a boat; Fig. 4, a similar view of the shaft of the universal-joint mechanism and its support; Figs. 5 and 6, views in elevation of said shaft, seen in planes at right angles one to the other; Fig. 7, a front view of the end frame of the trolley-pole; Fig. 8, a side view of the same, showing also the counterbalance and its arm; Fig. 9, a transverse section through the trolley-pole, showing one of the clamps for the attachment of the truss-wires; Fig. 10, a side view of the clamp of Fig. 9; Fig. 11, a similar view of two struts and their connections; Fig. 12, a transverse section through the trolley-pole, showing a set of struts connected thereto; and Fig. 13, a similar section, on a larger scale, showing a portion of a single strut in longitudinal section.

In order that the electrical propulsion of canal-boats may be properly and desirably effected, it is necessary, among other things, that provision should be made for variation of the distance laterally of the boat from the trolley wire or conductor, as required from time to time in changing the course of the boat to pass other vessels or avoid shoals or

obstructions, as well as of variation of the vertical distance from the deck of the boat to the trolley, as in passing under bridges or through locks. To this end I provide a trolley-pole which is made as long as may be required to reach the trolley-wire when the boat is at the maximum distance therefrom permitted by the width of the canal and which is also made as light as is consistent with strength. The main body of the pole is made of bamboo or of other light tubulous or hollow material or of light metal tubing, and in order to give it the requisite rigidity it is trussed by a system of wires and struts. It is hung upon a universal joint, so that its end which makes contact with the conductor may move into any point in a semisphere which it is adapted to describe about the universal joint as a center. The trolley-pole rests and bears on the conductor by the excess of its outboard or overhanging weight, which excess of weight may be graduated as required by means of an adjustable counterbalance.

As shown in the drawings, the body of the trolley-pole is composed of light tubular sections 1, having a metal tip or outer end section 2, which makes contact with the conductor. The opposite or inner end of the trolley-pole is supported upon a universal-joint mechanism, a suitable and preferred form of which, as shown, is of the following construction: A transverse socket 3, fixed upon the inner end of the trolley-pole, receives a horizontal journal 8, formed at the upper end of a vertical support 4, having a journal 5 at its lower end, which is fitted to rotate in a socket or bearing 6, fixed to a bed-plate 7, which is in turn secured to the deck or frame of the boat on which the trolley-pole is applied. The trolley-pole is free to move about the axis of the horizontal journal 8 and to move with the support 4 about the axis of the vertical journal 5 of the latter. A true universal-joint system, admitting of the movement of the outer end of the trolley over a semisphere, is thus provided.

The socket 3 is provided with a central prolongation in line with the axis of the trolley-pole to receive a rod or bar 11, upon which a counterbalance 9 is secured adjustably, as by a set-screw 10. The outer section 2 of the

trolley-pole bears upon the trolley wire or conductor by the preponderance of the weight of the pole over that of the counterbalance 9, which preponderance may be increased or diminished, as desired, by moving the counterbalance nearer to or farther from the horizontal socket 3. The relation of the trolley-poles of two canal-boats traveling in opposite directions is clearly shown in Figs. 1 and 2, from which it will be seen that the trolley-pole of the boat moving to the left passes under the trolley-pole of the boat moving in the opposite direction and lifts it from the conductor, to which it is returned by the preponderance of its outboard weight as soon as the other trolley passes clear of it.

Rigidity is imparted to the trolley-pole by a truss system, a simple and desirable form of which, as shown in the drawings, is of the following construction: A light frame or set of arms 12, braced by a rod or wire 13, is fixed upon the trolley-pole adjacent to the socket 3 at its inner end, from the outer ends of which arms 12 truss-wires 14 extend to clips or collars 15, which are clamped upon the pole by bolts 20 at one or more points in its length, one or more sets of truss-wires being employed, as preferred. The truss-wires 14 are strained to the proper tension by struts 16, connected to the trolley-pole by clamps 17 and carrying eyebolts 18 on their outer ends, through the eyes of which the truss-wires 14 are passed. The struts 16 are of tubular form, being preferably made of short pieces of gas-pipe, and the clamps 17 are sectional, each fitting on a portion of the outer cylindrical surface of the trolley-pole and having on each side slightly less than one-half of a tapered and screw-threaded stem 19. Internal tapered screw-threads are cut upon the inner ends of the struts 16, each of which is thereby connected to two adjacent half-stems 19, a complete set of which is clamped upon the pole by the connected struts, as shown in Fig. 12, the specific means of connection being more fully shown in Fig. 13. The outer ends of the struts are internally threaded to engage screw-threads on the eyebolts 18, by the adjustment of which the effective length of the struts may be varied as required for properly straining the truss-wires 14, which may be further strained by nuts 14^a on their ends bearing against the arms 12.

The trolley-pole is adjusted and maintained in proper angular relation to the axis of the boat by a cord 21, passing around sheaves 22 22,

journaled on the deck of the boat in front and in rear, respectively, of the standard 4, and a wire 23 is led from the trolley-pole to the electric motor 24, by which the propeller or propellers 25 of the boat is or are actuated.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, substantially as set forth, of a trolley-pole, a fixed socket, a vertical support journaled at its lower end in said socket, and having a horizontal journal at its upper end, a transverse socket fixed to the trolley-pole adjacent to its inner end and fitting on said horizontal journal, and a counterbalance connected to the trolley-pole on the side of its transverse socket opposite its outboard end.

2. The combination, substantially as set forth, of a trolley-pole, a universal-joint system on which said pole is journaled, in position to allow it to bear, adjacent to its free or outboard end on a trolley wire or conductor, and a cord connected at each of its ends to the trolley-pole and passing around intermediate sheaves journaled in bearings in front and in rear of the journal of the universal-joint system.

3. The combination, substantially as set forth, of a tubular or tubulous bodied trolley-pole, a truss-frame fixed thereon, truss wires or rods connected to said truss-frame and to the body of the trolley-pole, and adjustable struts connected to the body and to the truss-wires.

4. The combination, substantially as set forth, of a tubular or tubulous bodied trolley-pole, a truss-frame fixed thereon, truss wires or rods connected to said truss-frame and to the body of the trolley-pole, sectional clamps fitting the body and carrying threaded stem-sections, and struts engaging said stem-sections and carrying eyes through which the truss-wires are passed.

5. The combination, substantially as set forth, of a tubular or tubulous bodied trolley-pole, a truss-frame fixed thereon, truss wires or rods connected to said truss-frame and to the body of the trolley-pole, sectional clamps fitting the body and carrying threaded stem-sections, struts engaging said stem-sections, and bolts threaded to engage with the outer ends of the struts and carrying eyes through which the truss-wires are passed.

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Witnesses:

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