

(No Model.)

4 Sheets—Sheet 1.

A. L. RICH.

SYSTEM OF SUPPLYING WATER TO LOCOMOTIVES.

No. 560,822.

Patented May 26, 1896.

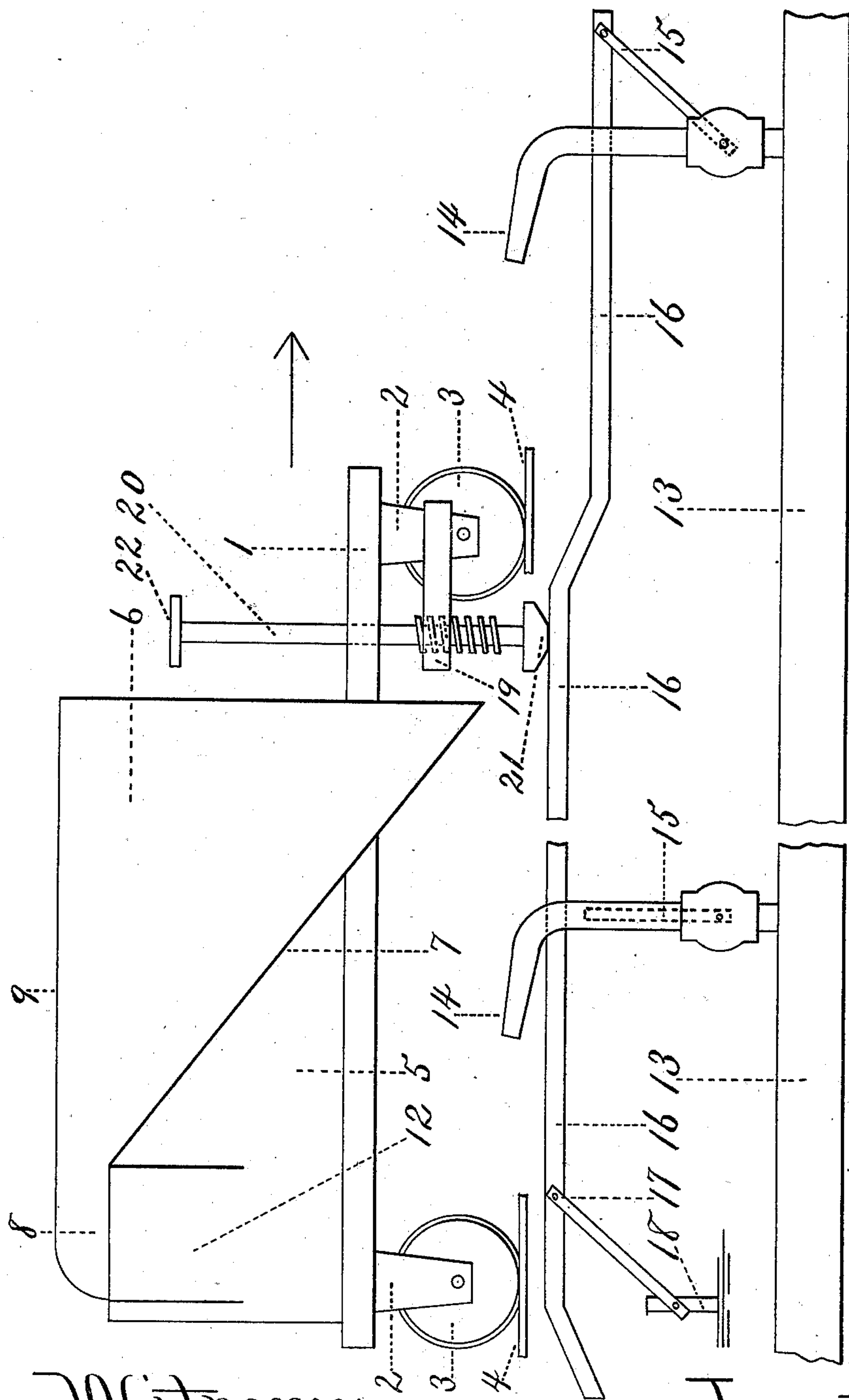


Fig. 1 -

Witnesses:

James B. Crooks.
Joseph M. Kelly.

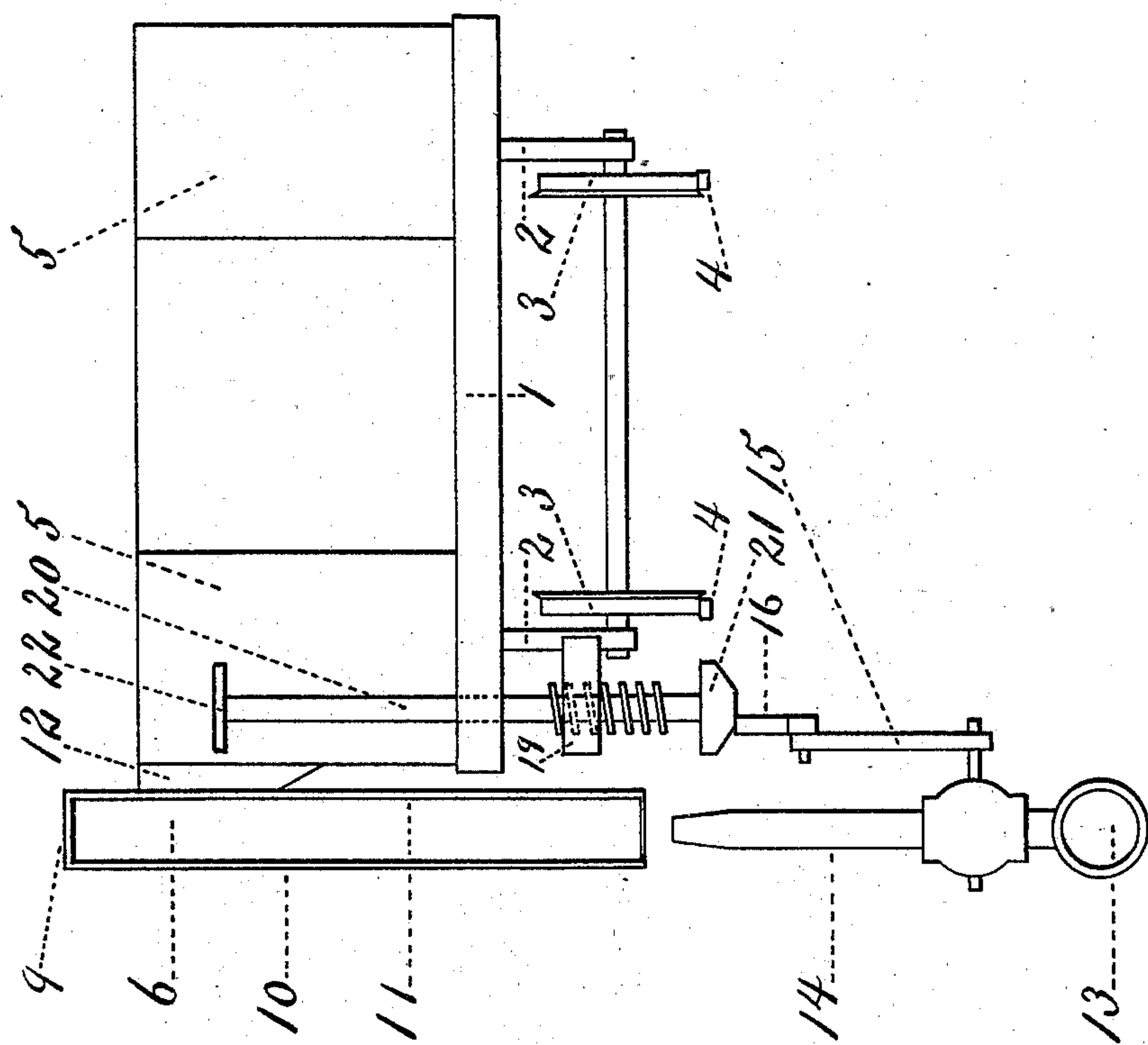
Inventor:

Abraham L. Rich

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Witnesses:
James B. Brooks.
Joseph M. Kelly.

Inventor:
Abraham L. Rich.

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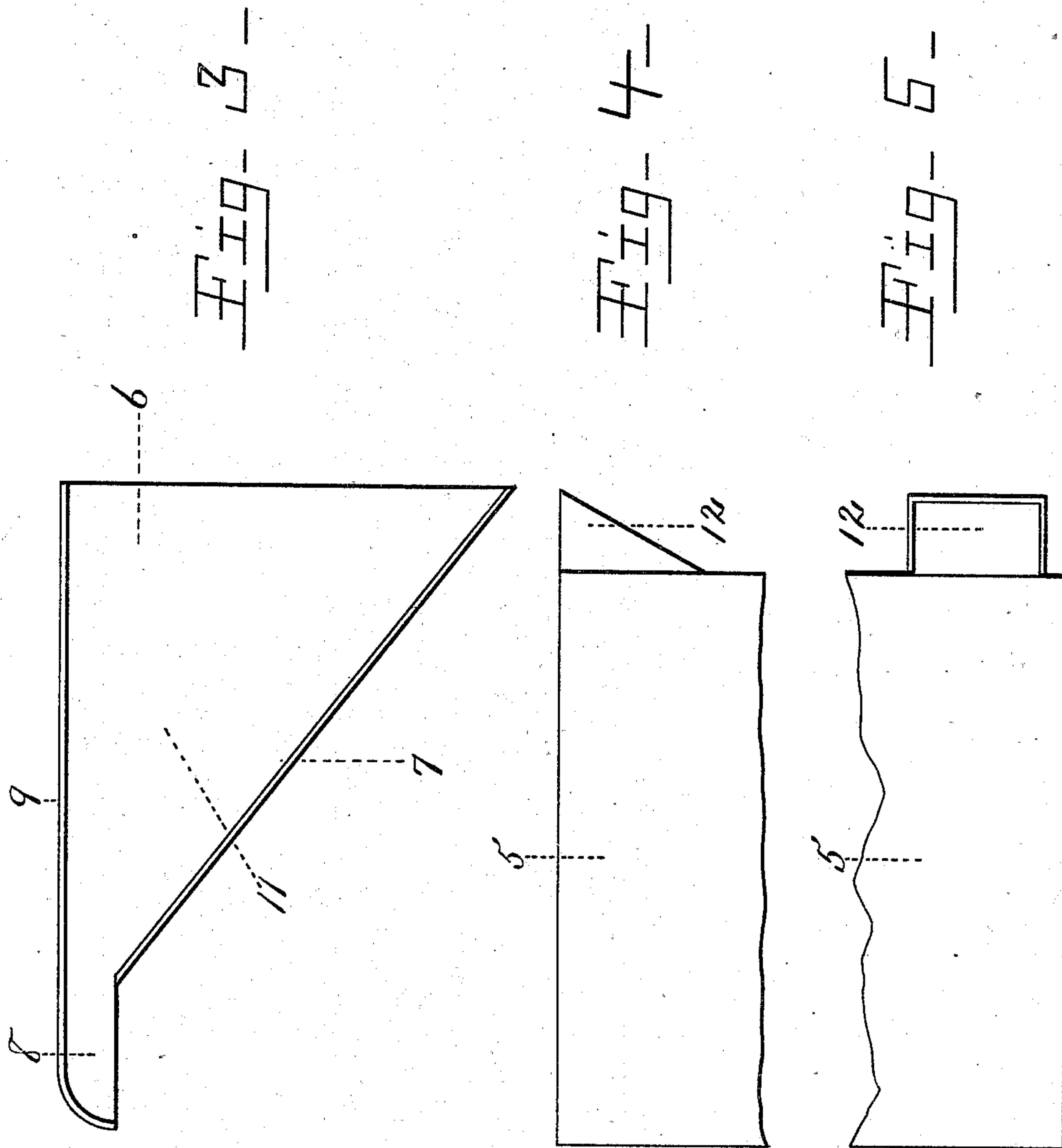
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James B. Brooks.
Joseph M. Kelly.

Inventor:
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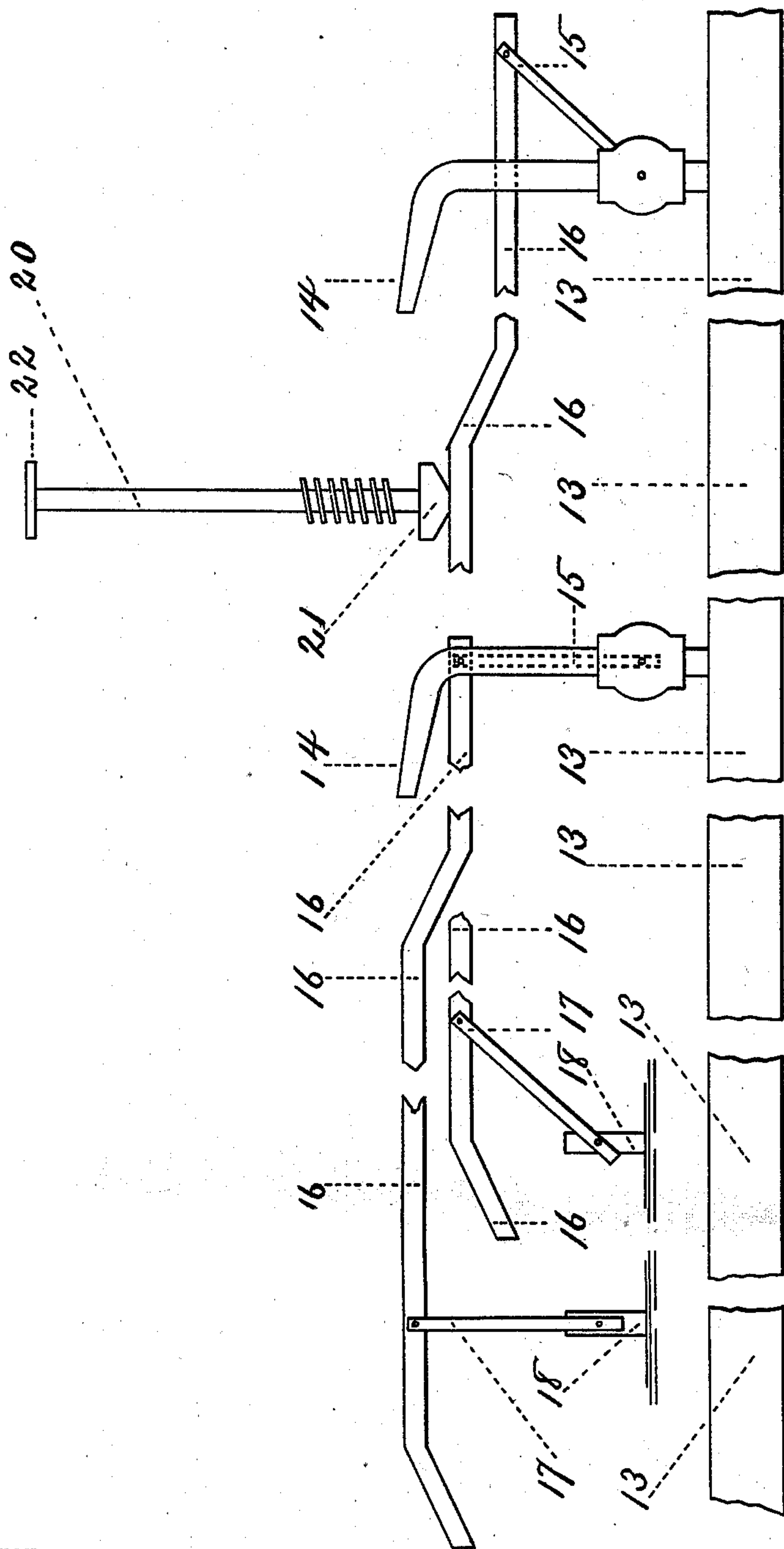


Fig. 6-

Witnesses:

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Thomas M. Dickie

Inventor:

Abraham L. Rich.

UNITED STATES PATENT OFFICE.

ABRAHAM L. RICH, OF PITTSBURG, PENNSYLVANIA.

SYSTEM OF SUPPLYING WATER TO LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 560,822, dated May 26, 1896.

Application filed December 30, 1895. Serial No. 573,754. (No model.)

To all whom it may concern:

Be it known that I, ABRAHAM L. RICH, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful System of Supplying Water to Locomotives, of which the following is a specification, accompanied by drawings, in which—

Figure 1 is a side view of a locomotive tank or tender and associated apparatus constructed for supplying water and storing the same. Fig. 2 is an end view of Fig. 1. Figs. 3, 4, and 5 are details. Fig. 6 also is a detail, said figure being a side view.

My invention relates to means for supplying water to locomotives.

Referring to the drawings, 1 represents the car or motor-frame supported by pedestals 2 and 2 and wheels 3 and 3, resting on the usual bearing-rails 4 of the track. Suitably disposed on the car or motor is a water-reservoir 5. Attached to side of the water-reservoir 5 is a water-inductor 6, disposed longitudinally to the track and extending to a height above the top of the water-reservoir 5. The water-inductor 6 has an upwardly-inclined bottom 7, extending to the delivery portion 8 of said water-inductor, said bottom terminating at about the top of the water-reservoir 5. The top 9 of the water-inductor 6 extends to the extreme end of the delivery portion 8 of said water-inductor and has preferably an oblique angular or curved termination, thereby constituting a deflector-surface, whereby the water is diverted into the water-reservoir 5 without, as hereinafter stated, said water-inductor appreciably decreasing the velocity of said water, and consequently interposing no considerable resistance thereto nor causing accumulation thereof or pressure therein while being inducted to said water-reservoir. The said water-inductor 6 has an open endwise entrance, said entrance being preferably substantially coextensive with the height of said water-inductor. The water-inductor 6 has preferably a height of, say, eight or nine feet, more or less. By an "endwise" entrance I mean an entrance extending throughout the end of the water-inductor 6. By an "open" entrance I mean an entrance which is open throughout said entrance, an entrance which is open continuously for the induction of the

water, and an entrance which is also open continuously to the atmosphere. Further, by an "open" entrance I mean an entrance which is open for the induction of the water and that said entrance is also open to the atmosphere while the water is being inducted. Within said water-inductor 6, provided with the open endwise entrance described above, there can be no fluid-pressure such as can be produced in a closed vessel or in a chamber rendered substantially fluid-tight by a substantially fluid-tight connection or union of separable members.

The water-inductor 6 is, as hereinbefore stated, to be hereinafter referred to, constructed so as to induct the water to the water-reservoir 5 without said water-inductor appreciably decreasing the velocity of said water, and consequently interposing no considerable resistance thereto nor causing accumulation thereof or pressure therein while being inducted to said water-reservoir.

The detail drawing, Fig. 3, further illustrates the above, said figure being a side view of the water-inductor 6 with the outer side wall 10 removed, showing the inner side wall 11.

The water-reservoir 5 can have a projection 12 in its side, as shown in Figs. 1 and 2, and further illustrated in the detail drawings, Figs. 4 and 5, Fig. 4 being an end view of a portion of said water-reservoir and Fig. 5 being a top view of a portion of said water-reservoir where the delivery portion 8 of the water-inductor 6 can discharge the water into said water-reservoir. Suitably disposed and extending along the track a desired distance is a supply-conductor 13, through which the water is transmitted under pressure. At regular intervals along said supply-conductor 13 are supply-nozzles 14, preferably tapering or conical in shape, the eduction-orifices thereof terminating at about the height of the bearing-rails 4 of the track. Said supply-nozzles 14 are constructed so as to emit the water longitudinally to the track, to the car or motor 1 and to the water-reservoir 5, and transversely to the height of the water-inductor 6. Said supply-nozzles are provided, preferably, with self-closing supply-nozzle valves having valve-rods 15, and said valve-rods 15 are pivotally attached to one end of throttle-bars 16, the

other end of said throttle-bars 16 being pivotally attached to connecting-rods 17, the latter being pivotally attached also to supports 18. Said supply-nozzle valves, valve-rods, 5 throttle-bars, connecting-rods, and supports or their equivalents constitute valve mechanism constructed to be operated by valve-operating mechanism described below.

Attached to a pedestal 2 is a base-block 19, 10 through which passes a screw-threaded throttle-rod 20, the lower end of said throttle-rod terminating in a suitably-formed throttle-rod foot 21. To the upper end of the throttle-rod 20 is attached a throttle-wheel 22.

15 The members described in the above paragraph or the equivalent of said members constitute valve-operating mechanism constructed to operate the valve mechanism hereinbefore described.

20 The supply-nozzles through which the water is emitted can be disposed at intervals of, say, fifteen, thirty, forty, or fifty feet, or any desirable distance. The cessation of the emission of water from any supply nozzle or nozzles 25 is coincident with the beginning of the emission of water from the succeeding supply nozzle or nozzles.

The water in the supply-conductor 13 can be maintained at any desirable pressure—say 30 ten, fifteen, two hundred, or more pounds to the square inch.

The operation of my invention as above described is as follows: On revolving the throttle-wheel 22 throttle-rod 20 and throttle-rod 35 foot 21 are depressed, and said throttle-rod foot coincidently with the advance of the car or motor successively depresses the throttle-bars 16, thereby, through the medium of the valve-rods 15, connecting-rods 17, and supports 18, opening the supply-nozzle valves, enabling water to be emitted from the eduction-orifices of the supply-nozzles to which said valves are attached, and enter the water-inductor 6, whence it is inducted to the water-reservoir 5. The supply-nozzles can have a 45 length that will permit of an efficient angular decrease of the lateral dimensions thereof—say from one to six or more feet—the induction-orifices having sufficient area to introduce enough water to produce desired velocity 50 at the eduction-orifices—say a velocity five, ten, fifteen, or more times greater than would be attained if discharged through a pipe of uniform area. Supply-nozzles, shaped as 55 above described, would be capable of emitting the water at a high velocity, enabling it to pass therefrom to the water-reservoir with a minimum loss thereof.

The apparatus can be arranged singly or 60 plurally.

The supply-conductor 13 and members connected therewith can be disposed along the track any desired distance—say from one or 65 two hundred to ten or twelve hundred or more feet.

The valve-operating mechanism can be adjusted to take water at each supply-station

and can be arranged to operate automatically, taking water when the amount thereof in the water-reservoir is the minimum amount intended to be carried and discontinuing the 70 reception therein when the amount therein has attained the maximum amount intended to be carried therein, or can be worked manually. 75

The water-inductor 6 and the supply-nozzles 14 are disposed in different planes, so that one can pass the other without necessitating the movement of either out of its plane.

By reason of the water-inductor 6 being on 80 a different plane from the supply-nozzles 14 said water-inductor passes out of the inductive range of any particular supply-nozzle before reaching said supply-nozzle. The passage of the water-inductor 6 out of the inductive range of any particular supply-nozzle 85 is coincident with its passage into the inductive range of the succeeding supply-nozzle, and the valve mechanism is constructed so as to conform to this action. 90

By the use of supply apparatus, as hereinbefore set forth, locomotives can be supplied with water while moving at any speed of which they are capable or when remaining 95 stationary on supply-stations.

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

1. A locomotive or car having a water-reservoir thereon, and a water-inductor having 100 an open endwise entrance, in combination with a supply-conductor and a supply-nozzle constructed so as to emit water longitudinally to the track, whereby water can be supplied without stopping said locomotive or car, substantially as herein set forth. 105

2. A locomotive or car having a water-reservoir thereon, a water-inductor having an open endwise entrance, and valve-operating mechanism, in combination with a supply-conductor and a supply-nozzle constructed so 110 as to emit water longitudinally to the track and provided with valve mechanism operated by said valve-operating mechanism, whereby water can be supplied without stopping said locomotive or car, substantially as herein set 115 forth.

3. A locomotive or car having a water-reservoir thereon, and a water-inductor having an open endwise entrance, in combination 120 with a supply-conductor and a series of supply-nozzles constructed so as to emit water longitudinally to the track, whereby water can be supplied without stopping said locomotive or car, substantially as herein set 125 forth.

4. A locomotive or car having a water-reservoir thereon, a water-inductor having an open endwise entrance, and valve-operating mechanism, in combination with a supply-conductor and a series of supply-nozzles constructed so as to emit water longitudinally to the track and provided with valve mechanism operated by said valve-operating mech- 130

anism, whereby water can be supplied without stopping said locomotive or car, substantially as herein set forth.

5 5. A locomotive or car having a water-reservoir thereon, and a water-inductor having an open endwise entrance, said entrance also open to the atmosphere while the water is being inducted, in combination with a supply-conductor and a supply-nozzle constructed so
10 as to emit water longitudinally to the track, whereby water can be supplied without stopping said locomotive or car, substantially as herein set forth.

6. A locomotive or car having a water-res-

ervoir thereon, and a water-inductor having 15 an open endwise entrance, in combination with a supply-conductor and a supply-nozzle constructed so as to emit water longitudinally to the track, said water-inductor not in contact with said supply-nozzle, whereby water 20 can be supplied without stopping said locomotive or car, substantially as herein set forth.

ABRAHAM L. RICH.

Witnesses:

JAMES B. CROOKS,
JOSEPH M. KELLY.