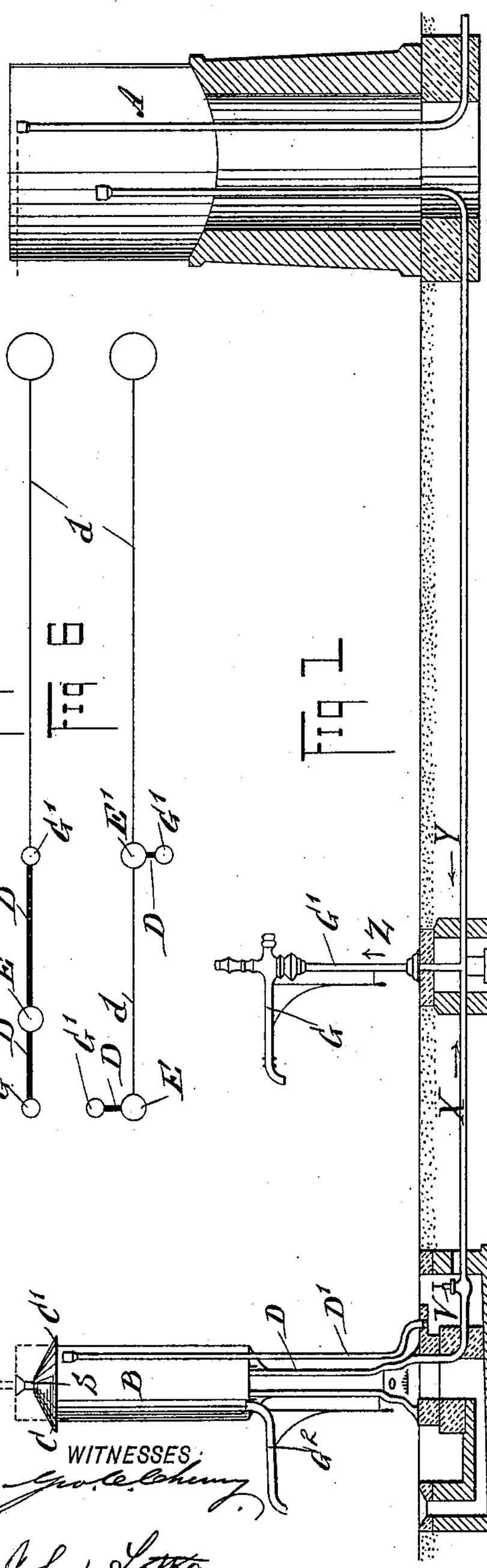
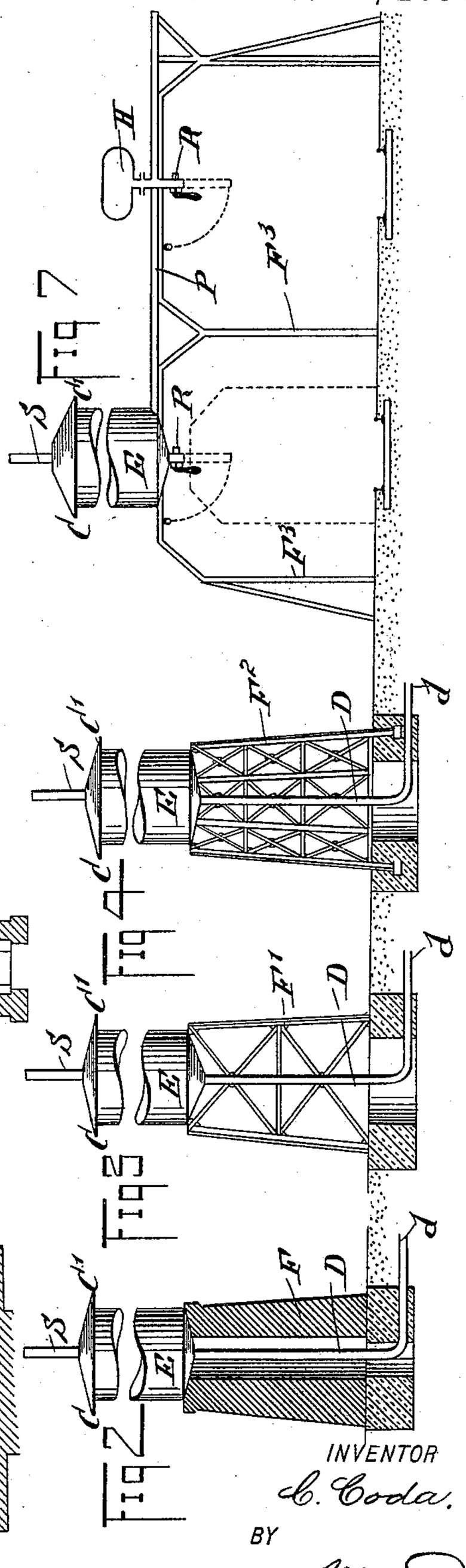
(No Model.)

C. CODA.

WATER ACCUMULATOR.

No. 594,326. Patented Nov. 23, 1897.





WITNESSES:
Geo. E. Sherry.
John Lotka

INVENTOR
C. Coda.
BY
Munn & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

CARLO CODA, OF CIVITA VECCHIA, ITALY.

WATER-ACCUMULATOR.

SPECIFICATION forming part of Letters Patent No. 594,326, dated November 23, 1897.

Application filed March 25, 1896. Serial No. 584,873. (No model.) Patented in Belgium November 30, 1895, No. 118,282; in Hungary December 7, 1895, No. 4,793; in Italy February 8, 1896, No. 316, and in Austria March 26, 1896, No. 46/1,155.

To all whom it may concern:

Be it known that I, CARLO CODA, civil engineer, a subject of the King of Italy, and a resident of the city of Civita Vecchia, in the Kingdom of Italy, have invented new and useful Improvements in Water-Accumulators, (for which I have obtained patents in Belgium, No. 118,282, dated November 30, 1895; in Hungary, No. 4,793, dated December 7, 1895; in Italy, No. 316, dated February 8, 1896, and in Austria, No. 46/1,155, dated March 26, 1896,) of which the following is a specification.

The invention relates to apparatus for supplying railway-locomotives with water, and has for its object to considerably reduce the time actually required for replenishing the water-supply of an engine. The stand-pipes used in many cases do not permit of filling the water-tank of an engine in less than five minutes on an average. Where the available time does not allow such ordinary stand-pipes to be used, water-towers of a capacity of about nine cubic meters are sometimes employed, and by this means the time required for one filling operation is reduced to less than one minute. In other cases time has been saved by increasing the diameter of the pipe and thereby the amount discharged per second. These two expedients, which practically are the only ones available at present, are very expensive; yet in view of the considerable advantages derived from the reduction of stoppages, especially in the transportation of goods or of troops, these expedients must be frequently resorted to. It has been my aim to provide an improved arrangement forming a water-accumulator and permitting a locomotive to receive its supply of water in a short time, the cost of the improved apparatus being considerably less than that of the devices hereinbefore mentioned.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is an elevation, with parts in section, of one form of construction of my improved apparatus. Fig. 2 is a sectional elevation of a water-tower constructed according to my invention. Figs. 3 and 4 are elevations of constructions similar to that represented in Fig. 2. Figs. 5 and 6 are diagrammatic plans showing two different ways of arranging the water-towers shown in Figs. 2, 3, and 4, and Fig. 7 is a cross-section of a double-track railway provided with an overhead water-feeding apparatus constructed according to my invention.

A is the reservoir containing the water to be supplied to the water-tower B, Fig. 1. As ordinarily arranged the water-tower is located at a lower level than the reservoir, and in consequence thereof a valve, as indicated at V, is required to cut off communication between the reservoir and the water-tower after each filling operation, since otherwise there would be a continuous escape of water through the overflow-pipe D′. To dispense with this valve and to entirely avoid the danger of leakage or outflow owing to an improper manipulation of the valve, I have extended the water-tower B upward to the level of the reservoir A. This may be done by simply continuing upward the cylindrical shell of the water-tower, as indicated by dotted lines in Fig. 1, or by applying to said shell an air-tight cap or cover C C′, provided with a vent-pipe S S′, extending upwardly beyond the level of the reservoir A. This pipe is ordinarily of less diameter than the supply-pipe D, and its upper end should be sufficiently above the level of the water in the reservoir A to prevent the water from being thrown out by a "hydraulic-ram" action. Besides dispensing with the valve V in the supply-pipe D, I secure the important advantage that water is supplied directly to the stand-pipe G′ and gooseneck G, communicating with the pipe D, both from the water-tower B and from the reservoir A, as indicated by the arrows X Y Z. With the ordinary arrangement of parts two water-towers at least are required for a double-track railway, while with my improvement one water-tower will suffice, the stand-pipe G′ and gooseneck G serving to supply water to locomotives on one

track and the gooseneck G^2, attached to the water-tower B, supplying water to engines on the other track.

As water-towers are expensive and often necessitate alterations of the track, I have also devised an arrangement whereby such water-towers are replaced by comparatively cheap auxiliary reservoirs, as shown in Figs. 2, 3, and 4. These auxiliary reservoirs are connected to the main reservoir A in the manner illustrated by Figs. 5 and 6, and more fully explained hereinafter. They are supported either on a column of masonry F, as in Fig. 2, or on trestle-work pillars F′ and F^2, as shown in Figs. 3 and 4, respectively. Each of the reservoirs E is provided with a vent-pipe S. The capacity of each reservoir should be about ten to fifteen cubic meters, so that two or even three engines on the same track may be supplied with water at the same time.

In Figs. 2 to 6, *d* D indicate the connecting-pipe between the main reservoir A and the auxiliary reservoirs E. It will be understood that these auxiliary reservoirs, like the water-tower B shown in Fig. 1, extend up to or beyond the level of the main reservoir A, and that the stand-pipes G′ or other discharge devices receive their supply both from the auxiliary reservoirs E and from the main reservoir A. The distance from each auxiliary reservoir to its corresponding stand-pipe will be so selected, taking into consideration the fact that water is supplied to the stand-pipes from the main reservoir also, that the same quantity of water will be discharged from each stand-pipe. When the supply of water per second is increased by the means hereinbefore described, it will not be necessary to replace the entire supply-pipe or connecting-pipe *d* even if it should be obstructed on account of long service, but it will suffice to put in new pipes, as indicated at D, between the auxiliary reservoir E and the stand-pipes G′ connected thereto. (See Fig. 5.) It is preferable to provide a separate auxiliary reservoir E for each of the stand-pipes G′ or goosenecks G, and in this case it will be sufficient to put in short new pipes D to connect each auxiliary reservoir to its stand-pipe G′. Since the supply of water delivered at the discharge-nozzle comes from the auxiliary reservoirs as well as from the main reservoir, the latter may be made of much less capacity than when it has to supply all the water, and consequently the cost of the apparatus is considerably reduced.

Another advantage of the new construction is that it obviates the danger of the water freezing in the reservoirs. The water is almost continuously in motion, the dimensions of the several parts being so selected that the time it takes to refill the auxiliary reservoirs will be approximately equal to the smallest interval of time between two succeeding trains. Where a much longer interval occurs between two successive operations of the water-supply apparatus, congelation may be prevented by continuously withdrawing a small quantity of water from the reservoir. This water may be used for some secondary purpose or it may be pumped back into the reservoir A. This simple means of preventing congelation is not applicable to the ordinary water-supply apparatus for locomotives. The upper part of the reservoirs in my improved arrangement is not obstructed by operating-levers or pipes or other devices, as is the case with water-towers as usually constructed.

As illustrated by Fig. 7, the auxiliary reservoir may be secured to an elevated structure F^3 extending above the track. The discharge-nozzles R instead of being secured to stand-pipes are arranged to depend either from the auxiliary reservoir E or from a transverse pipe P connected thereto. By means of this transverse pipe or of longitudinal pipes a series of discharge-nozzles may be readily fed from a single auxiliary reservoir E. The arrangement of the discharge-nozzle about centrally over the track is of particular advantage, as it enables the engineer to make the required connection with the discharge-nozzle or gooseneck, and thus a special attendant for operating the ordinary swinging discharge-nozzle is dispensed with.

To counteract the hydraulic-ram action, an air-chamber H may be employed, as shown at the right-hand portion of Fig. 7.

The invention is simple and inexpensive and permits of readily and quickly supplying engines with water either at stations or at any convenient point of the line.

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

1. A water-supply apparatus, comprising a main reservoir, an auxiliary reservoir or water-tower communicating therewith and provided with an air-tight cover continued upwardly by a vent-pipe beyond the level of the main reservoir, and a discharge-nozzle connected to the said reservoirs, substantially as described.

2. The combination of the main reservoir, the auxiliary reservoir communicating therewith, a gooseneck secured directly to the said auxiliary reservoir, and another gooseneck connected to the pipe by which the main reservoir is connected with the auxiliary reservoir, substantially as described.

3. A water-accumulator for feeding locomotives, comprising a main reservoir, an auxiliary reservoir permanently communicating with said main reservoir so that the water shall always stand at the same level in both, a vent-pipe on the auxiliary reservoir, and one or more goosenecks located at a lower level than said reservoirs, substantially as described.

4. The combination with the main reser-

voir, the auxiliary reservoir permanently communicating with said main reservoir so that the water shall always stand at the same level in both, a gooseneck intermediate between said reservoirs and connected thereto, and another gooseneck connected directly to said auxiliary reservoir, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 4th day of March, A. D. 1896.

CARLO CODA.

Witnesses:
CHARLES MOTT WOOD,
ROBERT BERNARD HANDLEY.