

No. 855,421.

PATENTED MAY 28, 1907.

W. H. WINKS.

INJECTOR.

APPLICATION FILED FEB. 18, 1907.

Fig. 1.

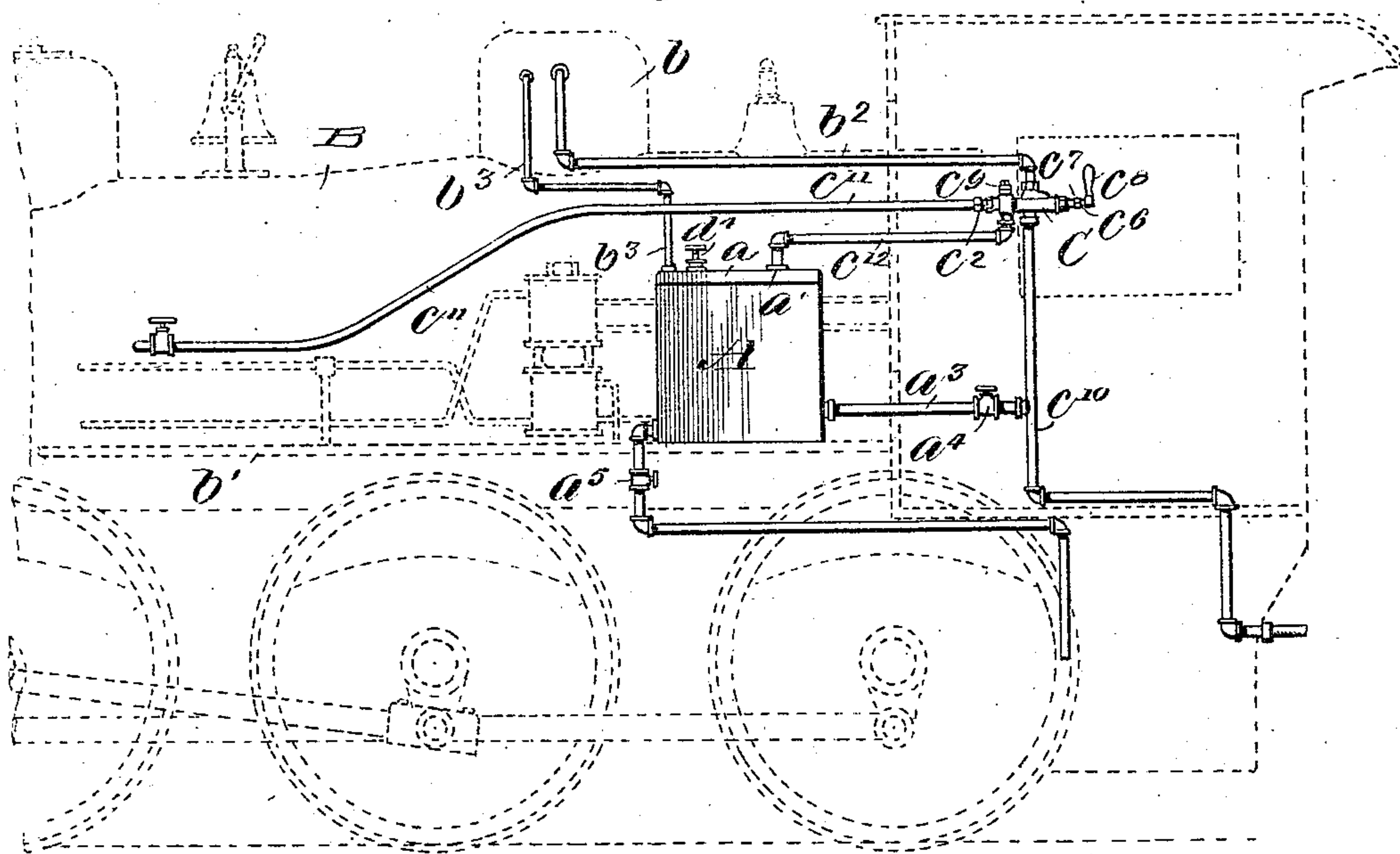
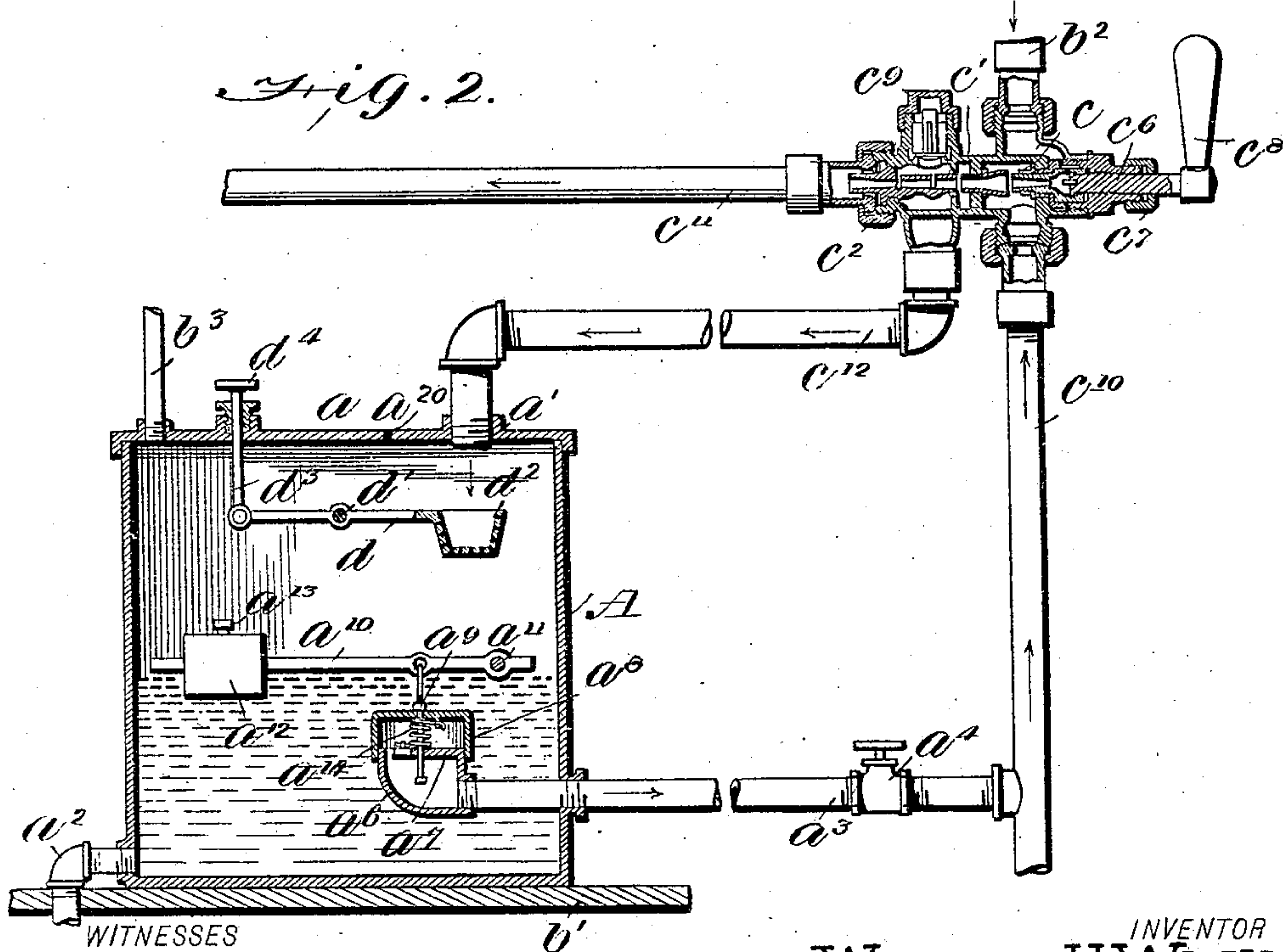


Fig. 2.



WITNESSES

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WALTER H. WINKS, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF
TO CHARLES W. CAVEY, OF BALTIMORE, MARYLAND.

INJECTOR.

No. 855,421.

Specification of Letters Patent.

Patented May 28, 1907.

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To all whom it may concern:

Be it known that I, WALTER H. WINKS, a citizen of the United States, and a resident of Baltimore, Maryland, have invented certain new and useful Improvements in Injector Attachments, of which the following is a specification.

My invention is an improvement in injector attachments and consists in certain novel constructions and combinations of parts hereinafter described and claimed.

Referring to the drawings forming a part hereof—Figure 1 is a diagrammatic view of a locomotive having an injector provided with my attachment, and Fig. 2 is a vertical section through the injector and the attachment.

In the operation of supplying water to a boiler by means of an injector, the steam is admitted gradually to the injector in order to properly start the water, which operation is called "priming." During this operation the water raised by the injector is discharged through the overflow pipe and with the ordinary injector is wasted.

During the operation of injecting the water there frequently occurs a "break" in the passage of the water from the tank to the boiler, the water being discharged through the overflow pipe instead of into the boiler. In such event the boiler is not supplied with the necessary amount of water which might give rise to serious consequences.

My invention is designed to obviate both the above disadvantages, and for this purpose I provide a tank A connected with the overflow pipe of the injector C, the said tank being in the present instance arranged on the foot board *b* of the locomotive B although it is obvious that the tank might be arranged at any other convenient point.

The injector shown in the present instance is of the metropolitan type, the influx of steam being controlled by a valve *c*⁶ operated by the handle *c*⁸ and delivered through the steam jet *c*, and through the suction jet *c*⁷ where it meets the water entering by the supply pipe *c*¹⁰, the steam and water passing thence through the combining and delivery tube *c*² through the boiler pipe *c*¹¹ to the boiler. The admission of water to the overflow pipe *c*¹² is controlled by the overflow valve *c*⁴, access to the valve being obtained by means of the overflow cap *c*⁹.

The tank A is of suitable size and shape and is provided with a removable top *a* having an opening *a*¹ into which is threaded the overflow pipe *c*¹² of the injector. A pipe *a*³ connects the tank with the water supply pipe *c*¹⁰ of the injector, a valve *a*⁴ being arranged in said pipe. A casing *a*⁶ is connected with the end of the pipe *a*³ within the casing having an open top normally closed by a cap or valve *a*⁸. The valve *a*⁸ is connected by means of a link *a*⁹ with a lever *a*¹⁰ pivoted at *a*¹¹ within the casing, and provided upon the free end thereof with a float *a*¹², the float being slidably mounted upon the lever and retained in its adjusted position by means of the setscrew *a*¹³.

It will be evident from the description that when the water in the tank reaches a predetermined level the float will be elevated thus raising the cap and permitting the water to flow from the tank into the supply pipe *c*¹⁰ of the injector.

A spider *a*⁷ is arranged across the open end of the casing *a*⁶ and a spring *a*¹⁴ is connected with the valve and with the spider, the spring being of sufficient strength to resist the normal pressure of the water flowing through the supply pipe *c*¹⁰ of the injector whereby to prevent the opening of the valve by its pressure. The strength of the spring being equal to the pressure of the water in the supply pipe, the float will always act at the same level of water in the tank, without regard to the pressure in the pipe *a*³. The link *a*⁹ has nuts threaded thereon above and below the cap or valve, whereby to retain it in position and by adjusting the nuts the resistance of the spring may be varied.

The valved discharge pipe *a*⁵ leads from the tank to the ash pan, and to prevent freezing of the water in the tank a small pipe *b*³ leads from the steam dome *b* to the tank.

In operation when water in the tank reaches a predetermined level the valve *a*⁸ is lifted thus permitting the water to be withdrawn from the tank by the injector, thus preventing the wasting of the water which would otherwise be lost through the overflow pipe.

In order that the engineer may be notified when the injector "breaks," a telltale D is arranged in the tank, the said device comprising a lever *d* pivoted at *d*¹ within the casing and having at one end a perforated dish

d^2 , the said dish being arranged directly below the overflow pipe. The opposite end of the lever has connected thereto a link d^3 projecting upwardly through the top of the tank and provided on its free end with an indicator or signal d^4 of any suitable form. It is evident that when the injector "breaks" the flow of water through the overflow pipe filling the perforated dish will depress the end of the lever to which the dish is attached, thus lifting the link and the indicator and notifying the engineer that the injector is not working properly.

If for any reason it is not desired to make use of the tank the valve a^4 of the pipe a^3 is closed, and the water may be either retained in the tank or permitted to pass out through the pipe a^5 .

A vent opening a^{20} is arranged in the top of the tank to permit the passage of air to and from the tank.

I claim—

1. The combination with the injector, of a tank with which the overflow pipe thereof communicates, a pipe leading from the tank to the water supply pipe of the injector, a valve within the tank and normally closing said pipe, a lever pivoted within the casing, a link connecting the valve and the lever, a float on the lever, and a spring for holding the valve against the pressure of the water passing through the supply pipe.

2. The combination with the injector, of a tank with which the overflow pipe thereof communicates, a pipe leading from the tank to the water supply pipe of the injector, a valve within the tank normally closing said pipe, a lever pivoted within the casing, a link connecting the valve and the lever, and a float on the lever, whereby a predetermined height of water in the tank will open the valve.

3. The combination with the injector, of a tank with which the overflow pipe thereof is connected, a communication between the tank and the supply pipe of the injector, a balanced float valve normally closing said communication, and a valved discharge pipe connected with the tank.

4. The combination with the injector, of a tank with which the overflow pipe thereof is connected, a communication between the

tank and the supply pipe of the injector, a balanced float valve normally closing said communication, and a steam pipe connected with the tank for heating the water therein.

5. The combination with the injector, of a tank with which the overflow pipe thereof is connected, a communication between the tank and the supply pipe of the injector, a balanced float valve normally closing said communication, and a spring for holding the valve against the pressure of the water passing through the supply pipe.

6. The combination with the injector, of a tank with which the overflow pipe thereof is connected, a communication between the tank and the supply pipe of the injector, and a balanced float valve normally closing said communication.

7. The combination with the injector, of a tank to which the overflow pipe delivers, a communication between the tank and supply pipe of the injector, and a balanced float valve controlling the communication.

8. The combination with the injector, of a tank to which the overflow pipe delivers, a communication between the tank and the supply pipe of the injector, a balanced float valve controlling the connection, a lever pivoted within the tank and having a perforated cup on one end thereof, said cup being directly below the discharge opening of the overflow pipe, and an indicator outside the tank and connected with the opposite end of the lever.

9. The combination with the injector, of a tank to which the overflow pipe delivers, a connection between the tank and the supply pipe of the injector, a balanced float valve within the tank and controlling said connection, and a manually operated valve in said connection outside of the tank.

10. The combination with the injector, of a tank to which the overflow pipe delivers, a communication between the tank and the supply pipe of the injector, and a float valve controlling the communication.

WALTER H. WINKS.

Witnesses:

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CHAS. W. CAVEY.