No. 652,134. Patented June 19, 1900.

R. McDOUGALL.

BOILER FEEDER.

(Application filed Apr. 5, 1900.)

(No Model.)

Fig. 1

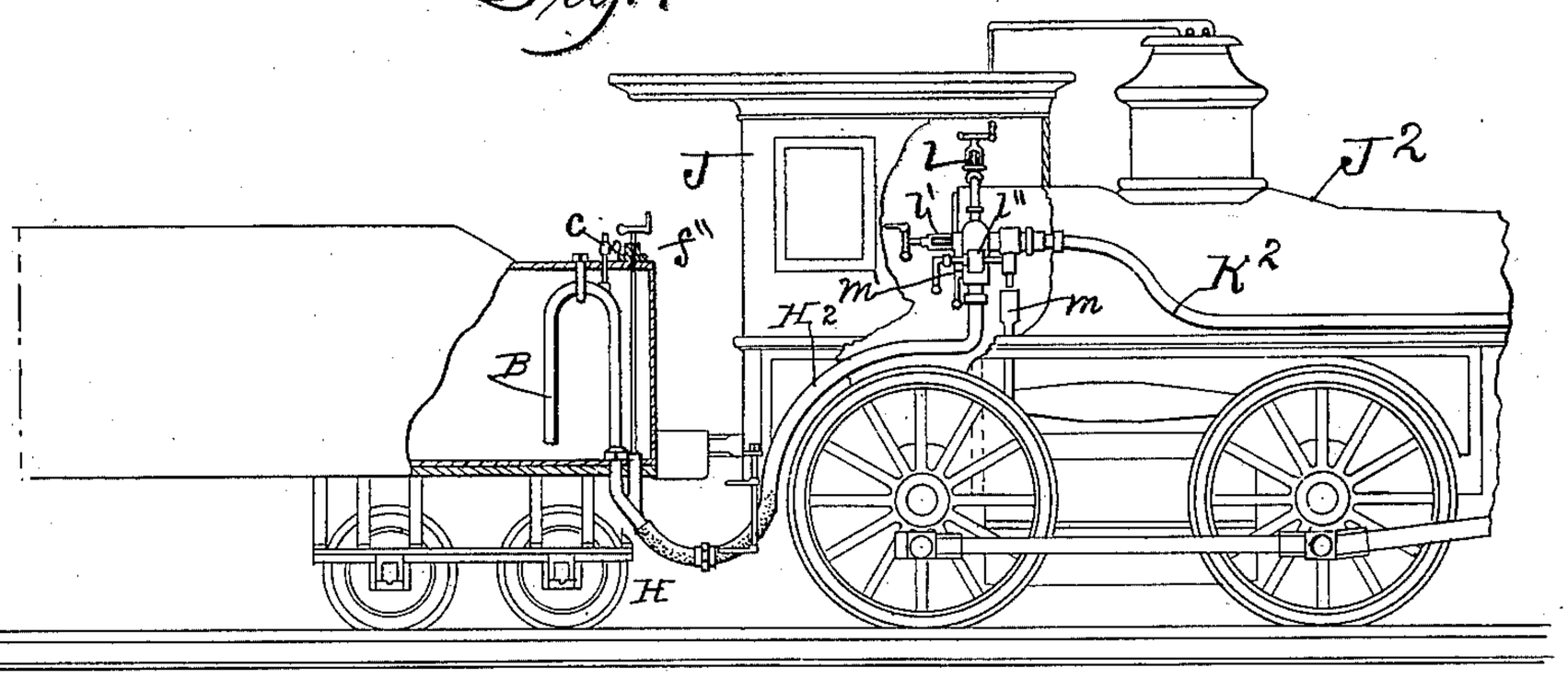


Fig. 2

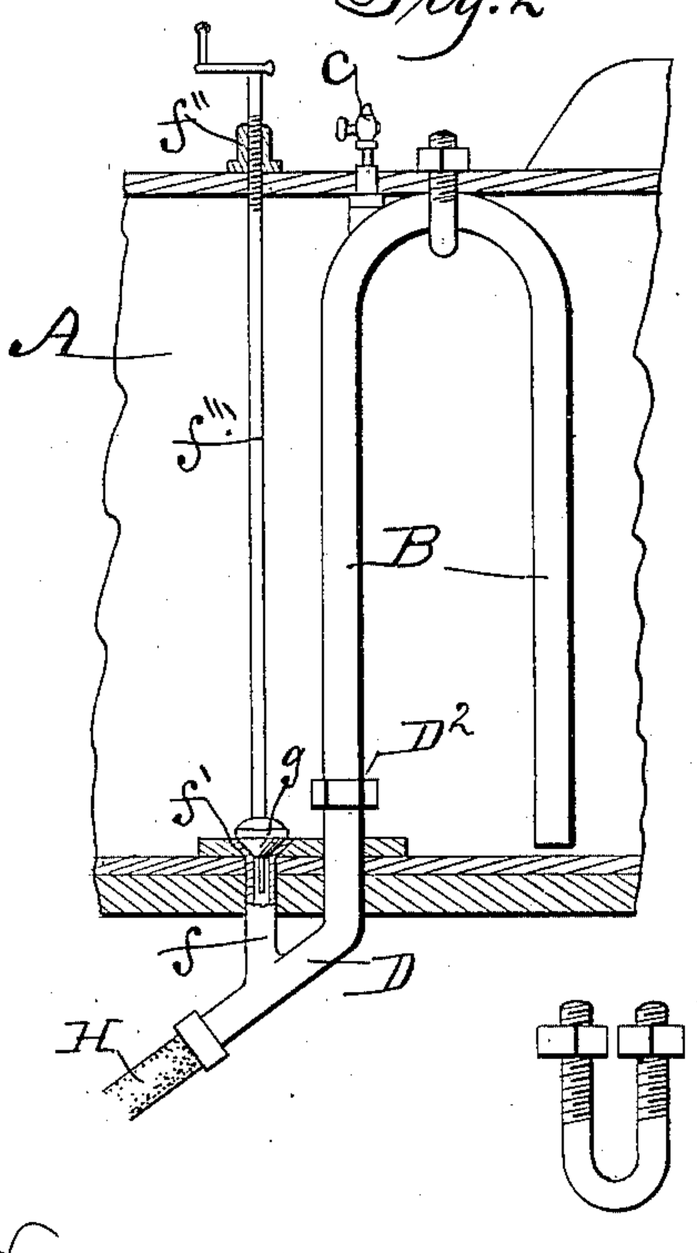
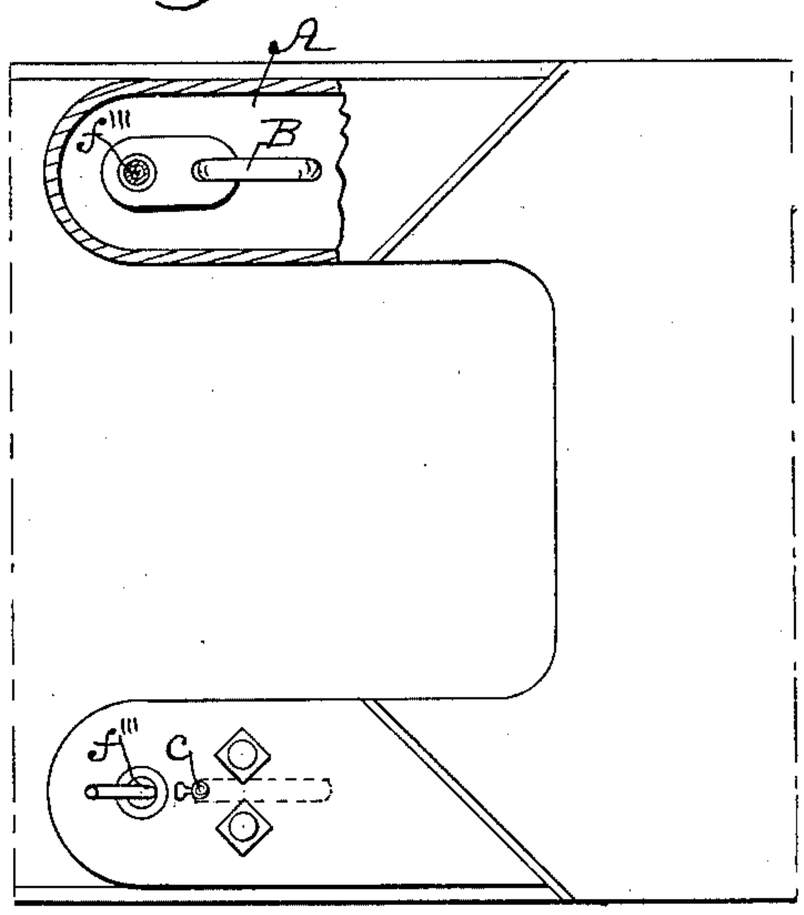


Fig. 3



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UNITED STATES PATENT OFFICE.

RUTHER McDOUGALL, OF DES MOINES, IOWA.

BOILER-FEEDER.

SPECIFICATION forming part of Letters Patent No. 652,134, dated June 19, 1900.

Application filed April 5, 1900. Serial No. 11,599. (No model.)

To all whom it may concern:

Be it known that I, RUTHER MCDOUGALL, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Improvement in Boiler-Feeders, of which the following is a specification.

My objects are, first, to combine a siphon and an injector for feeding water to a locomotive-boiler, and thereby overcoming the difficulties incident to drawing water from a tank when the supply is low and the locomotive on an inclined grade, so that the water remaining in the tank will not cover the outlet where the hose is attached; second, to connect the injector with the boiler and the siphon with the tank in such a manner that the engineer in the cabin can operate them jointly for feeding the boiler and also for cleaning the pipes and hose to prevent the accumulation of sediment in the boiler and tank, and, third, to prevent leakage and waste of water and damage to hose incident to water freezing in pipes and hose.

My invention consists in the arrangement and combination of parts as hereinafter set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of parts of a locomotive-engine and tender, showing portions broken away and the relative positions of the different operative parts. Fig. 2 is an enlarged section of the tank, showing the manner of combining a siphon therewith and means for removing water from the siphon and also from the tank. Fig. 3 shows a section of the tank.

The letter A designates the tank, and B a siphon fixed to the roof of the tank by means of a U-shaped screw-bolt and nuts. A petcock *c* at the top of the siphon allows air to be admitted into the siphon as required to allow water to empty therefrom into the tank and to make the siphon inoperative.

D is an elbow-shaped pipe extended up through the bottom of the tank and connected with the siphon by means of a coupling D^2 or in any suitable way. A branch *f* extends upward from the pipe D through the bottom of the tank and has a valve-seat *f'* at its top. A screw-seat *f''* on top of the roof of the tank supports a screw-threaded valve-stem *f'''*, that terminates in the bottom of the tank, and has a valve *g* fixed thereto that fits the valve-seat in such a manner that the valve can be readily operated, by means of a crank-handle *g'* at the top of the stem, to open the branch pipe *f* as required to allow water to pass through from the tank for the purpose of emptying and cleaning the tank.

H represents a section of hose connected with the end of the pipe D and adapted to be detachably connected with a mating section of hose-section H^2 by means of a hose-coupling H^3.

J represents the cabin, and J^2 the boiler, of a locomotive-engine, and K an injector connected with the boiler. The hose-section H^2 is fixed to the bottom of the injector and detachably connected with the hose-section H by means of the coupling H^3.

K^2 is a pipe extending from the injector to the front and lower portion of the boiler. A valve *l* opens and closes communication between the boiler and the injector. A valve *l'* opens and closes communication between the injector K and pipe K^2. A valve *l''* opens and closes communication between the injector and a waste-pipe *m*, and a valve *m'* opens and closes communication between the injector through the hose H and H^2 and the siphon B with the tank A.

In the practical use of my invention when the petcock *c*, the valve *g*, and the valve *l'* are closed and the valves *m'*, *l''*, and *l* are opened the force of the steam escaping through the injector and valve *m'* will by suction draw water from the tank and into the hose up to the valve *m'*, and as quick as any escapes through the valve *l''* that valve must be closed and the valve *l'* opened, so that the force of steam will press water through the pipe K^2 into the boiler as required to feed water from the tank to the boiler, and by closing the valve *l'* the water remaining in the injector and the hose will be pressed back through the siphon into the tank, so that the hose can be uncoupled without wasting any water.

It is obvious the hose and pipe and siphon may be cleared of any sediment that may gather therein by the same manner of backward steam-pressure directed from the boiler

through the injector and such matter thereby prevented from being conveyed into the boiler.

Having described the construction, arrangement, and combination of the different operative parts, the practical utility of my invention will be readily understood by persons familiar with the art to which it pertains.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a water-tank for a locomotive steam-engine, a siphon fixed in the tank and one end extended through the bottom of the tank, a section of hose attached to said end of the siphon, an injector connected with the boiler, a section of hose connected with the injector and a coupling for connecting the two sections of hose, arranged and combined with the cabin and tender of a locomotive-engine to operate in the manner set forth for the purposes stated.

2. In the tank of a locomotive-engine, a fixed siphon, an elbow-shaped pipe extended from one end of the siphon through the bottom of the tank, a branch pipe extended from the elbow-shaped pipe up through the bottom of the tank, a valve-seat at the top of said branch, a valve fitted to said valve-seat and provided with a stem extended up through the top of the tank, arranged and combined to operate in the manner set forth for the purposes stated.

RUTHER McDOUGALL.

Witnesses:
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