

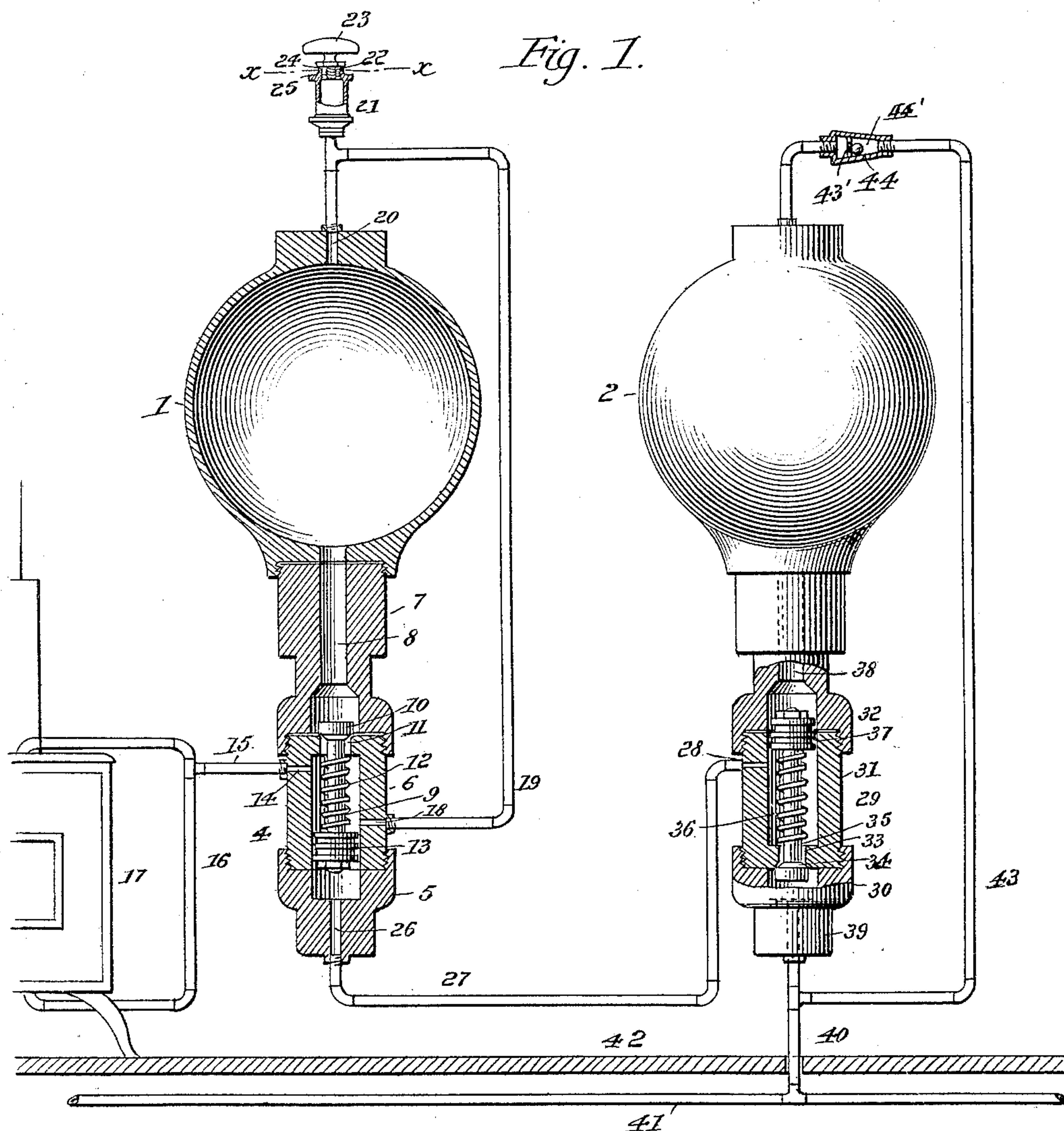
(No Model.)

R. H. GILMOUR & F. G. KELLOGG.

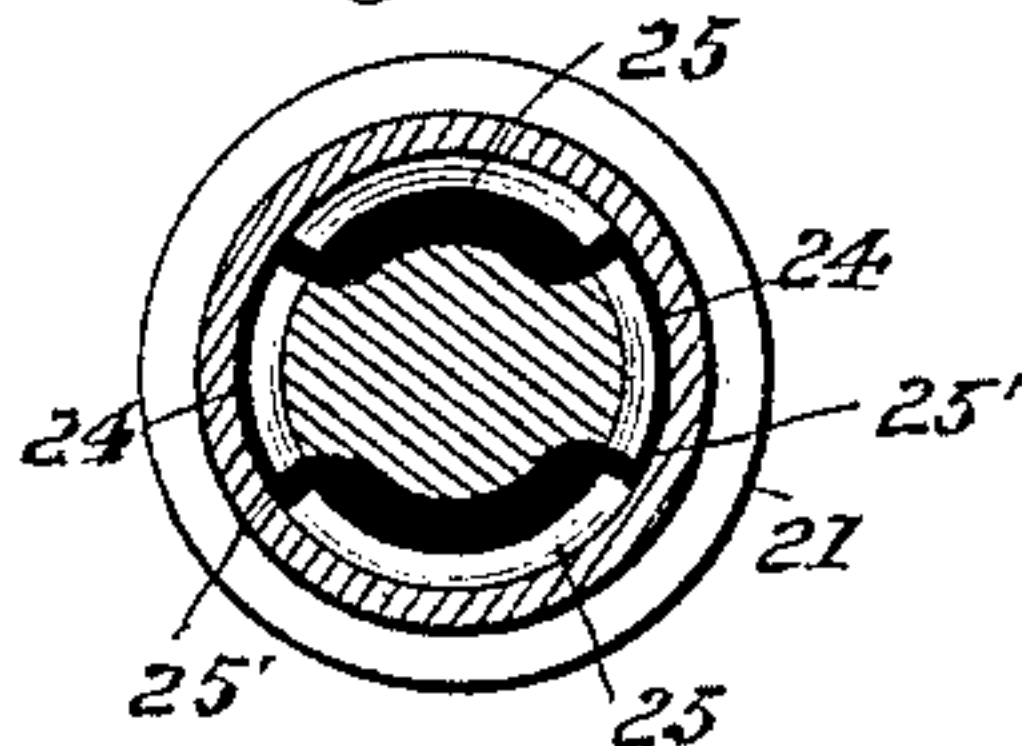
APPARATUS FOR EXTINGUISHING THE FIRES IN RAILWAY CAR STOVES.

No. 399,398.

Patented Mar. 12, 1889.



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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APPARATUS FOR EXTINGUISHING THE FIRES IN RAILWAY-CAR STOVES.

SPECIFICATION forming part of Letters Patent No. 399,398, dated March 12, 1889.

Application filed February 23, 1888. Serial No. 264,891. (No model.)

*To all whom it may concern:*

Be it known that we, ROBERT HOWIE GILMOUR and FORTUNATUS GALBRAITH KELLOGG, both of Huntington, in the county of Huntington and State of Indiana, have invented a new and Improved Apparatus for Extinguishing the Fires in Railway-Car Stoves, of which the following is a full, clear, and exact description.

10 This invention relates to a novel device to be employed in railway-cars, whereby in case of collision the fires in the stoves or heaters on a train may be instantly extinguished and the cars thereby prevented from catching fire.

15 The invention consists in an apparatus for this purpose constructed and arranged as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, 20 in which similar figures of reference indicate corresponding parts in both the views.

Figure 1 illustrates, with parts in section, an apparatus constructed in accordance with this invention. Fig. 2 is a detail in horizontal section on the line *xx* of Fig. 1. 25

In carrying out this invention an apparatus is located in each car and connected with the engine and the stove in the car, so that the engineer can extinguish at will the fire in the stoves on a train by causing water or chemicals to be discharged into the stoves. Each car is provided with an air-chamber and a chamber containing water or chemicals, each chamber having a cylinder, piston, and valve 30 and being connected by pipes with each other and the car-stoves, which pipes connect with a main pipe leading to an air-reservoir on the engine. The air in the air-chamber is held therein by the pressure of the air from the air-reservoir on the engine. When this pressure is cut off by the engineer, the air in the air-chamber is automatically released, opens a valve closing the water-chamber, and forces the water or chemicals into the stove, thereby extinguishing the fires. 45

1 indicates the water-chamber, and 2 the air-chamber. The chambers 1 and 2 may be of any suitable size and shape and are located in any convenient part of a car and supported by suitable brace-rods or brackets 50 (not shown) fastened to the side or floor of a

car. The water-chamber 1 communicates with a cylinder, 4, formed by means of the parts 5 6 7, screwed together and opening into chamber 1, by means of a passage-way, 8, in part 7. The cylinder 4 is provided with a piston, 9, having a valve, 10, at its end, which is normally held seated in opening 11 by a spring, 12, located between piston-head 13 and the upper end of the cylinder. An opening, 14, at the upper end of cylinder 4 connects by means of pipe 15 with a pipe, 16, leading to the top and bottom of a car-stove, 17, and communicating with the top and bottom of the fire-box. An opening, 18, is located in cylinder 4, just above the piston-head 13, and is provided with a pipe, 19, leading to an opening, 20, in the top of chamber 1. 60

21 indicates a chamber or boxing for the admission of water or chemicals supplied to chamber 1. The boxing 21 is closed by cover 22, with handle 23, the cover being formed with screw-threaded portions 24, engaging corresponding threaded portions, 25, of the boxing 21. The cover 22 is secured in place by the screw-threaded portions 24 being pushed down in slots 25' in the sides of the boxing 21, and then giving the cover a partial turn, when screw-threaded portions 24 are thrown into engagement with their corresponding portions, 25, in boxing 21. 70 80

The lower end of cylinder 4 has an opening, 26, which connects by a pipe, 27, with an opening, 28, adjacent to the upper part of a cylinder, 29, formed of the parts 30, 31, and 32, screwed together. 85

An opening, 33, in the lower end of cylinder 29 is normally closed by means of a valve, 34, on the end of a piston, 35, having a spring, 36, located between the end of the cylinder and the piston-head 37. In normal position the latter is located just above the opening 28. 90

The upper end of cylinder 29 communicates with air-chamber 2 by means of a passage-way, 38, in part 32. The lower end of cylinder 29 has an opening, 39, which connects by means of a pipe, 40, with the main air-pipe 41, located beneath the car-floor 42. The main pipe 41 leads to an air-reservoir on the engine, and is connected between the cars by suitable couplings. The air-supply is 95 100



regulated by a valve or cock on the engine under control of the engineer.

A pipe, 43, leads from pipe 40 to the top of air-chamber 2 and communicates with the interior thereof.

44 indicates an automatic reacting valve, which remains open when there is air-pressure through tube 41 into chamber 2. The valve 44 normally lies against cross-wires 43' in chamber 44'.

The operation of the apparatus is as follows: Water or chemicals having been placed in chamber 1, air is supplied from the reservoir on the engine at a pressure of about sixty pounds to the square inch. The air passes through pipes 41 40 43 to chamber 2 and through passage 38 to the upper end of cylinder 29. It also passes through passage 39 into the lower end of cylinder 29. The pressure of the air holds valve 44 open and is equal against piston-head 37 and valve 34, so that piston 35 remains in its normal position, as shown, the difference of pressure due to the difference of areas of the piston-head and valve being counterbalanced by the spring. When a collision is seen to be imminent, the engineer cuts off the supply of air from the reservoir on the engine, which withdraws the air-pressure from pipes 41, 40, and 43 and passage 39 and causes the air under pressure in chamber 2 to react. The reaction of the air in chamber 2 closes valve 44 and forces the piston-head 37 down below the opening 28. The air then passes through pipe 27 and opening 26 into the lower end of cylinder 4, lifts the piston-head 13 above opening 18, passes through pipe 19 into chamber 1, and drives out the water or chemicals therein through passage 8, opening 14, and pipes 15 and 16 to the interior of stove 17, extinguishing the fire therein. The piston-head 13, when lifted by the pressure of air, as above described, will be held raised by the difference of pressure due to the difference of areas of the valve 10 and piston-head 13.

Each car being supplied with this apparatus, it will readily be seen from the foregoing description that all the fires in the stoves of a train may be instantly extinguished.

While a specific construction and arrangement of apparatus has been set forth, it is not intended to limit the invention thereto, as the parts may be modified and arranged without departing from the principles of the invention to accomplish the same result. It is obvious that a single connection may be used with the stove instead of a double one, as shown, and that the water or chemicals may be admitted into the stove by any desirable form of discharge-pipe.

The apparatus is adapted to operate automatically as well as to be set in motion by the engineer, as in case of a collision or derailment, upon the breaking of the main air-pipe or its couplings, the apparatus will operate to extinguish the fires in the stoves.

Having thus described our invention, we

claim as new and desire to secure by Letters Patent—

1. An apparatus for extinguishing fire in car-stoves, consisting of a main pipe through which air is supplied under pressure, an air-chamber and cylinder with reacting piston and valve, pipe-connections leading from the main pipe to cylinder, an air-chamber with an outwardly-closing self-acting valve located in air-chamber pipe-connection, a chamber to contain water or chemicals, and a cylinder having a reacting piston and valve, and pipe-connections leading from said cylinder to the first-named cylinder, to the water-chamber and to a car-stove, substantially as described.

2. In an apparatus for extinguishing fire in car-stoves, an air-chamber, a cylinder communicating with the air-chamber and having a piston with reacting spring and valve normally closing one end of said cylinder, a main air-pipe through which air is admitted under pressure connecting with the closed end of the cylinder and with the air-chamber, the air-chamber connection having a reacting valve, a chamber for containing water or chemicals communicating with the cylinder having a piston with a reacting spring and valve normally closing one end of the cylinder, and pipe-connections leading from said cylinder to air-chamber cylinder, to water-chamber, and to a car-stove, substantially as described.

3. In an apparatus for extinguishing fire in a car-stove, the combination of a water-chamber, a cylinder communicating therewith and adapted to be connected to a stove, a valve in said cylinder, an air-chamber, a cylinder communicating with said air-chamber, a valve in said cylinder, a pipe connecting the two cylinders, an air-supply pipe connected to the cylinder of the air-chamber, a pipe leading from the air-supply pipe to the top of the air-chamber, and an automatic reacting valve in the pipe leading from the air-supply pipe to the air-chamber, substantially as described, whereby when the compressed-air supply is cut off the air in the air-chamber will enter the water-chamber and force its contents into the stove, as set forth.

4. In an apparatus for extinguishing fire in car-stoves, a chamber for containing water or chemicals, having a cylinder communicating with its lower end provided with an upwardly-moving piston and valve with reacting spring, and having pipe-connections with the car-stove and with the top of the water-chamber above the piston-head, an air-chamber having a cylinder communicating with its lower end provided with a downwardly-moving piston and valve with reacting spring, a pipe-connection beneath the piston-head leading to the lower end of the water-chamber cylinder, a main pipe for the supply of compressed air, and a branch pipe connecting the said main pipe leading to the lower end of the air-chamber cylinder and to



the upper end of the water-chamber, and an outwardly-closing reacting valve closing the connection between the top of the air-chamber and the main air-pipe, substantially as described.

5 5. In an apparatus for extinguishing fire in car-stoves, the combination of the following elements, viz: the water-chamber 1, having the cylinder 4, with reacting piston 9 and valve 10, the pipe-connections 15 and 16, leading to the stove 17, pipe-connections 19, leading to the upper end of air-chamber 2, and pipe-connection 27, leading to cylinder 29, air-cham-

ber 2, having cylinder 29, with reacting piston 35 and valve 34, pipe 40, connecting with 15 lower end of cylinder 29, branch pipe 43, connecting pipe 40 with the upper end of air-chamber 2, and having reacting valve 44, and the main compressed-air-supply pipe 41, connecting with pipe 40, substantially as described. 20

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