

(No Model.)

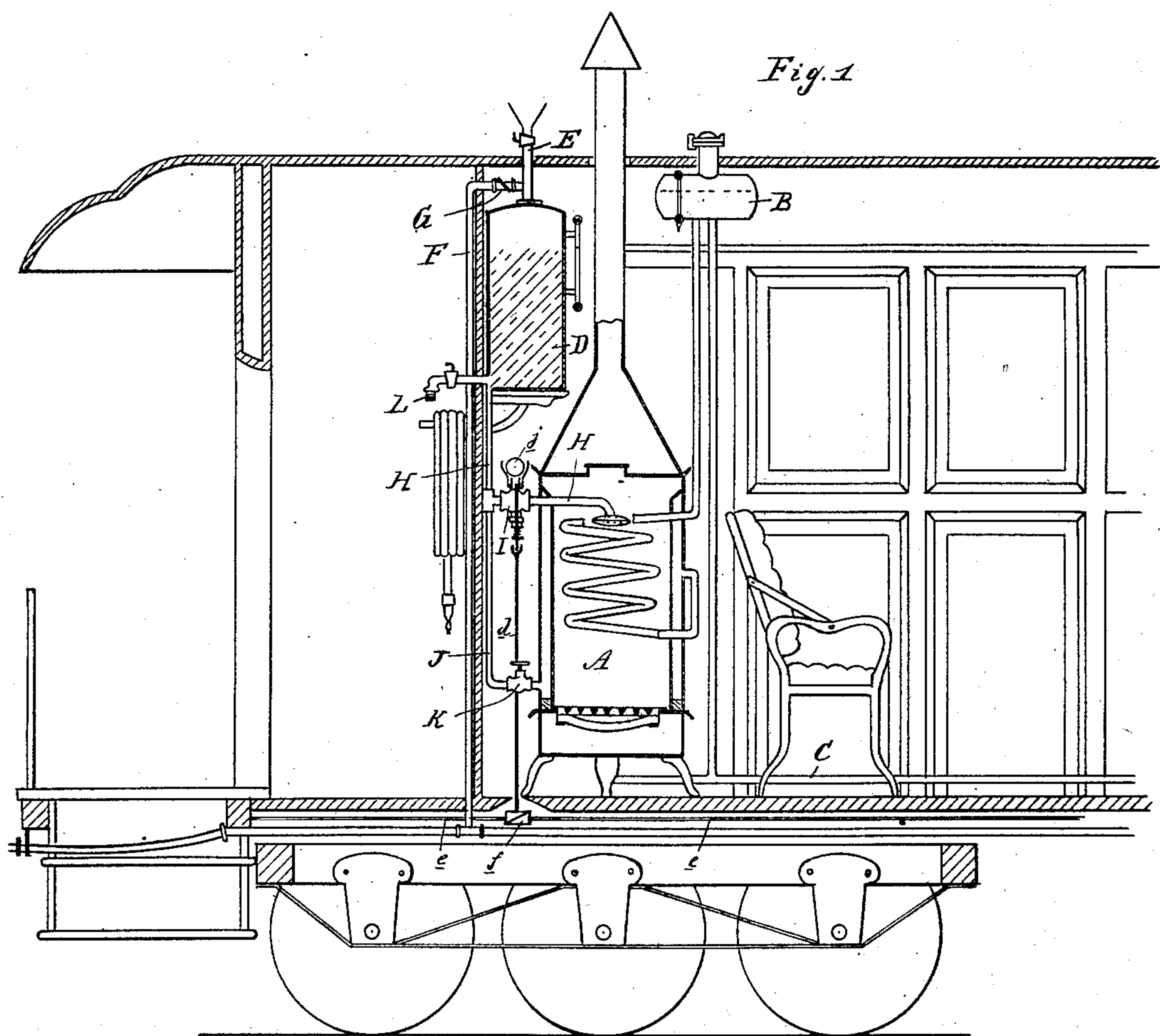
2 Sheets—Sheet 1.

P. SMITH.

FIRE EXTINGUISHER FOR RAILWAY CARS.

No. 374,211.

Patented Dec. 6, 1887.



Attest:

John Schuman.
[Signature]

Inventor:
Peter Smith.

by his Atty.
Thos. S. Sprague

(No Model.)

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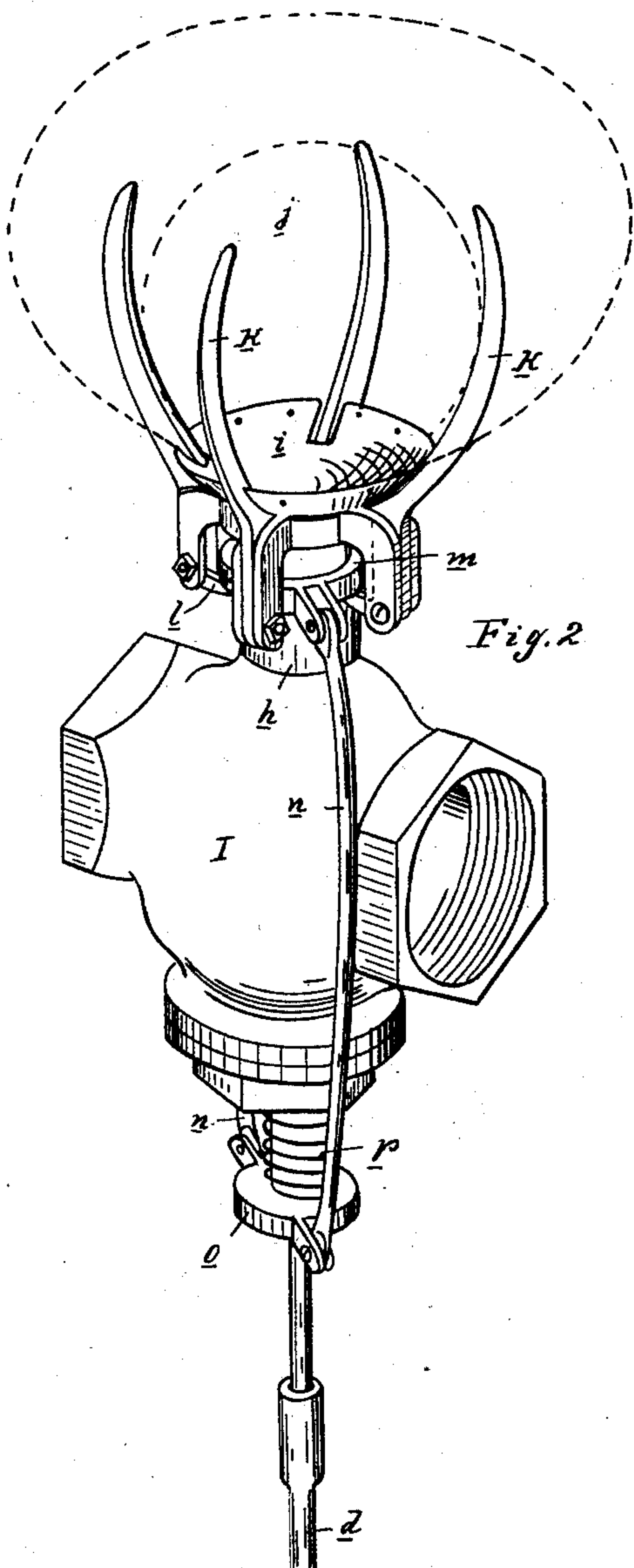


Fig. 2

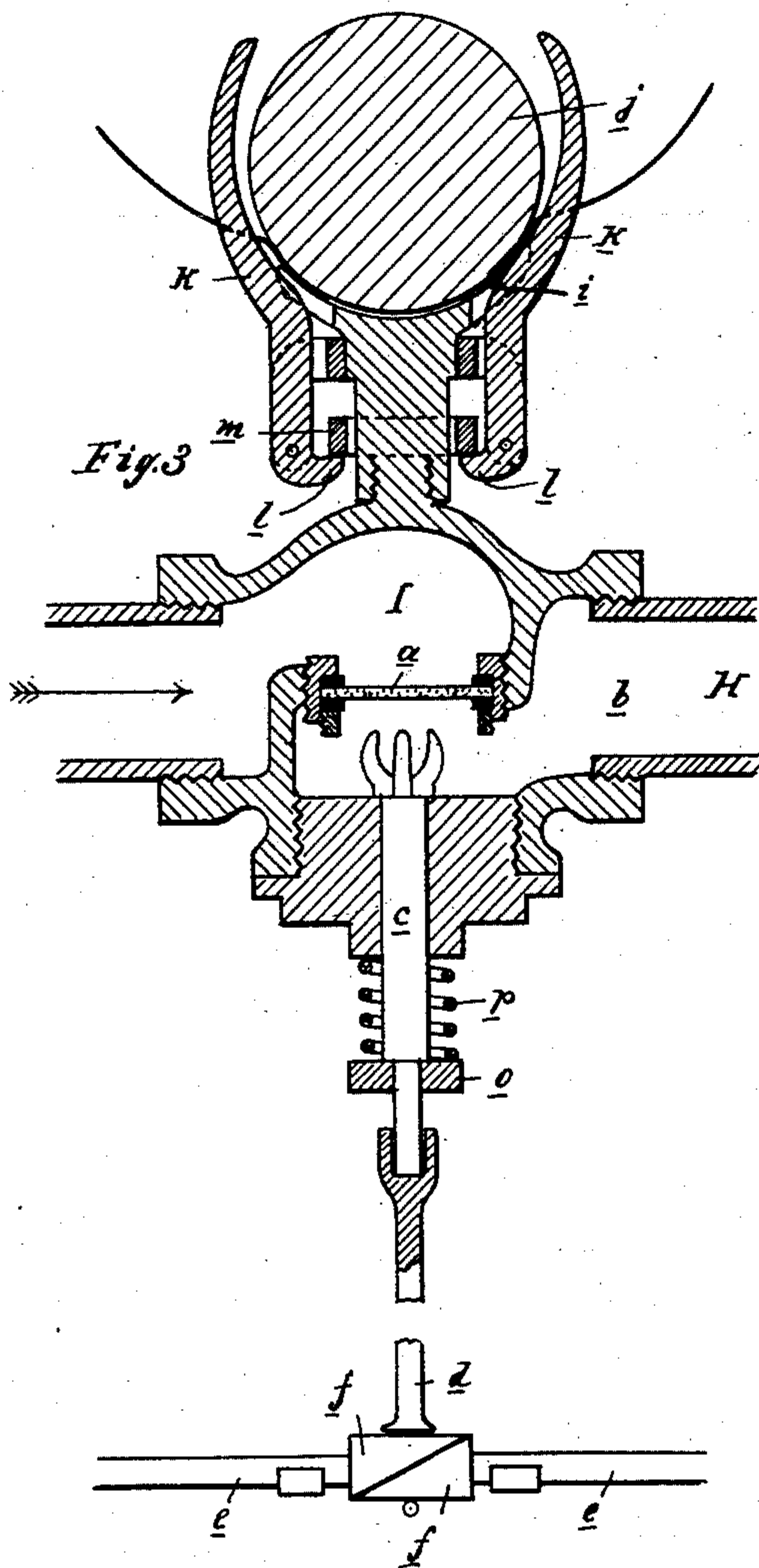


Fig. 3

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UNITED STATES PATENT OFFICE.

PETER SMITH, OF DETROIT, MICHIGAN.

FIRE-EXTINGUISHER FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 374,211, dated December 6, 1887.

Application filed March 17, 1887. Serial No. 231,224. (No model.)

To all whom it may concern:

Be it known that I, PETER SMITH, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Fire-Extinguishers for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to new and useful improvements in automatic fire-extinguishers for railroad-cars; and the invention consists in the peculiar combinations and the construction, arrangement, and adaptation of parts, all as more fully hereinafter described and claimed.

My invention is fully illustrated by the accompanying drawings, in which—

Figure 1 is a sectional view of a railroad passenger-car provided with a hot-water-circulating heater of known construction and provided with my improvements. Fig. 2 is a perspective view of the automatic valve in the discharge-pipe. Fig. 3 is a section through the automatic valve in the discharge-pipe.

In Fig. 1, A is a circulating hot-water heater of known construction.

B is the expansion-drum, and C are the circulating hot-water pipes on the floor of the car.

D is a closed tank, partly filled with a fire-extinguishing fluid agent, preferably water, to suit all the various objects I have in view. This tank is provided with suitable means, as E, for filling in the water or other fire-extinguishing agent, and it has a pipe, F, leading to an air-pump or to the air-brake system for the purpose of filling the top of the tank above the fire-extinguishing agent with compressed air, and, if necessary, to prevent loss of air-pressure, a check-valve, G, is placed in said pipe. A discharge-pipe, H, leads from said tank into the fire-chamber of the stove or heater, so arranged that it will discharge the water from the tank into the fire under the pressure of the air in the tank and effectually and quickly distribute it to instantly extinguish the fire.

The discharge-pipe H is provided with a valve, I, which automatically controls said discharge-pipe and which is constructed as follows: A glass disk, *a*, secured in any suitable manner in the opening of the diaphragm of an ordinary valve-case of the kind used in

globe-valves, prevents the fluid from passing to the outlet-opening *b*. Underneath said glass disk is a vertically-sliding plunger, *c*, the upper end of which carries one or more prongs suitably arranged to strike the glass at the upward displacement of the plunger. The plunger passes out through the valve-case and rests loosely upon a vertical rod, *d*, which is held in suitable guides. The lower end of this rod is connected to a device which forcibly pushes said rod upwardly in case of the crushing in of one or both ends of the car in a collision. A device of this nature is shown in the drawings, consisting of the horizontal sliding rods *e*, which are attached to the front and rear ends of the car, respectively, and carry wedges *f*, arranged to produce an upward displacement of the rod *d* whenever one or both of the rods *e* are displaced longitudinally. On top of the valve-case is secured a cylindrical neck, *h*, which terminates in a dish-shaped rest, *i*, upon which a ball-weight, *j*, is supported. Four upwardly-curved levers, *k*, stationarily fulcrumed near their lower ends, are grouped around the weight *j*, and these levers terminate in inwardly-projecting toes *l*, which engage under a yoke, *m*, sleeved upon the neck *h*. This yoke has pivotally secured to it upon opposite sides the connecting-rods *n*, which at their lower ends are similarly secured to a yoke, *o*, secured upon the plunger *c*. A spring, *p*, is interposed between the yoke *o* and the valve-case.

In case of a railroad-accident which produces an upsetting or abnormal tipping of the car in any direction, the weight *j*, in being displaced from its seat, bears against one of the curved levers *k*, causing it, by means of the connections described, to drive the plunger against the glass disk with sufficient force to break it, and thus open the passage through the valve to the extinguishing fluid, which is now forced under pressure into the fire of the heater. The breaking of the glass disk *a* by the plunger *c* requires but little force, as it will be seen that the glass disk is under a constant tension resulting from the pressure of the extinguishing fluid upon it, and, while it will easily withstand such pressure, it breaks instantly at a comparatively slight blow from the plunger. It will further be noticed that this kind of valve obviates the use of any stuffing-box, and therefore, when once adjusted, will remain permanently efficient.

The ball-weight *j* may be inclosed in a suitable case to prevent tampering, and the glass disk is suitably secured in the valve-case to form a perfect seal.

5 The tank D may be provided, if desired, with a pressure-gage for indicating the height of the extinguishing fluid therein.

J is a feed-pipe provided with a valve, K, by means of which water may be forced from 10 the tank D into the water-space or circulating hot-water system of the heater in case of a deficiency of the water therein. This connection is, however, intended to form only a contingent means for supplying the heater with 15 water in addition to the ordinary means provided therefor.

The tank D is also provided with a suitable hose-connection, L, by means of which the water in the tank may be used for fire-extinguishing 20 purposes through the medium of a flexible hose attached to said connection, sufficient air-pressure being kept in the tank to produce a stream of sufficient force to reach any portion of the car. This hose-connection may be in 25 the form of a threaded faucet suitable for hose-connection as well as for drawing off the water from the tank should occasion require.

What I claim as my invention is—

1. In a railway-car fire-extinguisher, a fire- 30 extinguishing agent consisting of a closed tank located near the top of the car and arranged to contain a permanent charge of water or other fire-extinguishing agent under pressure, a discharge-pipe from said tank into the fire- 35 space of the stove or heater, and a fragile seal in said pipe to normally restrain the extinguishing agent, substantially as described.

2. In a railway-car fire-extinguisher, a fire- 40 extinguishing agent consisting of a closed tank located near the top of the car and arranged to contain a permanent charge of water or other fire-extinguishing agent under pressure, a discharge-pipe from said tank into the fire- 45 space of the stove or heater, a fragile seal in said pipe, a breaker for breaking said seal automatically in case of accident to the car, and a hose-connection on said tank, all arranged substantially as described.

3. In a railway-car fire-extinguisher, a closed 50 tank arranged to contain a permanent charge of water or other fire-extinguishing agent under pressure, a discharge-pipe from said tank into the fire-space of the stove or heater, a fragile seal in said pipe, a breaker for automatically breaking said seal in case of upsetting 55 of the car, and a breaker for automatically breaking said seal in case of the crushing or telescoping of the car, all substantially as described.

60 4. In a railway-car fire-extinguisher, a closed tank arranged to contain a charge of water or other fire-extinguishing agent under pressure, a connection between said tank and an air-pump for maintaining a permanent air-pressure 65 upon the charge in the tank, a discharge-pipe from said tank into the fire-space of the stove or heater, a valve in said pipe, and a

breaker operating in case of accident to the car to automatically open said valve in case of upsetting or telescoping the car, substantially as specified. 70

5. In a railway-car fire-extinguisher, the combination, with a hot-water-circulating heater, of a closed tank arranged to contain 75 a permanent charge of water under air-pressure, a discharge-pipe from said tank into the fire-space of the heater, a valve in said pipe provided with a breaker for automatically opening it in case of accident to the car, a 80 hose-connection on said tank, and a feed-connection between said tank and the hot-water-circulating system of the heater, substantially as described.

6. In a railway-car fire-extinguisher, the combination, with a fire-extinguishing device 85 consisting of a closed tank arranged to contain a permanent charge of water or other fire-extinguishing agent under pressure and having a valve-controlled discharge-pipe into the fire-space of the stove or heater, of a glass seal or 90 diaphragm in said valve covering the outlet-opening *b* and a breaker for breaking said seal, substantially as described.

7. In a railway-car fire-extinguisher, the combination, with a fire-extinguishing device 95 consisting of a closed tank arranged to contain a permanent charge of a fire-extinguishing fluid under pressure and having a discharge-pipe into the fire of the car-heater, of a casing in said discharge-pipe provided with a glass 100 seal or diaphragm, a movable plunger arranged to break said glass seal, a device for actuating said plunger at the upsetting of the car by the displacement of a weight, and a device for actuating said plunger at the crush- 105 ing in of one or both ends of the car by the displacement of horizontal rods secured to the ends of the car and said weight and rods, substantially as described.

8. In a railway-car fire-extinguisher, the 110 combination, with the car-heater, of the tank D, the discharge-pipe H, the casing I, having the glass seal or diaphragm *a*, the movable plunger *c*, the vertical rod *d*, the horizontal rods *e*, and the wedges *f*, all arranged to op- 115 erate substantially as described.

9. In a railway-car fire-extinguisher, the combination, with the car-heater, of the tank D, the discharge-pipe H, the casing I, having the glass seal or diaphragm *a*, the movable 120 plunger *c*, the ball-weight *j*, the seat *i*, the curved levers *k*, the sliding yoke *m*, the connecting-rods *n*, and the yoke *o*, all arranged to operate substantially as described.

10. In a railway-car fire-extinguisher, a 125 valve controlling the exit of the fire-extinguishing agent, said valve having a glass seal, and a movable plunger arranged to break said seal by the crushing in of one or both ends of the car, substantially as described.

PETER SMITH.

Witnesses:

H. S. SPRAGUE,
E. J. SCULLY.