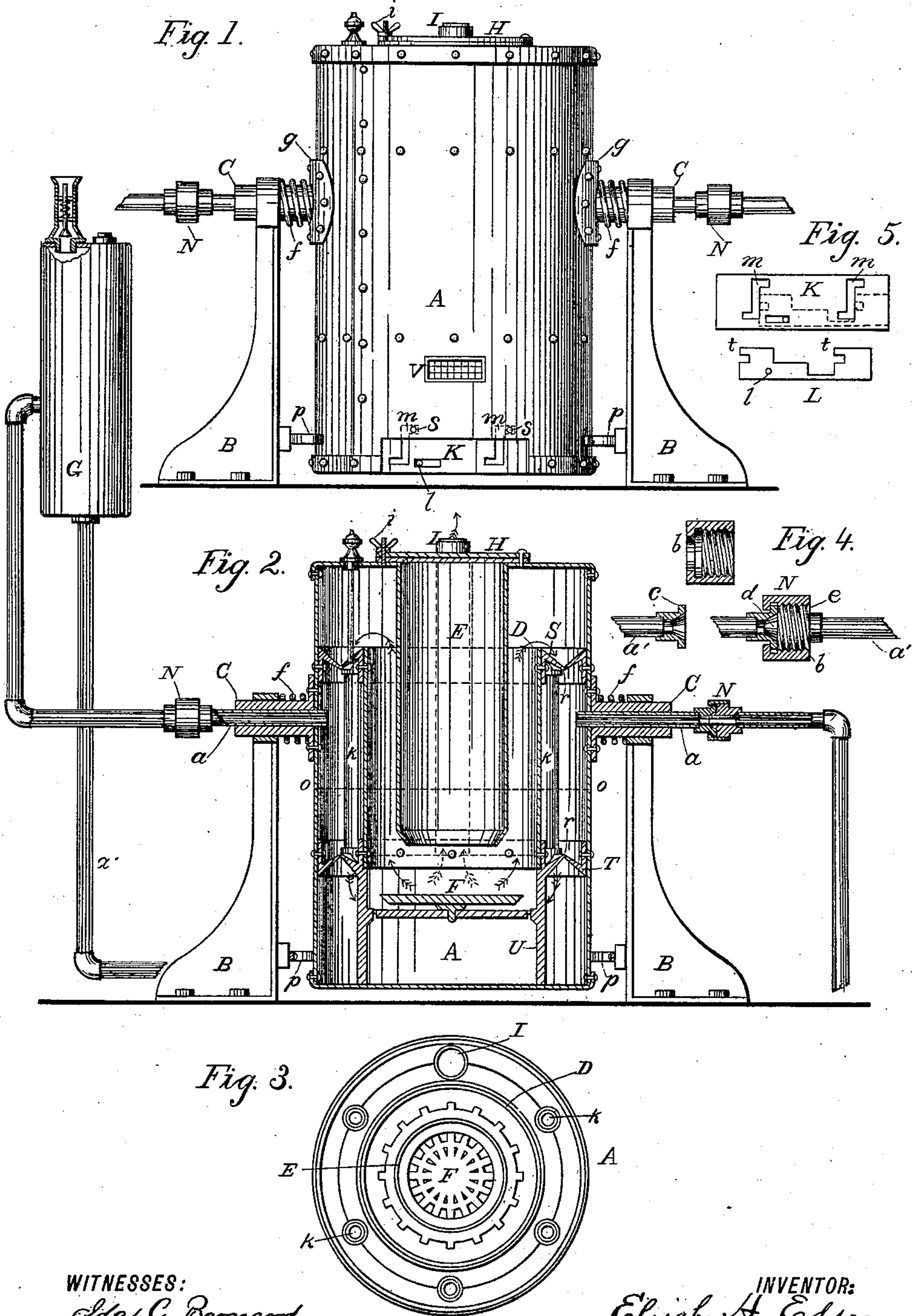


(No Model.)

E. H. EDSON.
SAFETY HEATER FOR RAILWAY CARS.

No. 407,726.

Patented July 23, 1889.



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ELIJAH H. EDSON, OF ROCHESTER, NEW YORK.

SAFETY-HEATER FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 407,726, dated July 23, 1889.

Application filed March 21, 1887. Serial No. 231,704. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH H. EDSON, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented an Improvement in Safety-Heaters for Railroad-Cars, of which the following is a full specification, which will enable others skilled in the art to which it appertains to construct my said improvement.

Reference is made to the accompanying drawings, in which—

Figure 1 is a front elevation of my improved safety-heater. Fig. 2 is a vertical section of the same and showing an expansion-tank G and connecting-pipes. Fig. 3 is a horizontal section of the heater through the line *o o*, Fig. 2. Figs. 4 and 5 are details of the device.

My invention consists of a self-feeding water-heater having an annular water-space surrounding the fire-pot, the whole mounted on trunnions and bearings placed lengthwise of the car in such a way that it always maintains a vertical position, no matter how much the car may incline from a horizontal position.

The object of my invention is to provide against fire being communicated from the heater to the inflammable portions of the car in case of accident of any kind.

An outer shell A, preferably constructed of iron or steel plate, contains the heating device. Trunnions or bearings C C are secured to the shell at a point above its center of gravity, and, resting in bearings on the top of the brackets B B, suspend the heater slightly above the floor of the car. In the upper end of the shell A is a door H, opening into the feeding-chamber E, through which the fire is supplied with fuel. An inner shell D divides the fire-pot from the annular water-space, which is formed by the shell D, the outer shell A, and the rings S and T. The ring T has a cylindrical extension U, which is carried down to the base of the shell A and divides the ash-pit from the annular smoke-box under the water-space.

Between the rings S and T and extending through the annular water-space are fire-tubes *k k*. A smoke-flue I extends from the smoke-box under the ring T, up through the water-space and the shell A, and thence by a

suitable connection through the roof of the car to the outer air.

The products of combustion rise between the feeder E and the shell D, pass down through the tubes *k k*, heating the water in the annular water-space to the smoke-box, into which their lower ends extend, and thence escape through the smoke-flue I, as indicated by arrows in Fig. 2.

Draft to the fire is furnished through the slots in the door K, Fig. 1, and access is gained to the ash-box for the purpose of removing the ashes through the door K, which is constructed as shown in Fig. 5. Studs *s s*, projecting from the interior of the shell A, engage the slots *m m*, and act as guides and checks for the door K, so that it must be moved laterally until the studs are in line with the vertical portion of the slots before it can be raised. A plate L slides on the inner side of the door and serves as a draft-regulator by covering the slots *m m*. It is operated by a stud *l*, projecting through a suitable slot in the door. This plate L also forms a locking device to the door when desired, the arms *t t* obstructing the slots *m m* and preventing the raising of the door.

The trunnions C C are hollow, and through these pass the pipes *a a* into the water-space of the heater. An expansion-tank G is connected with the circuit of pipes *a a*, and through these pipes a circulation of hot water is obtained for the purpose of heating the car. The method of warming by means of the circulation of hot water through a system of pipes extending from and returning to a device in which the water is heated is too well understood to need further explanation here. I do not claim any improvement in the method of obtaining a circulation of water. My invention is confined to the construction of the heater itself.

The cover H of the feeder is securely fastened by means of the screw-catch *i* or some other suitable fastening, so that it cannot open and permit the egress of any part of the fire in case of fracture of the heater. Suitable springs or catches *p p*, secured to the brackets B B and bearing against the shell A, serve to keep it in a vertical position with reference to the floor of the car. Care must

be taken that these catches are not strong enough to hold the heater and carry it out of a vertical position should the car become inclined to any considerable degree.

5 Revolving union-joints N, Fig. 4, are placed on either side of the heater in the pipes *a a*, and permit the heater to oscillate in the bearings of the brackets B B without loosening any portion of the pipes. Suitable springs *f*
 10 *f* may be placed on the trunnions C C, between the brackets and the heater, to prevent any injury to the device by any sudden jar produced by coupling together the cars. The device, as already described, provides immu-
 15 nity from fire by preventing the possible escape of any part of the fire from the heater in any accident wherein the car in which it is placed is thrown from its ordinary horizontal position.
 20 To prevent fire being communicated to the car in case of an accident by which the heater may be dislodged from its support or in any manner broken, the annular rings S and T are constructed of the shape shown in Fig. 2
 25 and with less strength of material at the apex *r* than in any other part. These rings are preferably made of cast-iron, while the outer shell of the heater is made of less brittle material. Any blow that the heater may sus-
 30 tain of sufficient violence to cause a fracture of any part will first break these rings and allow the water confined in the annular space between the rings to flood the fire-box and extinguish the fire. An opening V may be made
 35 in the shells of the heater for convenience in observing the condition of the fire. It should be protected on the inside by a fine metallic grating and covered by mica or other suitable material to prevent the egress of any part of
 40 the contents of the fire-pot. This should be placed below the ring T and above the level of the grate.

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

1. A heater for railway-cars, inserted in a hot-water-circulation system and suspended above the floor of the car from points above the center of gravity of the heater by hollow trunnions C C, connecting with the water-
 50 space, said trunnions resting in bearings in brackets B B, substantially as and for the purposes described.

2. In a heater for railroad-cars, having an outer shell and an inner shell separating the water and fire spaces, pairs of frangible rings connecting the two shells and inclosing there-
 55 with the water-space, each pair of rings meeting substantially in V form and each ring being thinned toward the line of meeting with the other ring, so that in the event of fracture
 60 of such rings the contents of the water-space will discharge into the fire-space, substantially as and for the purposes set forth and described.

3. In a heater for railway-cars, the outer containing-shell A, the inner shell D, inclosing the fire-pot, pairs of frangible rings S and T, connecting said two shells and inclosing
 65 therewith the water-space, fire-tubes *k k*, passing through said water-space and the rings S and T, smoke-flue I, grate F, hollow trunnions C C, fastened to said shell A, connecting with the water-space and resting in bearings in
 70 brackets B B, a system of pipes *a a*, and expansion water-tank G, substantially as and for the purposes set forth and described.

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Witnesses:

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