

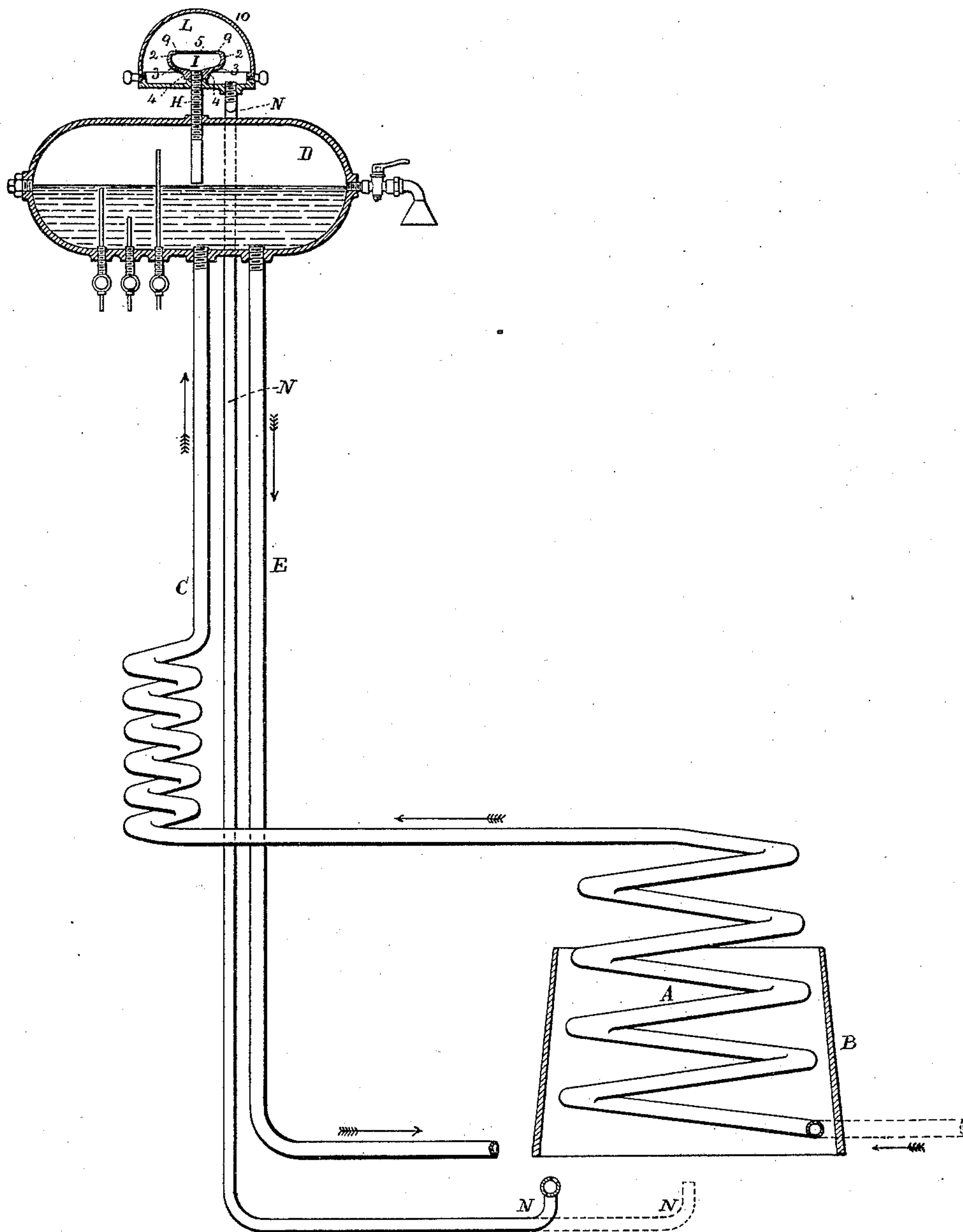
(No Model.)

W. C. BAKER.

SAFETY VENT FOR STEAM APPARATUS.

No. 473,722.

Patented Apr. 26, 1892.



Witnesses:

J. Staib  
Chas. H. Smith

Inventor:

William C. Baker  
per Lemuel W. Serrell  
Atty

# UNITED STATES PATENT OFFICE.

WILLIAM C. BAKER, OF NEW YORK, N. Y., ASSIGNOR TO THE BAKER HEATER COMPANY, OF SAME PLACE.

## SAFETY-VENT FOR STEAM APPARATUS.

SPECIFICATION forming part of Letters Patent No. 473,722, dated April 26, 1892.

Application filed January 22, 1890. Serial No. 337,732. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM C. BAKER, a citizen of the United States, residing at the city and State of New York, have invented an  
5 Improvement in Safety-Vents for Steam Apparatus, of which the following is a specification.

In steam and hot-water apparatus, especially that made use of in heating railway-cars, there is danger from the apparatus being  
10 left without attention until the pressure accumulates to a dangerous height, and where safety-valves have been employed the valve is liable to become obstructed by oxidation and  
15 foreign substances, and if it opens by the pressure it often cannot be closed tightly again, and a sound that is disagreeable to the passengers ensues. To rectify this difficulty, I invented a safety-vent, for which Letters Patent No.  
20 372,289 were granted to me, and in the same is described a flattened chamber having one side or face thinner than the body and turned off true, so that with undue pressure the thin side would blow off and give vent for the  
25 steam. I find that with proper care the safety-vent can be cast with a thin side to the body in such a manner that the turning or truing is rendered unnecessary, and the breaking point or pressure will be sufficiently uniform  
30 for general purposes.

In carrying out my invention I provide for relieving undue pressure and also for extinguishing the fire in the car-heater, so that perfect safety is obtained even when the car  
35 may be carelessly left without an attendant.

In the drawing I have represented my improvement by a diagrammatic vertical section.

The ordinary Baker heater contains a coil  
40 of pipe A within the fire-chamber B, and the rising pipe C opens into an expansion-vessel D, and at E is a descending circulating-pipe for the hot water or brine passing through the radiators in the car. Connected with some  
45 portion of the circulating apparatus of the car, and preferably with the expansion-vessel D, is a pipe H, upon which is the safety-vent I. The flattened chamber forming this safety-vent is usually circular, or nearly so, and it is  
50 preferably of cast-iron or other suitable metal. The edges or periphery 2, the back 3, and the

hub 4 are sufficiently thick to be as strong as the other parts of the steam or other apparatus; but the safety-face 5 of the vent is much thinner, so that it will break away from the  
55 periphery under the action of undue internal steam-pressure.

It is not necessary, as in my aforesaid patent, to make a hole in the hub 4 of larger diameter than the pipe H, to which the vent is to  
60 be screwed, because I find that the thin side of the safety-vent can be cast so that it blows off at nearly the same internal pressure in numerous vents formed of the same size. To effect this object, the core around which the  
65 vent is cast is made with care and supported at the opening for the pipe H, and the mold is formed so that the interior surface thereof is parallel to the face of the core; or, by preference, the safety-face is slightly thicker in  
70 the middle portion than at its union with the periphery, so that the separation under undue pressure takes place all around the safety-face at about the lines 9 9, thus furnishing a  
75 large opening for the rapid escape of steam, and a consequent reduction in the pressure. A screw-thread is to be cut in the hub 4 in order that the safety-vent may be screwed upon or removed from the vent-pipe H with  
80 facility, and the exterior of this hub 4 is preferably polygonal, so that an ordinary wrench may be used in applying or removing the vent.

This improved vent having the thin face, a casting without being turned or trued is a  
85 new and useful article of manufacture that requires less expense in making than the vents heretofore constructed and is equally efficacious.

The safety-vent I is represented as within the  
90 chamber L, the cover 10 of which is removable to give access to the safety-vent, and from this chamber L a pipe N descends and opens into the fire-chamber, preferably into a portion of the ash-pit, so that the steam and any  
95 water that may foam over or issue through the vent when a rupture thereof takes place may pass up into the fire and either extinguish such fire or so effectually dampen the same as to remove further risk of injury to  
100 the car. By removing the cover 10 access is given to the safety-vent for removing the



same and placing another in position. It is not necessary that the joint between the base and cover of the safety-vent be air-tight, as the rush of steam and hot water will usually  
5 be sufficient to extinguish the fire, and any leak at the joint will be immaterial, as the chamber L is usually outside the car.

Any suitable safety-vent may be made use of in the chamber, from which the steam and  
10 water are led to the fire to extinguish the same when the vent is ruptured or opened.

I claim as my invention—

1. The combination, with the car-heating apparatus having a fire-chamber, an expansion-vessel, and pipes in which the heated  
15 liquid is caused to circulate, of a safety-vent adapted to be ruptured by undue pressure, an inclosure for the same, and a pipe for directing the steam or water to the fire-chamber,  
20 substantially as specified.

2. The combination, with the car-heating apparatus having a fire-chamber, an expansion-vessel, and circulating-pipes, of a safety-vent formed of cast metal with a thick body

and a thin face, adapted to be blown off by  
25 undue pressure, a chamber inclosing such safety-vent, and a pipe from the same to the fire-chamber for directing the steam and water upon the fire when the safety-vent is ruptured by the pressure, substantially as set  
30 forth.

3. The combination, in a car-heating apparatus, of a fire-chamber, a closed system of heating-pipes within the car, and a water-heating coil or vessel acted on by the fire, an  
35 expansion-vessel, a safety-vent adapted to be ruptured by undue pressure, a pipe connecting the same with the system of heating-pipes, a closed chamber into which the steam passes when the safety-vent is ruptured, and a pipe  
40 leading from such chamber to the fire, substantially as set forth.

Signed by me this 13th day of January, 1890.

W. C. BAKER.

Witnesses:

A. E. SMITH,

F. B. WEAVER.