(No Model.) 2 Sheets—Sheet 1.

C. F. MURDOCK.

SAFETY VALVE FOR CAR HEATERS.

No. 406,290. Patented July 2, 1889.

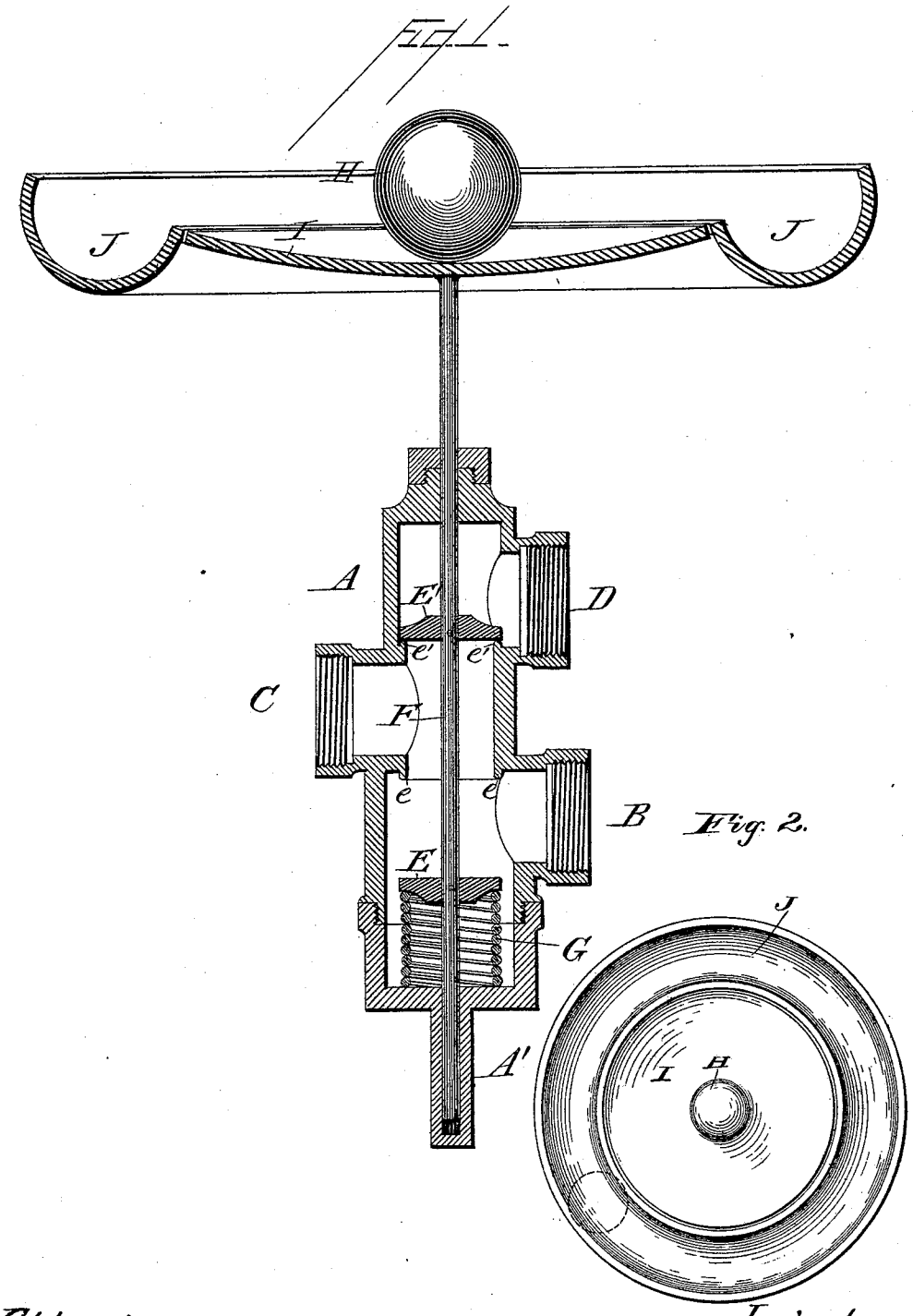


Fig. 2.

Attest.
F. H. Schott
Charles J. Stockman

Inventor:
Charles F. Murdock
by Morris J. Foote
atty

N. PETERS. Photo-Lithographer, Washington, D. C.

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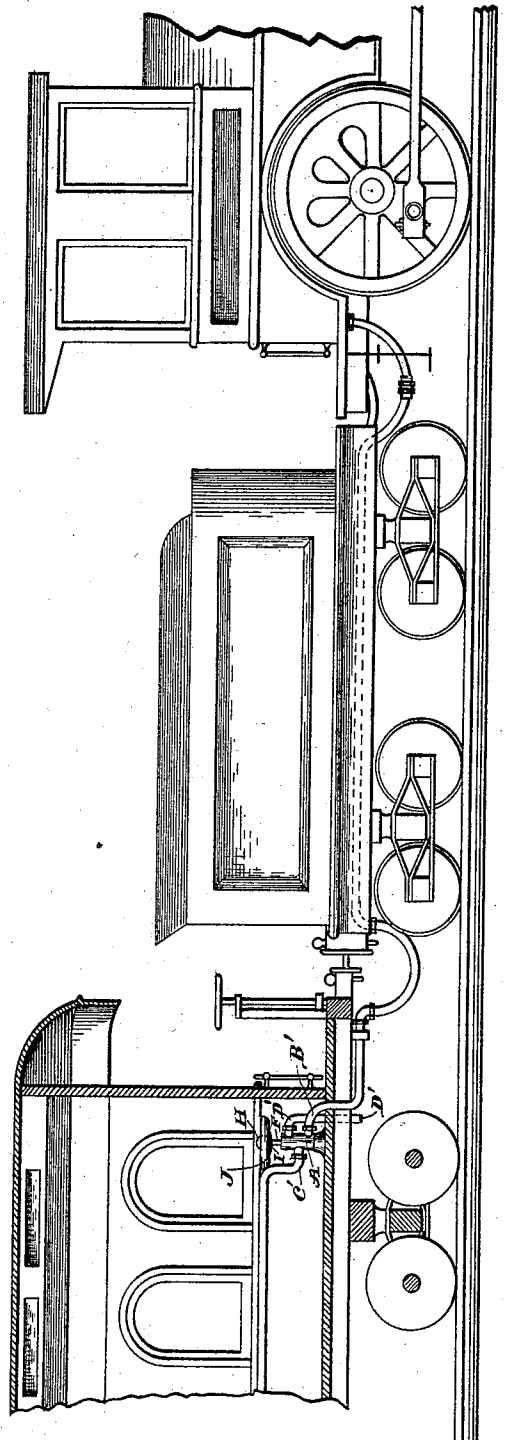


Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES F. MURDOCK, OF DETROIT, MICHIGAN.

SAFETY-VALVE FOR CAR-HEATERS.

SPECIFICATION forming part of Letters Patent No. 406,290, dated July 2, 1889.

Application filed October 26, 1888. Serial No. 289,230. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. MURDOCK, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Safety-Valves for Car-Heaters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has relation to certain new and useful improvements in valves for car-heaters; and it has for its object the construction of a device of this character particularly adapted for use in connection with means for heating railway-cars by steam or hot water, and which will prevent the occurrence of those accidents liable to arise from the use of such means as a heating medium in the event of an accident to the train.

To this end my invention consists in certain peculiarities in the construction, arrangement, and combination of parts, substantially as will be hereinafter described, and particularly pointed out in the subjoined claims.

In the accompanying drawings illustrating the invention, and in which the same letters of reference refer to the same parts in all the figures, Figure 1 is a vertical section of my improved safety and relief valve, and clearly shows the arrangement of the internal mechanism; and Fig. 2 is a detail plan view of the concave disk and the pocket surrounding the same. Fig. 3 is a view of a locomotive and passenger-coach, the latter in section, showing the relation of the valve to the coach and the conducting-pipes to the locomotive.

A represents the main valve body or casing, which is constructed of any suitable size, form, or material, and preferably terminates in a recessed extension A′ to receive the extremity of the valve-rod. The casing A is formed or provided with lower inlet-opening B, having coupled thereto the conducting-pipe B′, and intermediate outlet-opening C, having coupled thereto the conducting-pipe C′, said openings being, respectively, situated on opposite sides thereof, the inlet-opening B being coupled to the conducting-pipe B′, as shown in Fig. 3, and the outlet C coupled to the conducting-pipe C′, and also with a secondary outlet-opening D, situated above the inlet-pipe B and having communication with the exterior of the locomotive or car within which the device is situated by means of exhaust-pipe D′. The valve-casing A is also constructed with interiorly-projecting flanges *e e′*, forming seats for the valves E E′, which are respectively situated in the lower and upper portions of the said casing. As shown in the drawings, the valve E is normally out of contact with its seat *e*, leaving a clear and uninterrupted passage-way from inlet-opening B to outlet-opening C, while the valve E′ normally rests upon its seat *e′*, and thus closes the upper portion of the valve-casing, preventing the escape of any of the water or steam through outlet D.

F represents the valve-rod, which, as shown, extends from a point a suitable distance above the valve-casing through the same to a point a suitable distance below the lower valve E. This valve-rod F is obviously secured to both of the valves and has its lower extremity situated within the recess of the extension A′ of the valve-casing, which recess is made of suitable size to permit free vertical movement of the said valve-rod, but to prevent lateral movement thereof. The lower valve E has its base resting upon a coil-spring G, the pressure of which is normally overcome by the ball or weight H, (when in its normal position immediately above the valve-rod and in line therewith,) causing the valves to remain in their normal position, (shown in the drawings,) as more fully hereinafter set forth. This ball or weight is supported by means of the disk I, of a form preferably concavo-convex, and which is situated a suitable distance above the valve-casing in contact with the uppermost extremity of the valve-rod F. This disk I is surrounded by a pocket J, of a depth greater than that of the said disk, and adapted to receive and hold the weight when it has left the disk. The pocket J is rigidly secured in any approved manner to some suitable portion of the car or locomotive within which the device is located.

From the foregoing the operation of my device will be readily understood. The weight or ball H being in position immediately above the valve-rod and in alignment therewith, the resiliency of the spring G will be overcome

by the pressure of the said weight transmitted thereto through the said valve-rod, and communication will be established and maintained between inlet-openings B and outlet C, the heating medium thus being permitted to flow throughout the length of the train, while the upper portion of the valve-casing is closed by the valve E′ and any escape of the heating medium therethrough prevented; but in the event of the locomotive or the train receiving a sudden shock—such as would be caused by a collision or the train leaving the track—the weight will be caused to roll to one side or the other out of alignment with the valve-rod and into the pocket J, and its pressure upon the springs ceasing the resiliency of the same will automatically raise the valves E and E′, respectively, to and from their seats, thus cutting off the further supply of the heating medium to the tubes conducting the same to the cars and opening communication through outlet D and exhaust-pipe D′ to the exterior of the coach, so that any water or steam contained within the conducting-tube C′ at the time of the accident will be permitted to escape therefrom unobstructed. The valve being preferably situated at the head end of the coach, the danger of injury to passengers from scalding, in the event of an accident to the train, is obviated, since whenever the coach lurches abnormally communication with exhaust-pipe D′ is established, exhausting the steam from pipe C′ within the coach, and synchronously therewith cutting off the incoming steam in pipe B′.

Having now described the objects, uses, and advantages of my invention, and having described a preferred means of carrying the same into effect, what I believe to be new, and desire to secure by Letters Patent, and what I therefore claim, is—

1. In a valve for car-heaters, the main casing having an upper escape outlet-opening, a lower supply inlet-opening, and an intermediate main outlet-opening, with pipes leading to and from said openings, in combination with upper and lower valves secured to a valve-rod extending beyond the top of the main casing, said rod having a spring coiled about its lower extremity, the upper valve, when raised, adapted to open communication between the main intermediate outlet-opening and escape-outlet and the lower valve, when lowered, adapted to open communication between the supply-inlet and main outlet, a disk connected to the upper extremity of the valve-rod, a ball or weight supported by said disk and normally in alignment with said valve-rod, and a circular track or way secured to the car-body.

2. The main casing having a lower inlet-opening and a conducting-pipe coupled thereto, an upper escape outlet-opening having an exhaust-pipe connected thereto, an intermediate main outlet-opening situate on the opposite side of the main casing relatively to the said upper and lower openings and having a radiating conducting-pipe coupled thereto, in combination with upper and lower valves secured to a valve-rod which extends beyond the top of the main casing and has its upper end secured to a disk and its lower extremity surrounded by a spring, a ball or weight supported by the said disk, and a curved track or way secured to the car-body.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES F. MURDOCK.

Witnesses:
JNO. B. CORLISS,
ROBT. MCKINSTRY.