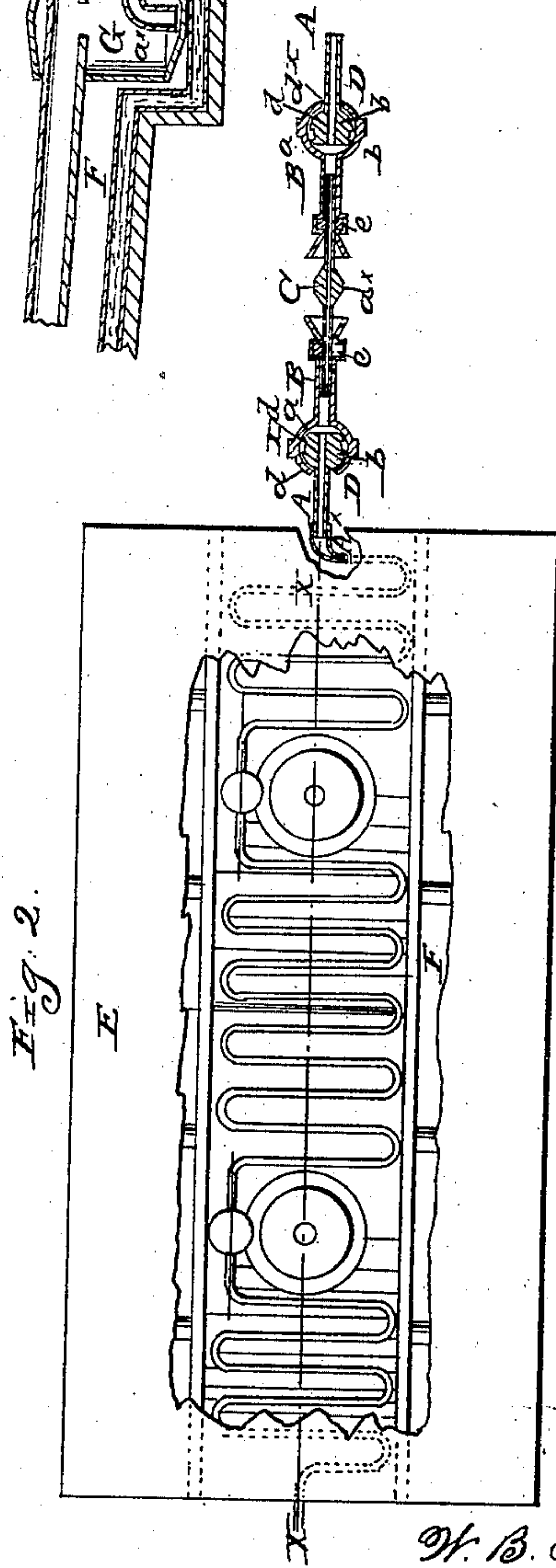
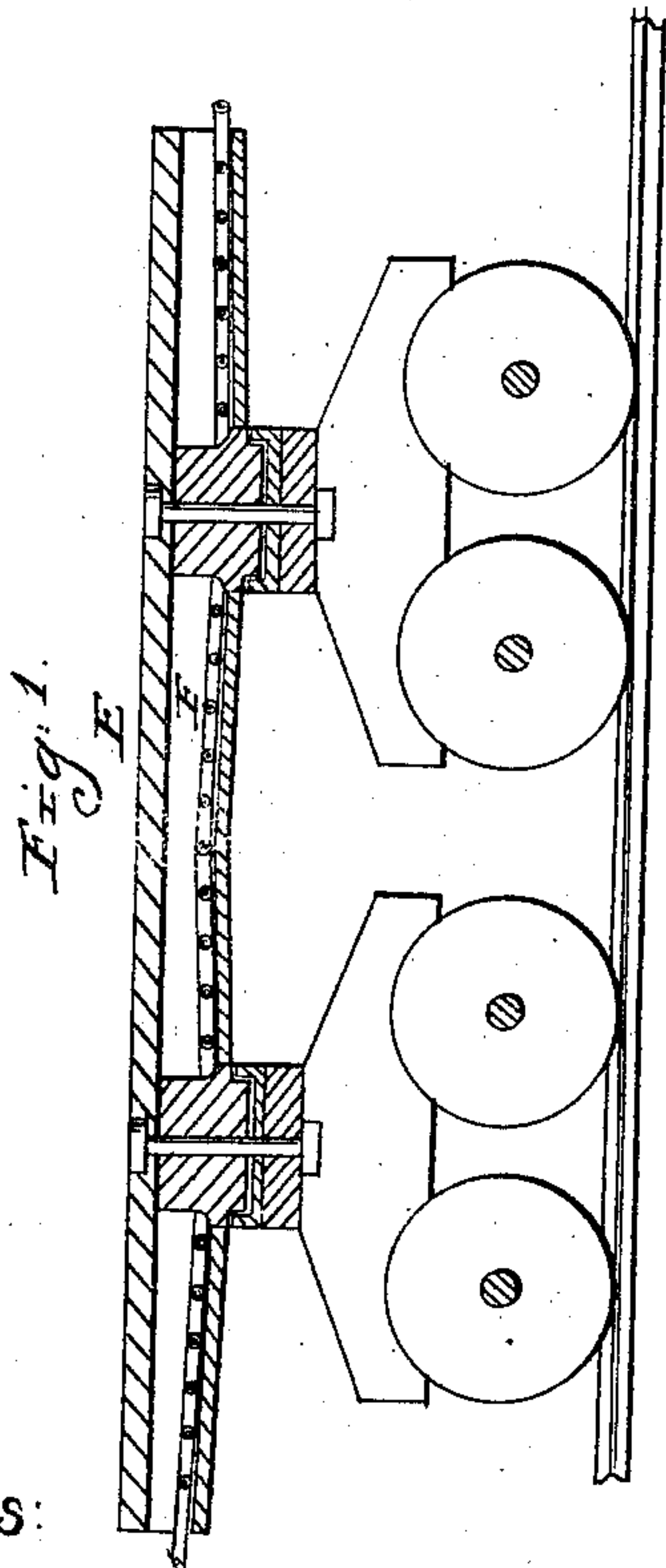
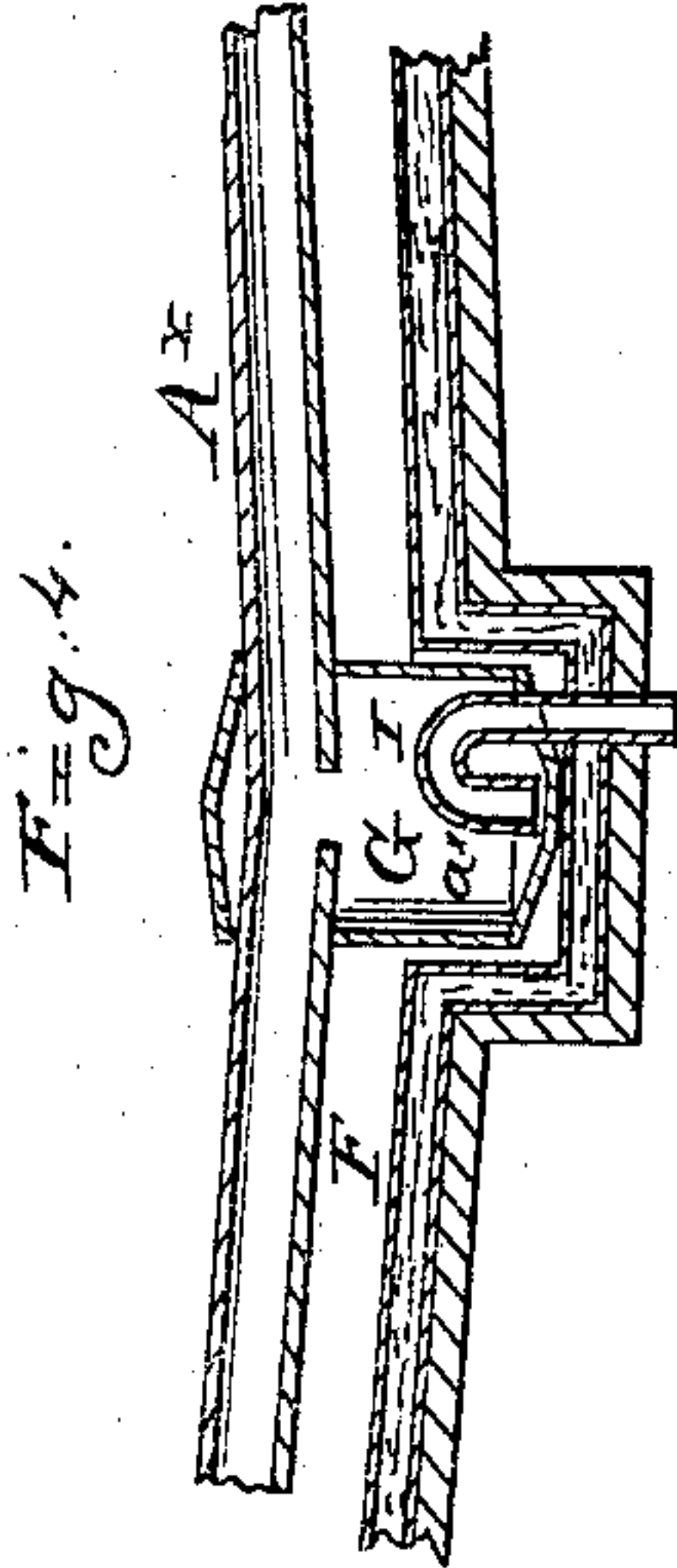
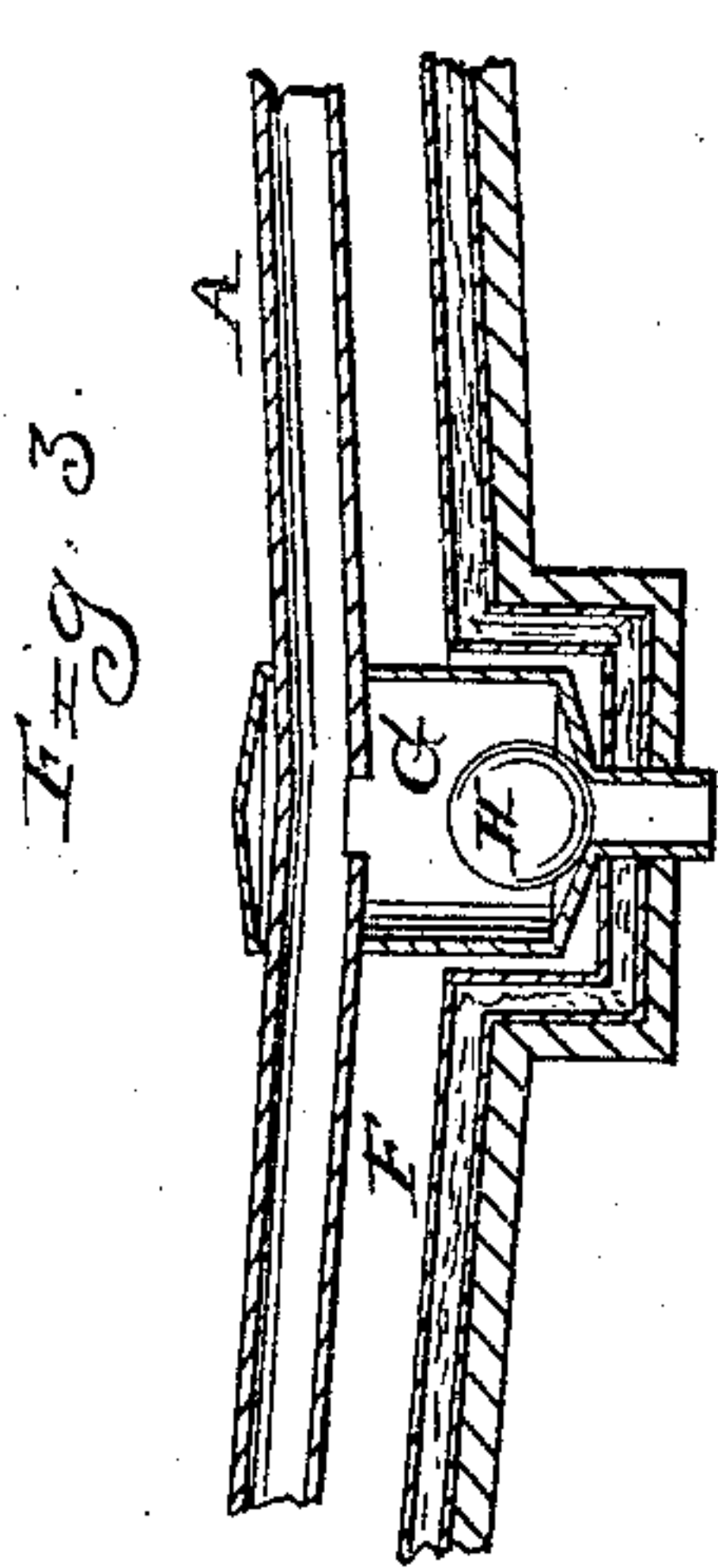


W. B. FARWELL.
RAILROAD CAR HEATER.

No. 82,210.

Patented Sept. 15, 1868



Witnesses:

W. C. Ashkettle
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Inventor:

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W. B. FARWELL, OF NEW YORK, ASSIGNOR TO HIMSELF AND CHARLES R. ABBOTT, OF ELMIRA, NEW YORK.

Letters Patent No. 82,210, dated September 15, 1868.

IMPROVEMENT IN RAILROAD-CAR HEATERS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, W. B. FARWELL, of New York, in the county and State of New York, have invented a new and useful Improvement in Heating Railway-Cars by Steam; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to certain new and useful improvements in heating railway-cars by steam taken from the boiler of the locomotive by which the cars are drawn. In this mode of heating railway-cars, two difficulties present themselves: first, the obtaining of a suitable connection between the steam-pipes of the several cars comprising a train, which, while being steam-tight, will admit of the necessary free lateral, vertical, and longitudinal play of the cars as they are drawn along, and which is due to the inequalities of the railway, sudden variations in the speed of the locomotive, &c.; and second, the ready discharge from the steam-pipes of the water of condensation, an accumulation of which in the pipes would render them inefficient for heating purposes. These difficulties, it is believed, are fully obviated by the within-described invention.

In the accompanying sheet of drawings—

Figure 1 is a side sectional view of a car provided with my invention, taken in the line $x x$, fig. 2.

Figure 2 is a plan or top view of the same.

Figures 3 and 4, detached enlarged side sectional views of a portion of the steam-heating apparatus.

Similar letters of reference indicate corresponding parts.

A A, fig. 2, represent the steam-pipes, which are fitted in or secured to the ends of the permanent steam-pipes A^x of the adjoining cars, and the pipes B, B, and C, with certain joints, hereinafter described, comprise the connections of the pipes which are permanently attached to the cars. The pipes A A and B B are connected by universal joints, D D, which are constructed as follows: The inner ends of the pipes B B are formed or provided with hollow semispheres, a , in which sections of spheres, b , on the adjoining ends of the pipes A A, are fitted. These sections of spheres b are grooved circumferentially to receive packing, d , and the former are secured in the semispheres or sockets a by screw-caps, d , which are also sections of hollow spheres, and screw on the exterior of the sockets a and lap over the sections of spheres b , so as to effectually secure the latter in the former. The packing d prevents any leakage of steam through the joints D D. The pipes B B are connected by the pipe C, which simply fits into the outer ends of B B, so that either the latter or the former may slide freely in a longitudinal direction, leakage of steam being prevented by packing, e , inserted in suitable chambers in B B. By this simple arrangement, it will be seen that the cars may move or play in a vertical, lateral, or longitudinal direction, the two former movements being permitted by the universal joints D D, and the latter movement permitted by the pipe C. The pipe C is prevented from slipping out from B B by the car-coupling, which limits the longitudinal play of the cars, and a hub or boss, a^x , on the exterior of C, at its centre, which limits the longitudinal movement of C in B B. It is not essential that the sockets a be on B, and the sections of spheres b on A; they may be reversed, a be on A and b on B, and the same end attained.

The permanent or fixed pipes A^x extend underneath the cars E, and are of sinuous form, coiled, or arranged in any suitable way to obtain as great a heat-radiating surface as possible, (see fig. 2,) and this coiled portion should be enclosed within a box or trunk, F, leaving double walls, with the space between filled with a good non-conducting material, in order to prevent the radiation of heat from the exposed sides of the box or trunk, and compel it to ascend through the bottom of the car, which bottom may be perforated or arranged in any suitable way to allow the heat to pass up into the car. This coiled or sinuous portion of the pipes A^x is not in a horizontal plane, but arranged or placed in inclined planes, as shown in fig. 1, and at the junction of the lower ends of the inclined portions of the coils there are receptacles, G, which communicate with the coils of the pipes A^x , and receive the water of condensation, (see figs. 3 and 4.) This water may be discharged from the receptacles in different ways, the different plans being shown by the figures above alluded to, the receptacle G, in fig. 3

being provided with a ball-valve, H, which is kept down or closed, by the pressure of the steam, until the water rises above it, when the valve is raised, by the buoyancy of the latter, and the water allowed to escape until it descends in G to a level, the height of which is equal to the diameter of the valve. The water, therefore, it will be seen, cannot reach a height in G above the height of the valve when the latter is closed.

In fig. 4 a siphon, I, is employed for the purpose, which discharges the water from G whenever the water reaches the curve or bend a^x . The escape of steam is prevented by either of these devices.

Thus, by this simple means, the water of condensation is discharged from the steam-pipes, so that the steam will have a free passage through the whole length of the pipes A^x from car to car.

I claim as new, and desire to secure by Letters Patent—

1. The universal joints D D, and the pipes B B and C, applied to the permanent or fixed pipes A^x of the cars, for the purpose of forming a steam-tight connection between the pipes of the cars, and admitting of a free vertical, lateral, and longitudinal play or movement of the latter, substantially as set forth.

2. The placing of the coiled or sinuous portion of the steam-pipes A^x in inclined positions, with water-receptacles, G, communicating with them at their connecting-points, said receptacles being provided with valves or siphons, so arranged as to admit of the discharge of the water of condensation at proper intervals, without permitting the escape of steam, substantially as set forth.

W. B. FARWELL.

Witnesses:

WM. F. McNAMARA,
ALEX. F. ROBERTS.