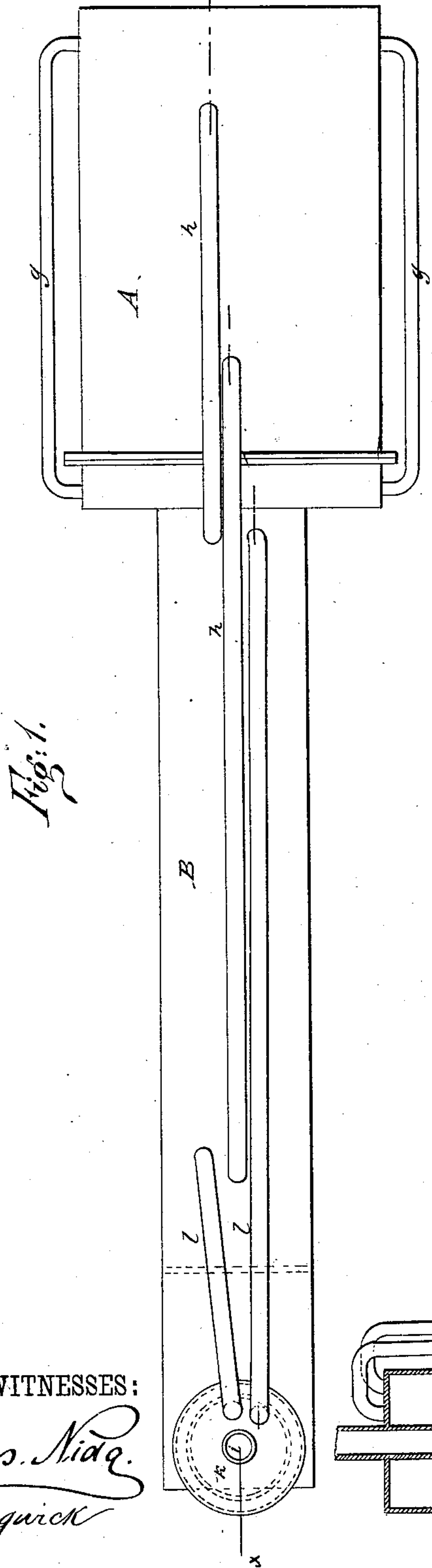


E. H. ANGAMAR.
Boiler for Locomotives.

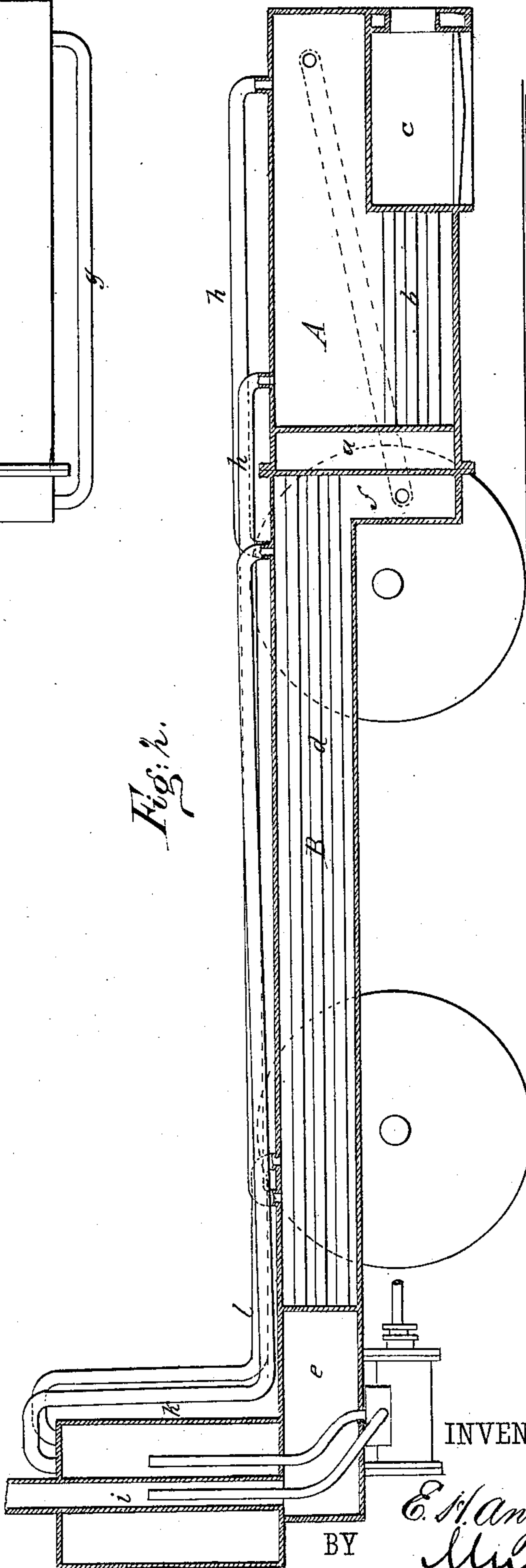
No. 226,694.

Patented April 20, 1880.



WITNESSES:

Chas. N. A. Q.
C. Sedgwick



INVENTOR:

E. H. Angamar
Mum & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EUGENE H. ANGAMAR, OF NEW ORLEANS, LOUISIANA, ASSIGNOR TO SURFACE MOTOR COMPANY OF NEW YORK CITY.

BOILER FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 226,694, dated April 20, 1880.

Application filed August 5, 1879.

To all whom it may concern:

Be it known that I, EUGENE HENRY ANGAMAR, of New Orleans, in the parish of Orleans and State of Louisiana, have invented
5 a new and Improved Boiler for Locomotives, of which the following is a specification.

My improvements relate to boilers that are applied beneath passenger-cars and supplied with hot water and steam from stationary boilers at the end of the route, as more fully described in the Letters Patent granted to me
10 November 27, 1877, No. 197,584.

The object of the present invention is to construct a boiler adapted for application to
15 horse-cars now in use, so as to utilize such horse-cars without material changes; and my invention consists in a boiler made in two portions, separated by a mediate chamber, the water and steam spaces of the parts being
20 connected by pipes. The construction will be explained more particularly with reference to the accompanying drawings, and the invention pointed out in the claim.

In the drawings, Figure 1 is a plan view of
25 the boiler. Fig. 2 is a vertical longitudinal section on line *xx* of Fig. 1, showing the boiler also in its relation to the car-wheels.

Similar letters of reference indicate corresponding parts.

30 The boiler is made in two parts, A B, of convenient size and form to place under the car-body, and between the parts A B is a space or chamber, *a*. The part A is deeper than the part B, and contains a fire-box or furnace, *c*, from which flues *b* extend to the
35 space *a*.

The part B is fitted with tubes *d*, that extend from the space *a* to the smoke-box *e*, and the part B is formed with a water-leg, *f*, one
40 side of which is formed by the wall of chamber *a*, and the leg *f* is connected by tubes *g* with the part A below the water-level. The steam-spaces of the parts A B are connected by tubes *h*.

45 Upon the smoke-box *e* and around the smoke-pipe *i* the steam-dome *k* is placed. This dome is connected with the steam-space of A by pipes *l*. The steam-dome will project upward through the front platform of the
50 car, and the chimney will extend through the roof.

By the above-described construction, while the boiler is adapted for occupying the space beneath the car-body, it has ample water-space and a large extent of heating-surface, so that
55 the initial pressure of the water and steam when placed in the boiler may be readily maintained by a small fire.

It will be seen that the chamber *a* furnishes additional heating-surfaces, and the products
60 of combustion from the furnace, instead of passing straight to the chimney, are arrested in chamber *a* before passing to the discharge-flues *d*. By these means the heat of the fire is utilized to the greatest possible extent to
65 maintain the pressure and overcome the depredation of heat or pressure occasioned by the exhaust of the engine.

By having the steam and water spaces connected by double pipes attached to different
70 points, as shown, the connection will not be interrupted by changes of level of the car, as when one pipe is choked the other will be free.

I am aware that it is not new to use steam-
75 chests or annular spaces around chimneys, or to use an auxiliary combustion-chamber between and connecting with two sections; but in these cases all the heat may pass directly through the chamber, the flue-tubes being op-
80 posite, while in mine the heat is received by the back plate of the chamber, and must rise before escaping, my steam-dome being separate from boiler and connected with it by pipes, so that changes of level will not interrupt cir-
85 culation.

What I claim as new and of my invention is—

A passenger-car boiler consisting of two parts, A B, intermediate chamber, *a*, smoke-
90 box *e*, and steam-dome *k*, arranged around smoke-stack and connected with steam-space, the part A having fire-box and flues *b c*, and the part B having water-leg *f* and tubes *d*, as shown and described.

E. H. ANGAMAR.

Witnesses:

C. SEDGWICK,
GEO. D. WALKER.