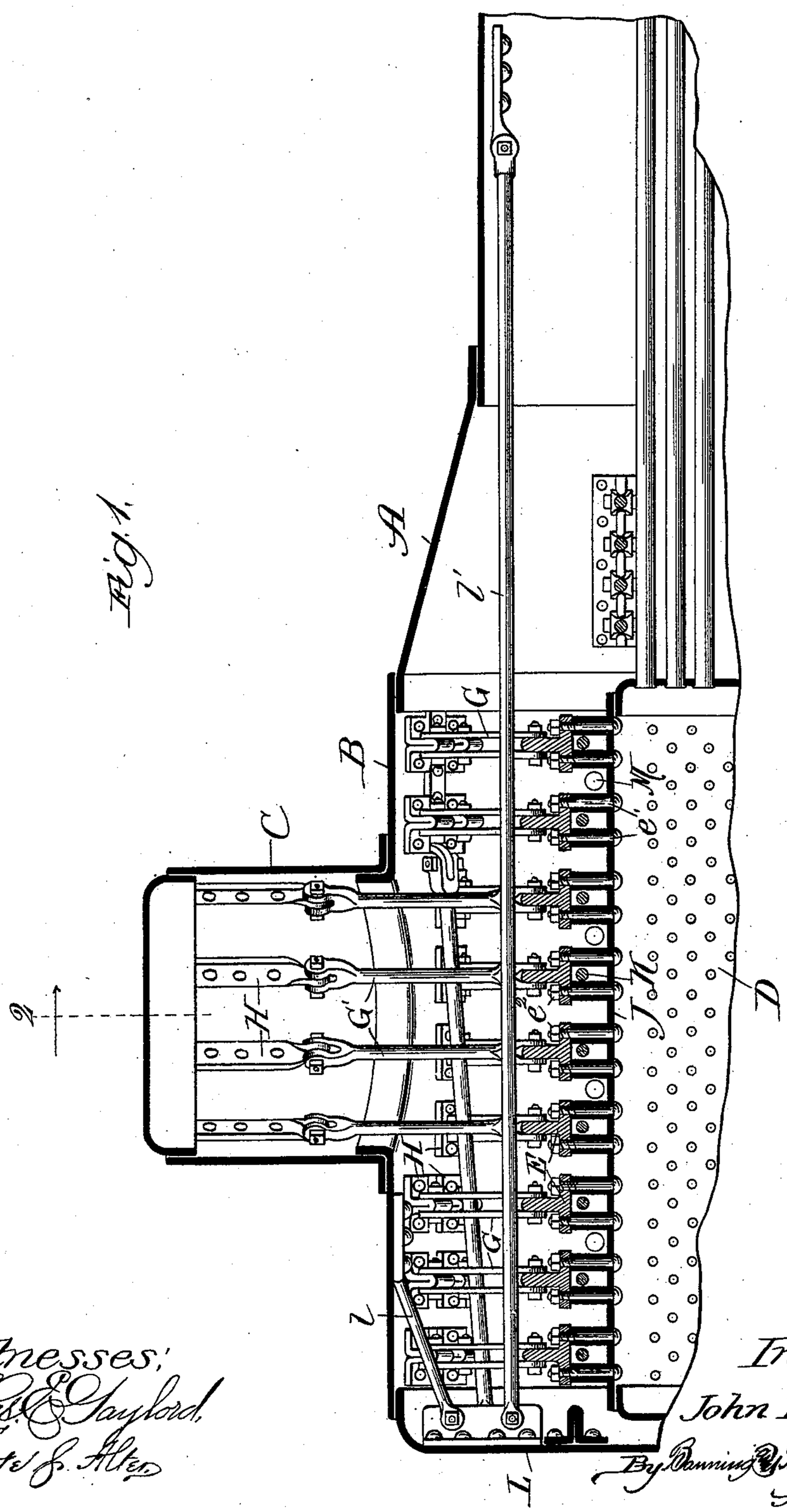
(No Model.) 2 Sheets—Sheet 1.

J. PLAYER.

BOILER.

No. 533,080. Patented Jan. 29, 1895.

Fig. 1.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

J. PLAYER.

BOILER.

No. 533,080. Patented Jan. 29, 1895.

Fig. 2.

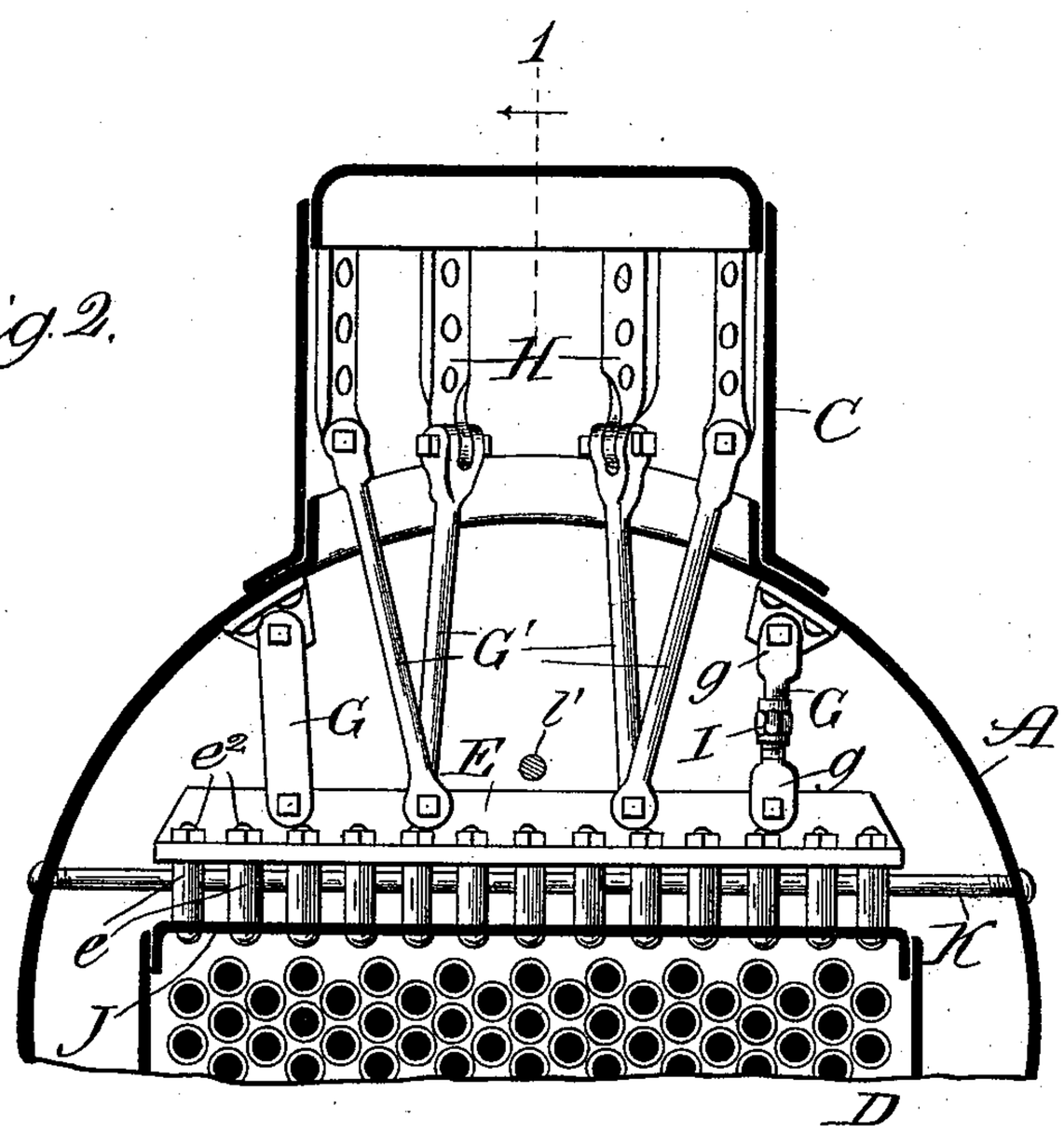


Fig. 3.

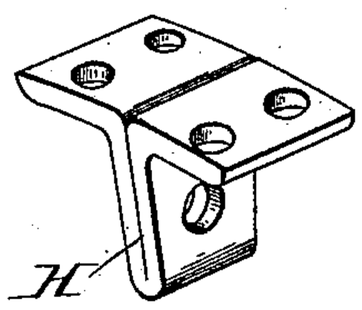
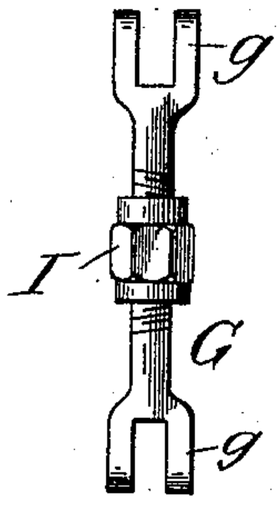


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN PLAYER, OF TOPEKA, KANSAS.

BOILER.

SPECIFICATION forming part of Letters Patent No. 533,080, dated January 29, 1895.

Application filed March 20, 1894. Serial No. 504,409. (No model.)

To all whom it may concern:

Be it known that I, JOHN PLAYER, of Topeka, Shawnee county, Kansas, have invented certain new and useful Improvements in Boilers, of which the following is a specification.

My invention relates particularly to locomotive boilers, and has for its object the providing of simple, economical and efficient mechanism for supporting and staying the crown sheet, wagon top, and other parts of a locomotive boiler; and the invention consists in the features, combinations and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of a portion of a boiler above the fire box, taken on line 1 of Fig. 2; Fig. 2, a transverse section taken on line 2 of Fig. 1; Fig. 3, a perspective view of one of the crow feet to which the sling stays are secured, and Fig. 4 a detail view of one kind of sling stays.

In internally fired boilers, especially those of the locomotive, where steam is generated and confined at very high pressures, attention has to be paid to supporting and sustaining the different parts of the boiler, more particularly the crown sheet, which, being thinner and in direct contact with the heated gases in the fire box, would warp or collapse under the high pressure of steam, which is generally above one hundred and thirty pounds per square inch, and is often used at two hundred pounds. Divers means have been devised for supporting the crown sheet and wagon top, and, in a measure, have proved effective so far as the mere supporting of the crown sheet is concerned, but without attendant advantages, in that the movement of the different parts—due to the expansion and contraction by heat and cold—were not compensated for; and the circulation of the water currents, owing to the deposit of sediments, became choked, thus allowing the crown sheet to burn out.

To overcome the above, as well as other objections, and to provide simple and more efficient mechanism than is now in use is the principal object of my invention.

In constructing my improvements, I use a boiler, A, having what I term a wagon top, B, a steam dome, C, and a fire box, D, secured and riveted together in any well known manner, the particular manner of which will be understood by those skilled in the art from a glance at the drawings, and which, therefore, needs no further description here.

To support the crown sheet, I provide a number of T-irons, E, which extend transversely or longitudinally across the fire box of the boiler, and which are connected to and supported by either the wagon top or steam dome, according to their location, by means of the sling stays, G. These sling stays are provided with bifurcated ends, *g*, by which they are connected with the T-irons and the crow feet, H, and when desired may be provided with right and left hand turn-buckles, I—see Fig. 4—for the purpose of adjusting the strains. I connect the T-irons with the crown sheet, J, by means of a series of parallel cylindrical thimbles, *e*, arranged in two lines and extending at each side of the center of the T-iron. Extending through the cylindrical bore of the thimbles, with their heads resting against the lower surface of the crown sheet and their threaded ends projecting above the ledges of the T-irons, are bolts, *e'*, provided with nuts, e^2, so that the tightening of these bolts and nuts will draw the crown sheet against the thimbles and removably connect it with the T-irons. The thimbles being made of parallel cylinders can be placed a suitable distance from each other, so as not to interfere appreciably with the circulation of the water, thus in a measure preventing the deposit of sediment. By the use of the screw-threaded bolts each individual thimble may be removed independently without taking out other parts.

From the above description, it will be seen that the T-irons have no rigid connection with other parts than the crown sheet, and by flexibly connecting the sling stays with the boiler proper they are permitted to partake of the same movements as the crown sheet. The wagon top is supported also by these sling stays, but to further insure their proper position and form, I provide lateral stay rods, K, running from side to side thereof. To prevent warping and stay the boiler front, L, I provide it with several crow feet, having

stay bolts, *l*, *l'*, running and connecting with crow feet on the wagon top and boiler, respectively. The wagon top is provided with what I term cleaning holes, M, and plugs arranged on a line above the crown sheet, so that the same may be readily cleaned should any sediment be deposited thereon and become hardened.

The advantages incident to the use of my improvements are, first, that a clearer space is provided above the crown sheet for the water to circulate, thus minimizing the deposit of sediment; second, the strains are more equally distributed; third, the stays are what I term flexible, permitting the expansion and contraction of the parts and compensating therefor; fourth, it permits the taking out of one thimble of T-iron, without necessitating the removal of other parts; and fifth, the adjustment of the strains.

While I have described my invention as applied to locomotive boilers, I do not desire to be limited to such use, but to cover any and all places where it may be used; and while I have described with great minuteness the details of my invention, I do not wish to be understood as limiting myself thereby, any more than is pointed out in the claims. On the contrary, I contemplate all proper changes in form, construction and arrangement, the omission of parts, and the use of equivalents, as circumstances may suggest or render expedient.

I claim—

1. In combination with a boiler, a fire box having a crown sheet, T irons arranged above such crown sheet, means for supporting the T irons, a series of thimbles interposed between the T irons and crown sheet, and means for independently and removably securing the T irons, crown sheet and thimbles together, substantially as described.

2. In combination with a boiler, a fire box having a crown sheet, T irons arranged above such crown sheet, sling stays connecting with and supporting the T irons from the outer boiler sheets, and a series of thimbles for connecting the T irons and crown sheet together, substantially as described.

3. In combination with a boiler, a fire box having a crown sheet, T irons arranged above such crown sheet, sling stays flexibly connecting with and supporting the T irons from the boiler proper, and a series of thimbles independently and removably securing the T irons and crown sheet together, substantially as described.

4. In combination with a boiler, a fire box having a crown sheet, T irons arranged above such crown sheet, sling stays flexibly connecting with and supporting the T irons from the boiler proper, several of such sling stays being adjustable, a series of parallel thimbles interposed between the T irons and crown sheet, and screw bolts passing through the thimbles for removably securing the different parts together, substantially as described.

5. In combination with a boiler, a fire box having a crown sheet, T irons arranged above such crown sheet, crow feet attached to the boiler proper, sling stays connecting with and supporting the T irons from the crow feet, and a series of thimbles connecting the T irons and crown sheet together, substantially as described.

JOHN PLAYER.

Witnesses:
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