No. 655,018. Patented July 31, 1900.

R. SCHEIDLER.

STEAM BOILER.

(Application filed Feb. 28, 1898.)

(No Model.)

FIG. I.

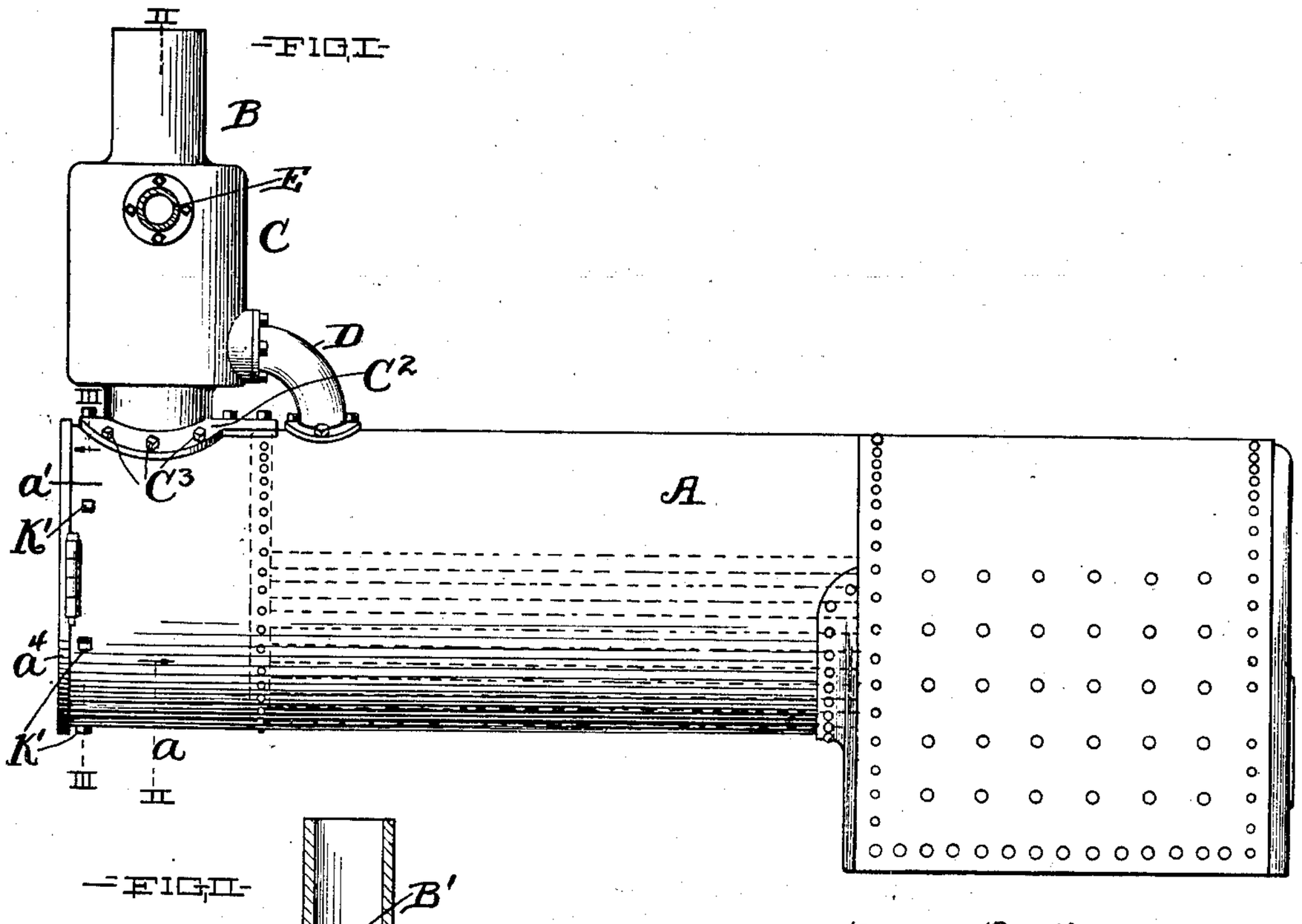


FIG. II.

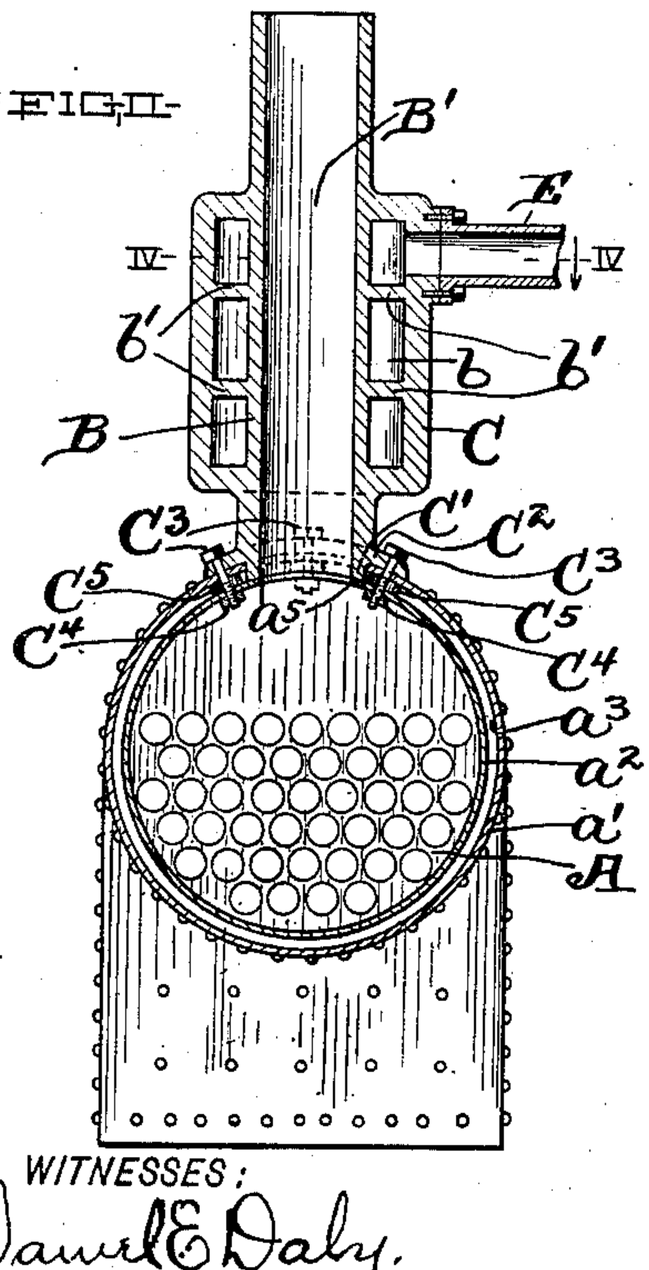
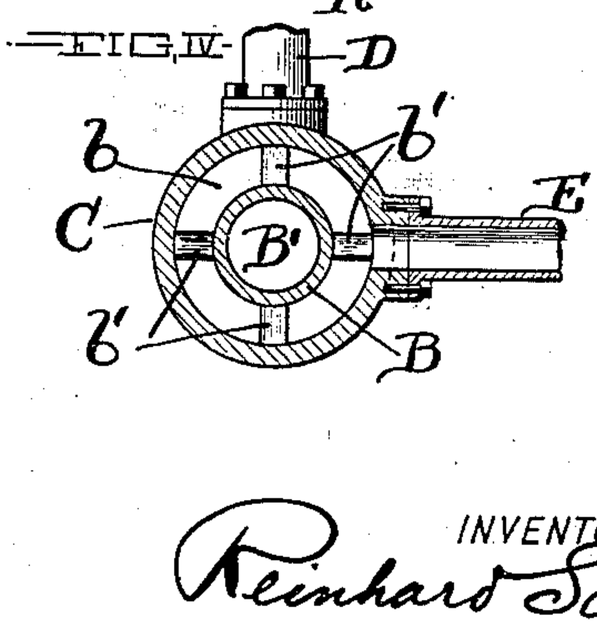


FIG. III.

FIG. IV.



WITNESSES:

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UNITED STATES PATENT OFFICE.

REINHARD SCHEIDLER, OF NEWARK, OHIO.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 655,018, dated July 31, 1900.

Application filed February 28, 1898. Serial No. 672,010. (No model.)

To all whom it may concern:

Be it known that I, REINHARD SCHEIDLER, of Newark, Licking county, Ohio, have invented certain new and useful Improvements in Steam-Boilers for Traction-Engines, &c.; 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 pertains to make and use the same.

My invention relates to improvements in steam-boilers, and more especially to a boiler for traction-engines and locomotives.

One object is to make the steam-dome and the smoke-flue in one and the same casting that has the smoke-flue formed centrally thereof and has a steam-chamber formed around the flue and having its opposing walls strong and durable and adequately connected together by internal stays integral with the casting.

With this object in view and to attain certain other advantages hereinafter mentioned the invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation, partly in section, of a steam-boiler embodying my invention. Fig. II is a vertical section on line II II, Fig. I, looking in the direction of the arrow. Fig. III is a vertical section on line III III, Fig. I, looking in the direction of the arrow. Fig. IV is a transverse section on line IV IV, Fig. I.

Referring to the drawings, A designates the boiler proper; *a*, the smoke-box, formed at one end of the tubed portion of the boiler; B, the upright smoke-flue, and C the steam-dome. Flue B and dome C consist of one upright casting suitably secured at its lower end to the top of the smoke-box. The said casting has the smoke-flue forming passage-way B′ extending vertically therethrough and in open relation at its lower end with the chamber of the said box. The said casting has a steam-dome-forming chamber *b*, formed around the smoke-flue. The outer or surrounding wall or walls of chamber *b* are somewhat thicker than the said chamber's inner wall or walls, and the said opposing walls are connected together, and consequently reinforced, by any suitable number of suitably-arranged webs or stays *b*′, that are integral with the said walls. The top of the boiler, preferably near the smoke-box, and the lower portion of the steam-dome are connected together by a pipe D, that is suitably secured to the boiler-top and dome and establishes open relation between the steam-space of the boiler proper and the lower portion of the steam-space of the dome. E designates a pipe that communicates with and leads from the upper end of the steam-space of the dome to the engine-cylinder, (not shown,) wherein the steam is utilized.

The dividing wall or walls between the smoke-flue and steam-dome chamber is extended upwardly above the dome a suitable distance to form an upward extension of the said flue.

It will be observed that the combined smoke-flue and steam-dome, being made of a reinforced single casting, is free from seams or joints and requires no riveting in its construction and is not liable to leak nor to succumb to the steam-pressure in the dome-chamber, nor is it liable to be affected or injured by exhaust-steam and gaseous products of combustion. The dome's outer shell is preferably somewhat thicker than the shell that separates the smoke-flue from the dome-chamber, so as to reduce the waste of heat and condensation of steam to a minimum.

The body of the smoke-box consists of two cylindrical shells a' and a^2, arranged the one, a^2, centrally within and somewhat smaller in external diameter than the internal diameter of the other, a', so as to form an air-space a^3 between the exterior of the inner shell and the internal surface of the outer shell. The said smoke-box shells are held apart by collars K, interposed between the shells at suitable intervals circumferentially of and near the outer ends of the shells. The said collars are mounted upon bolts K′, that extend through both shells. These bolts are arranged with their heads at the outer side of the outer shell, and nuts K^2 are mounted upon the bolts at the inner side of the inner shell. The smoke-box at its outer end is provided with a door a^4. The inner shell a^2 at the top is provided with an aperture a^5, that registers with the passage-way through the

smoke-flue. My improved smoke-box is comparatively long-lived. The outer shell a' or jacket of the smoke-box will last as long as the boiler's water-carrying portion, of which the said shell is a part, and the inner shell or section of the smoke-box when it is burned out or requires repairing can be readily removed for the purpose upon loosening the nuts and withdrawing the bolts that are instrumental in supporting the said inner shell. The latter is therefore removable and of course extends from the boiler's tubed or water-carrying portion to the outer end of the smoke-box. By my improved construction of smoke-box it is obvious that little heat is wasted.

The casting that forms the smoke-flue and steam-dome is provided at its lower end with a downwardly-projecting flange C', that extends around the aperture a^5 of the smoke-box and engages the external surface of the outer shell of the smoke-box, and consequently obstructs communication between the path of the products of combustion and the air-space between the inner and outer shells of the smoke-box. The said casting has its smoke-flue-forming portion extending below the dome-forming portion, and the said downward extension at its lower end and above flange C' is provided with a laterally-projecting external flange C^2, that engages the external surface of the outer shell of the smoke-box. Bolts C^3 extend through the said flange C^2 and through both shells of the smoke-box. The bolts are arranged with their heads at the upper sides of the flange. Nuts C^4 are mounted upon the bolts at the inner surface of the inner shell of the smoke-box and collars C^5 are mounted upon the bolts between the two shells of the smoke-box. The said collars C^5 are instrumental in bracing apart the two shells and reinforce the support for the casting that forms the smoke-flue and steam-dome. The said construction renders the said casting readily removable, and of course the said nuts and bolts are withdrawn to accommodate the removal of the inner shell of the smoke-box.

What I claim is—

1. As an article of manufacture, the dome C having the centrally-located open-ended upright passage-way B', the chamber *b* formed around the surrounding wall of the aforesaid passage-way, and the webs or stays *b'* connecting the said wall with the outer wall of the chamber, which last-mentioned wall is thicker than the first-mentioned wall, substantially as shown, for the purpose specified.

2. In a steam-boiler, the combination with the tubed water-carrying portion of the boiler, and the smoke-box comprising two separated shells supported the one within the other, and the inner shell's top having an aperture; of a casting having a centrally-located open-ended passage-way that communicates with the aforesaid aperture, and arranged upon the smoke-box and flanged laterally and externally at its lower end, bolts extending through the said flanged end and through both smoke-box shells, nuts upon the bolts, means for bracing apart the two shells at the bolts, a steam-chamber surrounding the passage-way, a pipe or passage-way between the said chamber and the steam-space of the tubed portion of the boiler, and another pipe or passage-way for conducting steam from the chamber, substantially as shown, for the purpose specified.

3. In a steam-boiler, the combination with the tubed water-carrying portion of the boiler, and the smoke-box comprising two separated shells supported the one within the other, and the inner shell's top having an aperture; of a casting arranged above the smoke-box and flanged laterally and externally at its lower end, bolts extending through the said flanged end and through both smoke-box shells, nuts upon the bolts, collars upon the bolts between the two shells, and the aforesaid casting being formed with a steam-chamber surrounding an upright smooth passage-way communicating with the aforesaid aperture, a pipe or passage-way between the said chamber and the steam-space of the tubed portion of the boiler, and another pipe or passage-way for conducting steam from the said chamber, substantially as set forth.

Signed by me at Cleveland, Ohio, this 2d day of February, 1898.

REINHARD SCHEIDLER.

Witnesses:

W. E. DONNELLY,

C. H. DORER.