

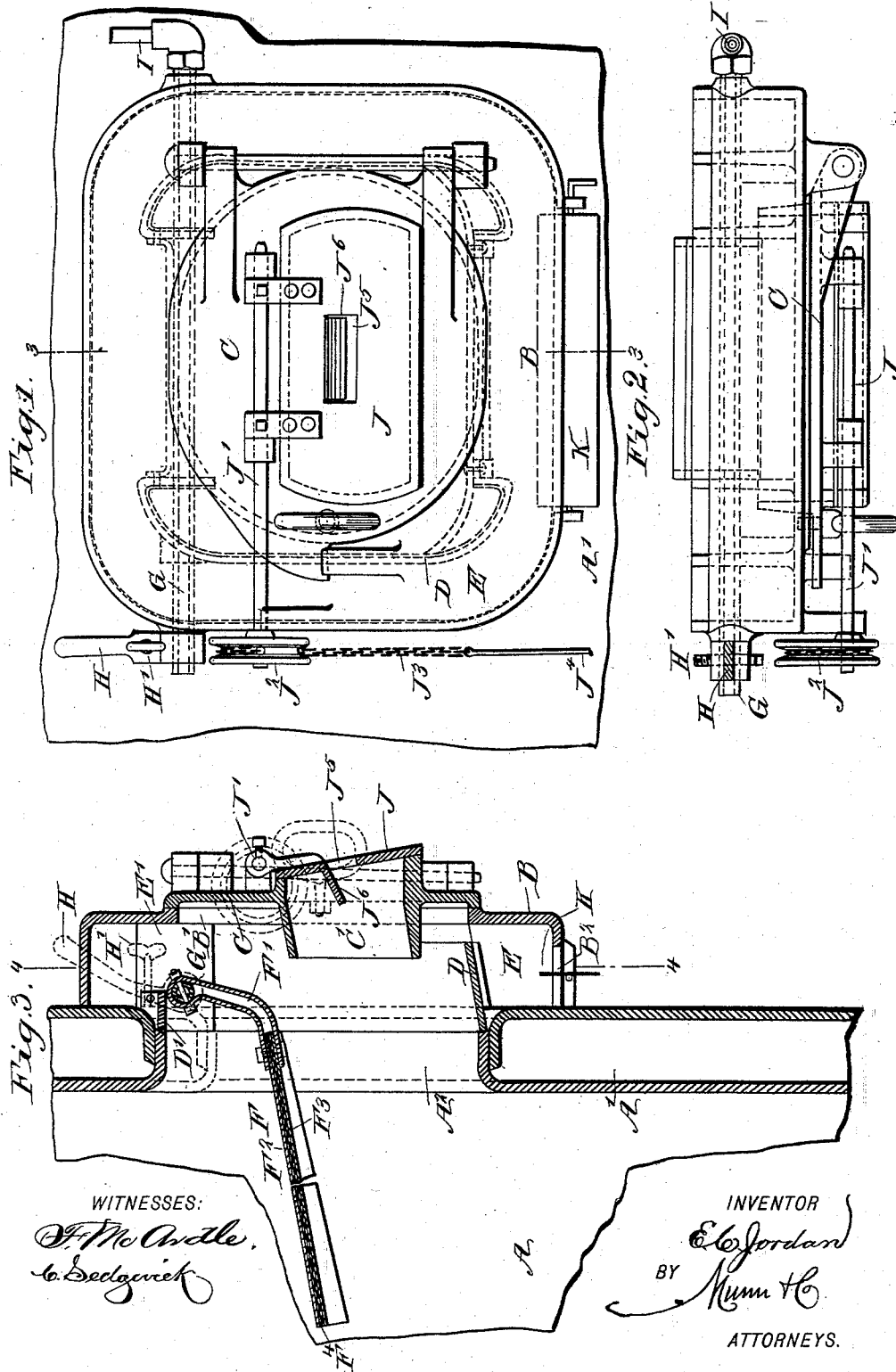
(No Model.)

2 Sheets—Sheet 1.

E. C. JORDAN.
LOCOMOTIVE BOILER.

No. 524,901.

Patented Aug. 21, 1894.



WITNESSES:

T. McAnally
W. Sedgwick

INVENTOR

E. C. Jordan
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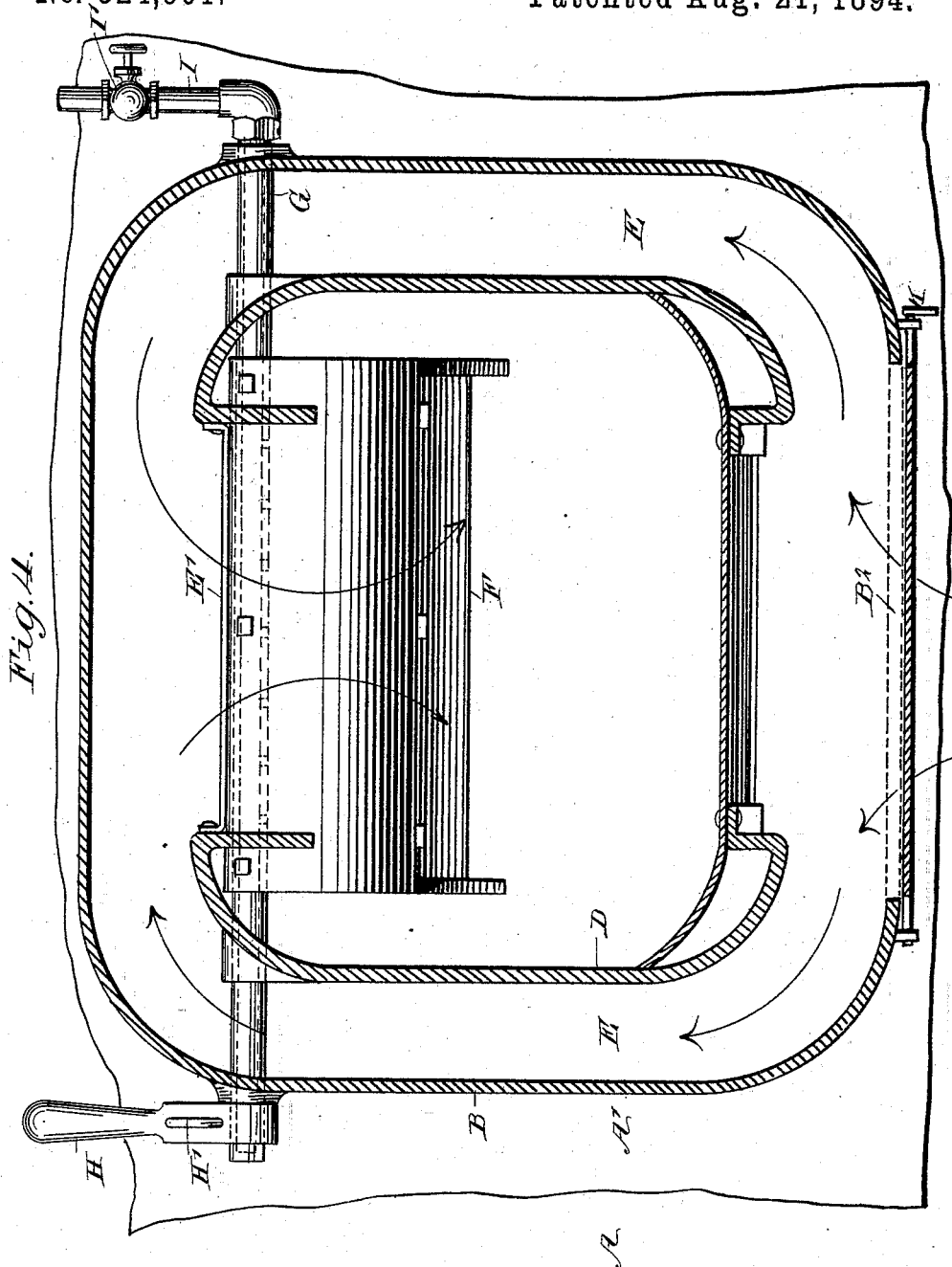
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WITNESSES:

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UNITED STATES PATENT OFFICE.

ELMER C. JORDAN, OF SACRAMENTO, CALIFORNIA.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 524,901, dated August 21, 1894.

Application filed November 7, 1893. Serial No. 490,260. (No model.)

To all whom it may concern:

Be it known that I, ELMER C. JORDAN, of Sacramento, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Locomotive-Boilers, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in locomotive boilers, whereby preheated air is admitted to the fire-box for insuring proper combustion and saving of the fuel.

The invention consists principally of a box-like frame secured on the boiler and formed at its under side with an opening for the entrance of the air, and air passages leading from the said opening in the frame to a top opening and to the fire-hole in the boiler end.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section of the same on the line 3—3 of Fig. 1; and Fig. 4 is a sectional front view of the same on the line 4—4 of Fig. 3.

The boiler A of any approved construction is provided at its front end A' with the usual fire hole A² through which the fuel is introduced to the fire-box of the boiler. A box-like frame B is secured to the outer face of the front A', so as to surround the fire hole A² and in the front of this box-like frame B is formed a door opening B' covered by a door C hinged in the usual manner to the front face of the frame B.

In the under side of the frame B is formed an opening B² and within the said frame and directly surrounding the fire hole A² is arranged a wall D which forms with the sides and top of the frame B, air passages E leading from the opening B² to an opening E' in the top of the said wall D so that the said opening E' leads into the interior of the fire hole A² and to the inside of the fire-box. Thus air entering the opening B² passes

through the air passages E around the wall D to the top thereof to finally pass through the opening E' into the fire hole A², and it is heated by coming in contact with the heated wall D.

In order to guide the air in its downward movement from the opening E' to the interior of the fire-box, I provide a deflector F, which extends from the frame B through the fire hole A² into the fire-box, as plainly illustrated in Fig. 3. This deflector F is secured on a shaft G journaled in suitable bearings in the sides of the wall D, and the frame B, one outer end of the said shaft carrying a handle H in which screws a screw H' abutting against the face of the front end A' of the boiler A.

By adjusting the screw H' more or less inclination can be given to the deflector F. The shaft G is made hollow and closed at the end having the handle H and connected at the other end with a pipe I, leading to the steam dome of the boiler, so that superheated steam can pass from the steam dome into the said hollow shaft and through openings in the same to a passage F' formed within the upper part of the deflector F. The lower part of this deflector is formed with two plates F² and F³ between which are held perforated sheets F⁴ so that steam passing into the deflector F' is readily decomposed between the plates, the iron taking up the oxygen so as to leave the hydrogen free at the end of the deflector, it being understood that the freed hydrogen passes into the fire-box to aid combustion of the fuel burning therein.

A valve I' on the pipe I serves to regulate the amount of steam admitted to the deflector. The door C previously mentioned is formed with a box-like opening C' closed at its outer end by an auxiliary door J' having its pintle J' journaled in suitable bearings attached to the door C. On one outer end of the pintle J' is eccentrically secured a wheel J² over which passes a chain J³ connected with a downwardly-extending rod J⁴ under the control of the fireman so that when the latter exerts a pull on the rod, the eccentric wheel J² will turn, thus causing the pintle J' to turn likewise, whereby the door J is swung open. As soon as the pressure is released on the rod J⁴ the door J will again swing down-

ward by its own weight to close the opening C'. Air is constantly admitted to the opening C' by an opening J⁵ in the auxiliary door J, the latter being also provided with an inward projection J⁶ extending from the upper edge of the opening J⁵, see Figs. 1 and 3. The door J may also have the hinge at the lower end to enable the operator to conveniently open and close it with the coal shovel.

The bottom of the wall D does not fully extend to the front of the frame B, as will be understood by reference to Fig. 3, so that a small amount of air can pass from the passage E into the fire hole A under the opening C', this air not being pre-heated to any appreciable extent at the time it enters the fire-box. A damper K is preferably arranged on the under side of the bottom of the frame B, so as to regulate the amount of air admitted through the opening B² into the air passage E.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A locomotive boiler provided with an air passage surrounding its fire hole, said passage communicating with the outer air at the bottom and with the fire hole at the top, substantially as described.

2. A locomotive boiler provided with an air passage surrounding its fire hole, said passage communicating with the outer air at the bottom and with the fire hole at the top, and a deflector for guiding the air into the interior of the fire box, substantially as described.

3. A locomotive boiler provided with an air passage surrounding the fire hole, said passage communicating with the outer air at the bottom and with the fire hole at the top, and an adjustable deflector below the opening of the passage leading to the fire hole, for guiding the air into the interior of the fire box, substantially as described.

4. A locomotive boiler provided with a door having an opening therein, an auxiliary door hinged on the main door for closing the opening thereof, and mechanism connected with the auxiliary door and under the control of the fireman for operating the said door, substantially as described.

5. A locomotive boiler provided with a door having an opening therein, an auxiliary door hinged at its upper edge to the main door and provided with a wheel eccentrically secured on its pintle, and a chain secured to said wheel, substantially as described.

6. In a locomotive boiler, a deflector comprising a hollow body connected with a steam supply and containing decomposing plates, substantially as and for the purpose set forth.

7. A locomotive boiler provided with a de-

flector comprising a hollow shaft connected with a steam supply, a hollow body attached to the shaft and into which discharges the said shaft, plates secured to the said body, and perforated sheets between the plates for decomposing the steam in the deflector, substantially as shown and described.

8. An attachment for locomotive boilers comprising a box-like frame provided with a door in its front, an opening in its under side, and with an annular wall within the frame and spaced therefrom to form an air passage, said wall having an opening in the top, the frame being adapted to be secured to the front of the boiler over the fire hole, substantially as described.

9. An attachment for locomotive boilers, comprising a box-like frame adapted to be secured to the front of the boiler and provided with a door in its front, an opening in its under side, an annular wall within the frame and spaced therefrom to form an air passage, said wall having an opening in its top, and a deflector in the upper part of the frame, substantially as described.

10. An attachment for locomotive boilers, comprising a box-like frame having an opening in its front, an opening in its under side, and an annular wall having an opening in its top and forming an air passage leading from the opening in the under side of the frame, a door for closing the front opening of the frame and having an opening therein, and an auxiliary door for closing the opening of the door, substantially as described.

11. An attachment for locomotive boilers, comprising a box like frame, having an air passage for supplying air to the fire box of the boiler, and provided with an opening in its front, a door for closing the opening of the frame and having an opening therein, and an auxiliary door for closing the opening of the main door and having an opening in it, substantially as described.

12. An attachment for locomotive boilers, comprising a box-like frame having an opening in its front, an opening in its under side, and an annular wall having an opening in its top and forming an air passage, a door for closing the opening in the front of the frame and having an opening therein, an auxiliary door for closing the opening in the main door, and a deflector in the upper part of the frame below the opening in the said wall, substantially as herein shown and described.

ELMER C. JORDAN.

Witnesses:

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E. S. WACHHORST.