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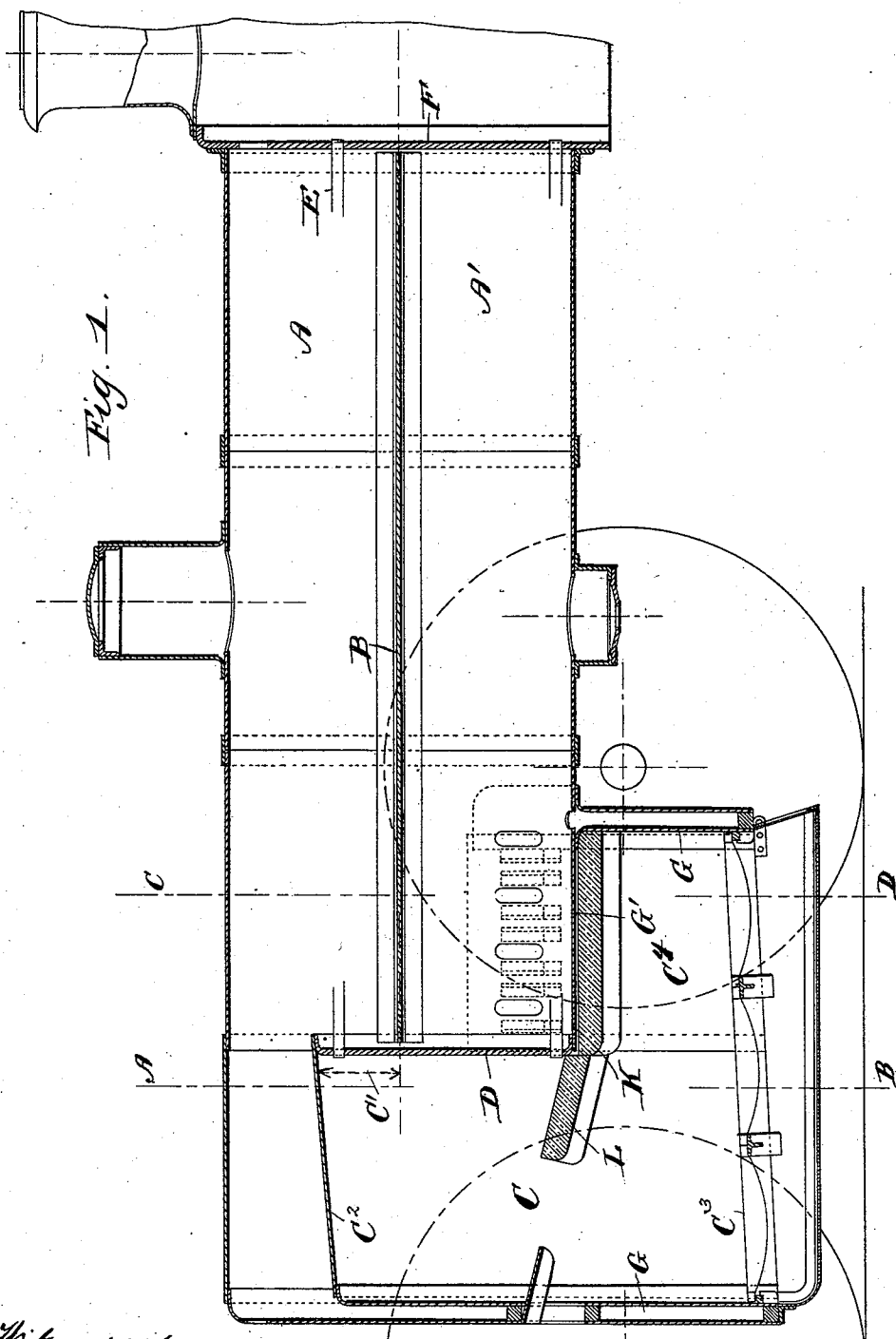
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F. C. WINBY.

CONSTRUCTION OF LOCOMOTIVE ENGINES.

No. 466,546.

Patented Jan. 5, 1892.



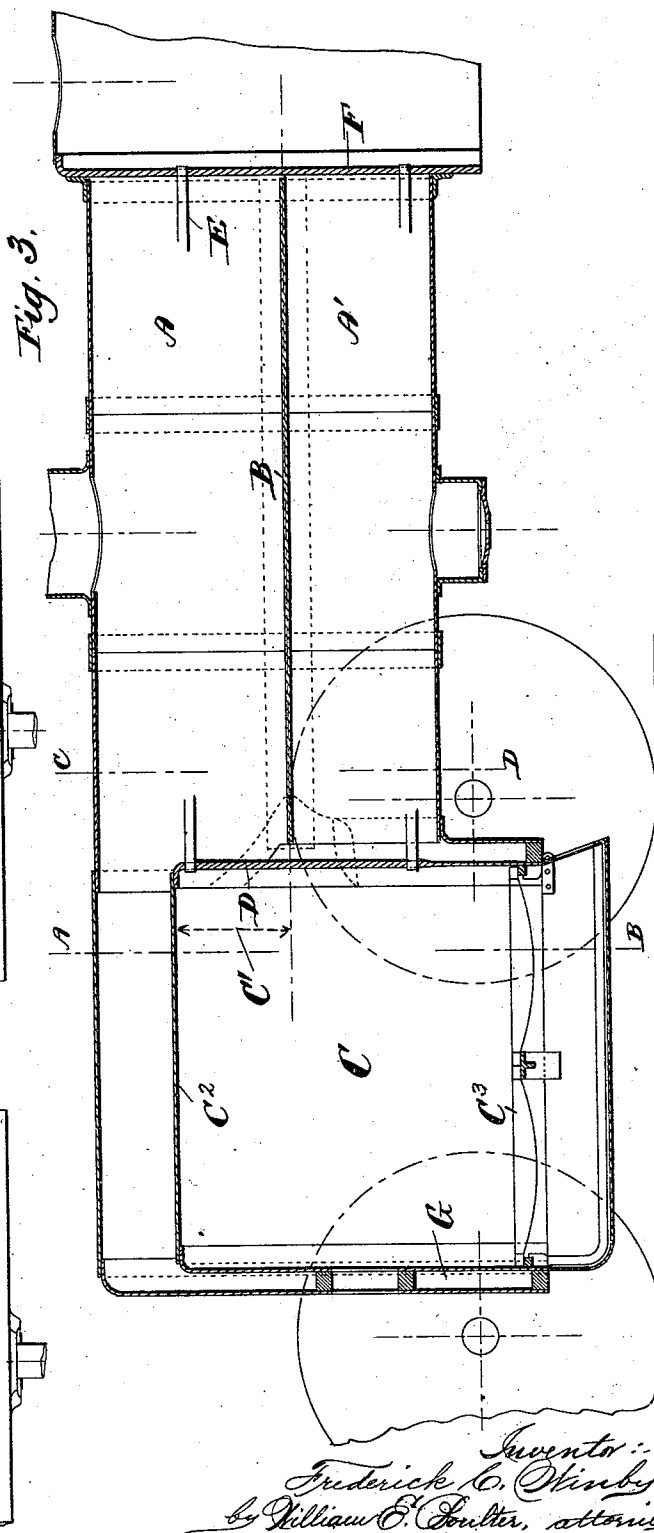
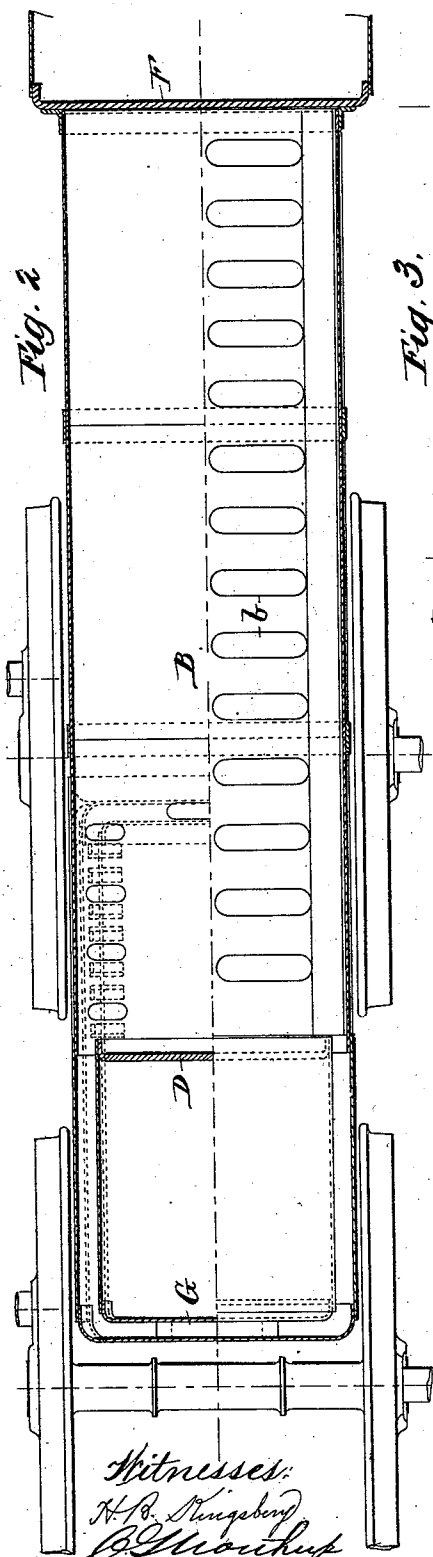
Witnesses:
H. B. Kingsberg
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Inventor:-
Frederick C. Winby
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Witnesses:
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C. M. H. H. H.

Inventor:
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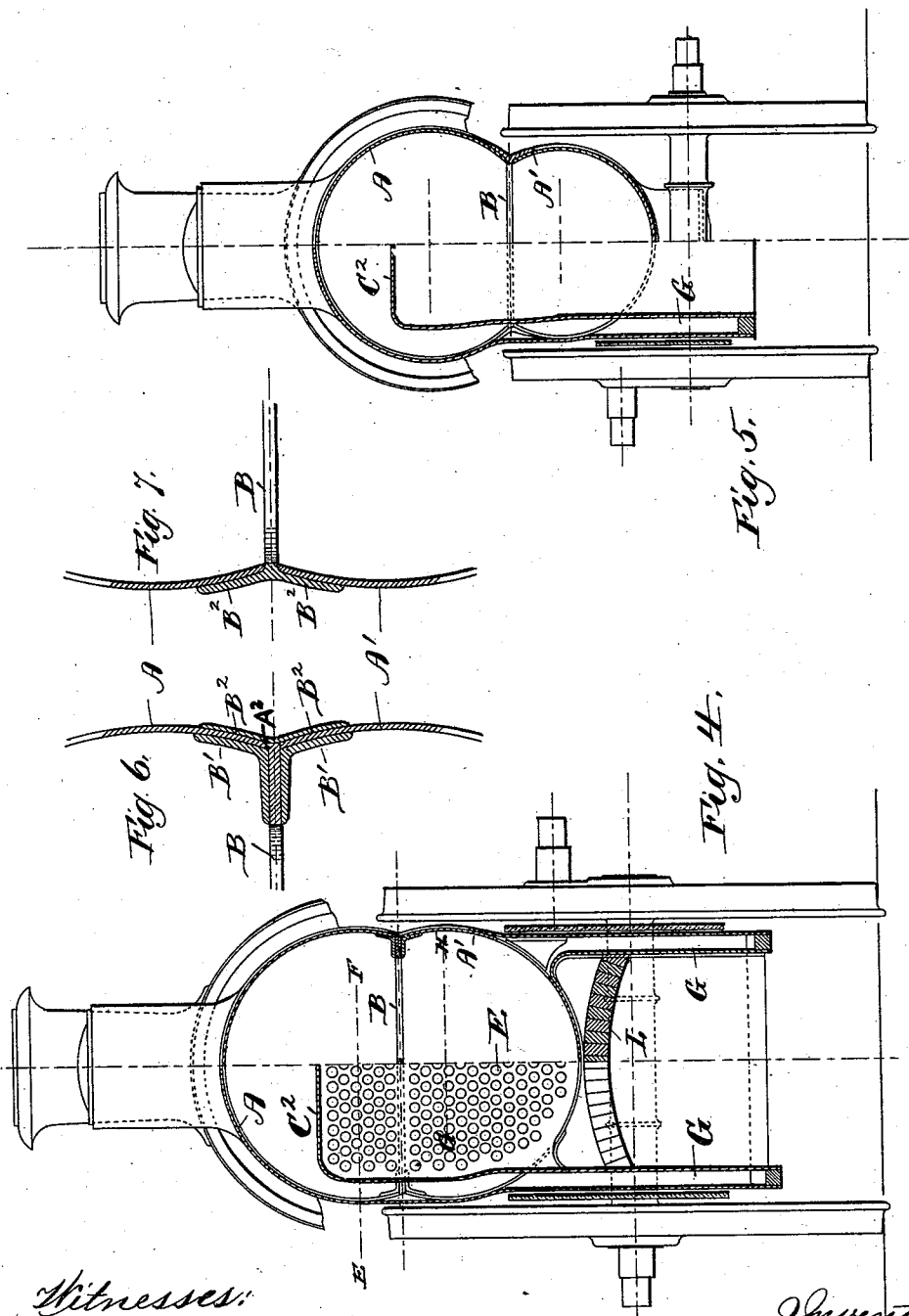
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F. C. WINBY.

CONSTRUCTION OF LOCOMOTIVE ENGINES.

No. 466,546.

Patented Jan. 5, 1892.



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UNITED STATES PATENT OFFICE.

FREDERICK CHAS. WINBY, OF BRIGHTON, ENGLAND.

CONSTRUCTION OF LOCOMOTIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 466,546, dated January 5, 1892.

Application filed May 21, 1891. Serial No. 393,650. (No model.) Patented in England November 8, 1889, No. 17,849.

To all whom it may concern:

Be it known that I, FREDERICK CHARLES WINBY, civil engineer, of Dover House, Clifton Hill, Brighton, in the county of Sussex, England, have invented certain new and useful Improvements in the Construction of Locomotive-Engines, (for which I have not made application for patent in any other country except in the United Kingdom of Great Britain under date of November 8, 1889, No. 17,849,) which invention is fully set forth in the specification thereof accompanying this application, and shown by the drawings referred to therein—that is to say:

15 This invention relates to a certain new or improved construction of locomotive-engines, the main object being to apply an improved construction of boiler-body and to increase the heating-surface.

20 In carrying out this invention I construct the boiler with a shell formed of two segments of a circle, said shell intersecting and meeting at an intermediate point in the height and being joined together from side to side across the boiler by a cross tie-plate. By this construction I am enabled to introduce in the space in the boiler-body between the engine-wheels a greater number of tubes and to increase the height and length of the fire-box and the size and area of the heating-tube plate and consequently the number of heating-surface tubes. The grate-surface is also increased proportionately in length. By reason of the increased steam-power I apply cylinders of greater capacity and am enabled to supply them with the necessary increased quantity and pressure of steam. This enables me to provide a locomotive-engine of greatly-increased power, capable of great haulage and high speed and for running long distances.

The construction will be explained in detail, reference being had to the accompanying drawings, in which—

45 Figure 1 is a vertical longitudinal section of my improved locomotive-engine. Fig. 2 represents by its lower half a horizontal section on line E F of Fig. 4 and by its upper half a horizontal section on line G H of Fig. 4. Fig. 3 is a vertical longitudinal section of a slightly-different construction of fire-box and boiler. Fig. 4 represents by its left-hand

half a vertical section on line A B of Fig. 1 and by its right-hand half a vertical section on line C D of Fig. 1. Fig. 5 represents by its left-hand half a vertical section on line A B of Fig. 3 and by its right-hand half a vertical section on line C D of Fig. 3. Figs. 6 and 7 are sectional detail views representing two methods of securing the tie-plate within the boiler.

It will be seen that the figures of drawings are to some extent in the nature of diagrams; but this has been resorted to in order to show more plainly the invention.

A is the upper segmental portion of the boiler-body, and A' is the lower segmental portion, which will be mounted upon substantially the usual engine-framing and furnished with the usual valve, link, connecting-gear, and driving motions of a locomotive-engine.

B is the tie-plate forming the common chord of the segments of the boiler, and said tie-plate is provided with a series of perforations b, as shown.

C is the fire-box space, which is increased in height to the extent shown by the dotted arrow-line C' above the horizontal line of the tie-plate.

C² is the crown of the fire-box.

D is the fire-box tube-plate, which is increased in area to receive the additional number of tubes between the line of the tie-plate and the crown-plate of the fire-box.

E are the heating-tubes, extending between the fire-box tube-plate D and the tube-plate F.

G is the water-casing, surrounding the fire-box in the ordinary manner.

The horizontally-extended fire-box C and grate-surface C³ are provided for by lengthening the boiler-body or by the distance between the tube-plates D and F, which may well be allowed for by the greatly-increased number of the heating-tubes that, according to this construction, can be put in the space C' between the tie-plate B and fire-box crown C².

In the construction shown in Fig. 1 the lower portion of the boiler-body is extended into the fire-space C', which, while maintaining the requisite proportional length of grate-surface, affords further heating-surface under the boiler-body at K. The tube-plate D is here fitted between the fire-box crown C² and the plate G' of the water-casing. In Fig. 6

the tie-plate is secured within the boiler by slotting the plates of the latter, as at A², to admit the ends of the tie-plate, the latter having the wings or forks B' connected therewith and fitting up against the inner side of the boiler. The said tie-plate has also at its outer end the wings or forks B², which fit against the outer side of the boiler.

In Fig. 7 the tie-plate is provided with the wings B² only fitting against the outer side of the boiler, the latter being slotted to admit the ends of the tie-plate passing therethrough.

L is a deflecting plate or bridge to shield the end of the boiler from the too direct action of the heat within the fire-box.

In Fig. 3 the boiler is composed of the segmental portions A A', the upper one A being of larger diameter than the lower one A', and in this figure the said boiler is not extended into the fire-box, as in Fig. 1.

The fire-box in Fig. 3 has substantially a rectangular shape, and the crown C² is arranged horizontally; but in other respects its construction is similar to that shown in Fig. 1.

What I claim, and desire to secure by Letters Patent, is—

1. In a locomotive-engine, the combination, with the boiler composed of two segmental sections, arranged one above the other, of a tie-plate extending horizontally across the boiler and uniting the segmental sections at their meeting edges, fire-tubes arranged in the lower section of the boiler and in the upper section of the latter above the tie-plate, and a fire-box located in front of the boiler-sections and communicating with the fire-tubes therein, as and for the purpose specified.

2. In a locomotive-engine, the combination, with the boiler composed of two segmental sections, arranged one above the other, and a tie-plate extending horizontally across the

boiler and uniting the segmental sections at their meeting edges, of a fire-box located in front of the boiler-sections and provided with a tube-plate extending above the tie-plate, and fire-tubes arranged in the lower section of the boiler and in the upper section of the latter above the tie-plate and supported at their rear ends in the said tube-plate, as described, for the purpose specified.

3. In a locomotive-engine, the combination, with the boiler composed of two segmental sections, arranged one above the other, and a tie-plate extending horizontally across the boiler and uniting the sections at their meeting edges, of a fire-box located in front of said boiler-sections and provided with a tube-plate extending above the said tie-plate and with a horizontal portion extending beneath the lower section of the boiler, and fire-tubes arranged within the lower boiler-section and within the upper section above the tie-plate and supported by said tube-plate, as and for the purpose specified.

4. In a locomotive-engine, the combination, with the boiler composed of two segmental sections, a tie-plate uniting the same at their meeting edges, of the fire-box provided with the space C⁴, extending beneath the front end of the boiler, the tube-plate D, extending above the line of the tie-plate, the crown, and the water-casing surrounding the fire-box, all arranged and adapted for co-operation as and for the purpose specified.

In testimony whereof I have hereunto set my hand, this 16th day of January, 1890, in the presence of two subscribing witnesses.

FRED. CHAS. WINBY.

Witnesses:

A. KNIGHTS,

WALTER A. BARLOW,

120 Chancery Lane.