

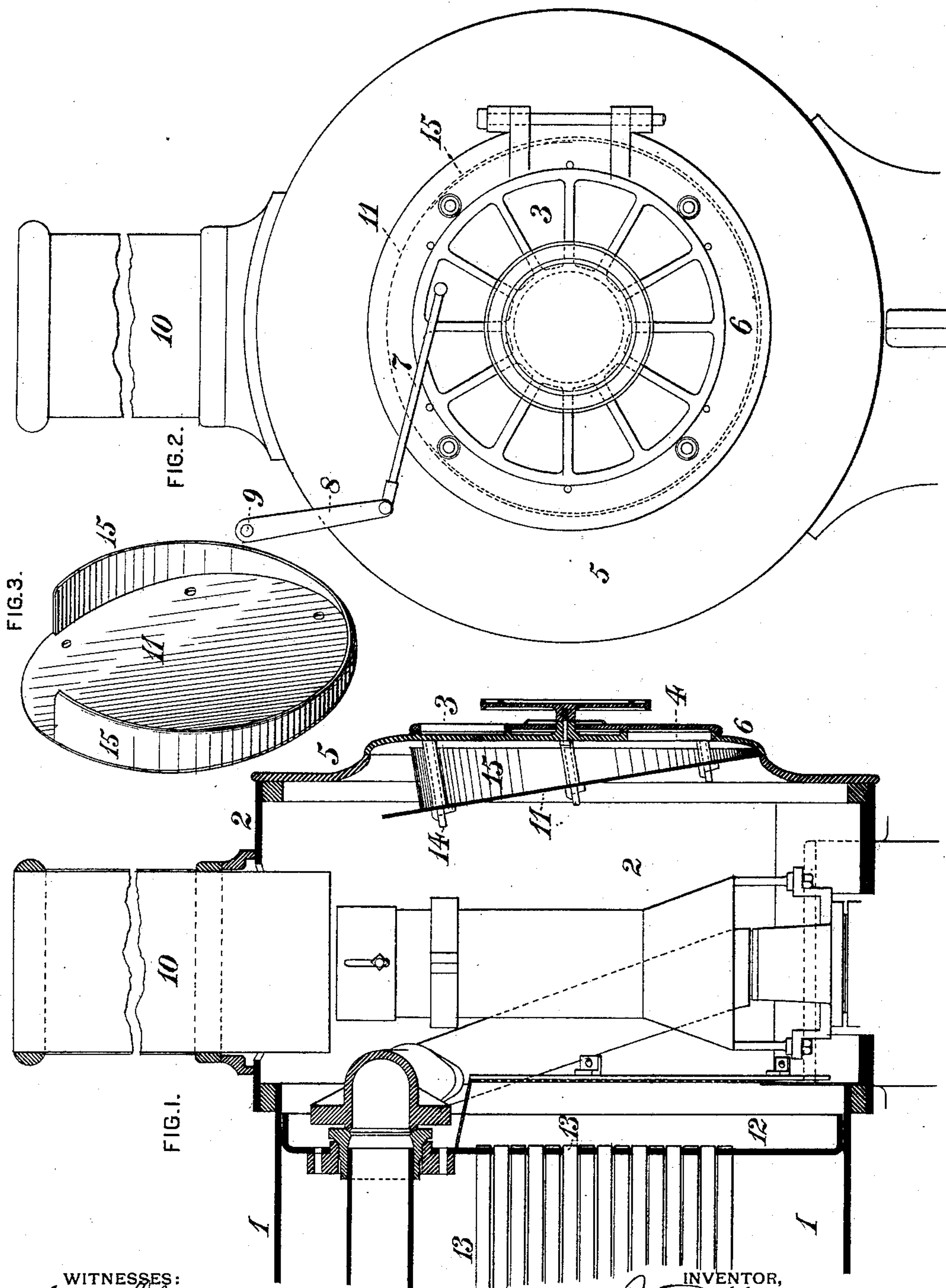
(No Model.)

J. E. WOOTTEN.

LOCOMOTIVE BOILER.

No. 348,942.

Patented Sept. 7, 1886.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN E. WOOTTEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
WHARTON RAILROAD SWITCH COMPANY, OF SAME PLACE.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 348,942, dated September 7, 1886.

Application filed July 21, 1886. Serial No. 203,595. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. WOOTTEN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Locomotive-Boilers, of which improvement the following is a specification.

My invention is more particularly designed for application in locomotive-boilers of the class which is illustrated in Letters Patent of the United States, Nos. 192,725, 254,581, and 291,120, granted and issued to me under dates of July, 3, 1877, March 7, 1882, and January 1, 1884, respectively, in the operation of which, by reason of the free and rapid steam-generating capacity resultant upon their large area of grate and heating surface, the supply of steam may from time to time, as in case of sudden and unexpected stoppages on the road, or diminutions of load or speed, &c., exceed that demanded for the time being, in which case it is desirable to provide proper means for temporarily reducing the intensity of the fire and thereby the generation of steam, to obviate undue pressure in the boiler and corresponding waste of fuel.

The object of my invention is to enable the draft through the fire-box and tubes of a locomotive-boiler of the above or of other type to be readily and effectively checked whenever desired, to prevent generation of steam in excess of the requirements of the duty performed by the engine without liability to inducing leakage of the tubes by the contact of cold air therewith.

To this end my invention, generally stated, consists in the combination, with the smoke-box of a locomotive-boiler, of a register or damper controlling one or more air-admission openings in the smoke-box front or door, and a baffle-plate or deflector interposed between said openings and the tube-sheet, in such position as to direct entering currents of air into the stack without permitting their contact with the tube-sheet and tubes.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a vertical longitudinal central section through the forward portion of a locomotive-boiler embodying my invention; Fig. 2, a front view in

elevation of the same, and Fig. 3 a view in perspective of the baffle-plate detached.

In the practice of my invention I provide the smoke-box 2 of a locomotive-boiler, 1, with a movable and adjustable register or damper, 3, governing one or more air-admission openings, 4, in the forward end of the smoke-box, which openings may be either located in the smoke-box front 5, or preferably, as shown, in the door 6, by which access is afforded to the interior of the smoke-box. The register 3 is pivoted or journaled to the door 6, or otherwise suitably fitted to slide or vibrate over the air admission openings 4, so as to uncover, to a greater or less degree, or completely close the same, as required, being moved by means of a link, 7, by which it is coupled to an arm, 8, fixed upon a shaft, 9, which extends to any convenient position within reach of the engineer in the cab. By uncovering the air-admission openings 4, currents of air are drawn freely through the same into the smoke-box and out through the stack 10, with the effect of immediately checking the less free draft through the tubes, and correspondingly reducing the intensity of the heat in the fire-box and the generation of steam therefrom.

The admission of cold air to the smoke-box has tended in practice to be unsatisfactory, where the air entering the smoke-box was allowed to come in contact with the heated tube-sheet, in the particular of involving liability to cause leaks around the front ends of the tubes by the sudden cooling and contraction of the same. To obviate such objection I interpose a baffle-plate or deflector, 11, between the air-admission openings 4 and the tube-sheet 12, said baffle-plate being so located as to upwardly deflect the entering currents of air and prevent their contact with the tube-sheet 12 and tubes 13 fixed therein. The baffle-plate 11, is preferably in the form of a sheet-iron disk, which is set with its lower portion at a short distance from the smoke-box door, and is rearwardly inclined toward its top, so as to afford a sufficient area of opening at and near the same for the passage of the air from the openings 4 to the stack. It may be secured in position in any suitable manner, and, as shown, is connected by a series of socket bolts or studs, 14, to the smoke-box door 6, so as to swing out-

wardly with the same when opened, and thus obviate obstructing the opening in the front, and, being entirely in advance of the exhaust-nozzle and stack, it presents no impediment 5 to the draft when the register is closed.

In order to more thoroughly fulfill its function, the baffle-plate may, if desired, be provided with a circumferential rim or casing, 15, extending around its lower and side portions, 10 and terminating at such distance below its top as to leave a sufficient area of discharge-opening thereat. The rim or casing substantially closes the space between the outer portion of the baffle-plate and smoke-box front, except 15 at its upper discharge-opening, and thus effectually prevents any contact of air with the tube-sheet by the passage thereof laterally behind the baffle-plate, and that which passes out through the upper discharge-opening tends 20 naturally only in the direction of the stack, through which it escapes.

I claim as my invention and desire to secure by Letters Patent—

1. The combination, in a locomotive-boiler, 25 of a register or damper controlling one or more air-admission openings in the forward end of the smoke-box, and a baffle-plate or deflector located in the smoke-box adjacent to said openings in position to direct currents of air entering through the same directly to the stack, sub- 30 stantially as set forth.

2. The combination, in a locomotive-boiler, of a register or damper controlling one or more air-admission openings in the front of the smoke-box, a baffle-plate or deflector located 35 in the smoke-box adjacent to said openings, and a rim or casing surrounding the lower and side portions of the baffle-plate between the same and the front end of the smoke-box, substantially as set forth.

3. The combination, in a locomotive-boiler, of a smoke-box, a door hinged thereto and provided with one or more air-admission openings, a damper or register governing said openings, and a baffle-plate or deflector se- 45 cured to the inner side of the smoke-box door, substantially as set forth.

4. The combination, in a locomotive-boiler, of a smoke-box, a door hinged thereto and provided with one or more air-admission 50 openings, a damper or register governing said openings, a baffle-plate or deflector secured to the inner side of said door, and a rim or casing extending from the baffle-plate to the door and forming a chamber between the same which 55 communicates with the smoke-box by an upper discharge-opening, substantially as set forth.

JOHN E. WOOTTEN.

Witnesses:

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