

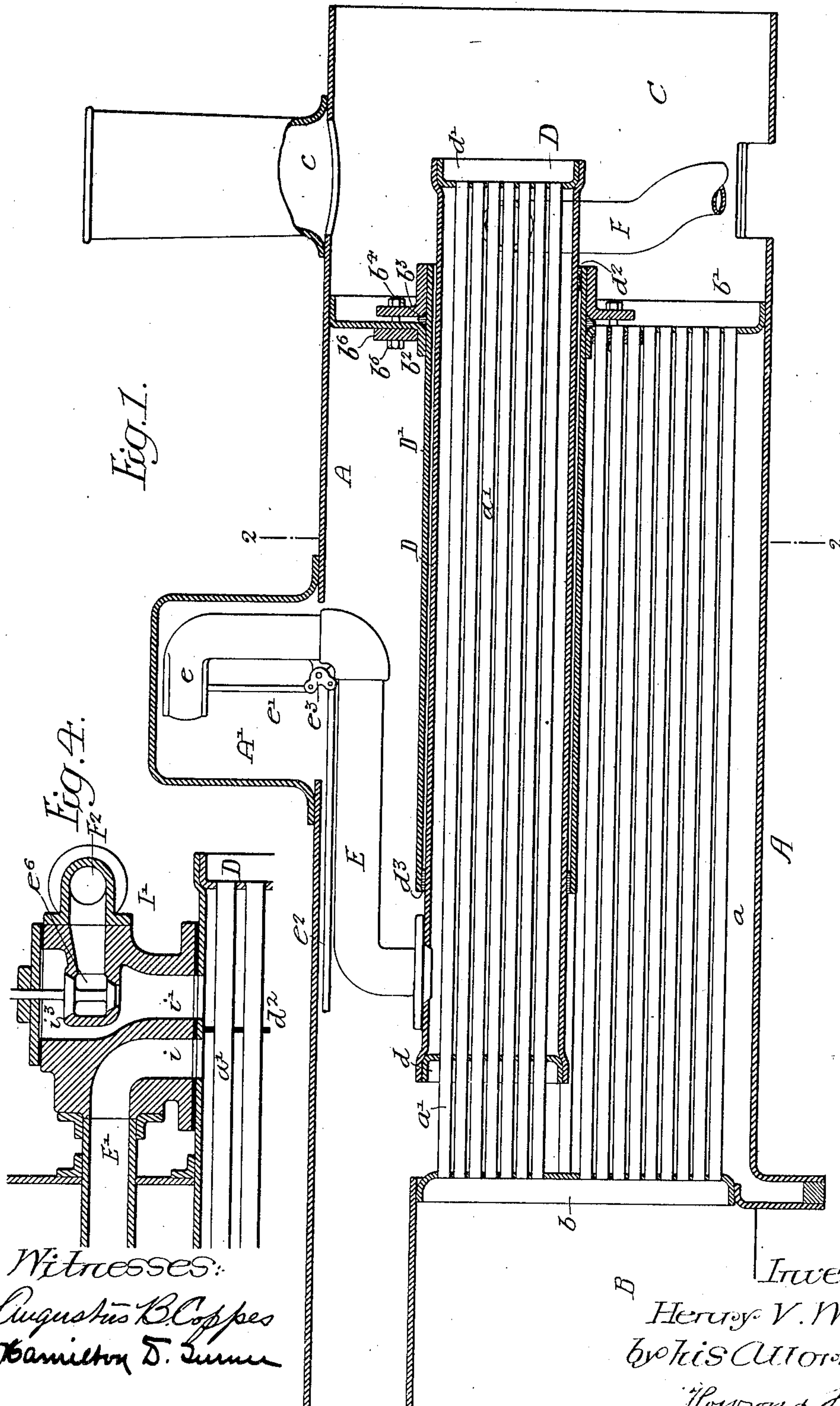
No. 843,315.

PATENTED FEB. 5, 1907.

H. V. WILLE.
SUPERHEATER FOR LOCOMOTIVES.

APPLICATION FILED NOV. 1, 1905.

2 SHEETS—SHEET 1

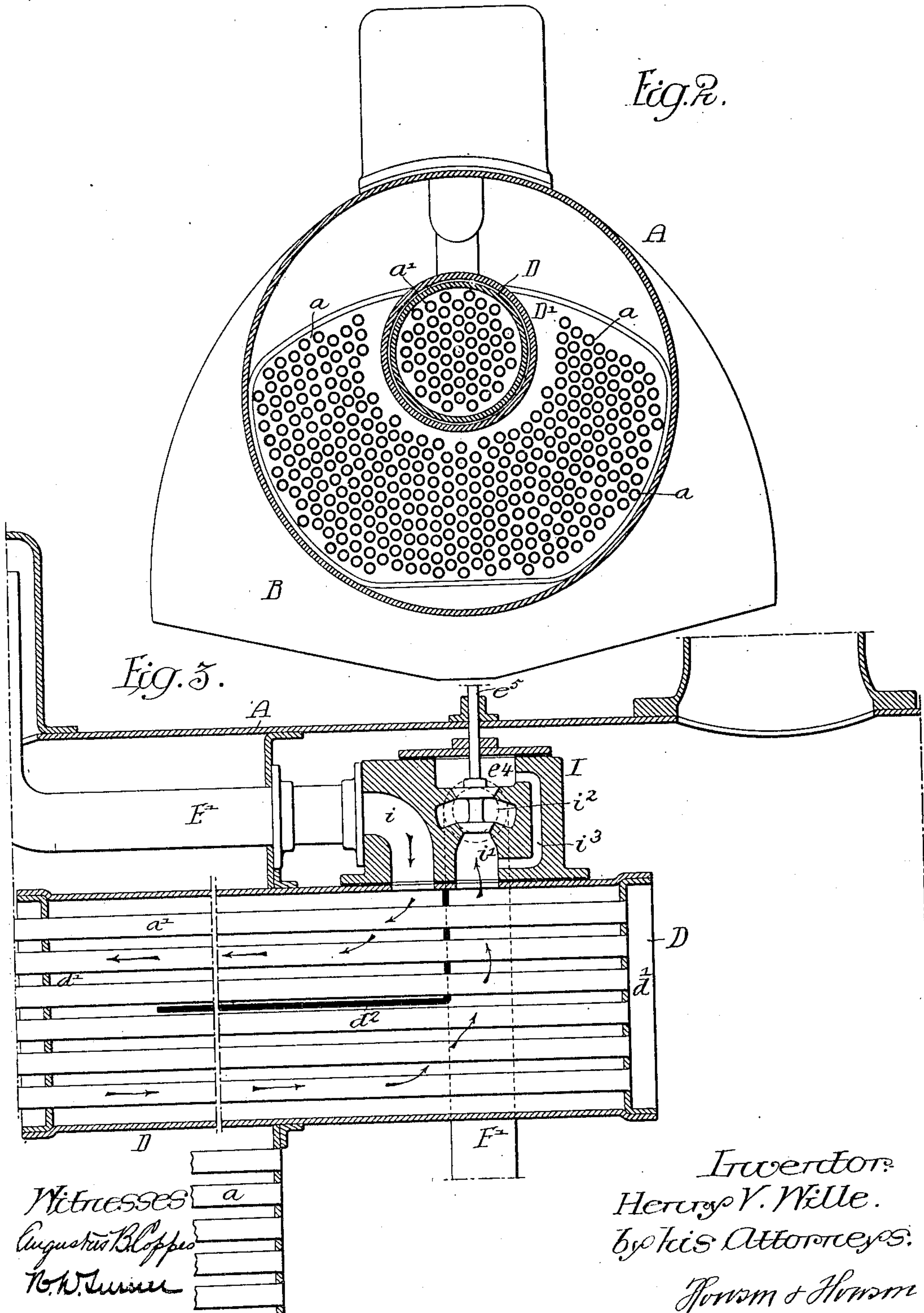


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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

HENRY V. WILLE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO BURNHAM, WILLIAMS & COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A FIRM.

SUPERHEATER FOR LOCOMOTIVES.

No. 843,315.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed November 1, 1905. Serial No. 285,447.

To all whom it may concern:

Be it known that I, HENRY V. WILLE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Superheaters for Locomotives, of which the following is a specification.

The object of my invention is to combine a superheater with a locomotive-boiler in such a manner that part of the boiler-tubes will be utilized to heat the steam passing through the superheater.

Other features of the invention relate to details of construction which will be described hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of a locomotive-boiler illustrating my invention. Fig. 2 is a transverse sectional view on the line 2 2, Fig. 1. Fig. 3 is a sectional view showing the throttle-valve situated in the smoke-box of the locomotive, and Fig. 4 is a modified form of the throttle-valve casing shown in Fig. 3.

A is the boiler-casing of the locomotive of the ordinary type. B is the fire-box. b is the rear tube-sheet, and b' is the forward tube-sheet. a are tubes leading from the tube-sheet b to the tube-sheet b' . C is the smoke-box, and c is the stack.

It will be noticed in referring to Figs. 1 and 2 of the drawings, that the greater proportion of the tubes are connected to the tube-sheets b and b' and are for the purpose of making steam in the main boiler A. I, however, connect a series of tubes a' in the upper portion of the boiler to the rear tube-sheet b and extend these tubes through a rear head d of a superheater D and through the superheater, securing them to a forward head d' , as shown in Fig. 1. The tubes a' in the present instance are longer than the tubes a , and the superheater-casing extends through the forward tube-sheet b' and into the smoke-box C, as indicated in Fig. 1.

In the present instance there is a casing D' , which surrounds a portion of the superheater D, and this casing extends also through the tube-sheet b' . There is an air-space formed between the casing D' and the superheater, so that there is a circulation of air around the superheater and the water in the boiler will not affect the dry steam in the super-

heater. There is a segment of a ring d^2 , which supports the forward end of the superheater, and there is a ring d^3 , which closes the opposite end of the air-space.

The tube-sheet b' has a flange b^2 , and between this flange and a flanged ring b^3 is mounted a joint-ring b^4 , so that a tight joint is formed between the outer cylindrical casing D' and the tube-sheet B' , the parts being held by bolts b^5 , which pass through the flange of the ring b^3 , the tube-sheet, and a ring b^6 . Other forms of joints may be used without departing from my invention.

The casing D' stops short of the rear end of the superheater D, as illustrated in Fig. 1, so that the steam-pipe E may be coupled to the casing. In the present instance this steam-pipe is turned up into the dome A' of the boiler and is provided with the usual throttle-valve e , connected by rods e' e^2 and bell-crank lever e^3 . The rod e^2 leads to the cab of the locomotive.

The opposite end of the casing D' stops short of the front end of the superheater D, so that the steam-pipes F leading to the cylinder can be readily coupled to the casing D of the superheater.

It will be understood that the throttle-valve may be mounted either in the steam-pipe E or the pipe leading from the superheater to the cylinders, and when the throttle-valve is situated between the superheater and the cylinders I prefer to construct the casing in the manner shown in Fig. 3, in which E' is the steam-pipe leading from the boiler. This pipe may either lead from the steam-dome, as shown, or may lead from the upper portion of the boiler when it is desired to dispense with the steam-dome.

I is the valve-casing having a passage i leading from the pipe E' to an opening in the superheating-casing. The valve-casing also has a passage i' communicating with the pipes F leading to the cylinders. There is one of these pipes on each side of the valve-casing. In this instance the superheater is divided by a baffle-plate d^2 , so that steam will pass through the superheater in a circuitous passage.

The throttle-valve e^4 is connected to a stem e^5 and is a double valve in the present instance and is so mounted in the passage i as to cut off the flow and allow the steam to