

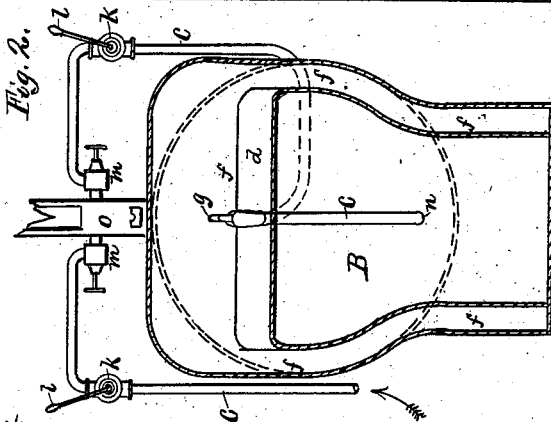
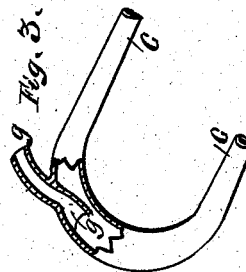
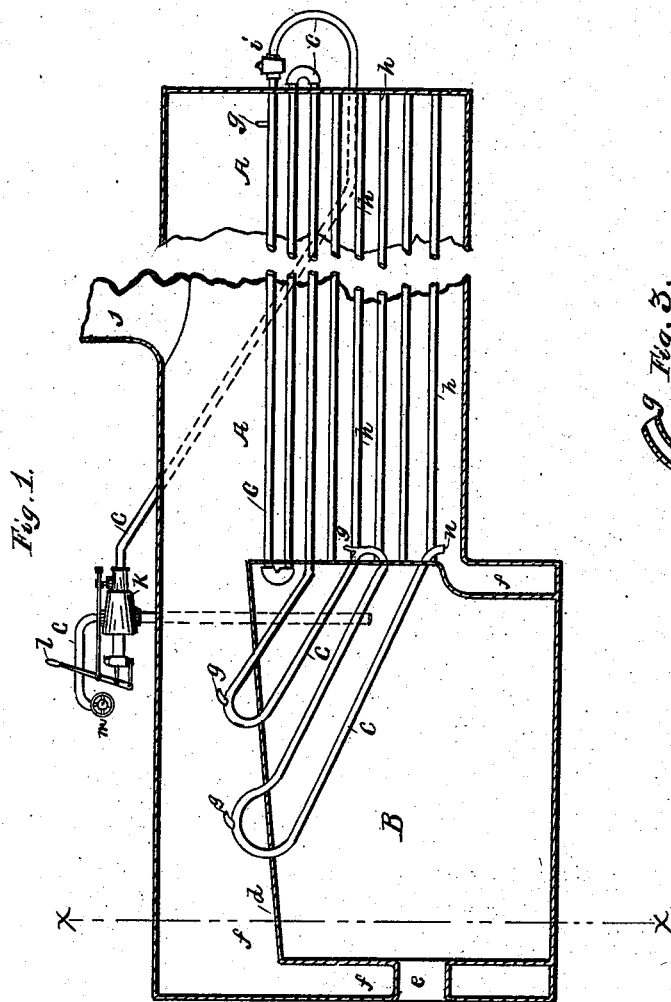
(No Model.)

2 Sheets—Sheet 1.

S. B. BRYAR.
FEED PIPE FOR BOILERS.

No. 382,753.

Patented May 15, 1888.



Witness:
James Allen,
Jas. Bryar, Jr.

Inventor:
Saml. B. Bryar.

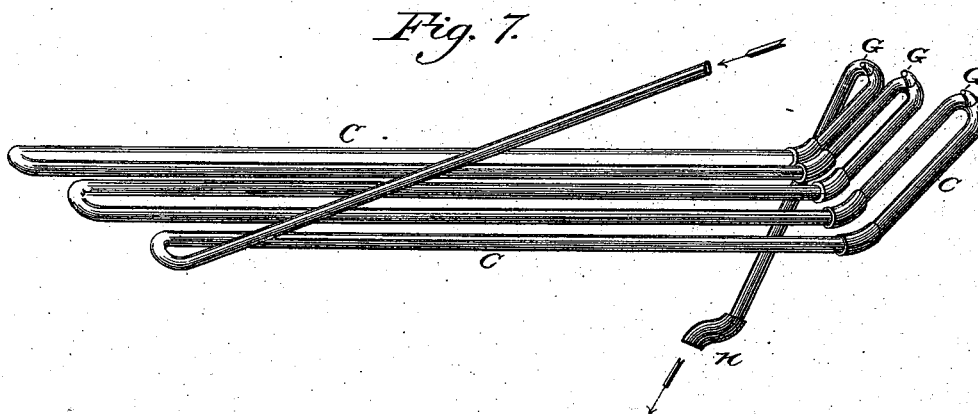
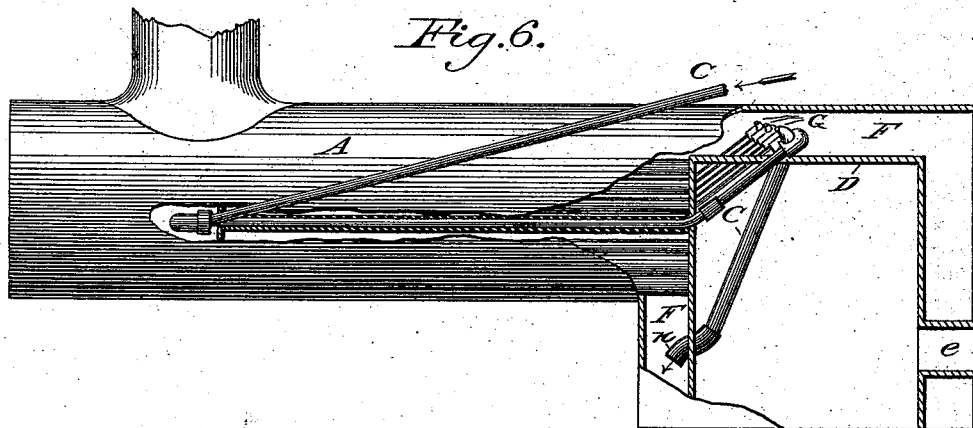
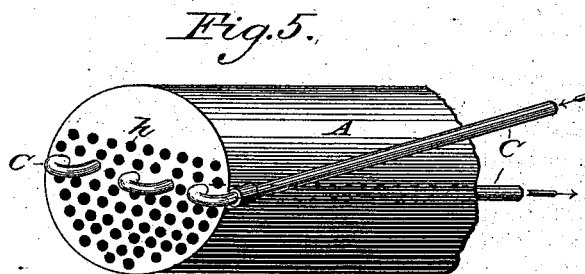
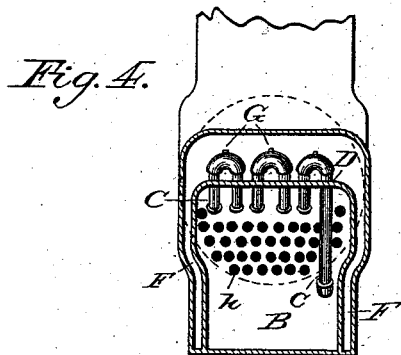
(No Model.)

2 Sheets—Sheet 2.

S. B. BRYAR.
FEED PIPE FOR BOILERS.

No. 382,753.

Patented May 15, 1888.



Witnesses:
B. C. Dawson.
S. B. Bryar.

Inventor:
Saul B. Bryar.

UNITED STATES PATENT OFFICE.

SAMUEL B. BRYAR, OF PITTSBURG, PENNSYLVANIA.

FEED-PIPE FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 382,753, dated May 15, 1888.

Application filed April 6, 1887. Serial No. 233,946. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. BRYAR, a citizen of the United States, residing at No. 209 Denniston avenue, Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Feed or Supply Pipes for Locomotive-Boilers; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The objects of my invention are, first, to obtain the greatest amount of steam with the least consumption of fuel; second, to obviate the necessity of water-tables in fire-boxes or furnaces; third, to give the feed-water the full advantages of the highest temperature of the fire before discharging into the boiler; and, fourth, to provide a continuous supply of water to the boiler at the same temperature as the water contained therein. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side sectional elevation of an ordinary locomotive-boiler, such as are now in common use, constructed in accordance with my invention. Fig. 2 is an end sectional elevation of the same, taken on the line *x x*. Fig. 3 is an enlarged detail side view of one of the feeding-ducts, as partially shown in section the better to show interior arrangement. Fig. 4 is a rear sectional elevation of my improved feed-water heater, showing the same attached in position in an ordinary locomotive-boiler. Fig. 5 is a perspective view of the front of a locomotive-boiler, showing the relative position of the flues and my improved feed-water heater. Fig. 6 is a side sectional elevation of a locomotive-boiler and fire-box or furnace, in which is shown the entire arrangement of pipes used in connection with my improvement. Fig. 7 is a perspective view of my improved heater detached from the boiler.

The following is a list of parts as designated by the letters of reference on drawings, viz: A, boiler; B, fire-box or furnace; C, feed or supply pipe; D, crown-sheet; E, fire-door; F, water-space; G, feeding-ducts; *h*, tubes or

flues; *i*, check-valves; J, steam-dome; K', injectors; L, injector-levers; M, valves; N, discharge end of feed or supply pipe; O, spider.

The feed or supply pipe C, part of which forms the heater, is arranged as follows: Beginning at the injector K', it passes thence downward and frontward along exterior of boiler, as shown by dotted lines, to the front end of boiler, there supplied with check-valve *i*, as shown, constructed, and adjusted to boiler and supply-pipe, as now in use, the feed or supply pipe thence being carried into and through one of the tubes or flues *h* to rear end of boiler; thence backward and upward through fire-box or furnace B and crown-sheet D into water-space F, there fitted with feeding-ducts G, as shown; thence forming half-circle frontward and downward through fire-box or furnace into parallel tube or flue to front end of boiler; thence in half-circle into another of the parallel tubes or flues; thence through same into fire-box or furnace; thence backward and upward parallel with the first circuit into and through crown-sheet into water-space, there fitted with feeding-duct G; thence in half-circle frontward and downward through fire-box or furnace and again into and through tube or flue to front end of boiler; thence in a half-circle into another of the tubes or flues; thence through same into fire-box or furnace; thence backward and upward parallel with the first and second circuits through crown-sheet into water-space, there fitted with feeding-duct G, as shown; thence in a half-circle frontward and downward through fire-box or furnace and crown-sheet into water-space of boiler, there discharging water-supply at N, as shown.

The feed or supply pipe is to be constructed of the best material in use to withstand heat. All other appliances are to be constructed and adjusted upon the same as are now in common use. The arrangement of the said feed or supply pipe in and through the fire-box or furnace renders water-tables therein, as now in use, unnecessary, the feed or supply pipe answering the same purpose, the feeding-ducts G to be constructed and adjusted on feed or supply pipe substantially as shown in Fig. 3. The water from the boiler, which enters therein, being hot, and following the current in the feed or supply pipe, insures a temperature equal to that of the water in the boiler before being

discharged therein, thus lessening the danger incurred from or by any sudden changes in the temperature, the boiler not being subject to the strains resulting from sudden cooling, as is now often the case, Fig. 7 showing continuous coil of feed or supply pipe from injector K' to discharge end N as detached from boiler.

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

1. In combination with steam-boilers, the feed-pipes C, extending through tubes or flues h, and inclined longitudinally through fire-box or furnace B, their upper curls entering crown-sheet D, and within water-space F, where it is provided with feeding-ducts G, as described, and for the purpose specified.

2. The combination, with a steam-boiler and feed or supply pipe C in a continuous coil or circuit through tubes or flues L passing within

and exposed to fire, of fire-box or furnace B, having feeding-ducts G adjusted thereon within water-space of boiler, as shown.

3. In steam-boilers, the combination or arrangement of continuous, inclined longitudinal feed or supply pipes C, extending parallel through tubes or flues h, upward and downward through fire-box or furnace B, through openings in crown-sheet D at top of furnace, provided with feeding-ducts G within water-space F, and having discharging end N at rear end and bottom of boiler, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL B. BRYAR.

Witnesses:

JAMES ALLEN,
JAS. BRYAR, Jr.