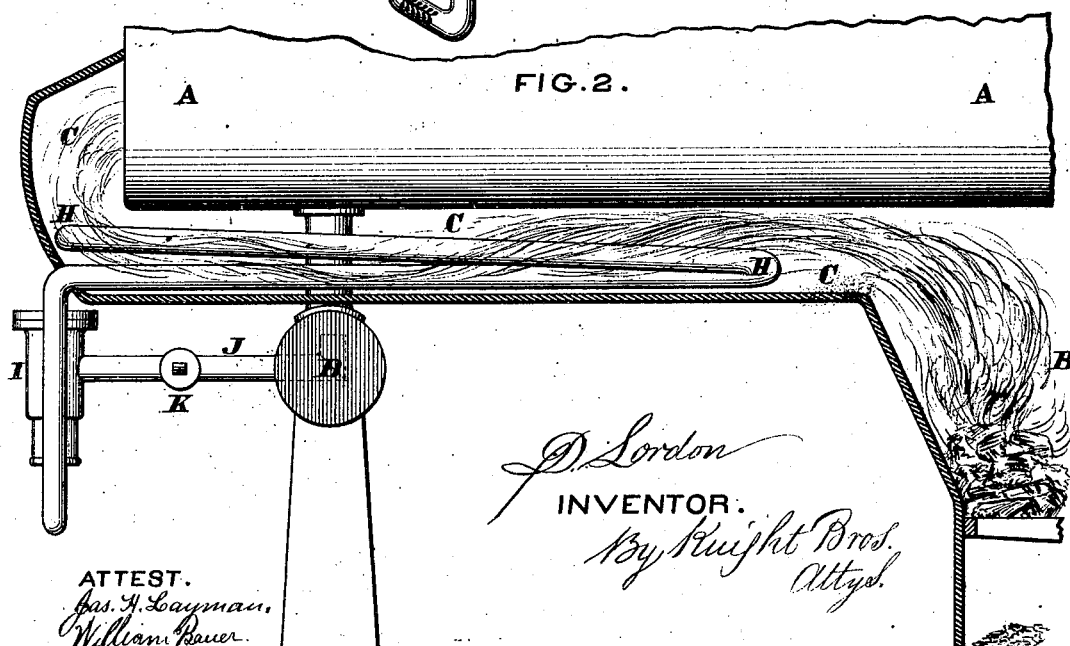
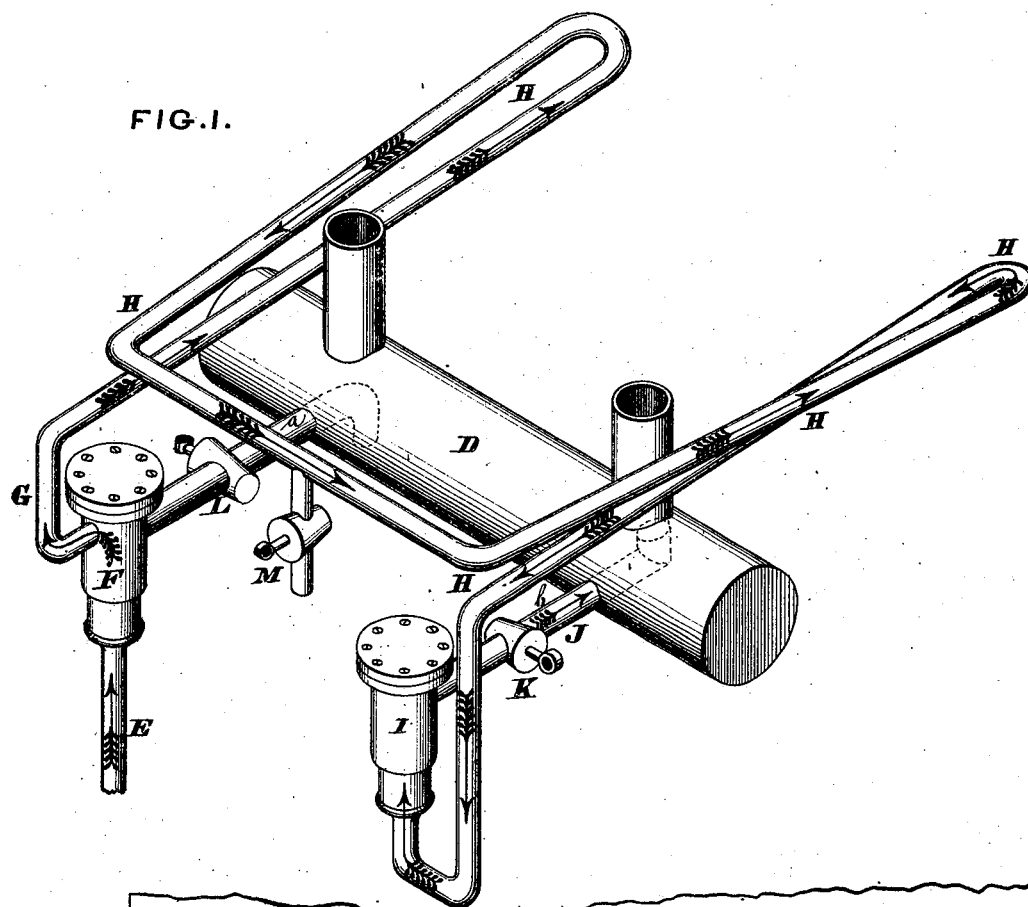


No. 107,185.

PATENTED SEPT. 6, 1870.

D. LORDON.

FEED WATER HEATER FOR STEAM BOILERS.



INVENTOR:

By Knight Bros.
Atty's.

ATTEST.

As. H. Layman.
William Bauer.

UNITED STATES PATENT OFFICE.

DANIEL LORDON, OF MEMPHIS, TENNESSEE, ASSIGNOR TO HIMSELF AND
JAMES SHIELDS, OF GRAND RAPIDS, MICHIGAN.

IMPROVEMENT IN FEED-WATER HEATER FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **107,185**, dated September 6, 1870.

I, DANIEL LORDON, of Memphis, Shelby County, Tennessee, have invented a new and useful Feed-Water Heater for Steam-Boilers, of which the following is a specification:

Nature and Objects of the Invention.

My invention has for its object improvement in the class of feed-water heaters in which a pipe is arranged to traverse the furnace-chamber, through which the water supplied to the boiler is fed by a force-pump.

My improvement consists in the arrangement of the coil or traversing feed-pipe with a mud-drum in such a manner as to allow the water to pass through the drum before entering the boiler, the drum answering the purpose of a receptacle of the foreign matter contained in the water, and the pipe being arranged to aid in maintaining the circulation of water in one direction when the force-pump ceases action.

General Description with Reference to the Drawing.

Figure 1 is a perspective representation of the feed-pipes and mud-drum. Fig. 2 is a side elevation of the same, together with a portion of the boiler, the furnace being in section.

I have selected to illustrate my invention an arrangement of feed-pipes adapted to a pair of ordinary horizontal boilers.

A represents a portion of an ordinary horizontal boiler; B, its fire-chamber; C, the flue; D, the mud-drum. E is the feed-water pipe from the "doctor;" F, a cylinder, in the chamber of which a check-valve, opening upward, is provided; G, a pipe emerging from said chamber's upper part, above its check-valve, and extending in the form of a coil, H, into the flue-space beneath the boiler or boilers, whence, emerging again, it enters the bottom of a second chamber, I, from whose upper part a pipe leads into the mud-drum. The end part, *a*, of the coil is made larger than the part *b* of said pipe, which is turned upward in the drum, as shown in dotted lines.

It is desirable, in order to obtain the best results, that the part *a* should enter the drum D at a lower point than the part *b*, and it is, in fact, inserted in such a manner that its upper side is in the same horizontal plane with that of the other part, *b*, and hence, it being longer, its under side is below that of *b*.

The cocks K and L are provided for the purpose of shutting off connection of the coil with the boiler and drum when desirable or necessary for sake of repairs or other purposes, and the cock L answers the additional purpose of serving to cause the stream of water forced in by the doctor to traverse the coil preparatory to entering the drum and boiler. A hot-water service-cock, M, may lead from a convenient part of the coil outside of the flue.

Operation.

Feed-water being forced cold from the doctor or pump into the foot valve-chamber, F, escapes from thence, and after traversing the flues by flowing through the coil H, and becoming highly heated, enters the second chamber, I, and passes thence into the mud-drum, thus utilizing a portion of the furnace heat that might otherwise be wasted, but without interfering with the action of the feed-pump or doctor, as is liable to occur with those heaters which are situated beyond the pump. When the doctor is not in action the current of water will continue for a few minutes in the direction indicated by the arrows, this being due to the momentum acquired.

To maintain the current beyond the time when mere momentum will no longer avail, I have curved the end of the part *b* upward, so that the stream may be delivered into one of the tubes connecting the drum and boiler, thus avoiding, in part, the reaction which would otherwise result from the water in the drum.

I desire to be understood as making no claim to the general arrangement of feed-coil.

Claim.

I claim—

The particular arrangement, with the boiler, of the mud-drum D, coil G H, with parts *a* and *b*, the valve-chamber F, and cocks K and L, all constructed as shown and described.

In testimony of which invention I hereunto set my hand.

DANIEL LORDON.

Witnesses:

GEO. H. KNIGHT,
JAMES H. LAYMAN.