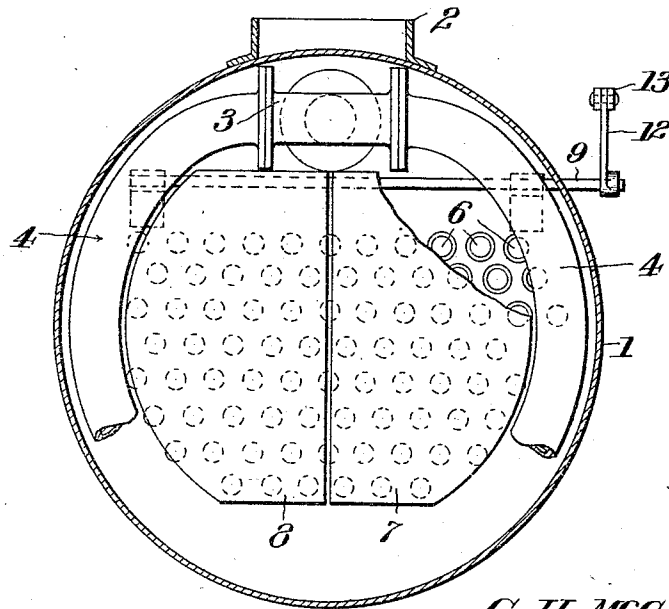
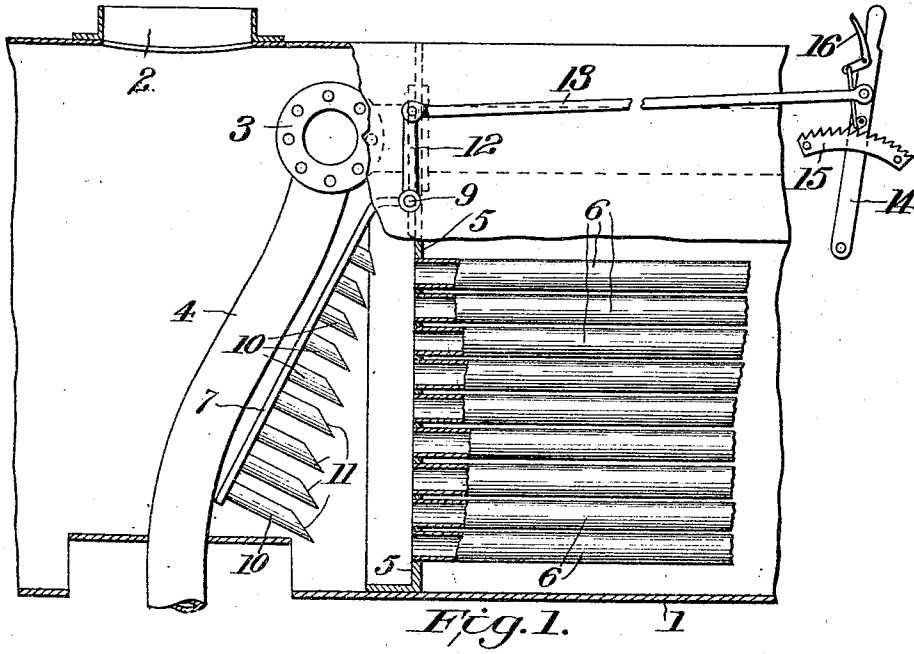


C. H. McCall.
 DRAFT REGULATOR FOR FIRE TUBE BOILERS.
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1,023,949.

Patented Apr. 23, 1912.



Witnesses

C. H. Walker.
 H. L. Davis

Fig. 2.

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CHARNOCK H. McCALL, OF ATLANTA, GEORGIA.

DRAFT-REGULATOR FOR FIRE-TUBE BOILERS.

1,023,949.

Specification of Letters Patent.

Patented Apr. 23, 1912.

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To all whom it may concern:

Be it known that I, CHARNOK H. McCALL, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Draft-Regulators for Fire-Tube Boilers, of which the following is a specification.

My invention relates broadly to draft regulators or dampers, and more particularly to regulators for fire tube boilers.

The invention has special utility when applied to locomotives, as by its use the dangerous throwing of sparks can be entirely eliminated, and also a more uniform temperature maintained, and a saving in fuel effected.

In order that my invention may be clearly understood, reference is had to the accompanying drawing, forming a part of this specification, and in which:—

Figure 1 is a side elevation, partly in section, showing my invention as applied to a locomotive boiler. Fig. 2 is a front elevation of the same, the boiler shell being in section, and parts being broken way.

Referring to the drawings in detail, which show the invention as applied to a fire tube boiler of the locomotive type, 1 designates the boiler shell, and 2 the usual stack, communicating with the smoke box. Attached to the front tube sheet 5 is a T 3, from which extend steam pipes 4 to the cylinders, (not shown), as usual.

6 designates the fire tubes, which are beaded into the tube sheet 5, and which extend back through the boiler to the fire box, (not shown), as will be readily understood.

In the smoke box, between the ends of the tubes and the stack, I arrange a suitable pivoted support, shown here as a baffle plate. This plate, for convenience, may be formed in two or more sections, 7, 8, as illustrated, and is secured at its upper edge to a shaft 9, supported in suitable bearings adjacent the tube sheet, and extending transversely through the boiler shell. Secured to the inner face of this baffle plate, and projecting at substantially right angles thereto, is a plurality of individual dampers or studs 10, arranged so as to enter the respective fire tubes, and control the draft therethrough. The plugs are somewhat smaller than the internal diameter of the fire tubes, and are preferably formed with beveled or otherwise tapered ends, 11, as shown. By virtue of

these tapered ends, the plugs serve to obstruct the tubes more and more, as they are forced farther in. In order that the dampers may be controlled by the engineer or fireman, I secure a crank lever 12 to the end of the shaft 9, and pivotally attach one end of a rod 13 to the end thereof, as clearly shown in Fig. 1. The other end of this rod may be connected to a suitable hand lever, such as indicated at 14, such lever having associated therewith an arc shaped rack 15, with which a pawl carried by the lever, and controlled by a hand grip 16, is adapted to engage, to lock the lever in any desired position.

The operation of the device will be apparent. When the engineer desires full draft, he will set the lever 14 so as to hold the baffle plate away from the tube sheet as far as possible. When, however, a less draft is sufficient, as where running slowly, or down hill, or where it becomes necessary to suppress the sparks, the shaft 9 is rocked by lever 15 so as to bring the baffle plate close to the tube sheet, and to cause the tapered plugs to enter the ends of the tubes to a greater or less extent. When in this position the products of combustion are compelled to pass through the restricted spaces between the plugs and the walls of the tubes, and then under and around the baffle plate, and it is evident that no dangerous sparks can escape through this tortuous passage.

It will thus be seen that I have provided a very simple and efficient draft regulator for fire tube boilers, and it is thought the many advantages of my improved arrangement will be readily appreciated by those familiar with such matters.

What I claim is:—

1. The combination with a fire tube boiler having a tube sheet, of a support pivotally mounted adjacent said tube sheet, and a plurality of plugs carried by said support, and arranged to enter the ends of the tubes as the support is swung on its pivot, the length of said plugs increasing in proportion to their distance from the pivot.

2. The combination with a fire tube boiler having a tube sheet, of a baffle plate arranged adjacent said sheet and hinged at one edge to the boiler, a plurality of plugs secured to said baffle plate and adapted to enter the tubes, the length of said plugs varying in proportion to their distance from such hinged edge, and means for swinging

said plate on its hinges so as to force said plugs into said tubes to a greater or less extent.

3. The combination with a fire tube boiler
5 of the locomotive type, of a horizontal shaft journaled adjacent the front tube sheet, a baffle plate secured at its upper edge to said shaft and arranged within the smoke box between the said tube sheet and the smoke
10 stack, plugs carried by said baffle plate and adapted to enter the ends of the fire tubes,

the length of said plugs increasing in proportion to their distance from said shaft, and means for rocking said shaft so as to swing said baffle plate toward and away 15 from the tube sheet.

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

CHARNOCK H. McCALL.

Witnesses:

W. K. MILLER, Jr.,

FRANK L. MALONE.