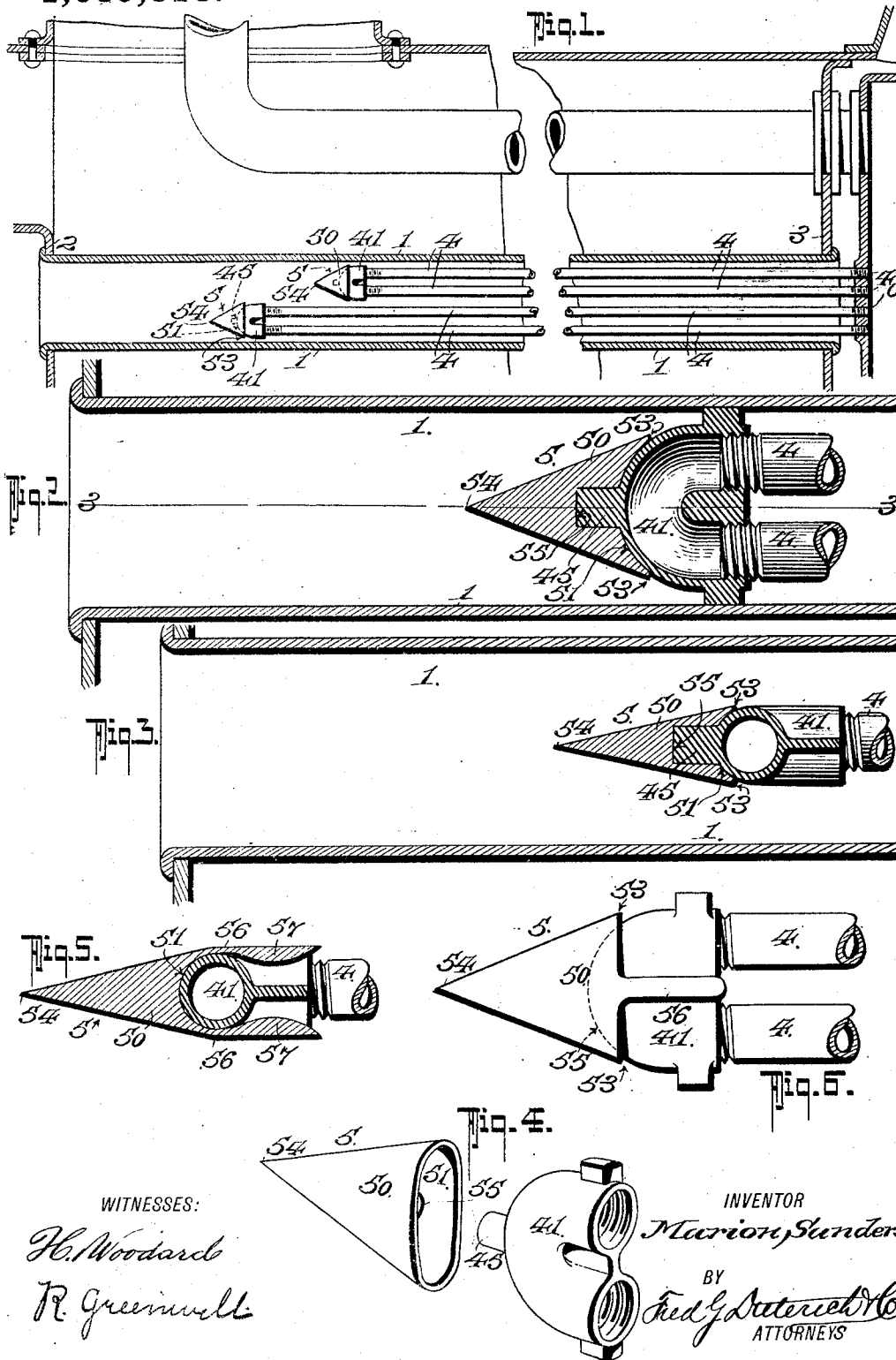


M. SANDERS.
STEAM PIPE SHIELD.
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1,039,818.

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WITNESSES:

H. Woodard
R. Greenville

INVENTOR

Marion Sanders

BY

Fred J. Butterfield
ATTORNEYS

UNITED STATES PATENT OFFICE.

MARION SANDERS, OF POPLAR BLUFF, MISSOURI, ASSIGNOR OF ONE-HALF TO GUS LYNCH, OF POPLAR BLUFF, MISSOURI.

STEAM-PIPE SHIELD.

1,039,818.

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To all whom it may concern:

Be it known that I, MARION SANDERS, residing at Poplar Bluff, in the county of Butler and State of Missouri, have invented a new and Improved Steam-Pipe Shield, of which the following is a specification.

This invention, while relating generally to superheating appliances for locomotive boilers, more particularly is in the nature of a shield or protecting means for the return ends of the superheating pipes located within the boiler tubes.

The return bends employed for joining the ends of the superheating steam pipes in locomotive boilers, usually present approximately flat surfaces to the incoming flames or gases which, in contacting with the said return bend of the steam pipes, cause the gathering of accumulation of solids or clinker stuff, and frequently to such an extent that the fire tubes become clogged and the return bends are burned out and destroyed.

My invention has for its object to overcome the aforesaid difficulty in the using of superheating appliances for locomotive boilers by providing a shield mountable on the return ends of the steam pipes and in such a manner that the said ends are thoroughly protected, not alone against the gathering of clinker accumulations, but so as to aid the solids in their passage over and by the said return bends.

My invention also has for its object to provide a simple, economical and easily applied shield or protector for the steam pipe bends that effectively serves its intended purposes, and the said invention consists in the means hereinafter fully described, specifically pointed out in the appended claims, and reference being had to the accompanying drawings, in which:—

Figure 1 is a longitudinal section of a locomotive boiler tube and a set of superheating pipes combined therewith and whose return bends are equipped with my improved shield or protecting means, the latter being shown in elevation. Fig. 2 is a longitudinal section of the fire end of a boiler tube, having superheating pipes with the preferred or simplest form of my shield or protector applied. Fig. 3 is a horizontal section of the same on the line 3—3 of Fig. 2. Fig. 4 is a detail perspective view of the

return bend or coupling head for a pair of steam pipes, and my improved shield, the latter being shown separated from the said head. Fig. 5 is a detail view that illustrates a modified form of my shield or protector, and Fig. 6 is a side elevation of the same.

In its simplest form, my improvement is adapted for use in connection with any of the usual arrangements of superheater steam pipes located within boiler tubes.

In the drawing, 1 designates a boiler tube connected to the flue sheets 2 and 3 in any well known manner.

4 designates the superheating steam pipes within the tube 1, whose open ends 40 join with the "nigger head" end of the boiler, and whose bends or loops 41 extend to near the firing end of the tube 1.

My invention relates entirely to improvements applicable to the return bend or loop end of the superheating pipes, and in its simplest form as shown in Figs. 1, 2, 3 and 4, it comprises a shield 5 that includes a head portion 50, having a flat face of a width not more than the diameter of the bend, and provided with a substantially semi-circular groove or seat 51, to permit of snugly slipping the head onto the bend 41. The body of the shield is solid and is made substantially conical, whereby the said body from the flat bend faces of the head and from the edges 53 thereof, tapers to a sharp point 54, which, when the shield is fitted onto the bend 41 faces the incoming flame or combustion products, and by reason of its shape not alone assists the passing of the combustion products over the bend and beyond it, but positively deflects the clinkorous deposits from seating or lodging on the bend 41.

In fitting my shield onto the bend 41, it is preferably detachably mounted thereon, for readily removing it in case it becomes defective for its intended purposes.

In the simplest form, as shown in Figs. 1 to 4, the return bend 41 has a centrally disposed heel lug 45 and the concaved seat in the head of the shield has a corresponding socket 55, it being obvious that when placed onto the bend 41 cold, the shield will firmly grip the stud and the bend as it expands.

In Figs. 5 and 6 I have shown a somewhat modified form of my shield and the same instead of having a socket 55, is provided with

parallel fingers 56, having convexed heel portions, 57. This latter or modified form can be used on bends having no central lugs 45, since the finger portions 56 can be sprung 5 over the return bend far enough to engage with the grooves between the parallel ends of the said bend. This last stated form of shield can be removed from time to time without affecting the superheater pipes or 10 the return bend.

One of the advantages in making my shield as stated, is, that since the thickest portion thereof is practically not more than the diameter of the bend, and the greatest 15 width thereof is somewhat less than the width of the bend, it follows that the said shield does not, in any way decrease the area of the draft on the tube 1, and as the products of combustion strike the shield 20 they are deflected and caused to pass around the superheater pipes as they travel by the ends and over the top and bottom faces of the bends, thereby avoiding the danger of clogging at the bend and also the danger of 25 burning out the said bend.

What I claim is:—

1. A protecting shield for the return bends of superheating steam pipes, comprising a 30 cone shaped body having a concaved seat for receiving the outer end of the return bend, and a socket, the said outer end of the

return bend having a lug for engaging with the said socket.

2. A protecting shield for the return bends of superheating steam pipes, comprising a 35 cone-shaped body that includes a head portion of not greater thickness and width than that of the return bend to which it is applied, the said head portion of the shield having a concaved seat for receiving the 40 outer end of the return bend and a socket, the said outer end of the return bend having a lug for engaging with the socket.

3. A shield for the return bends of superheating steam pipes in boiler tubes, comprising a substantially conical shaped body including a spear-like solid head having 45 means for fitting onto the outer end of the return end of the return bend of the pipe, and for removably holding it on said bend, 50 said means including resilient members adapted to be sprung over the return bend for engaging with the grooves between the parallel ends of said bend, said spear-like head tapering from said return bend and extending a distance beyond the same greater 55 than the length of the bend.

MARION SANDERS.

Witnesses:

WM. MOHNKERN,
J. P. GROSS.