(No Model.)

H. MILLHOLLAND.

DEFLECTING PLATE FOR LOCOMOTIVES.

No. 282,104. Patented July 31, 1883.

Fig. 1.

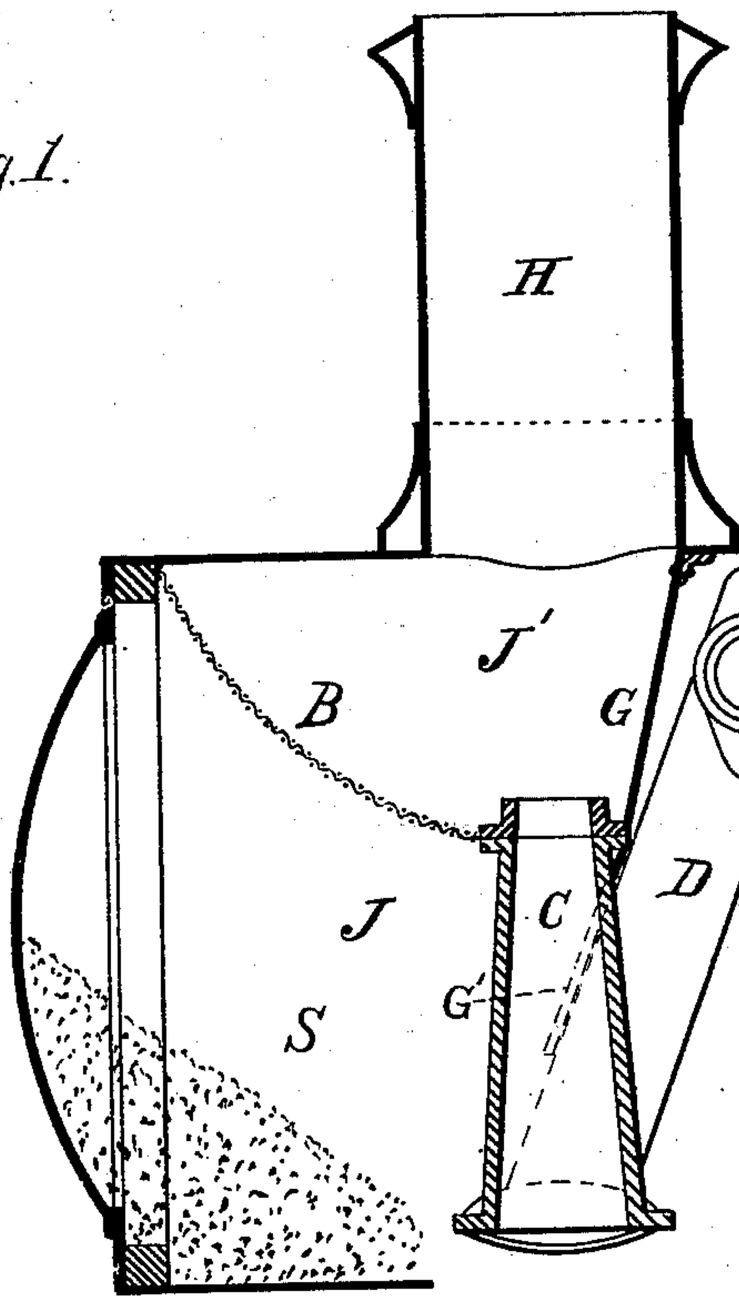
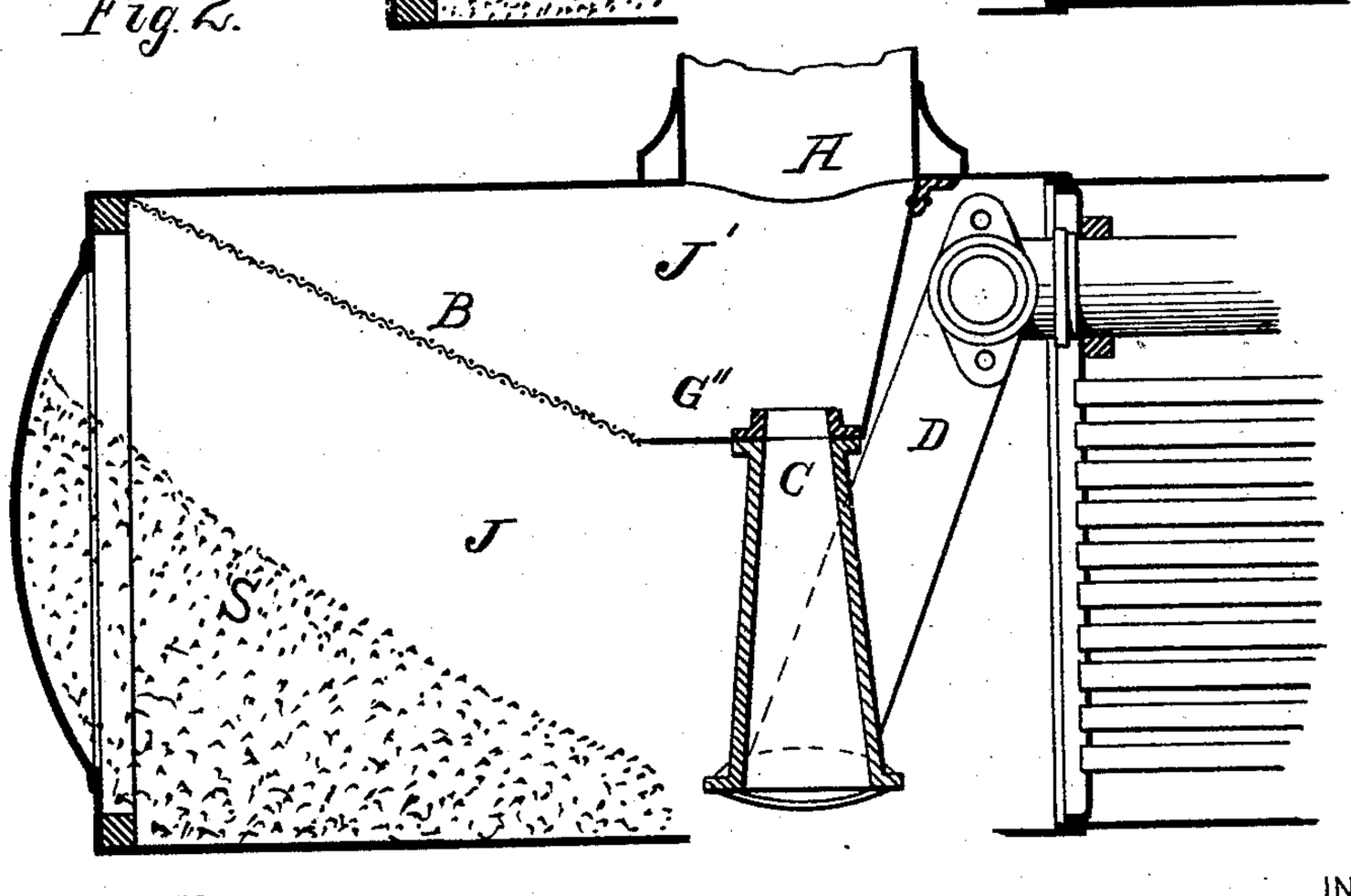


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY MILLHOLLAND, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO ROBERT W. LESLEY, OF SAME PLACE.

DEFLECTING-PLATE FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 282,104, dated July 31, 1883.

Application filed May 28, 1883. (No model.)

To all whom it may concern:

Be it known that I, HENRY MILLHOLLAND, of Philadelphia, Pennsylvania, have invented certain new and useful improvements in mechanical devices for regulating and distributing the draft through the tubes of locomotive-engine boilers, of which the following is a specification.

My invention belongs to that class of devices known as "deflecting-plates;" and it consists of a dividing plate or partition in the smoke-box, extending from the crown of the same in front of the induction-pipes by any convenient curved or straight line a sufficient distance below the upper line of tubes or beyond the exhaust-pipe, to produce the effect which is the object of my invention—that is, to regulate and distribute the force of the blast by preventing an undue direct influence of the same on the upper rows of flues, and incidentally providing a heat-jacket for the induction-pipes and preserving the steam in the same at a temperature above the point of condensation.

In the drawings which form part hereof, Figure 1 represents a longitudinal vertical central section of the waist and smoke box of a locomotive tubular boiler containing one form of my invention applied in a half-extension or short smoke-box, and Fig. 2 represents a similar section of a similar boiler with my invention applied within a long or full-extension smoke-box.

In both of the views, H is the stack; C, the exhaust-pipe and nozzle; D, the induction-pipe; G, the upper part of the deflecting-plate; G′, the lower part, when projected downward below the upper rows of boiler-tubes, as shown in Fig. 1; G″, the extension of the deflecting-plate G by any suitable line to a point beyond the exhaust-pipe, which then passes through it, as shown in Fig. 2. B is a screen or netting; J, the lower compartment of the smoke-box. J′ is the upper compartment of the same, and S an accumulation of sparks or cinders.

It will be noticed that the deflecting-plate G, as shown in both views, starts from any point on the crown of the smoke-box back of the stack-opening, and, extending from side to side of the same, projects downwardly by any convenient plane in front of the induction-pipes to a point at or near the upper end of the exhaust pipe or nozzle. From this point (if the engine be adapted for burning hard or anthracite coal and it is desirable to have a short or half-extension smoke-box for that or any other reason) the plate may be projected downward by any convenient line or plane at a sufficient distance to control the blast and distribute its effects more evenly throughout all the tubes. This form of deflector is shown in Fig. 1, and it is especially suited to a half-extension smoke-box where screen-space becomes important, as the screen or netting may be carried from side to side and by any convenient line or plane from the forward end of the smoke-box to the outward surface of the deflector back of the exhaust-pipe, which passes through the screen or netting. When, however, for any reason, a full extension smoke-box is desirable, (as where the accumulation of cinders is large, due to the character of fuel burned,) then the deflecting-plate may be carried forward by any suitable line or plane (or as shown by G″ in Fig. 2) a sufficient distance beyond the exhaust-pipe, which passes through it, to produce a regulating effect upon the blast substantially similar to that produced by the device when deflected downwardly, as shown in Fig. 1. The plate G″ may be extended by a screen or netting, B, by any convenient line or plane to the forward end of the smoke-box. I prefer in practice to arrange the nettings or screens substantially as indicated in the several views. The plate may be attached to the crown and sides of the smoke-box by angle-irons or strips, or by bending its edges, or any other suitable method of fastening. Where it is desirable to regulate the set of the extension of the deflecting-plate, the plate may be doubled near its extremity and the addition made adjustable; but I prefer to ascertain by experiment the proper length of plate for a given engine or class of engines, and use a single plate of the proper dimensions.

I am aware that other forms of deflecting-plates have been used; but my deflecting-plate projected from the crown of the smoke-box is cheaper in construction and more efficient in action, gives greater discharge-space for the tubes and yet distributes the draft, and, in addition thereto, forms a heat-jacket for the induction-pipes, insuring a steady supply of dry

steam through them when the engine is running, and affording a protection from condensation when the engine is at rest. It presents the further advantage that no small corners or crevices are found in the line of draft to prevent the free ejection of cinders from the tubes into the cinder-receptacle.

Having described my invention in the foregoing specification, what I claim as that invention is—

1. In the smoke-box of a locomotive-engine, a deflecting-plate extending from side to side of the same and projected from a line on the crown of the smoke-box back of the stack-opening downwardly by any convenient line or plane in front of the induction-pipes a sufficient distance below the upper rows of boiler-tubes, substantially as described, and for the purpose specified.

2. In the smoke-box of a locomotive-engine, a deflecting-plate extending from side to side within the same and projected from a line on the crown of the smoke-box back of the stack-opening downwardly by any convenient line or plane in front of the induction-pipes to a point near the top of the exhaust-pipes, and thence extended outwardly by any suitable line or plane a sufficient distance beyond the exhaust-pipe, which passes through it, substantially as described, and for the purpose specified.

3. In the smoke-box of a locomotive-engine, the combination of a deflecting-plate extending from side to side within the same and projected from a line on the crown of the smoke-box back of the stack-opening downwardly by any convenient line or plane in front of the induction-pipes a sufficient distance below the upper rows of boiler-tubes, with a screen or netting, through which the exhaust-steam pipe passes, extending from the said deflecting-plate by any suitable line or plane to the forward part of the smoke-box, which is by the plate and screen or netting divided into an upper and lower compartment, substantially as described, and for the purpose specified.

4. In the smoke-box of a locomotive-engine, the combination of a deflecting-plate extending from side to side within the same and projected from a line on the crown of the smoke-box back of the stack-opening downwardly by any convenient line or plane in front of the induction-pipes to a point near the top of the exhaust-pipe, and thence extending outwardly by any suitable line or plane a sufficient distance beyond the exhaust-pipe, which passes through it, with a screen or netting extending from the same by any suitable line or plane to the forward end of the smoke-box, which is by the plate and screen or netting divided into upper and lower compartments, substantially as described, and for the purpose specified.

5. A deflecting-plate projected within the smoke-box of a locomotive-engine from the crown of the same downwardly or downwardly and forwardly, substantially as described, and for the purpose specified.

In testimony whereof I have hereunto signed my name this 23d day of May, A. D. 1883.

HENRY MILLHOLLAND.

In presence of—
WM. H. ADDICKS,
WM. B. EDWARDS.