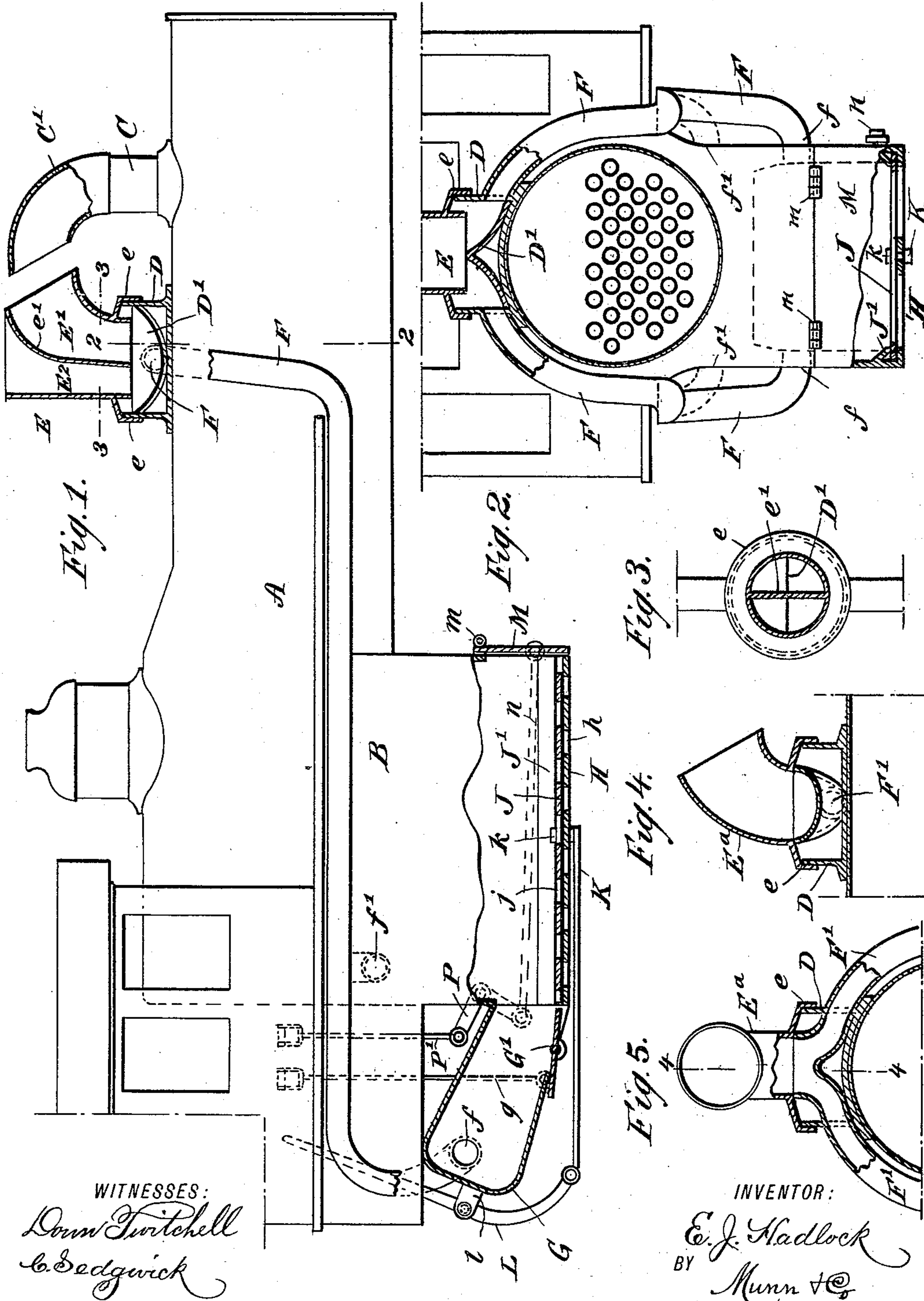


(No Model.)

E. J. HADLOCK.
SPARK ARRESTER.

No. 450,012.

Patented Apr. 7, 1891.



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EDSON J. HADLOCK, OF BIG SPRING, TEXAS.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 450,012, dated April 7, 1891.

Application filed November 18, 1890. Serial No. 371,819. (No model.)

To all whom it may concern:

Be it known that I, EDSON J. HADLOCK, of Big Spring, in the county of Howard and State of Texas, have invented a new and Improved Spark-Arrester, of which the following is a full, clear, and exact description.

My invention relates to improvements in spark-arresters for locomotives; and the objects of my invention are to produce a spark-arrester which will prevent the sparks and cinders from falling upon the train and upon surrounding lands and buildings, which will effect a more complete combustion of the fuel used in the locomotive, and which will give a greater draft to the same, and also to provide a cinder-box and ash-pan by means of which the cinders and ashes may be easily collected and dumped, and by means of which also the draft may be regulated.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a broken side elevation of an ordinary locomotive-boiler provided with the arrester and ash-pan embodying my invention, the arrester and ash-pan being shown in section. Fig. 2 is a broken vertical transverse section on the line 2 2 of Fig. 1, looking toward the engine-cab. Fig. 3 is a horizontal section through the arrester on the line 3 3 of Fig. 1. Fig. 4 is a vertical section of a modified form of arrester on the line 4 4 of Fig. 5; and Fig. 5 is a broken front elevation of the same, partly in section.

The locomotive-boiler A is of the usual construction, having a suitable fire-box B and a smoke-stack C, and having also the ordinary cab at its rear end. The smoke-stack C connects with the boiler in the ordinary way, but is provided at its top with a rearwardly-curved elbow C', which is slightly larger at its nozzle than at its lower end. Mounted on the top of the boiler in the rear of the smoke-stack is a box D, which supports the arrester E. The arrester E is provided at its lower end with a suitable flange e, which fits upon the box D, and it is of ap-

proximately the same height as the smoke-stack C, is open at the top, and is divided by a curved partition e' into two chambers E' and E². The chamber E' is curved forwardly at its upper end, and its opening aligns horizontally with the nozzle of the smoke-stack C, so that the smoke and cinders issuing from the stack will pass directly into it, and the chamber opens at the bottom into the box D. The chamber E² extends vertically through the arrester, its lower end communicating with the box D and its upper end opening into the air.

The box D is provided with a double deflector D', which is raised in its central portion, as best shown in Fig. 2, and the apex of which passes longitudinally beneath the chambers E' and E², and opening from each side of the box D are pipes F, which extend along each side of the boiler A and open at f into the cinder-box G and at f' into the fire-box B. Both these openings from the pipes F are not used at the same time, but they are used separately according to the form of the arrester, as hereinafter described.

The cinder-box G is arranged in the rear of the fire-box B and above the ash-pan H, and the rear portion of the cinder-box is raised slightly, as best shown in Fig. 1, so that the cinders that are in it will slide forward upon the ash-pan. The cinder-box G has a damper G' pivoted in an opening in the bottom of the box, and the damper is provided with a rod g, which extends upward into the engine-cab, and by means of which the damper may be regulated.

The ash-pan H is provided with a series of transverse slots h, and a slide J is arranged upon the upper side of the ash-pan H, the slide corresponding in length to the length of the ash-pan and having transverse slots j', which correspond in size to the slots in the ash-pan, so that when the slots in the ash-pan and slide align the ashes and cinders will be dropped through upon the ground, and when they do not align the ash-box will be closed. On each side of the slide J is a strip J' of iron, which strips serve as guides for the slide and prevent obstructions from getting beneath it, and the slide is connected by a bolt k, which extends downward through a slot in the ash-pan H, with a horizontal rod K, the rear end

of which is pivoted to a lever L, which extends upward into the cab, the said lever being pivoted centrally to a support l, so that by manipulating the lever the position of the slide in relation to the ash-pan may be regulated. At the rear end of the ash-box is a damper M, which is pivoted at its upper edge, as shown at m, and which is connected by a rod n (indicated by dotted lines in Fig. 1) to one arm of a bell-crank P, the other arm of the bell-crank being provided with a rod P', which extends upward into the cab, and by means of which the damper may be operated.

When my invention is used, the ordinary dampers are dispensed with, and, if desired, the air may be omitted beneath the grates by means of the dampers G' and M.

In Figs. 4 and 5 I have shown a modified form of the arrester, the arrester E^a having the flanges e, by means of which it is attached to the box D; but in this form the central partition is dispensed with and the main portion of the arrester is curved forward, as is best shown in Fig. 4, so that all the smoke issuing from the smoke-stack will pass into the arrester and through the branch pipes F', which open from the bottom of the arrester through the box D and pass to the fire-box like the pipes F, already described.

When the arrester E is used, the pipes F are connected directly with the fire-box, as shown at f', and the cinder-box G is dispensed with, and as the smoke issues from the smoke-stack it passes into the arrester, is deflected by the plate D' into the pipes F, and passes directly into the fire-box B through the opening f', where all the combustible matter is consumed, and this operation is facilitated by the exhaust-steam, which is let into the smoke-stack in the usual way. It will be seen that a certain amount of air will pass through the pipes with the smoke, and this will afford a sufficient draft, so that the ordinary dampers may be dispensed with.

The arrester should be placed far enough in the rear of the smoke-stack so as to allow sufficient air to enter the arrester, but not

far enough but that the smoke will all enter it. The heavier portions of the smoke will pass down the pipes F and the lighter parts will pass upward through the chamber E² to the air.

When the form of arrester shown in Figs. 4 and 5 is used, the pipes F are connected with the cinder-box G, as shown, and the cinders will be carried through the pipes to the cinder-box from whence they will be delivered upon the slide J, and at convenient points the slide may be operated so that the cinders and ashes may be dumped through the slots j and h.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the curved smoke-stack, the box mounted upon the boiler in the rear of the smoke-stack, and the conducting-pipes opening from the box, of the arrester adapted to rest upon the box, said arrester having a curved chamber to receive the smoke and conduct it to the box, and a chamber in the rear of the curved chamber opening from the box into the air, substantially as described.

2. In a spark-arrester, the combination of the curved smoke-stack, the box mounted in the rear of the smoke-stack, the conducting-pipes leading from the box to the fire-box, the arrester mounted upon the box and provided with a curved chamber to receive the smoke and conduct it to the box, and an exit-chamber in the rear of the curved chamber, substantially as described.

3. The combination, with the spark-arrester of the character described, of a cinder-box arranged to deliver upon the ash-pan, pipes leading from beneath the arrester to the cinder-box, and a damper pivoted in the cinder-box and connected by a suitable rod with the engine-cab, substantially as described.

EDSON J. HADLOCK.

Witnesses:

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