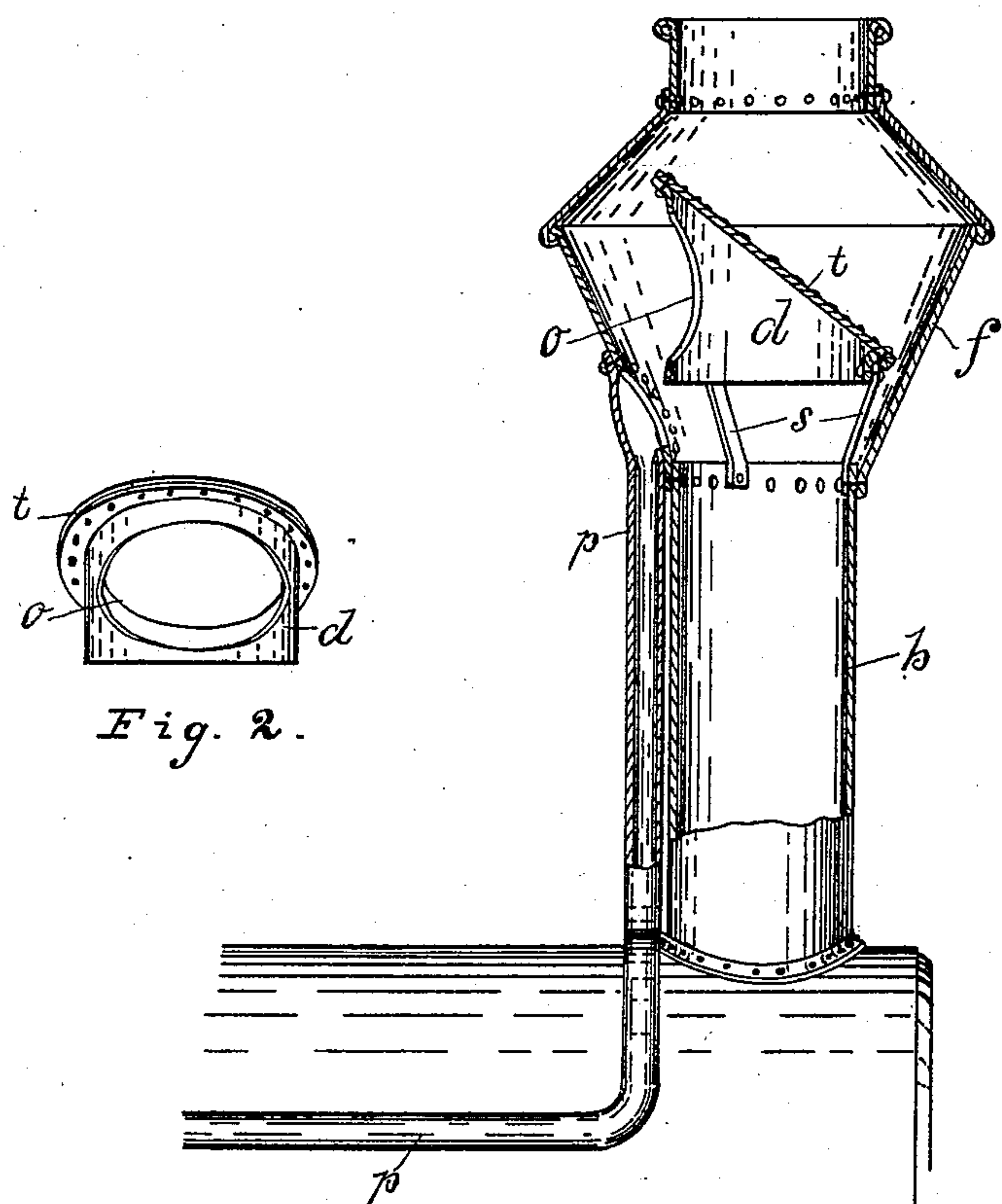


(No Model.)

J. ELA.  
SPARK ARRESTER.

No. 316,022.

Patented Apr. 21, 1885.



WITNESSES.

*E. C. Sicker.*  
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# UNITED STATES PATENT OFFICE.

JACOB ELA, OF INDIANAPOLIS, INDIANA.

## SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 316,022, dated April 21, 1885.

Application filed November 13, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB ELA, a resident of Indianapolis, Indiana, have made certain new and useful Improvements in Spark-Arresters, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters indicate like parts.

My invention relates to appliances for arresting sparks in locomotive-stacks and returning them, with the smoke, to the fire-box for consumption, and will be readily understood from the following description.

In the drawings, Figure 1 represents a side view of the stack and boiler of a locomotive, the stack being in vertical section so far as to show the construction and internal arrangement of the parts. Fig. 2 represents a front view of the deflector and its opening *o*.

In detail, *b* is the barrel of the stack, extending up to the flare *f*. Attached to the top of this barrel by straps *s*, and at some distance above it, is a deflector, *d*, having an inclined top, *t*, and an opening, *o*, on the side fronting the cab, this deflector being placed within and surrounded by the flare *f*, as shown in Fig. 1. The openings between the deflector and the barrel-mouth allow a ready draft, not only around the deflector, but also through the opening *o* and the top of the stack.

*p* is a pipe connected to the lower flare and running down along the outside of the barrel, as shown, and is intended for carrying the sparks, cinders, and smoke back to the fire-box. This pipe opens into the flare just below the opening *o* in the deflector *d*, and runs back either outside the boiler on either or both sides, or may be carried back through a flue, if desired, inside the boiler, to connect with the fire-box, so that it will discharge its contents therein. The inclined top of the deflector *d* stops the cinders, sparks, exhaust-steam, and gases, and turns them out through the opening *o*, and they pass readily down—at least the heavier portions—into the opening of pipe *p*, the steam supplying force to drive them back to the fire-box, where they

serve as fuel, thus economizing fuel, making a much hotter fire, and increasing the steam capacity of the locomotive.

This device thus constructed does not impair the draft, nor at all interfere with the engines making steam, but, for the reasons above given, greatly increases the latter, and steam is maintained much better than where the ordinary stacks are used.

I am aware that cones have long been used over the mouth of the barrel, and do not broadly claim the same as my invention; but I am not aware that a deflector provided with an opening like mine, in connection with a returning-pipe connecting with the fire-box, has ever before been known or used.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. The barrel *b*, provided with the deflector *d*, having the inclined top *t* and side opening, *o*, the deflector supported above the mouth of the barrel by straps *s* and within the flare *f*, all combined substantially as described.

2. The barrel *b*, provided with deflector *d*, having inclined top *t* and opening *o*, the deflector supported above the mouth of the barrel by suitable straps, *s*, and within the flare *f*, and one or more pipes connected to the lower portion of said flare for leading back to the fire-box, for returning the products of combustion thither, all combined substantially as described.

3. A spark-arrester for locomotives, wherein a deflecting-top having an inclined top and an opening in front is fixed above the mouth of the barrel, so that the opening in the deflector will be substantially over the opening of a return-pipe leading to the fire-box connected with the bottom of the flare, in combination with such barrel and returning-pipe, substantially as and for the purpose described.

In witness whereof I have hereto set my hand this 4th day of November, 1884.

JACOB ELA.

Witnesses:

C. P. JACOBS,  
E. E. SICKLER.