

(No Model.)

A. BERNEY.
SPARK CONSUMER.

No. 248,010.

Patented Oct. 11, 1881.

Fig. 1.

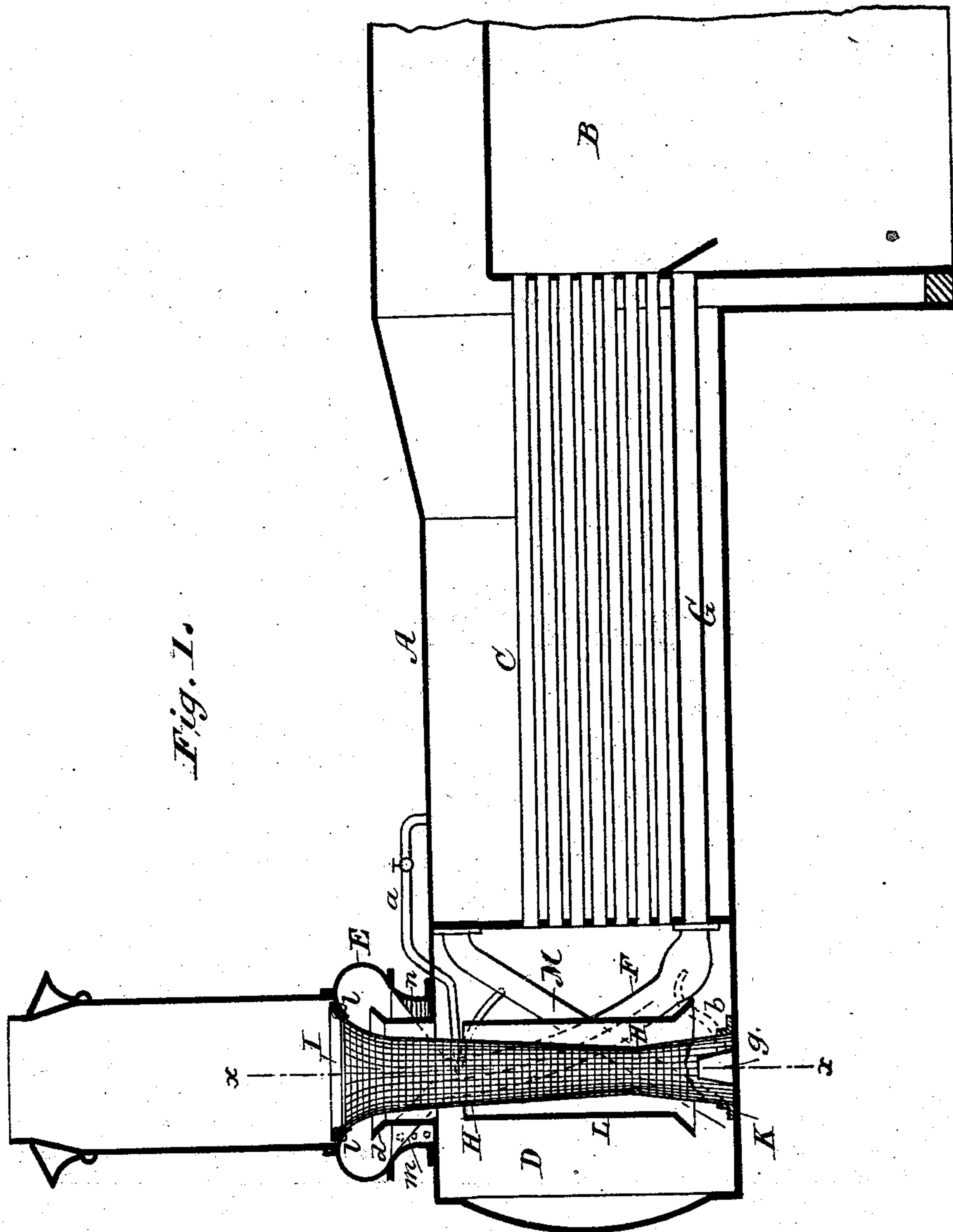
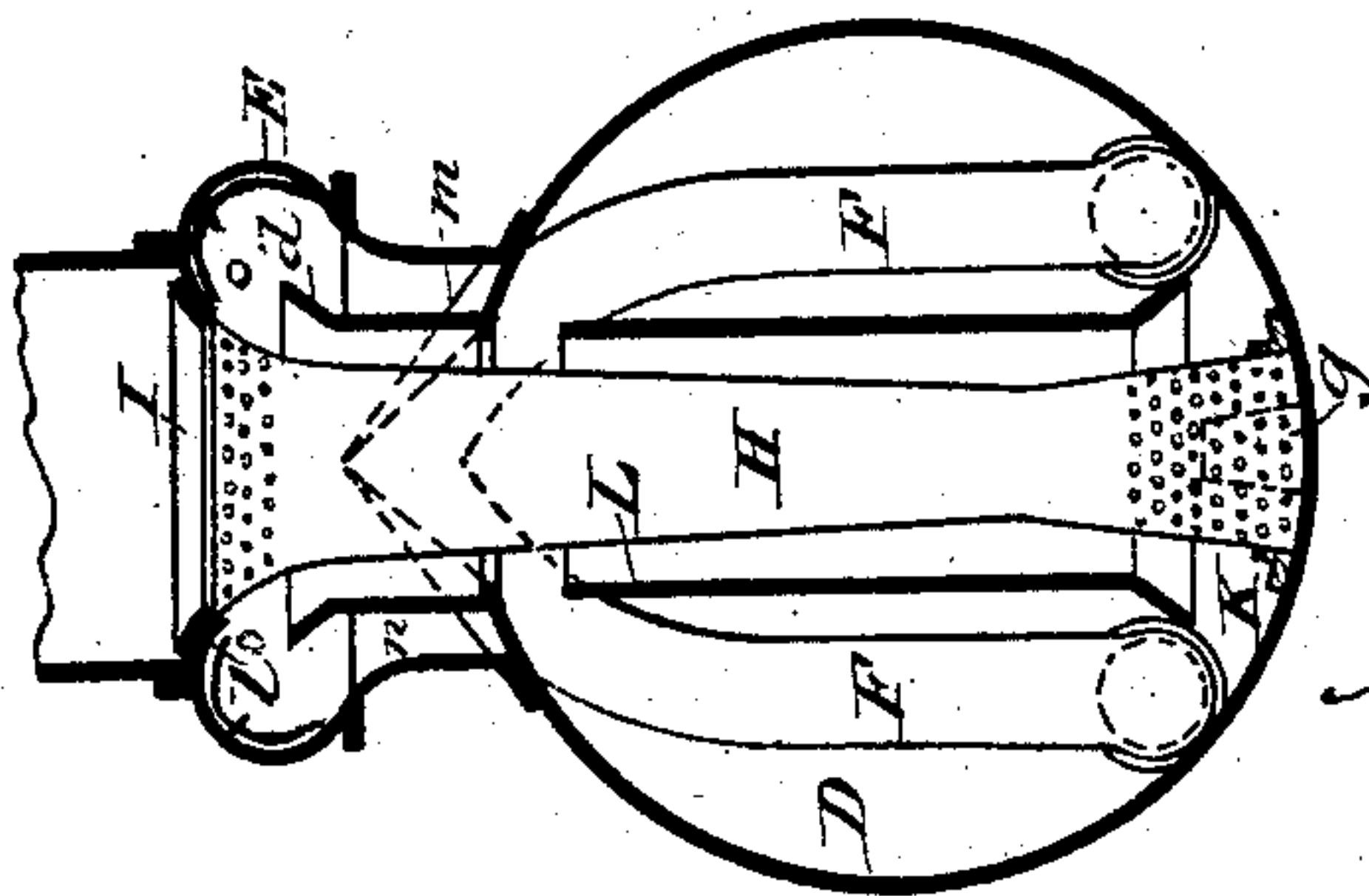


Fig. 2.



Witnesses:

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SPARK-CONSUMER.

SPECIFICATION forming part of Letters Patent No. 248,010, dated October 11, 1881.

Application filed March 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BERNEY, a citizen of the United States, residing at the city of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Spark-Consumers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to spark arresters and consumers in which the sparks, cinders, &c., are arrested and deflected and returned to the furnace by return-flues, to be there consumed and assist in the generation of steam; and the object in this instance is to dispense with the ordinary flaring or enlarged stack and substituting therefor the straight stack.

The invention consists, principally, in arranging in the saddle of the stack a truncated cone of wire-netting or perforated sheet metal connected by a pipe over the exhaust-tips to the bottom of the smoke-arch and attached to a ring at its upper and lower ends. The sparks, cinders, &c., are deflected into the hollow saddle, and from thence through a connecting-pipe and return-flues into the furnace, all of which will be more fully described hereinafter, reference being had to the letters of reference in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of a locomotive-boiler embodying my invention. Fig. 2 is a vertical cross-section on line *x x*.

In the drawings, A represents an ordinary locomotive-boiler, having the usual furnace, B, tubes or flues C, and smoke-arch D.

Above the smoke-arch is arranged the hollow saddle E, provided with inclined guides, by which the sparks, cinders, &c., are guided into the connecting-pipes F, which communicate with the return-flues G, and through them with the furnace B. In the smoke-arch are arranged the ordinary exhaust-tips, *g*, over which is attached a conical perforated pipe, H, of wire-gauze or perforated sheet metal. This

pipe H is held in position at its upper end by a ring, I, by which it is secured to the saddle, and at its lower end by a ring, K, to the smoke-arch. By this pipe the exhaust-steam can pass freely into the atmosphere, and prevent any back-pressure on the pistons of the engines, and the unconsumed gases can freely escape. The sparks, cinders, &c., are, however, drawn by the exhaust blast-pipes upward through the lift-pipe L, and are deflected by the curved part *l* of the saddle into the annular space *n* of the said saddle, and thence by means of the inclined guides *m* into the connecting-pipe F, and through the force of the steam-jet *a* are carried through the return-flues G into the furnace B. The usual lift or blast pipe, L, surrounds the pipe H, and through the space formed between these two pipes the sparks, cinders, &c., are forced into the saddle.

The steam-jet pipe is provided with a valve, and may be connected to the ordinary steam-pipes, M, leading to the cylinders or to the boiler; or, if desired, a branch pipe, *b*, may be used, and connected with the exhaust-tips, and by it the sparks, cinders, &c., forced through the return-flues into the furnace.

The saddle is provided with a curved lip, *l*, and an annular flaring mouth, *d*, by which the sparks are guided or deflected into the annular space *n* and onto the inclined guides *m*. The curved lip *l* is generally cast separate from the saddle and bolted onto it. A re-enforce should be cast and bolted on at O, as shown in Fig. 2. It will save the curve *l* from being worn out too fast.

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

1. The combination of a conical perforated pipe, H, connected to the bottom of the smoke-arch, and saddle E, in the manner and for the purpose herein specified.

2. In a spark-arrester, the combination of a conical perforated pipe, H, with the hollow saddle E, connecting-pipes F, and return-flues G, arranged substantially as set forth.

3. In a spark arrester and consumer, the combination of the conical perforated pipe H, hollow saddle E, provided with inclined guides,

with the lift-pipe L, exhaust-tips G, connecting-pipes F, and return-flues, all arranged substantially as shown and specified.

4. In a spark arrester and consumer, the combination of the conical perforated pipe H, hollow saddle E, provided with inclined guides, the lift-pipe L, connecting-pipes F, return-flues G, and a steam-jet, all arranged substantially as specified.

5. In a spark-arrester, the saddle herein de-

scribed, provided with a curved lip, *l*, and an annular flaring mouth, *d*, arranged substantially as shown and specified.

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

ALFRED BERNEY.

Witnesses:

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S. N. BERNEY.