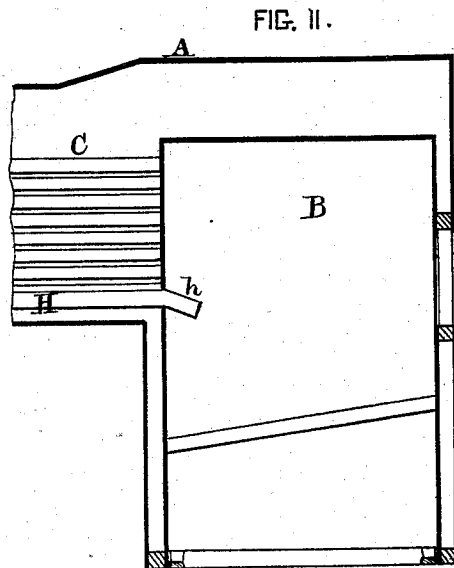
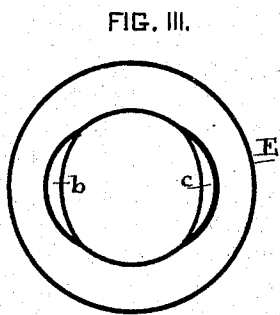
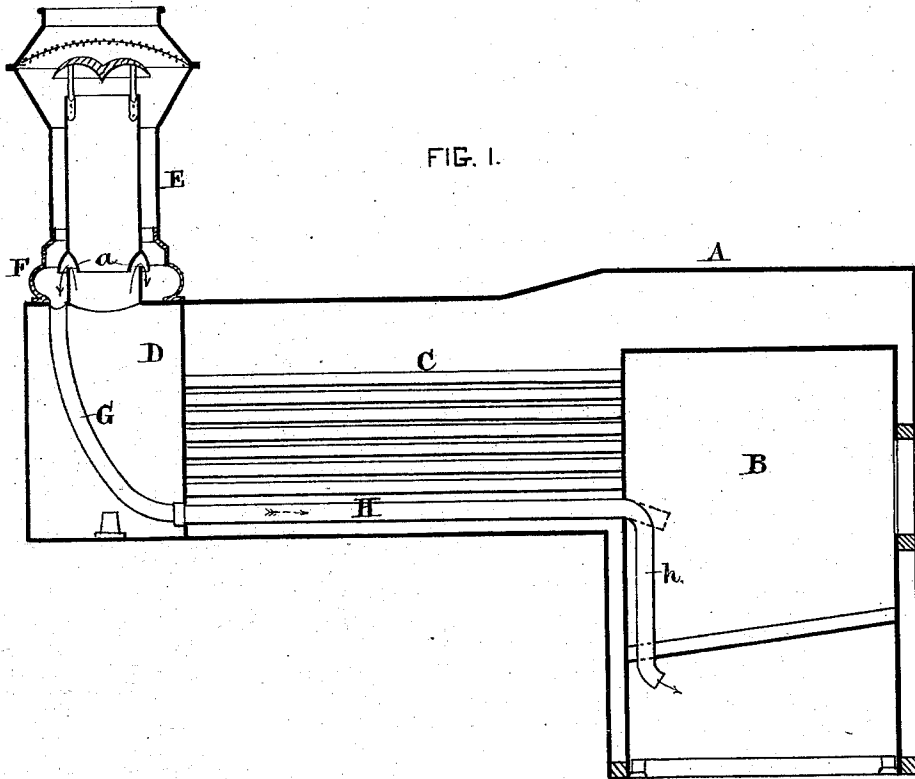


(No Model.)

A. BERNEY.
Spark Arrester and Consumer.
No. 239,020. Patented March 22, 1881.



WITNESSES:

Robt. Guard
Jos. H. Keller

INVENTOR:

Alfred Berney

UNITED STATES PATENT OFFICE.

ALFRED BERNEY, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO NATHIEL A. DUTTON, OF SAME PLACE.

SPARK ARRESTER AND CONSUMER.

SPECIFICATION forming part of Letters Patent No. 239,020, dated March 22, 1881.

Application filed September 30, 1880. (No model.)

To all whom it may concern:

Be it known that I, ALFRED BERNEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Spark Arresters and 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; and the object is to return the sparks, cinders, and unconsumed products of combustion to the furnace by means of part of the exhaust-steam entering the smoke-stack; and the invention consists in arranging in the inner barrel or saddle an annular or segmental curved lip, by which part of the exhaust-blast forces the sparks and products of combustion back into the furnace, to be there consumed. It also consists in forming on the return-flues a conducting-tube, all of which will be more fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure I is a longitudinal section of a locomotive-boiler with my invention attached. Fig. II is a section of the furnace, showing a modified form of spark-conducting tube. Fig. III shows two segmental lips, instead of one annular lip.

In the drawings, A represents a locomotive-boiler having furnace B, tubes C, smoke-arch D, and smoke-stack E, of ordinary construction. The saddle F is preferably provided with inclines, by which the sparks, &c., are guided into the curved pipe G, which connects, by a thimble, with return-flues H. These flues are

provided in the furnace with a curved or bent conducting flue or tube, *h*, by which the sparks are directed either to the forward side of the furnace in an inclined manner or between the double grates, when used. The inner barrel or the saddle is provided with an annular overhanging lip, *a*, by which part of the exhaust-steam is trapped and forces the sparks, &c., into the pipe G and back to the furnace to be consumed.

Instead of the annular lip, segmental lips *b* *c*, as shown in Fig. III, may be employed, which would serve the same purpose.

Any suitable cone or netting may be employed over the inner barrel to check the sparks, &c.

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

1. In a spark-arrester, one or more overhanging lips on the inner barrel or the saddle, to trap exhaust-steam and return sparks to the furnace therewith, substantially as shown and specified.

2. In a spark-arrester, the flues H, provided with a bent or curved conducting-flue, for returning and guiding the sparks and products of combustion to the furnace, substantially as described.

3. In a spark-arrester, the combination of a stack having the inner barrel provided with overhanging lip or lips, with a pipe, G, and return-flues H, provided with conducting-pipe *h*, substantially as specified.

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

ALFRED BERNEY.

Witnesses:

ROBT. GUARD,
GEO. M. MILLER.