(No Model.)

G. M. COOPER.

SPARK ARRESTER.

No. 386,385. Patented July 17, 1888.

Fig. 3.

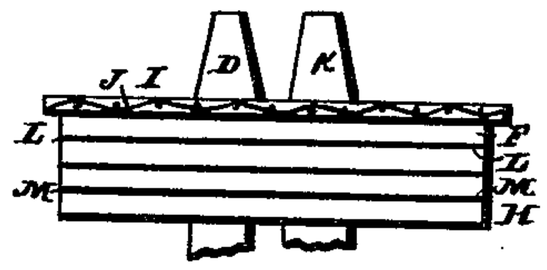


Fig. 2.

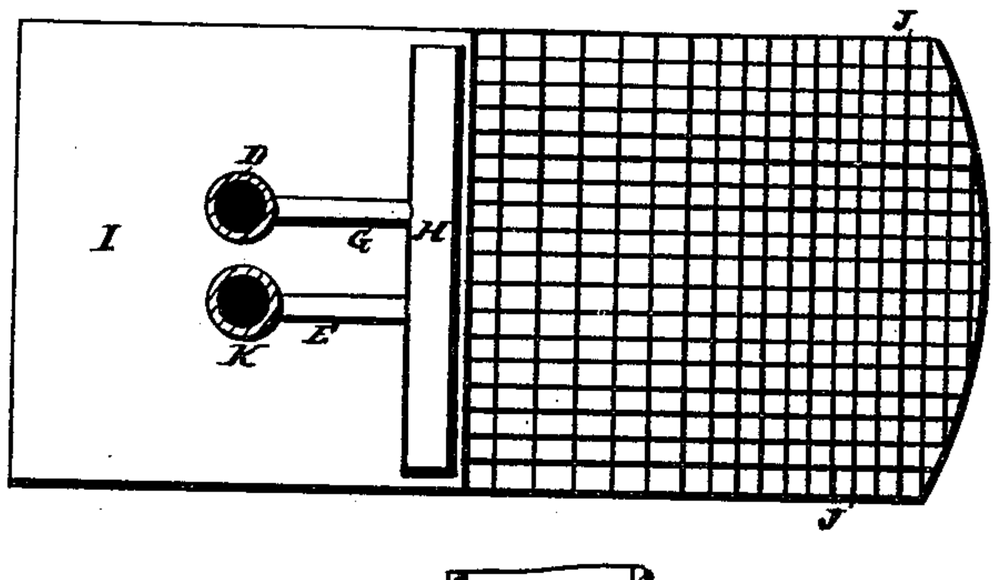
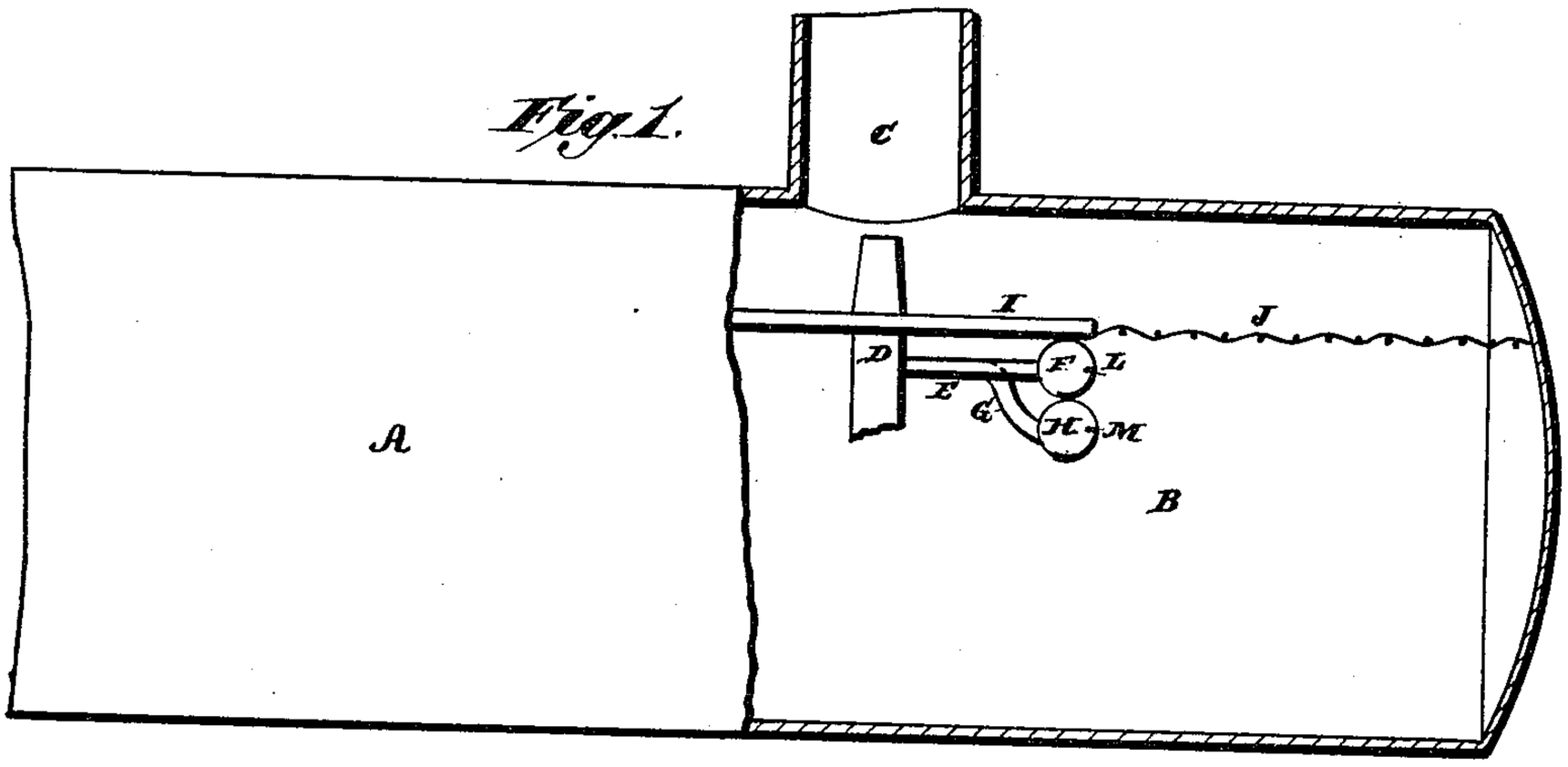


Fig. 1.



Witnesses,
Henry B. Lothrop,
C. Hesselbacher,

Inventor.
Gage M. Cooper.
by Geo. H. Lothrop.
atty.

UNITED STATES PATENT OFFICE.

GAGE M. COOPER, OF PORT HURON, MICHIGAN, ASSIGNOR OF ONE-HALF TO DANIEL WOOD, OF KOUT'S STATION, INDIANA.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 386,385, dated July 17, 1888.

Application filed February 16, 1888. Serial No. 264,294. (No model.)

To all whom it may concern:

Be it known that I, GAGE M. COOPER, of Port Huron, in the county of St. Clair and State of Michigan, have invented a new and useful Improvement in Spark-Arresters, of which the following is a specification.

My invention consists in an improvement in spark-arresters in locomotive-engines, hereinafter fully described and claimed.

Figure 1 is a side elevation of a portion of the boiler and of the extension-front, partly in section. Fig. 2 is a bottom plan view of my device, and Fig. 3 is a front elevation.

A represents the forward portion of a locomotive-boiler, and B represents the extension-front, now commonly used for the purpose of arresting sparks.

I represents a blank plate, and J a wire-netting used in said extension-front, the draft from the locomotive-tubes passing into the extension-front B, under said plate I and netting J, then passing up through said netting and out through the smoke-stack C.

D K represent the two exhaust-pipes from the cylinders, which pass through the plate I, are reduced to any desired extent at their ends, and discharge into the lower part of the smoke-stack C to cause a forced draft. At every exhaust of the cylinders the partial vacuum in the smoke-stack causes a strong draft through the boiler-tubes and up through the wire-netting J, and this throws out of the top of the smoke-stack such sparks as are not arrested by the plate I and the wire-netting J, and these are frequently the cause of fire.

My invention prevents any sparks from passing the wire-netting J in an incandescent state by subjecting said sparks to a steam bath; and the form of mechanism which I prefer to use is as follows, though the specific construction thereof may be varied:

F and H represent two small tubes secured under the forward end of the plate I, each provided with a slit or rows of perforations, L and M, along the forward side, and having their ends closed. The tube F is connected with the exhaust-pipe K by a small tube, E, and the tube H is connected with the exhaust-pipe D by a small pipe, G, so that at each passage of the exhaust-steam through either exhaust-pipe a portion of the steam will pass into one of the tubes F H and will be thrown out in the form of a thin sheet into the extension B. As the draft and sparks follow the exhaust, it is evident that a sheet of steam will be thrown into the extension B before the sparks thrown by each exhaust reach the extension, and that the sparks which come into the extension B will be quenched thereby.

Of course either of the tubes F and H may be used alone and connected with both of the exhaust-pipes, though I prefer to use both tubes, or any other construction may be adopted which will throw a small portion of the steam at each exhaust into the extension B.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a locomotive-engine having an extension-front, B, and the blank plate I, extending under the smoke-stack, of the exhaust-pipes passing through the blank plate and having an opening below said plate for the escape of a part of the exhaust-steam into the extension-front beyond the blank plate, substantially as described.

2. In combination with the extension-front B of a locomotive-engine and the exhaust-pipes D K, the slotted tubes F H, connected with said exhaust-pipes, substantially as shown and described.

GAGE M. COOPER.

Witnesses:
E. G. SPALDING,
J. H. MAXWELL.