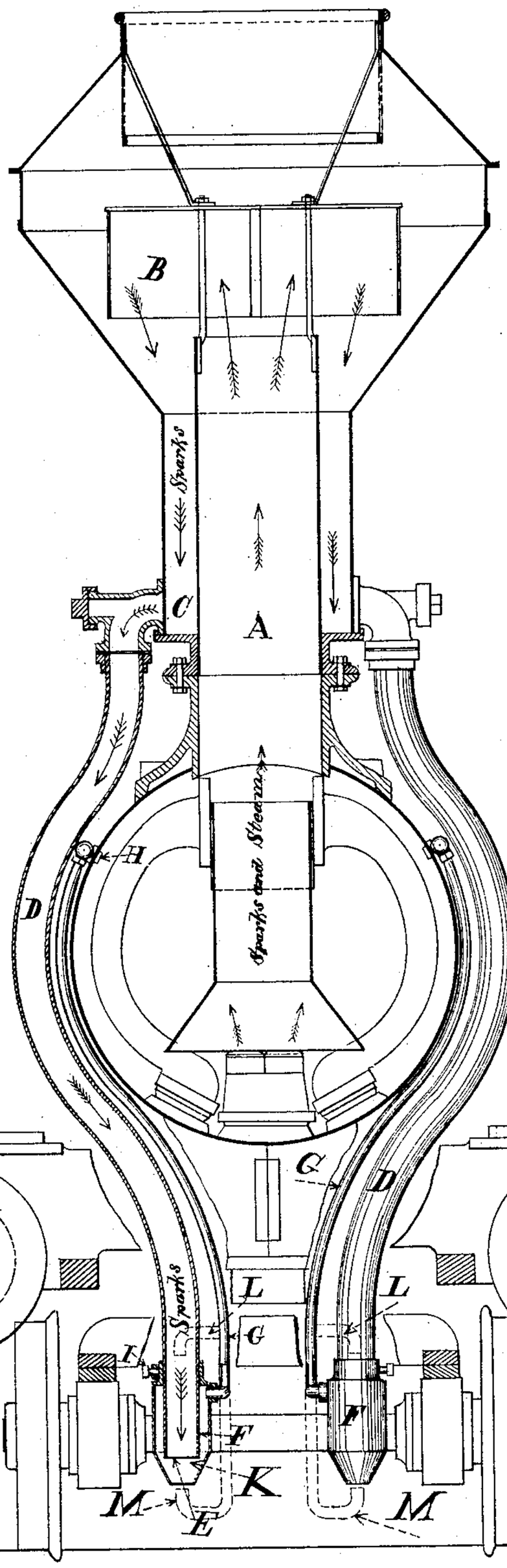
(No Model.)

G. B. NICHOLS.

SPARK ARRESTER.

No. 253,883. Patented Feb. 21, 1882.

Fig. 1.



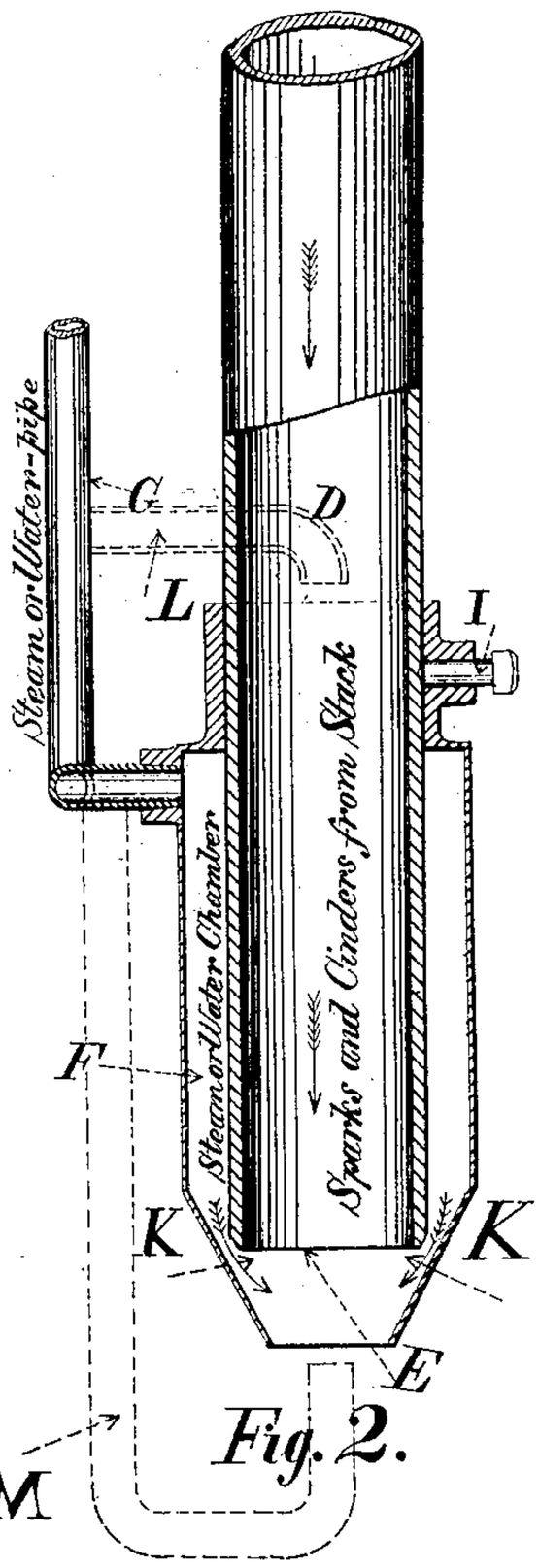


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE B. NICHOLS, OF GALVESTON, TEXAS.

SPARK-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 253,883, dated February 21, 1882.

Application filed November 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. NICHOLS, of Galveston, in the county of Galveston and State of Texas, have invented a new and useful Improvement in Locomotive Spark-Arresters; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front and vertical sectional view of my improvement. Fig. 2 is an enlarged view in vertical section of the extinguishing nozzles and pipes with their attachment.

Like letters of reference indicate like parts wherever they occur.

My invention relates to an improvement in spark arresters and extinguishers for locomotive-engines; and it consists in the construction and arrangement of devices by means of which the sparks are extinguished and discharged onto the road-bed.

I will now describe my invention, so that others skilled in the art may manufacture the same.

Inside of the smoke-stack of the locomotive is an inner pipe, A, into which the smoke and sparks are carried by the steam which is discharged into the lift-pipe. Over and above the top of the pipe A is a cone or cylinder having the top closed by a diaphragm, so that the sparks from the pipe A shall strike against the diaphragm and will fall into the space C between the inner pipe, A, and the smoke-stack. Opening out of the space C, at the bottom of the same, are pipes D, through which the sparks pass from the space C.

Around the lower ends of the pipes D are chambers F, the lower portions of which are in shape like the frustum of a cone, at the end of which is an opening smaller than the opening at the lower ends of the pipes D. These chambers F are fastened or secured to the pipes D by means of set-screws I, by means of which the chamber may be raised or lowered, so as to increase or diminish the space between the openings of the pipes D and the openings of the chambers F.

Discharging into the space between the delivery-pipes D and the shell of chambers F are pipes G, which conduct water or steam from the boiler to the chambers F, whence it passes into the annular space K, where, meeting the sparks and cinders as they pass out of the pipes D, it causes the extinguishment of the sparks.

Inside of the pipes D, near their lower ends, are auxiliary steam-pipes L, and discharging steam upward toward the openings of the chambers F are other auxiliary steam-pipes, M.

The operation of my device is as follows: The sparks, cinders, and smoke passing up the pipe A, the cinders and sparks strike against the diaphragm B and fall into the space C; thence they pass through the pipes D into the annular space K, where, meeting the steam or water jets from pipes G, L, and M, the sparks are extinguished and are carried out through the opening in the chambers F and fall onto the road-bed.

The advantages of my invention are that the sparks are completely extinguished and are discharged as cinder onto the road-bed instead of being thrown into the air in an ignited state.

I am aware that devices have been constructed by which sparks have been conveyed from the smoke-stack to the fire-box and to a box placed under the locomotive, and also that pipes have been used to convey sparks, in which pipes steam or water was used, but the steam and water were introduced into the place at or near the top, and therefore this device was impracticable, owing to the caking of the dirt in the pipes, thereby clogging them up. I do not claim these devices; but,

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

1. In a locomotive-engine, a pipe or pipes for conveying sparks from the smoke-stack, in combination with a diaphragm or cone placed in the stack and a steam or water chamber placed around the discharge of said pipe or pipes.

2. In locomotive-engines, a pipe or pipes for conveying the sparks and cinders from a stack, in combination with water or steam chambers and steam or water jets, substantially as and for the purposes described.

3. The downwardly-discharging steam or water chambers F F, surrounding the delivery-pipes D D, in combination with means, substantially as described, for supplying steam or

water thereto, substantially as and for the purpose described.

4. The steam or water chambers F F, having conical lower ends, in combination with spark-delivery pipes, substantially as and for the purpose described.

5. The chambers F F, having the opening at their lower ends smaller in area than the openings of the delivery-pipes D D, substantially as and for the purposes described.

6. The combination of the chambers F F and the set-screws for regulating the annular space K, substantially as and for the purpose described.

7. The steam or water jets M and L, in combination with spark-delivery pipes and chamber F, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand.

GEORGE B. NICHOLS.

Witnesses:

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