

(No Model.)

H. M. SMITH.
DEVICE FOR EJECTING SPARKS.

No. 334,202.

Patented Jan. 12, 1886.

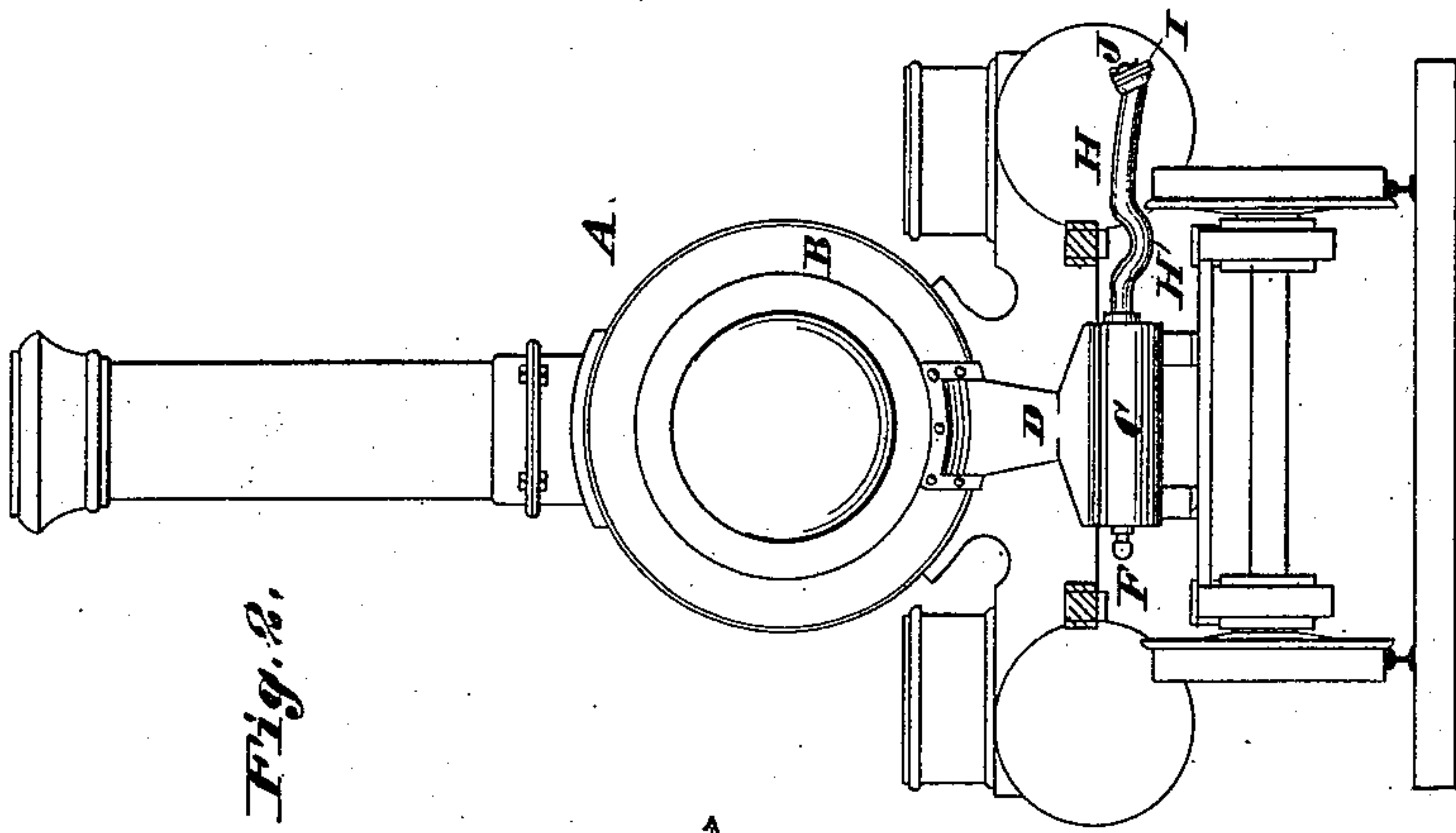


Fig. 2.

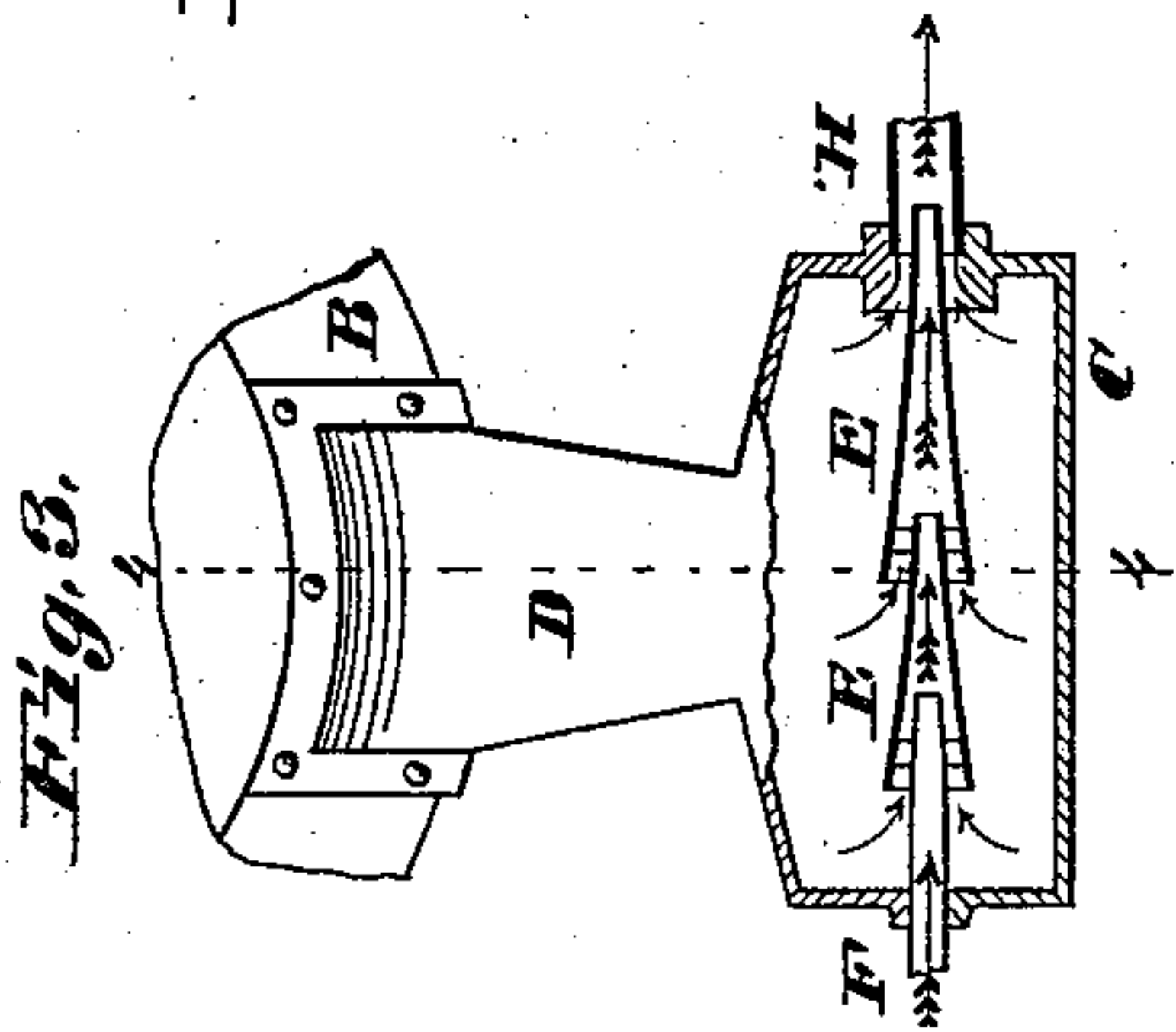


Fig. 3.

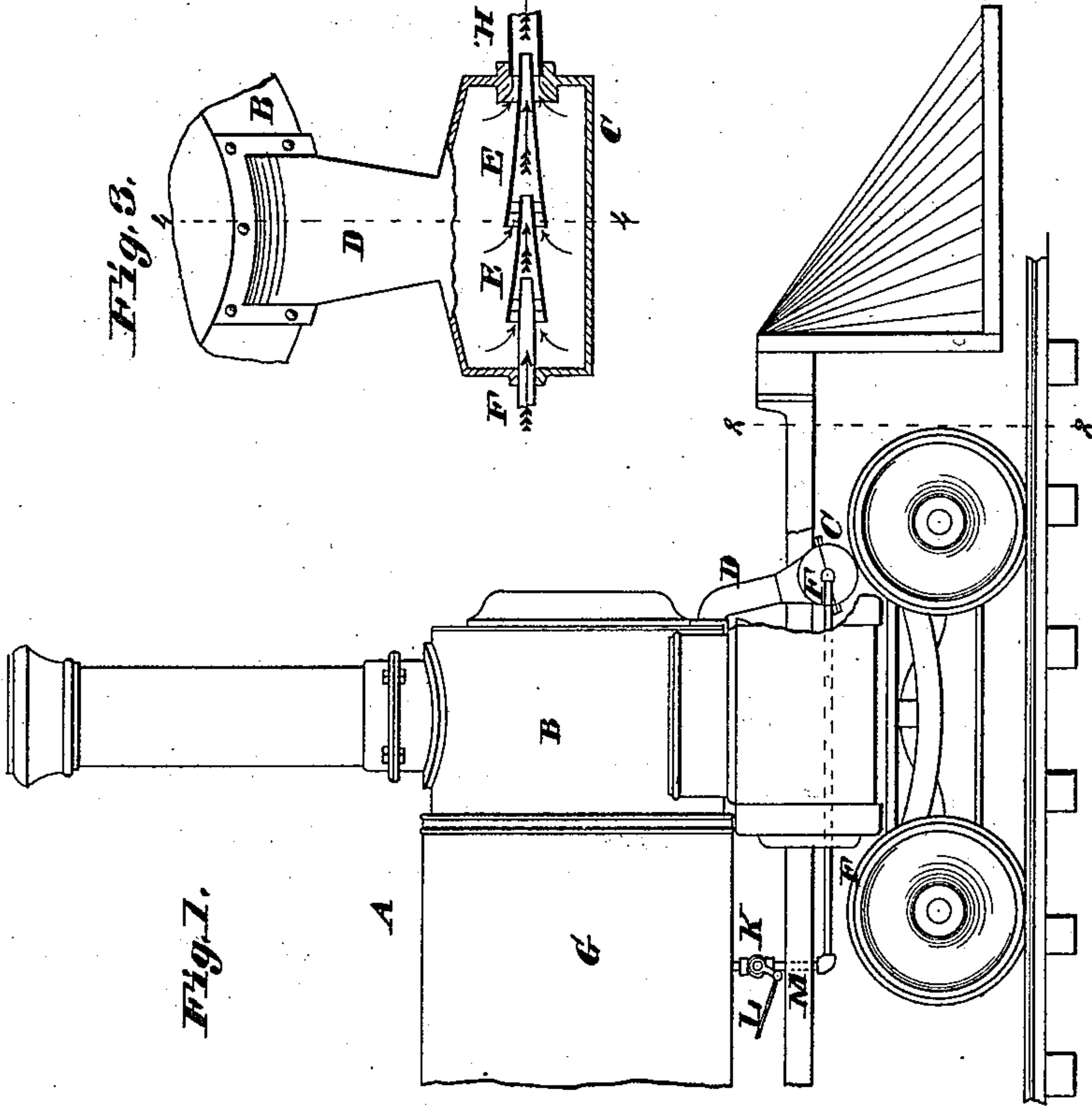


Fig. 1.

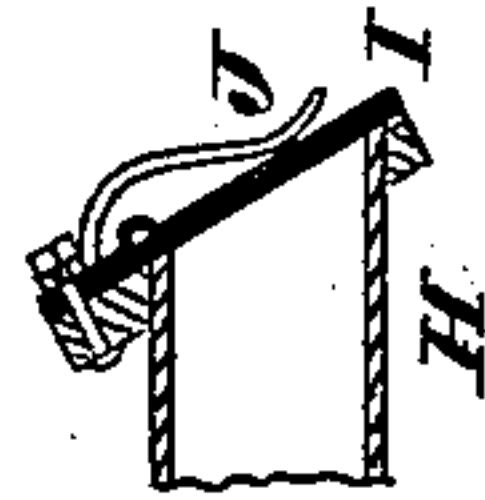
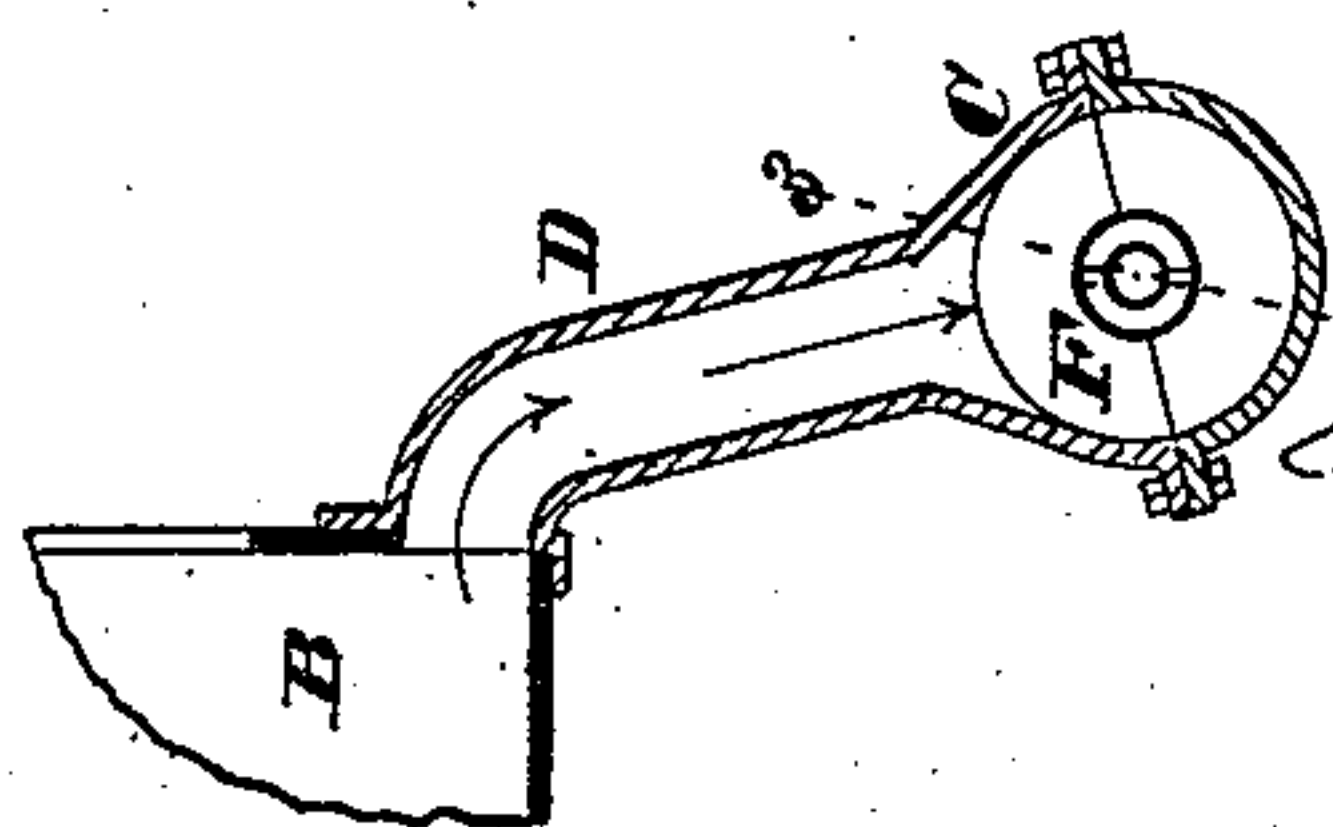


Fig. 4.

Attest,
Geo. Wheelock
Victor A. Lewis

Fig. 4.



Inventor:
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UNITED STATES PATENT OFFICE.

HOWARD M. SMITH, OF ST. LOUIS, MISSOURI.

DEVICE FOR EJECTING SPARKS.

SPECIFICATION forming part of Letters Patent No. 334,202, dated January 12, 1886.

Application filed January 15, 1885. Serial No. 153,004. (No model.)

To all whom it may concern:

Be it known that I, HOWARD M. SMITH, of the city of St. Louis, and State of Missouri, have invented a certain new and useful Improvement in Devices for Ejecting Sparks and Cinders from the Smoke-Boxes of Locomotives, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention has for its object the clearing of the smoke-box of locomotive-engines of sparks and cinders while the engine is in motion, and thus avoid the annoyance and trouble of handling dead sparks and cinders at stations.

Figure 1 is a side view of the front part of a locomotive with my improvement attached. Fig. 2 is a front end view of same with the cow-catcher removed and the frame in transverse section at 2 2, Fig. 1. Fig. 3 is a detail section at 3 3, Fig. 4; and Fig. 4 is a section at 4 4, Fig. 3. Fig. 5 is an enlarged vertical section of the flap-valve by which the discharge-pipe is closed when it is not in use.

The front part of a locomotive is seen at A, and the smoke-box at B.

C is a reservoir or ejector-case, which communicates with the smoke-box by a passage, D. The reservoir I prefer to make of cylindrical form, with its axis transverse to the engine, as shown.

E are conical ejector-nozzles placed axially in the reservoir, and with their ends overlapping, as represented in Fig. 3, in such a manner as to form a direct passage for the steam or other ejecting-fluid, which, in passing, produces an induced current, entering at the base of each cone in the well-known manner. This form of ejector is especially adapted for ejecting cinders, for the reason that the outlet-orifice cannot become choked. This is due to the fact that if the flow of fluid is feeble the amount of cinders sucked in by it will be correspondingly small, and with an increased current the same result would follow. A direct passage being provided for the ejecting-current, not only is the choking of the ejector avoided, but the escape of the water or steam in the smoke-box is also avoided, which is quite a desideratum.

F is a pipe extending from the water-space of the boiler G or mud-drum, and discharging into the rear ejector-nozzle. The front ejector-nozzle discharges into a discharge-pipe, H, at whose outer end is a flap-valve, I, which is forced open by the material when the ejector is in operation, and closes at other times to prevent the air entering the reservoir. The valve is inclined, so as to close by gravity, and this may be assisted by a spring, J.

K is a cock in the pipe F, which is operated from the cab of the locomotive by means of a rod, L, extending from the cab to the lever M of the cock.

When it is necessary to clear the reservoir C and smoke-box B of sparks, it can be done by opening the cock K, which allows the water from the boiler to escape at a high velocity, which causes a partial vacuum in the reservoir, and the sparks are carried with the water through the waste-pipe H into the atmosphere.

Two ejector-nozzles are shown. I do not confine myself to this number. Only one, or any number, may be used.

H is a bend in the waste-pipe, forming a water-trap.

I am aware that reservoirs are used in connection with the smoke-box of locomotives and a pipe connected with the boiler for washing out said reservoir, and on this I make no claim.

I am aware that the form of ejector employed by me is not new, and do not claim such as my invention; but

What I claim is—

1. The combination of a reservoir connected with the smoke-box of a locomotive, and an ejector in said reservoir connected by a pipe with the water-space of the boiler, and having a discharge-pipe opening to the atmosphere, and having an outwardly-opening automatic valve, for the purpose set forth.

2. The smoke-box of a locomotive and a reservoir connected therewith, in combination with an ejector consisting of a direct passageway through the reservoir for the ejecting-fluid, induction-openings for the admission of the cinder, and a discharge-pipe opening into the atmosphere, as set forth.

3. The combination, with the spark-reser-

voir of a locomotive, of an ejector consisting of the overlapping conical tubes, a pipe for discharging the ejecting-fluid into the first of said tubes, and a pipe communicating with
5 the atmosphere, as set forth.

4. The combination, with the spark-reservoir C and ejector therein, of waste-pipe H,

with self-closing valve I, for the purpose set forth.

HOWARD M. SMITH.

Witnesses:

SAML. KNIGHT,
GEO. H. KNIGHT.