

(No Model.)

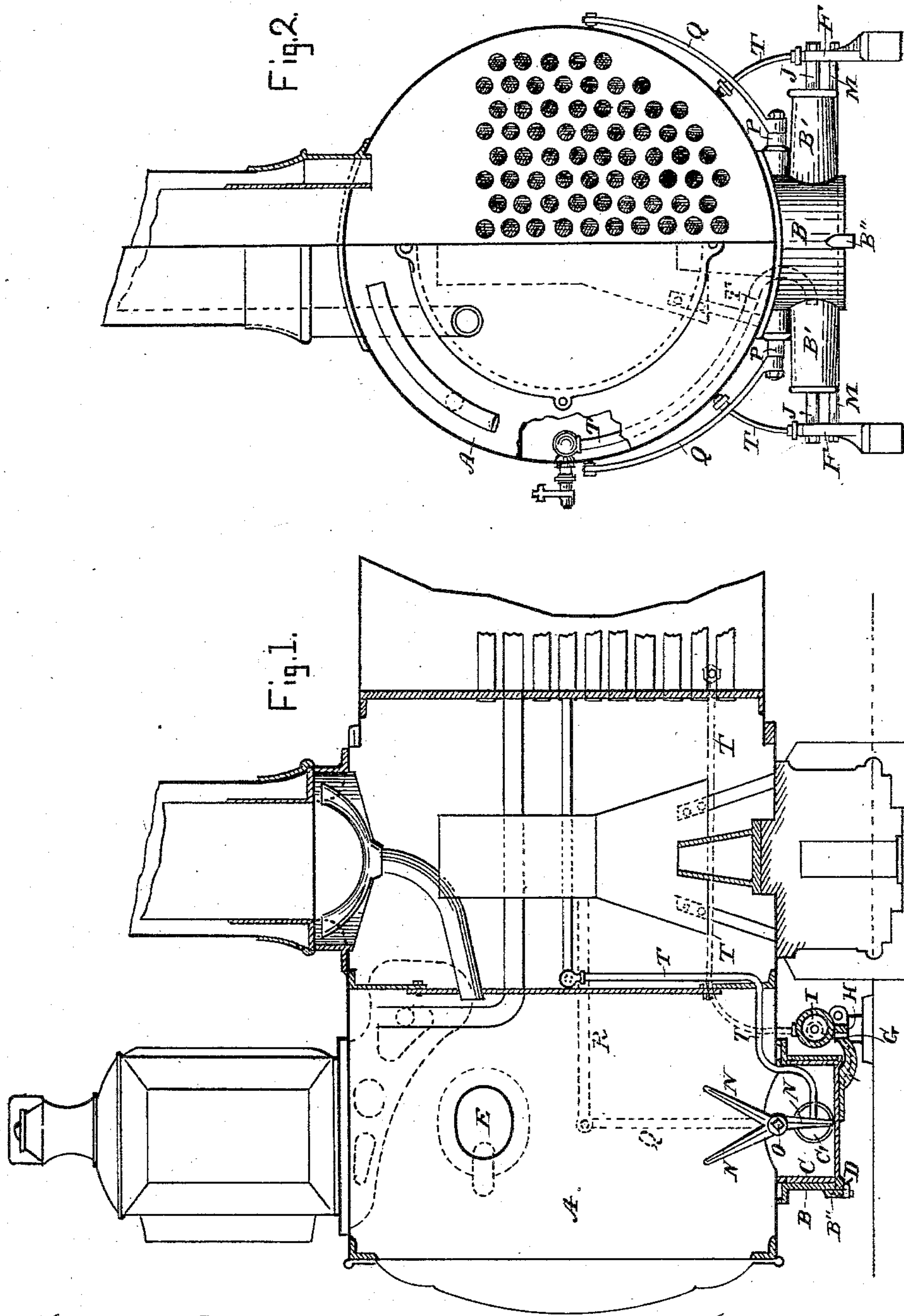
2 Sheets—Sheet 1.

J. K. TAYLOR.

SPARK EJECTOR FOR LOCOMOTIVES.

No. 281,160.

Patented July 10, 1883.



Witnesses
A. H. Spencer
L. S. Hayes

Inventor
James K. Taylor

(No Model.)

2 Sheets—Sheet 2.

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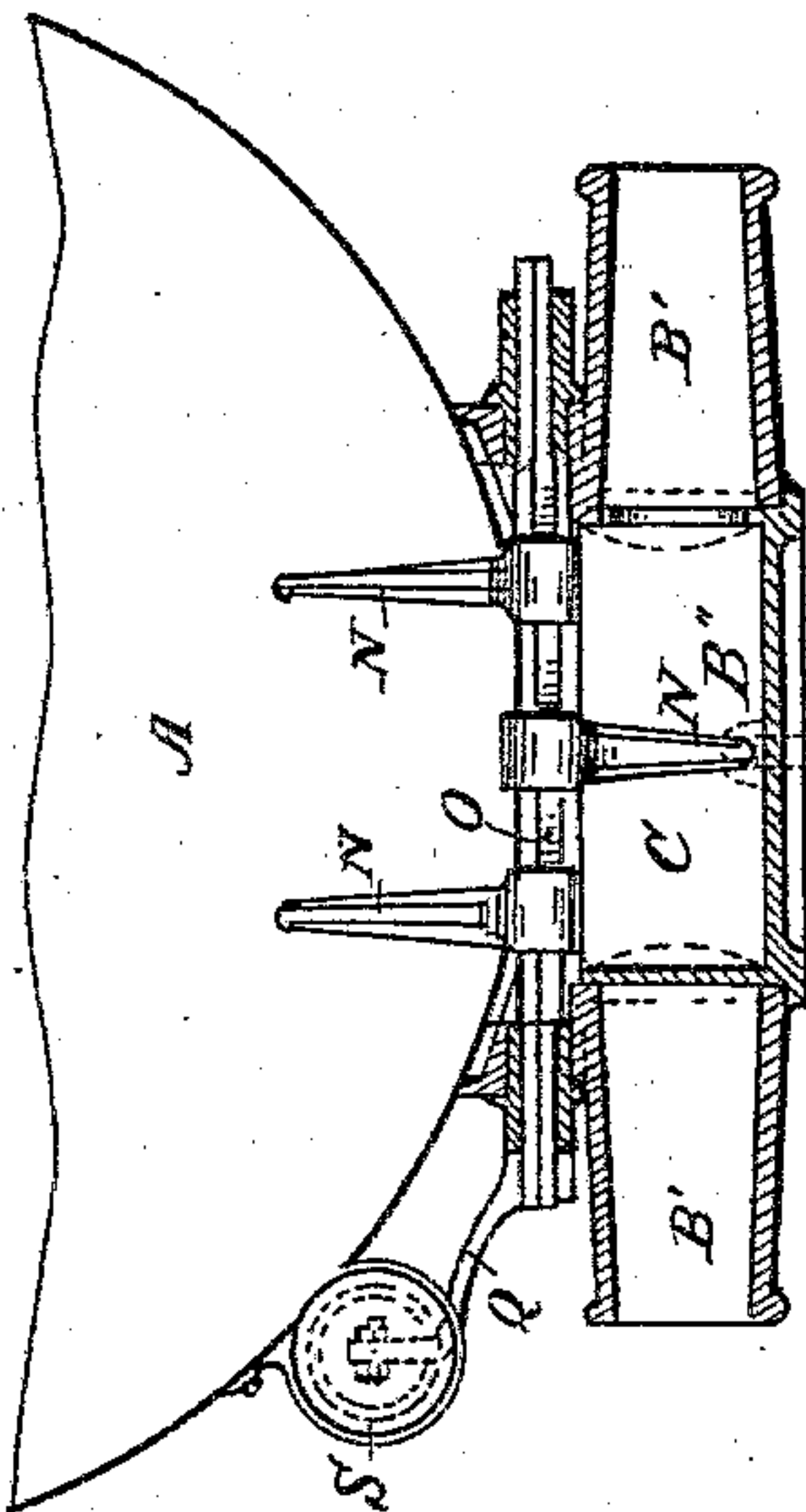


Fig. 3.

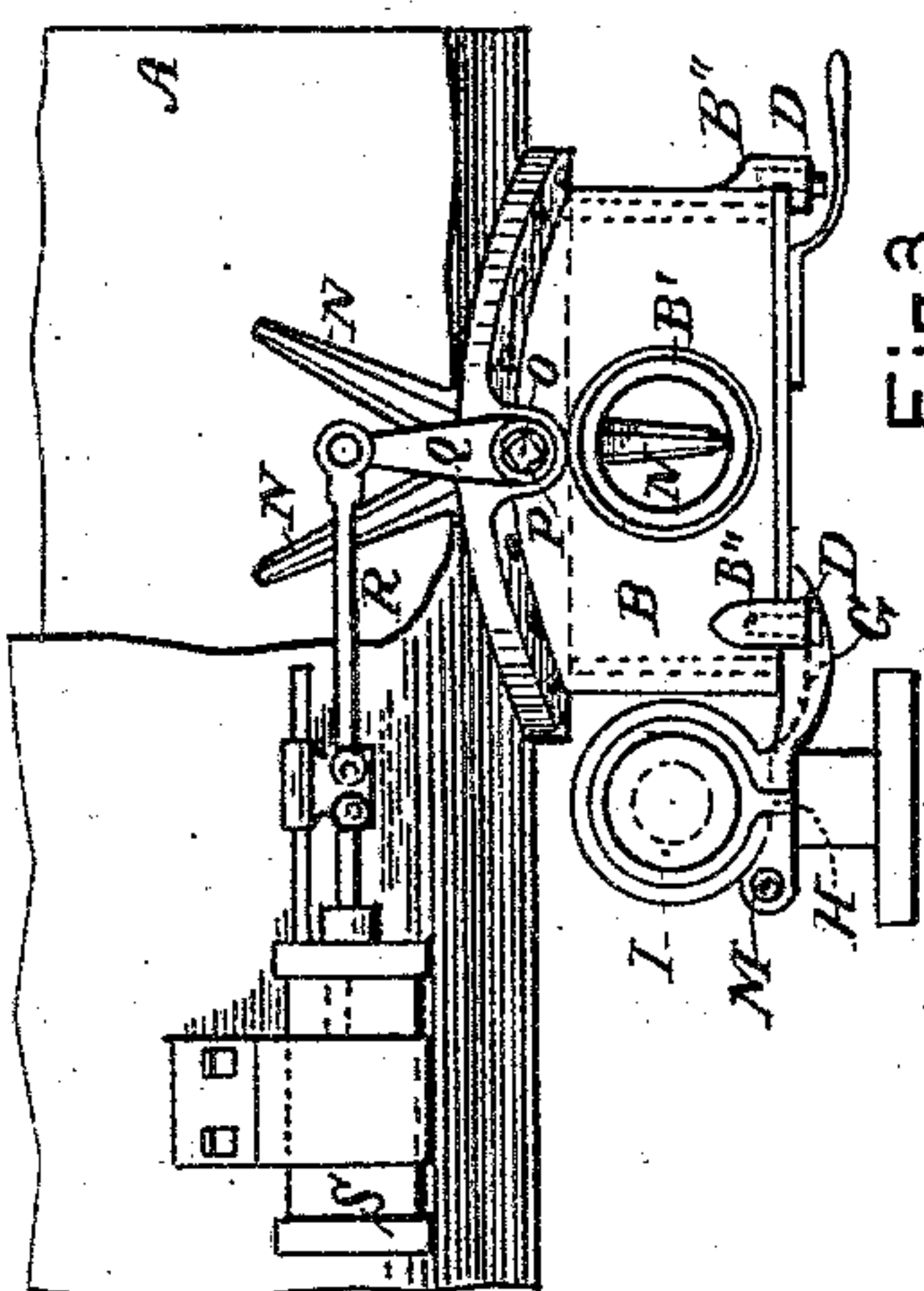


Fig. 4.

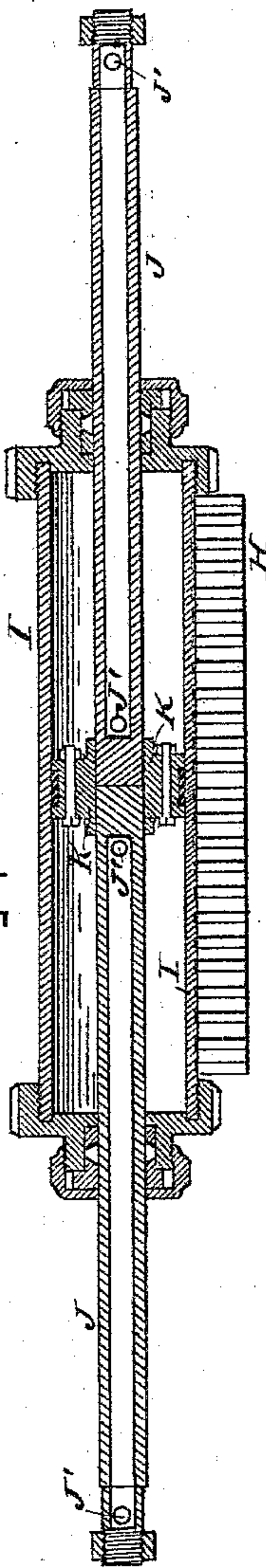


Fig. 5.

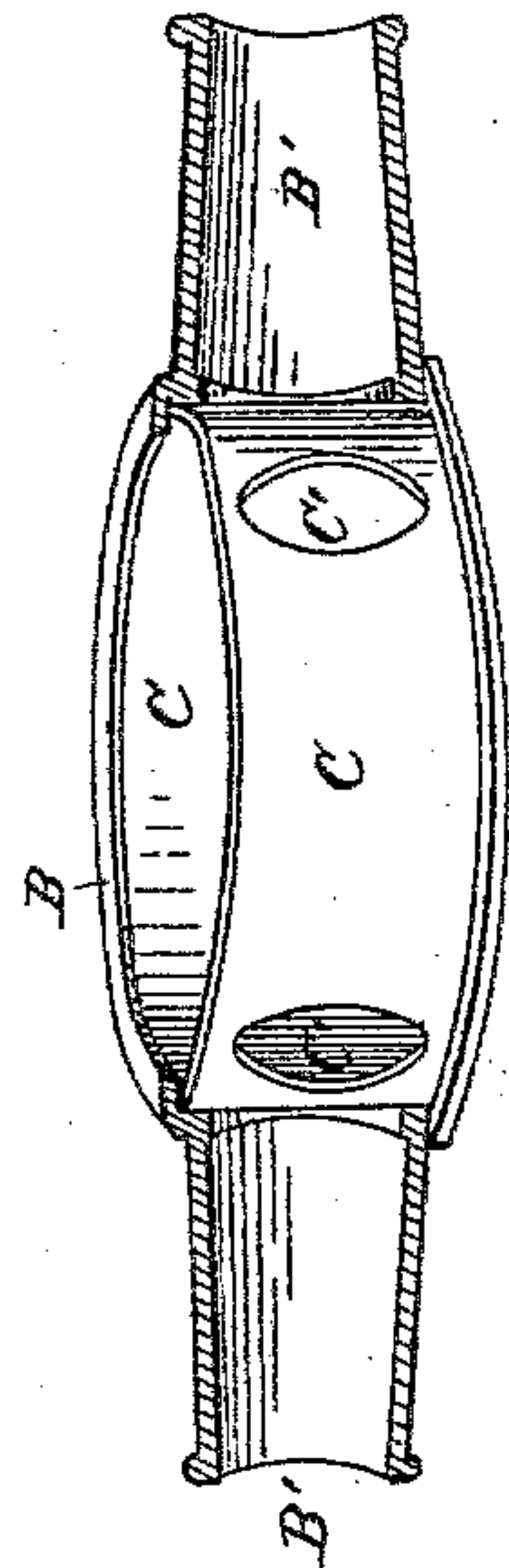


Fig. 6.

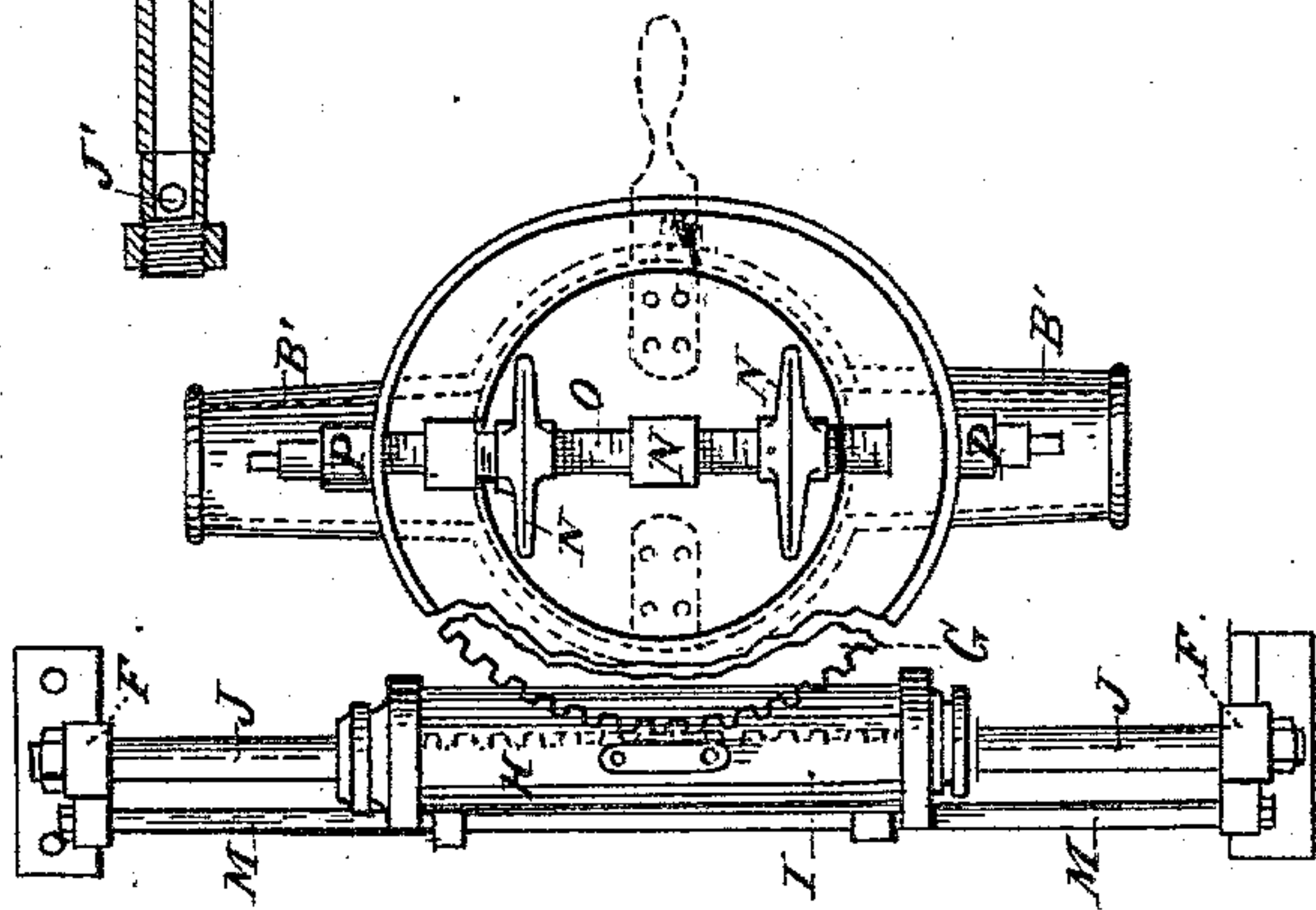


Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES K. TAYLOR, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO J. K. TAYLOR COMPANY, OF CONCORD, NEW HAMPSHIRE.

SPARK-EJECTOR FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 281,160, dated July 10, 1883.

Application filed March 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. TAYLOR, 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-Ejectors for Locomotives; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to the discharge of arrested cinders and sparks accumulated in the smoke-arch or extension-reservoir of a locomotive. The object is to eject the particles from said reservoir or arch by means of a jet of hot water or steam from the boiler, or of compressed air from the air-drum, aided by a stirring apparatus, both acting when the locomotive is in motion or at rest; and in order to prevent delays arising from stopping to discharge after running a long distance and filling the reservoir with sparks and dust, they may be discharged by this mechanism while the engine is running at full speed. The whole apparatus is designed to be worked by the engineer from his place in the cab.

My invention consists in the devices and combinations of devices set forth in the appended claims.

In the drawings, Figure 1 is a longitudinal section of part of a locomotive to which my improvements are applied. Fig. 2 is a front elevation, partly in section. Figs. 3, 4, and 5 are detail views of the improvements, seen from the side, front, and top, respectively; and Figs. 6 and 7 are enlarged views of the cylinder and hollow piston and of the gate moved thereby.

The locomotive is provided with a suitable deflector and with pipe leading the arrested sparks to the spark-reservoir A. At the bottom of this reservoir there is bolted a cylindrical shell, B, having at each side a discharge-pipe, B', preferably cast integral with it. Within this shell is a cylindrical gate, C, closed at the bottom and provided in its vertical wall with two apertures, C', corresponding in size and shape with the inner diameter of the discharge-pipes B'. The gate C has a semi-rotary movement within the shell B, and the aper-

tures C' are so located as by such movement to be each brought separately before one of the pipes B' for discharge of the accumulated cinders and sparks; but in the normal position of this gate both the apertures are closed by the inner wall of the shell B. The gate may be properly supported by lugs D, bolted to projections B'' of the shell, and extending inwardly therefrom beneath the gate, so that by removal of the bolts and lugs the gate C may be removed and replaced vertically from beneath the shell B.

The mechanism shown for giving to the gate C its partial rotary movement is novel. A segment-gear, G, cast with or secured to the lower end of the gate meshes with the teeth of a straight rack, H, on a steam-cylinder, I, which has a reciprocating motion on a straight and hollow piston-rod, J, having a fixed piston, K, at its center. The piston-rod J is mounted securely in brackets F, and extends across the front of the engine. It is plugged at the center, where the piston is fixed in its position. Steam or compressed air is admitted to and discharged from each end of the cylinder I alternately, through holes J' in the rod J, by means of a pipe, T, at each end of said rod, provided with suitable cocks located in the cab of the engine. A guide-rod, M, prevents the cylinder from rotation on the piston-rod J, and keeps the gear and rack in engagement. It is obvious that other suitable means may be employed to operate the gate—such as a lever and link-connection—if preferred.

The movement of the cylinder I to one end of the hollow piston-rod turns the cylindrical gate C so as to bring one of its apertures C' to coincide with one of the pipes B'; and if the water, air, or steam jet is now turned on, a rapid discharge of the cinders or sparks in the reservoir will follow, and continue during the pleasure of the engineer, until all are ejected. Should it be desired to eject them on the opposite side of the track, the steam is shut off from the end of the hollow piston-rod first employed and turned on at the other end, carrying the cylinder I also to the other end, since its piston cannot move under the steam-pressure; and this movement of the cylinder rotates

the gate sufficiently to bring its other aperture before the pipe corresponding thereto, from which the cinders will be blown.

In order to insure a free discharge of the 5 accumulated cinders, I provide an agitator having a vibratory or rocking movement within the reservoir or gate, and working in bearings, so that it may be actuated from the cab by convenient means. As represented in the 10 drawings, the agitator N has three pairs of projecting prongs mounted on a square central shaft, O, having horizontal bearings P in the upper part of the shell B. One pair of these prongs extends down into the center of the 15 gate, while the others run upwardly. The shaft is oscillated by a lever, Q, worked by a connecting-rod, R, a steam or air cylinder, S, or by other suitable means.

I claim as my invention—

20 1. In a locomotive having a receptacle for arrested sparks, an ejector provided with a rotating gate having discharge-openings, a blast-pipe leading thereto, and suitable means of operating the same, substantially as and for 25 the purpose set forth.

2. In a locomotive having a receptacle for

arrested sparks, an ejector having two lateral openings at the base of said receptacle, a steam-pipe leading to each opening, and a rotating gate having two discharge-passages adapted 30 to be brought successively before such openings, for the purpose set forth.

3. A spark-ejector having a rotary gate provided with a gear, in combination with a reciprocating cylinder having a rack engaging 35 with said gear, whereby the gate is partially rotated, for the purpose set forth.

4. An agitator mounted in bearings at the base of the spark-reservoir, and adapted to be operated by a crank or lever, for the purpose 40 set forth.

5. The combination of the spark reservoir and ejector with an agitator adapted to be operated from the cab of the locomotive, for the purpose set forth. 45

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

JAMES K. TAYLOR.

Witnesses:

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E. A. PHELPS.