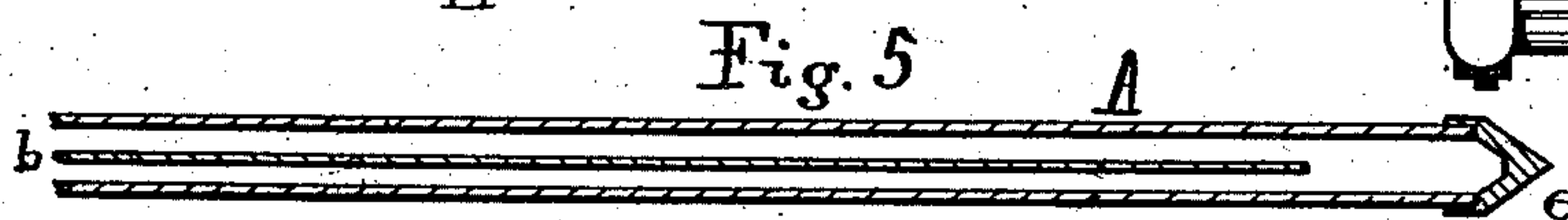
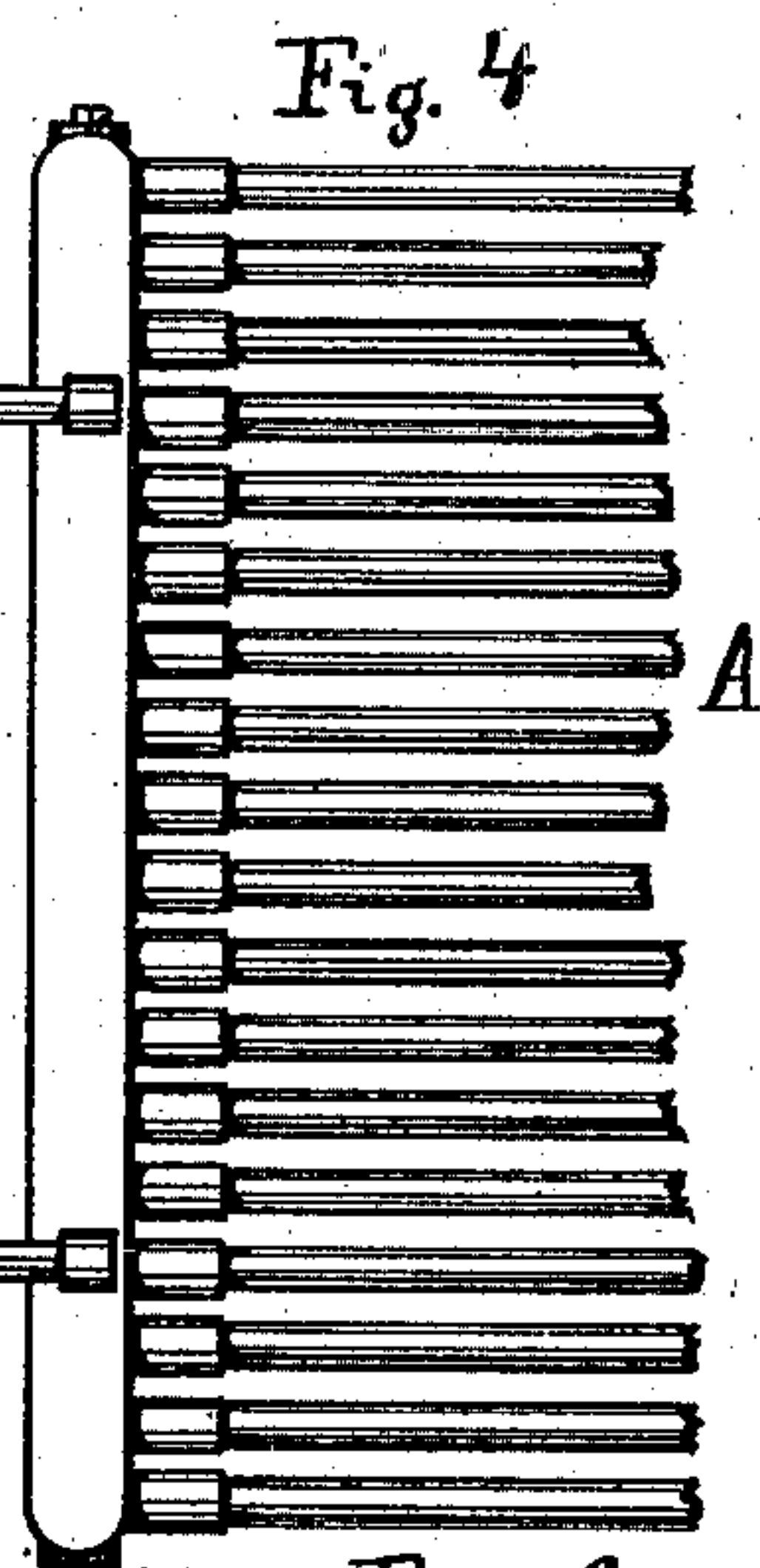
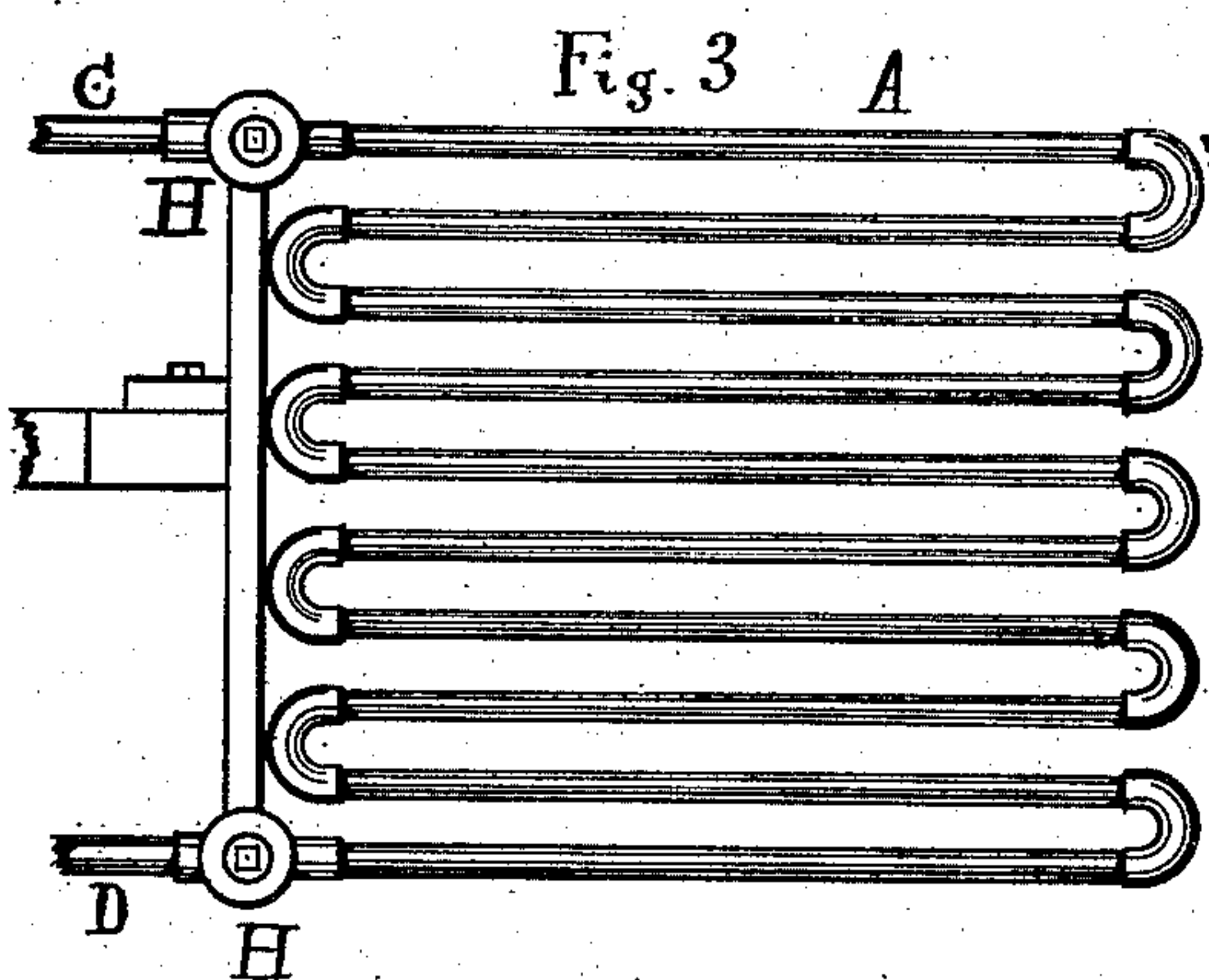
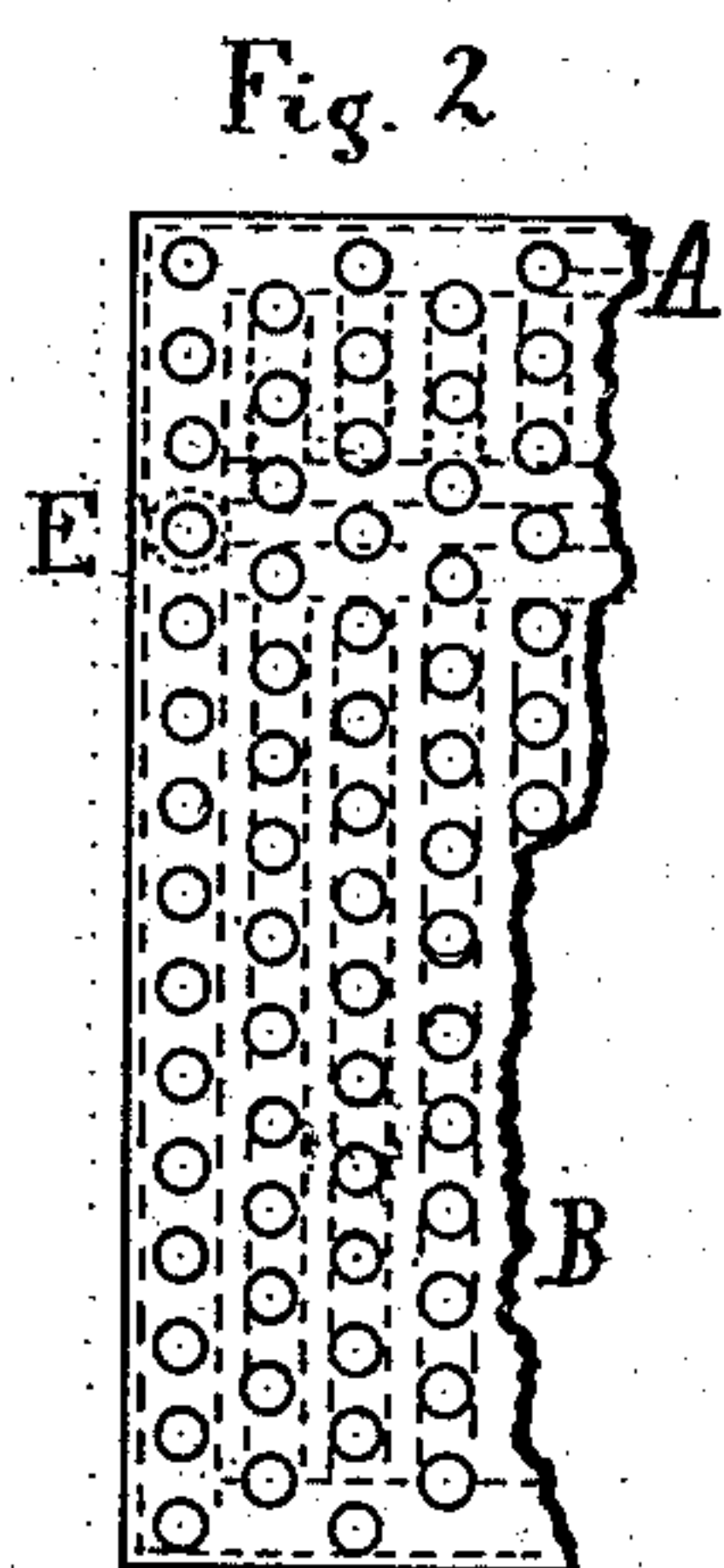
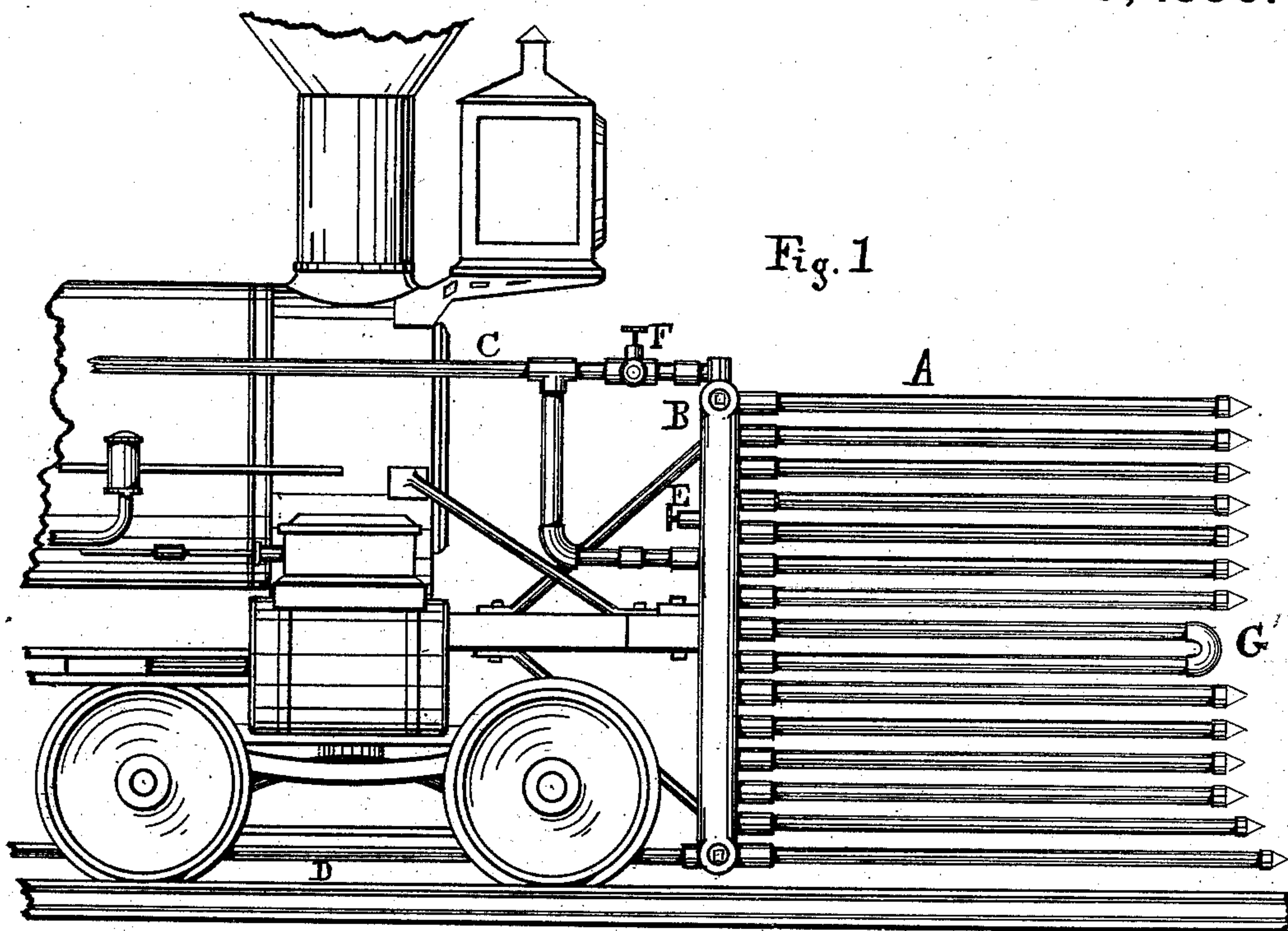


D. M. McMASTER.
Apparatus for Removing Snow from Railways.
No. 229,266. Patented June 29, 1880.



Witnesses:
Wm. B. Laez, Jr.
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UNITED STATES PATENT OFFICE.

DAVID M. McMASTER, OF BATH, NEW YORK.

APPARATUS FOR REMOVING SNOW FROM RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 229,266, dated June 29, 1880.

Application filed February 25, 1880.

To all whom it may concern:

Be it known that I, DAVID M. McMASTER, of Bath, in the county of Steuben and State of New York, have invented certain Improvements in Apparatus for Removing Snow from Railways, of which the following is a specification, reference being had to the annexed drawings, in which—

Figure 1 is a side elevation of my improved apparatus applied to the pilot of a locomotive. Fig. 2 is a partial front elevation. Fig. 3 represents a modified form of my improved apparatus. Fig. 4 is a plan view. Figs. 5 and 6 are, respectively, longitudinal and transverse sections of one of the horizontal tubes.

My invention relates to an improved apparatus for removing snow from railway-tracks; and my invention consists in melting the snow in front of the locomotive by means of a series of horizontal steam-pipes arranged in planes parallel to each other and to the track, and having their forward ends free to penetrate the snow.

My invention also consists in the combination, with the said pipes arranged parallel to the track, of a suitable supporting and steam-distributing reservoir located at the rear ends of the pipes.

My invention also consists in the mechanical details of the apparatus, as hereinafter more fully pointed out.

My improved apparatus for melting snow from railway-tracks is represented in the accompanying drawings, in which A A is the series of horizontal steam-pipes; B, the reservoir which supports the pipes and distributes steam to them, and C is the steam-supply pipe. D is a return-pipe, by which the condensed water is returned to the boiler or water-tank.

The reservoir B may be constructed in any desired form. It may consist of a series of vertical or horizontal pipes having suitable connections for the passage of steam, or it may be made of plates fastened together at their edges.

In the accompanying drawings I have represented the reservoir B as a casting, through which suitable vertical and horizontal passages are cored for the distribution of the steam.

The front side of the reservoir is provided with bosses, into which the tubes A are screwed. The reservoir receives steam from the boiler of the locomotive (or from two or more boilers) by means of one or more supply-pipes, C, which are provided with throttle-valves under the control of the engineer. The steam may be let into the reservoir at its top or at any desired position vertically.

By placing valves E, Figs. 1 and 2, in the vertical steam-passages, and by the use of a throttle-valve, F, Fig. 1, I am enabled to cut off the steam from the upper part of the series of horizontal tubes A, in case the snow is not deep enough to require the use of all the tubes.

The reservoir B is bolted to the pilot of the locomotive by suitable lugs cast on it, and it may be braced in any suitable manner. One or more return-tubes, D, are connected to the reservoir for the purpose of returning the condensed water to the boiler or water-tank.

Any suitable pumping or injecting apparatus may, if desired, be employed for this purpose.

The forward ends of the tubes A may be closed by welding, or a suitable pointed cap, e, Fig. 5, or a plug may be used. In order to secure a free circulation of steam in the pipes I introduce into them a partition, b, Fig. 5, which extends from the rear end of the tubes a portion of the distance toward their free ends; or any two of the tubes may be connected together at their free ends by a return-bend, as represented at G, Fig. 1. The free ends of the tubes may be connected together by suitable clamps or braces, which should, however, be so shaped as to present as little resistance to the snow as possible.

In Fig. 3 I have represented a modified form of my improved snow-melting device, in which the tubes are connected together at each end by return-bends, and the steam is allowed to circulate continuously through them from the upper pipe to the lowest, or vice versa. In this arrangement the steam is supplied through one or more horizontal pipes, H H, and any two pipes which are connected together at their rear ends may be inclined sidewise, so as to present a more effective heating-surface to the snow.

My improved snow-melting apparatus may be attached to a platform-car, in which case it may be supplied with steam from a boiler placed on the car, and it may also be so arranged, 5 either on a locomotive or a car, that it may be turned upward out of the way, the reservoir B being supplied with suitable hinges for this purpose, and provision being made for supplying steam and returning the water of condensa- 10 tion by flexible pipes or through the hinges. The top of the reservoir B being turned backward until it occupies a horizontal position, the tubes will be entirely out of way, and will permit of the use of an ordinary snow-plow on 15 such portions of the track as are not much obstructed by snow.

My said snow-melting apparatus may be used, in connection with any vehicle supporting a steam-generator, for the removal of snow from 20 streets, walks, or other places. A portion of the pipes may be perforated, so as to permit, by means of valves under the control of the operator, steam to be discharged upon the snow. The pipes may also be placed before the ve- 25 hicle at an angle to the center line of the track or way.

I am aware that it has been heretofore pro-

posed to remove snow from railways by lifting it in sections on a series of inclined steam-heated flues and discharging it at the side of 30 the track, and such device I do not claim.

I claim—

1. The improved snow-melting device herein described, consisting of a series of steam-pipes arranged parallel to the track at suitable dis- 35 tances apart vertically and horizontally, and having their forward ends free to penetrate the snow, substantially as described.

2. In combination with a locomotive, the series of steam-pipes A, arranged parallel to 40 the track at suitable distances apart, reservoir B, steam-supply pipe C, and return-pipe D, substantially as described.

3. In combination with a suitable steam-distributing reservoir, the series of horizontal 45 steam-pipes A, arranged parallel to the track at suitable distances apart, connected to the reservoir at their rear ends, and having their forward ends free to penetrate the snow, substantially as described.

D. M. McMASTER.

Witnesses:

G. H. McMASTER,
H. McMASTER.