

G. F. NORTH.
Dip-Pipes.

No. 151,611.

Patented June 2, 1874.

Fig. 1.

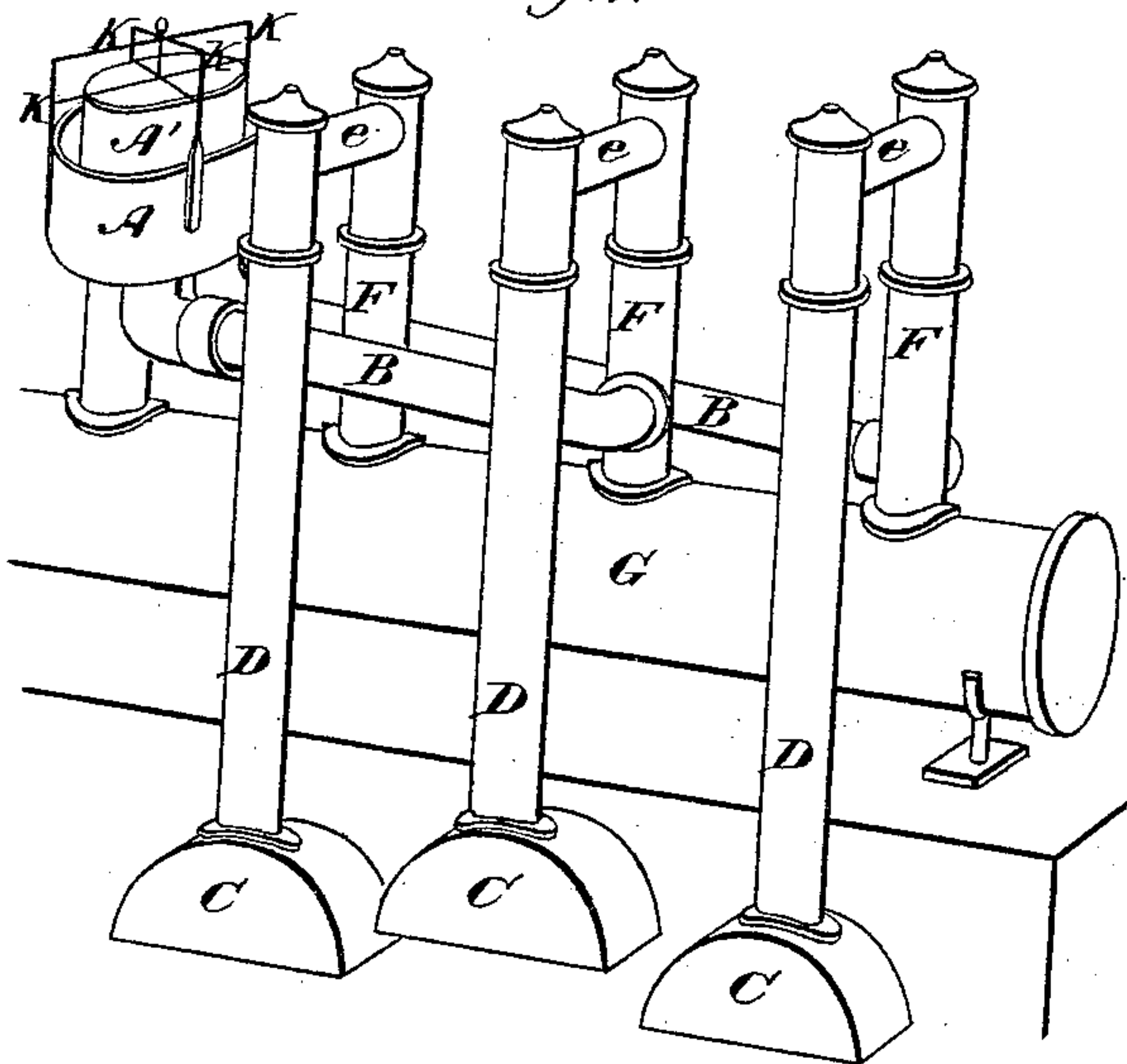


Fig. 7.

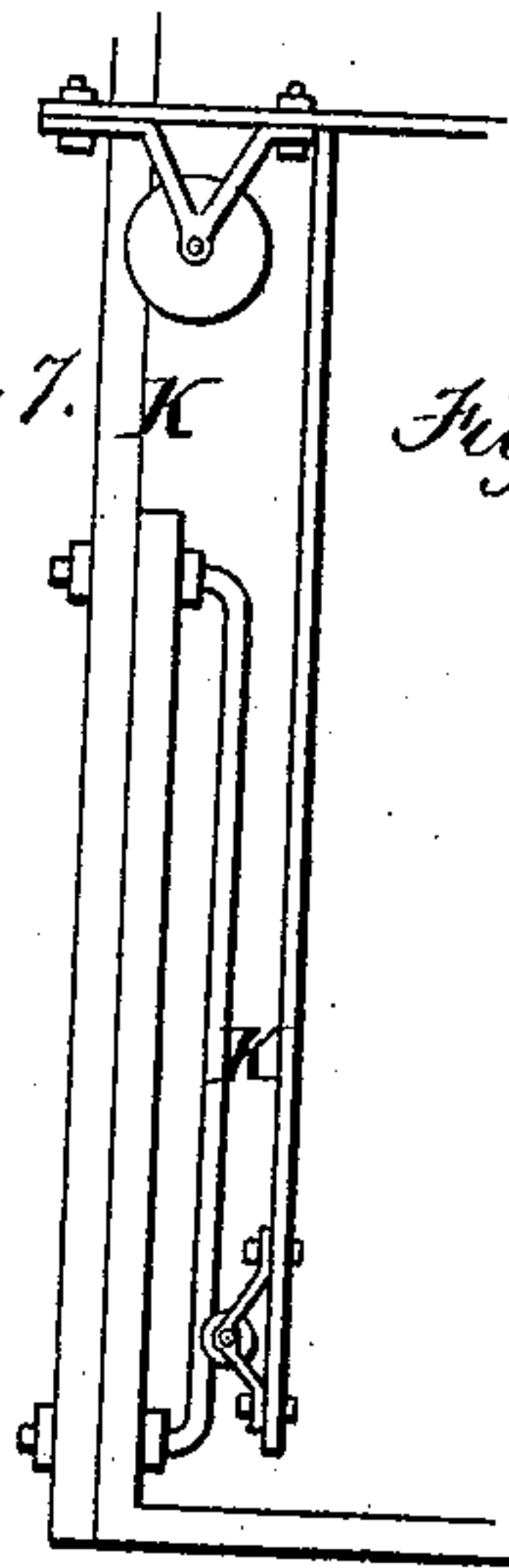


Fig. 6.

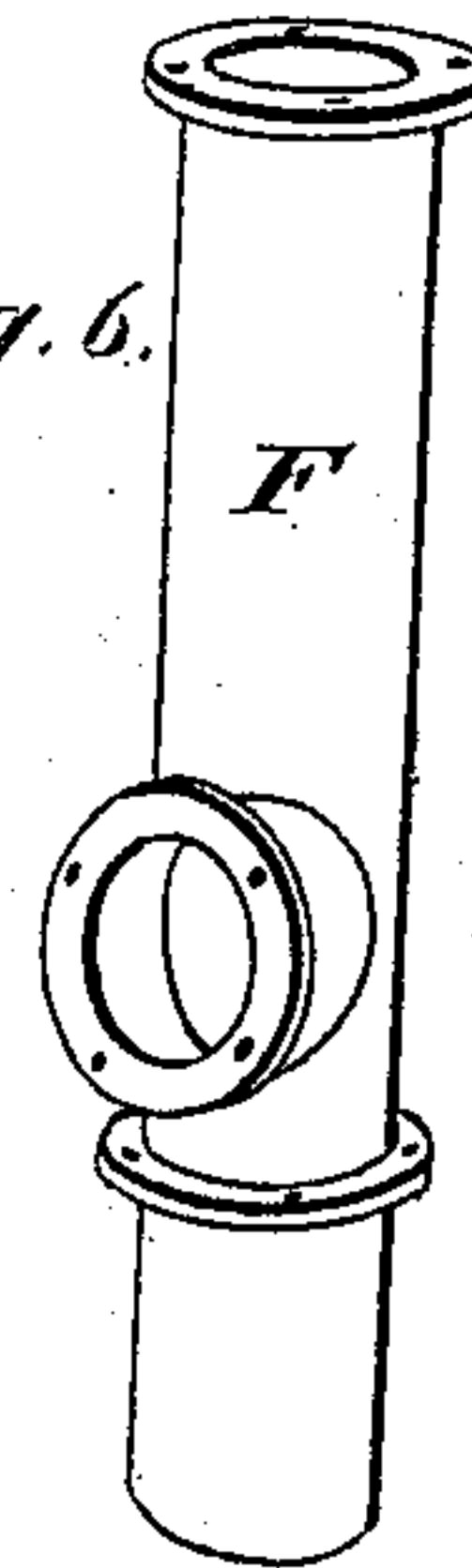


Fig. 5.

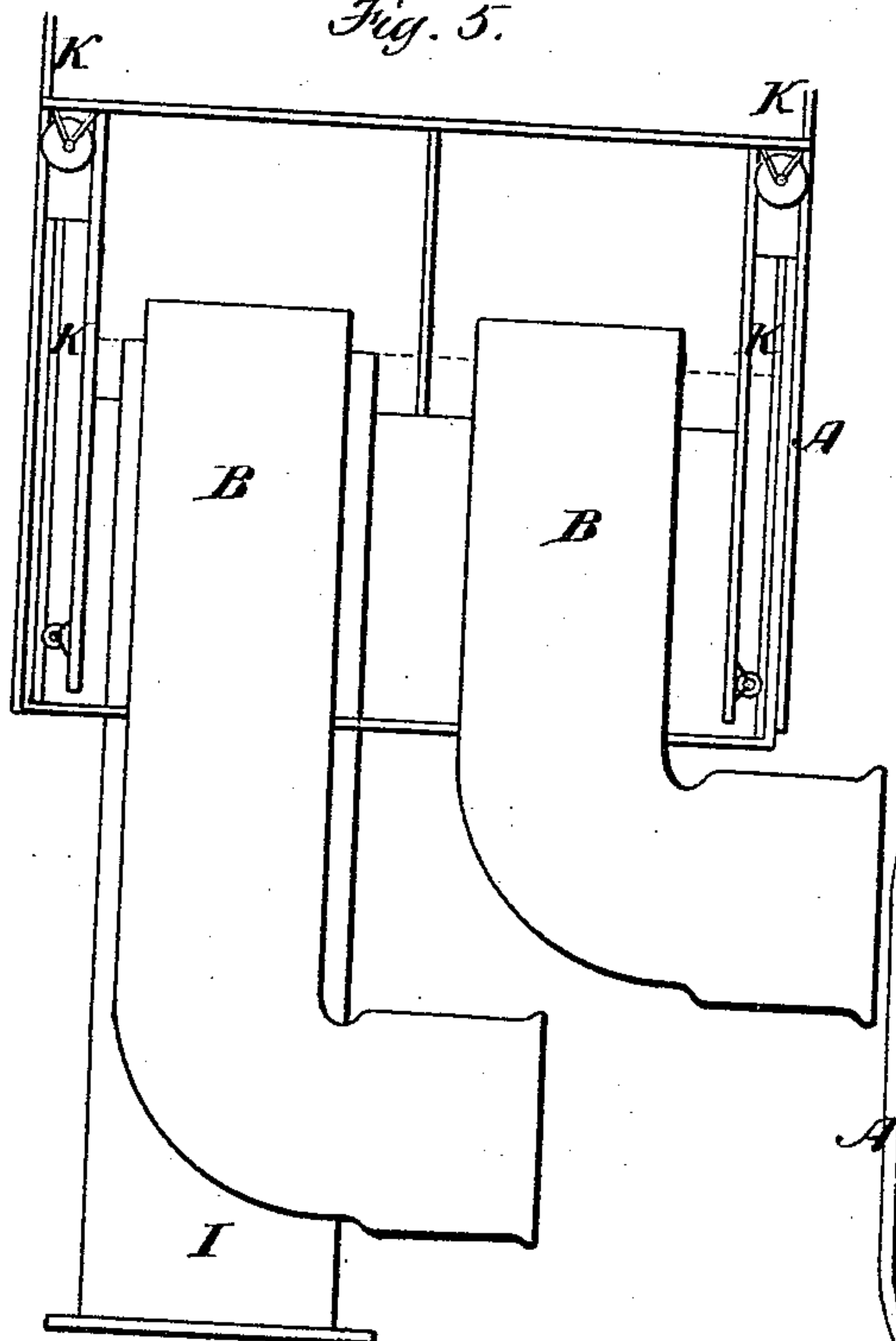


Fig. 2.

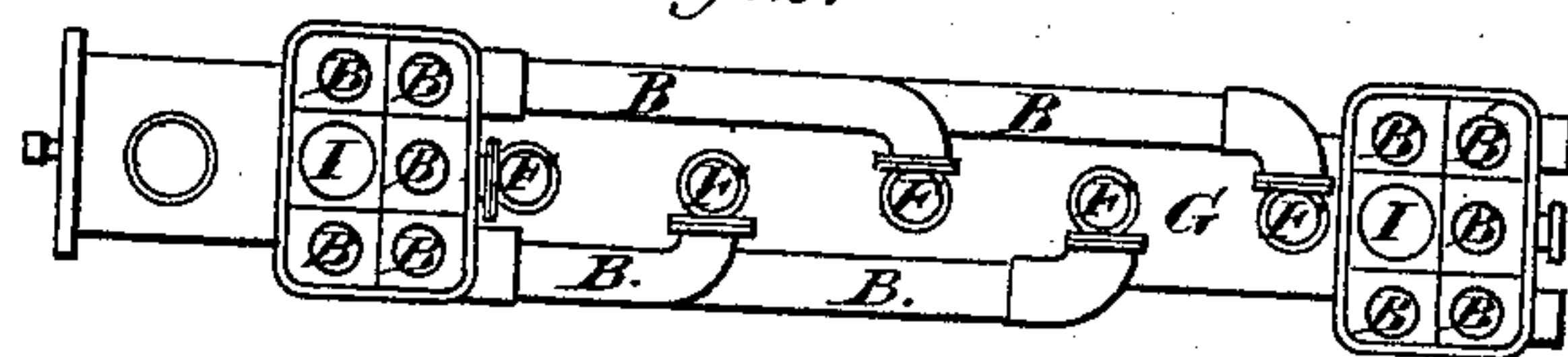


Fig. 3.

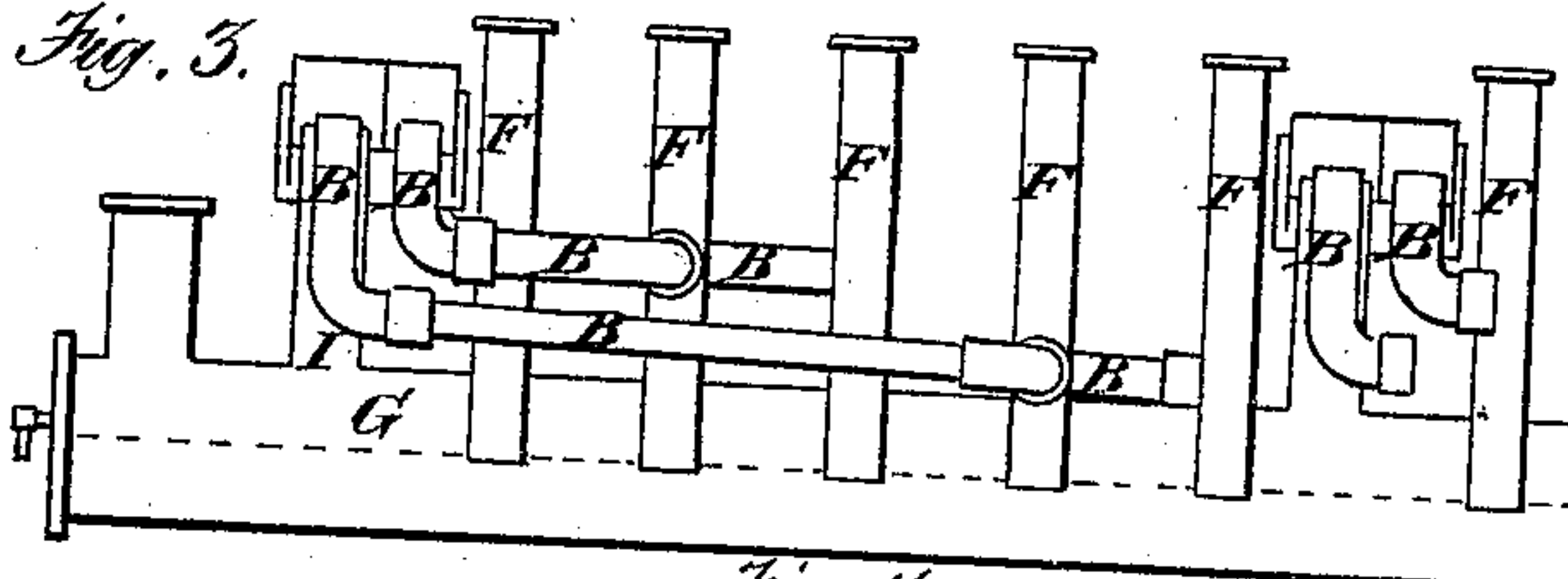
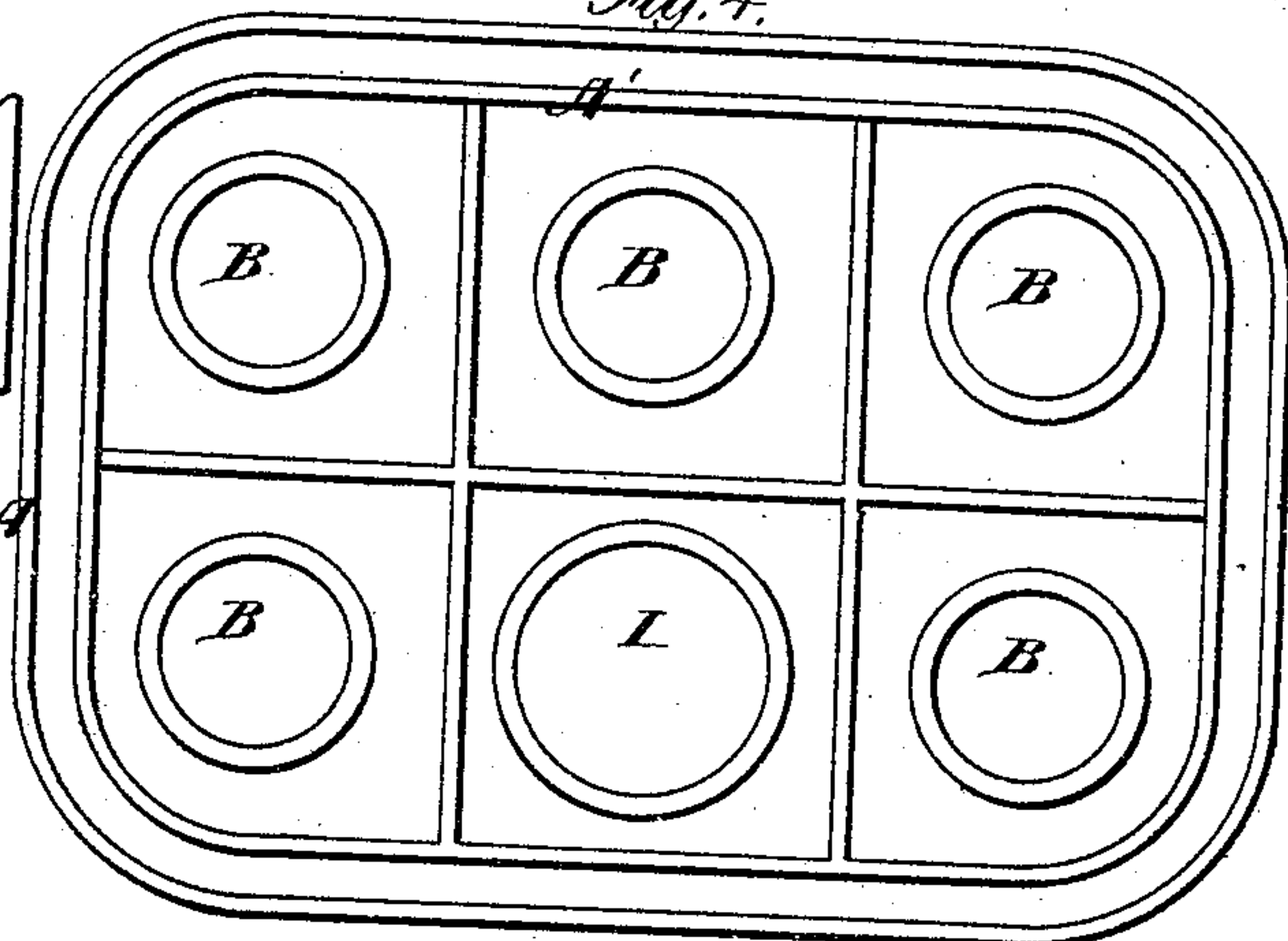


Fig. 4.



Witnesses:

Chas. Greenwood
& W. Whitehouse.

Inventor:

George F. North

UNITED STATES PATENT OFFICE.

GEORGE F. NORTH, OF AUGUSTA, MAINE.

IMPROVEMENT IN DIP-PIPES.

Specification forming part of Letters Patent No. **151,611**, dated June 2, 1874; application filed January 22, 1874.

To all whom it may concern:

Be it known that I, GEORGE F. NORTH, of Augusta, Kennebec county, Maine, have invented Improvements in the Manufacture of Illuminating-Gas, of which the following is a specification:

My invention is an improvement in the manufacture of illuminating gas; and has for its object the relief of the pressure upon the retorts caused by the force necessary to pass the gas through the water or tar sealing the dip-pipes in the hydraulic main.

This invention will be better understood by referring to the present process of making illuminating-gas, described as follows, (see accompanying drawings:)

The gas passes from the retorts C, Figure 1, up the rise-pipe D, through the bridge-pipe e, down the dip-pipes F, into the liquid of the hydraulic main G, where the dip-pipes F are sealed about one inch by the liquid, through which the gas is forced to the chamber of the hydraulic main, from whence it passes off. This dip or sealing of the pipes is necessary to prevent the return of the gas from the hydraulic main to the open retorts when charging, and causes a pressure in the retorts equal to the force necessary to pass the gas through the liquid when the retorts are in operation. This pressure causes a deposit of carbon on the retorts, which is taken from the gas, and deprives it of a portion of its illuminating power and the retorts of their full capacity to generate gas. The carbon thus deposited can only be removed by a slow process of burning, injuring the retorts and preventing their use for distillation during the process. My invention relieves this pressure, and avoids the obstruction to the free passage of gas from the retorts to the hydraulic main by using a hydraulic seal, in combination with pipes connecting the hydraulic main with the retorts in the following manner: The dip-pipes F are cast with a socket or flange-joint outlet immediately above their connection with the hydraulic main, as shown in Fig. 6 of drawing. To the outlet of the dip-pipes are connected lateral pipes, passing to a hydraulic seal, as represented in drawings by letter B, Figs. 3, 2, and 1. The hydraulic seal is constructed of an iron tub or tank, A, placed over

the hydraulic main between the stand-pipes of the benches of retorts, or as convenience may require in works constructed. Through the bottom of this tank, and opening into it, pass the lateral pipes B from the outlet in the dip-pipes, and through the bottom of the tank also passes a pipe, I, opening from the seal into the hydraulic main above the liquid in the hydraulic main. The pipe I and pipes B are sufficient in capacity and number to accommodate the number of dip-pipes in the bench of retorts it is intended to seal, the pipes marked B, Fig. 5, pass up to within a few inches of the top of the tank A. The outlet-pipe I is an inch lower than the inlet-pipes B, and conducts the overflow from condensation in the seal into the hydraulic main, the condensation always furnishing a sufficient quantity of liquid for the perfect operation of the seal, and relieving the operatives from all care and trouble in filling the tank. The cover or sealing part A' of the tank is made with partitions forming boxes, which cover each pipe, sealing them separately, thereby preventing the gas from escaping through the pipes B, into the stand-pipes D, and out of the mouth of the retorts C, and also preventing the gas from passing from the hydraulic main into the seal during the process of charging.

When the cover is raised, the lateral pipes are unsealed, and the gas, instead of passing down the dip-pipes F into the hydraulic main, and meeting with a resistance from the liquid in the hydraulic main, passes without obstruction through the lateral pipes B into the seal A, Fig. 1, and thence has free passage through the outlet-pipe I into the hydraulic main G above the liquid therein, thus avoiding the sealed dip-pipes in the hydraulic main.

When the cover is down the partitions enter the liquid, sealing the pipes to the depth of three inches or more, and the dip-pipes F in the hydraulic main being sealed only to the depth of one inch, the gas must necessarily pass through the lightly-sealed dip-pipes from the operating-retorts in the bench, while one or more retorts are being charged. The cover or seal must dip sufficient to seal all pressure. As soon as the retorts are charged, the cover to the seal is raised, and the gas passes into

the hydraulic main through the lateral pipes B unobstructed. The cover to the seal being counter weighted, may be operated by a lever or pulley, (not shown in the drawing,) as may be most convenient.

The hydraulic main may be round, or of the D-pattern, or any other convenient form. The tank A is held firmly in its place by flanges on the pipes B and I, and the cover H is accurately guided and firmly held by the guide-rods K, Fig. 7.

In case of injury to a retort, by which its use must be dispensed with, while other retorts in the bench are operated, the connecting-pipes between the seal and defective retort may be sealed by an iron plug, luted with fire-clay, placed in the end of the stand-pipe opening into the mouth-piece of the defective retort, which would be more convenient than the common practice of using a little masonry for the purpose.

The valve process used by inventors to accomplish the result attained by my invention is objectionable on account of the valves necessarily being inside of the pipes, and difficult of application as well as of access, liable to be clogged and to leak, and to the further objection that the valves must be operated by rods passing to the inside through stuffing-boxes, which, from the heat in the pipes, corrosion of the rods, and dust of the retort-house, will require constant attention and frequent renewal to prevent leakage. These objections are only obviated in degree, when the pipes from the retorts are connected with one pipe, to which a valve is applied, instead of using a valve on each of the connecting-pipes.

The following process, by which water is thrown into the hydraulic main to seal the dip-pipes and then withdrawn to unseal them,

is objectionable in the time required, and the skill and judgment that must be exercised in determining when sufficient water is injected for the purpose, and is liable, by the overflow and the condensation, to seal the dip-pipes in some of the compartments, into which the hydraulic main is divided.

The advantages of the process by my invention are that no part of the apparatus is within the pipes. The hydraulic seal, which performs its office with certainty, is instantaneous in its operation, one motion of a lever or cord sealing or unsealing the pipes, and after the tank of the seal is once filled with fluid the condensation from the gas keeps it full, requiring no care or attention from the operatives. It is simple in its construction, durable, not liable to get out of order, and with small expense can be applied to works already constructed, as well as those in process of construction.

I do not claim pipes leading from a series of retorts connecting with a single pipe communicating with the hydraulic main capable of being closed with a valve or cut-off, as shown in the patent of Alonzo M. Giles, March 26, 1872, and that of E. S. Jones, June 27, 1871.

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

The hydraulic seal consisting of the partitioned floating cover A' and tank A, in combination with the supply-pipes B, outlet-pipe I, and hydraulic main G, all arranged and operating substantially as and for the purpose set forth.

Witness my hand the 20th day of January, A. D. 1874.

GEORGE F. NORTH.

Witnesses:

CHAS. GREENWOOD,
E. W. WHITEHOUSE.