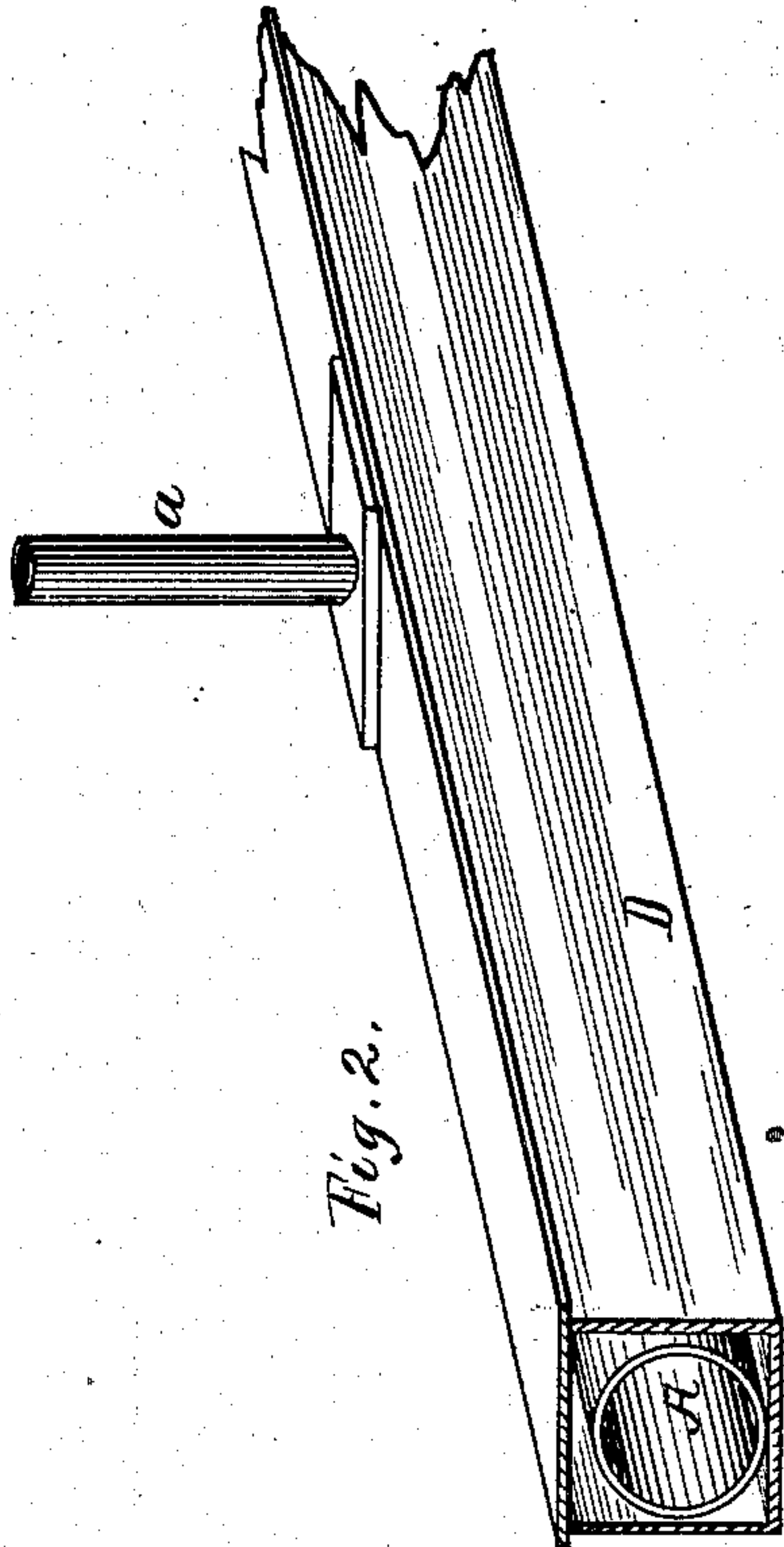
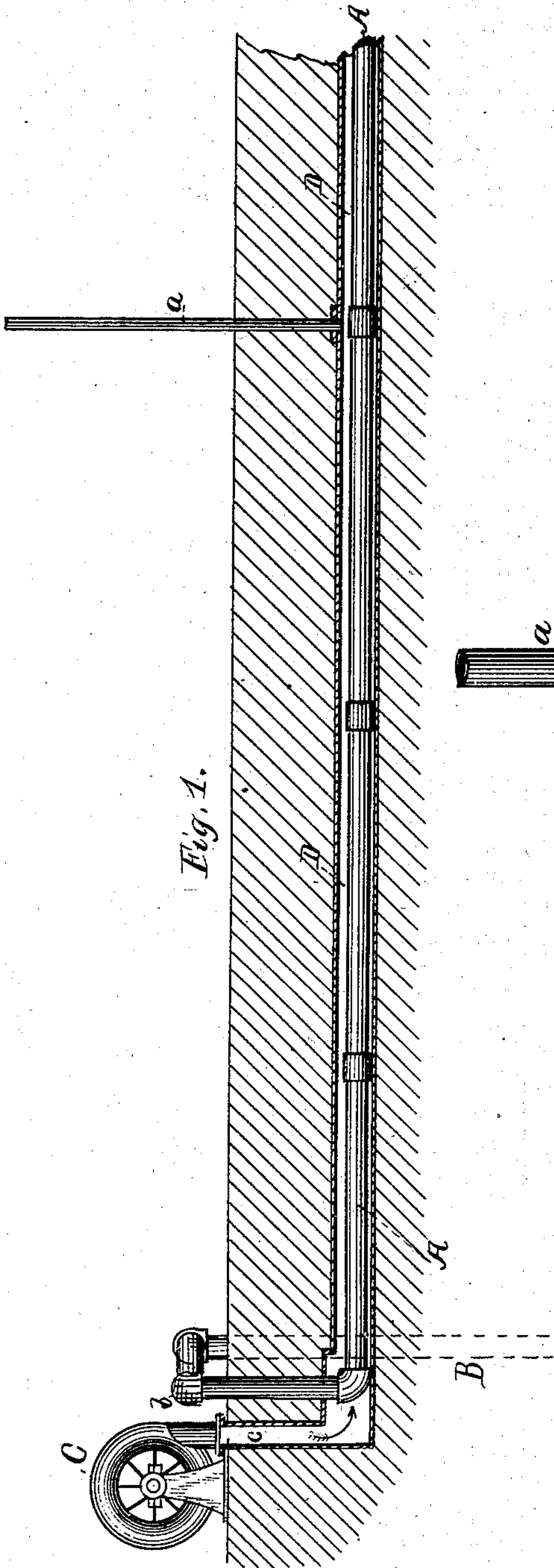


(No Model.)

A. RANDOL.
UNDERGROUND GAS MAIN.

No. 315,443.

Patented Apr. 7, 1885.



Witnesses:
H. E. Harrison
James C. Boyd

Inventor.
Alexander Randol
by J. H. Stevenson
Atty

UNITED STATES PATENT OFFICE.

ALEXANDER RANDOL, OF TARENTUM, ASSIGNOR OF TWO-THIRDS TO JOHN M. ARNOLD, OF PITTSBURG, AND GEORGE S. McKEE, OF ALLEGHENY CITY, PENNSYLVANIA.

UNDERGROUND GAS-MAIN.

SPECIFICATION forming part of Letters Patent No. 315,443, dated April 7, 1885.

Application filed February 5, 1885. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER RANDOL, of Tarentum, Pennsylvania, have invented a new and useful Improvement in Underground Gas-Mains, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

Similar letters of reference indicate corresponding parts.

My invention relates to pipes used in conveying natural gas from the wells to and through cities and towns where it is to be consumed. Experience has demonstrated that this gas when under a high pressure oozes out through the pipes at hundreds of pores, and much more so through defects in the pipe and also at the joints. To such an extent is this done that it seems quite impossible to confine it. When this gas does thus liberate itself from the gas-mains, it is found by experience to go off into the adjacent soil, and frequently makes its way into cellars of houses or into the sewers, and in this way becomes a highly-dangerous substance, frequently terminating in great explosions. The great utility of natural gas makes it highly necessary that it be rendered and made as harmless as possible, and to this end is my invention.

In the accompanying drawings, Figure 1 is a longitudinal section of a gas-main as seen in position underground, and Fig. 2 is a perspective view of the gas-main laid in a boxing.

A represents the gas pipe or main. B is the pipe leading from the gas-well. *b* is a pipe conveying the gas from pipe B to the gas-main A. C is an air-blower. *c* is the air-pipe, conveying the air from the blower into the safety-chamber D. *a* is an escape-pipe. The chamber D is made somewhat larger than the gas-main A, and is made of wood, earthen tile, or metallic. This chamber, it will be seen, is intended to admit of air being blown into it from the blower C. When this is done,

the pressure of the air will take up the gas that has escaped from the pipes and convey it to the escape-pipe *a*, where it finds an exit, and in addition to these pipes *a*, I expect to erect at certain intervals along the main line high brick stacks (or other kinds of stacks, such as are usually found in iron mills and furnaces) for the same purpose of conveying harmlessly away all the liberated gas getting into the chamber D.

In addition to the blower C forcing the gas through the chamber D to the exits, a suction can be made by setting fire to the said stacks, which, when once a considerable flame is secured, will tend to draw the air and gas up the same to the top. I expect by this means to perfectly control, manage, and carry off that portion of natural gas which is now the terror to the people living along the line of gas-pipes leading from natural-gas wells. This suction may also be partly secured by means of the pipes *a*, as they, too, may be fired at the top, first being erected so high above buildings as to be harmless.

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

In combination with the gas-pipe A, the air-pipe B, inclosing the same and leaving an air-space between them, the outlet-pipe *a*, communicating with said air-pipe, the inlet-pipe *c*, also communicating with said air-pipe, and the blower C, whereby air is forced through inlet-pipe *c* into air-pipe D, in order that it may carry off through outlet-pipe *a* all gas escaping from pipe A, substantially as set forth.

In testimony that I claim the foregoing as my invention I hereto set my hand in presence of two witnesses.

ALEX. RANDOL.

Witnesses:

I. H. LIVINGSTON,
JOHN H. CRATTY.