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Patented Jan. 9, 1900.

H. F. STANDING & C. F. DIXON.

INTERMITTENT AUTOMATIC SIPHONIC FLUSHING APPARATUS.

(Application filed May 11, 1899.)

(No Model.)

FIG. 3.

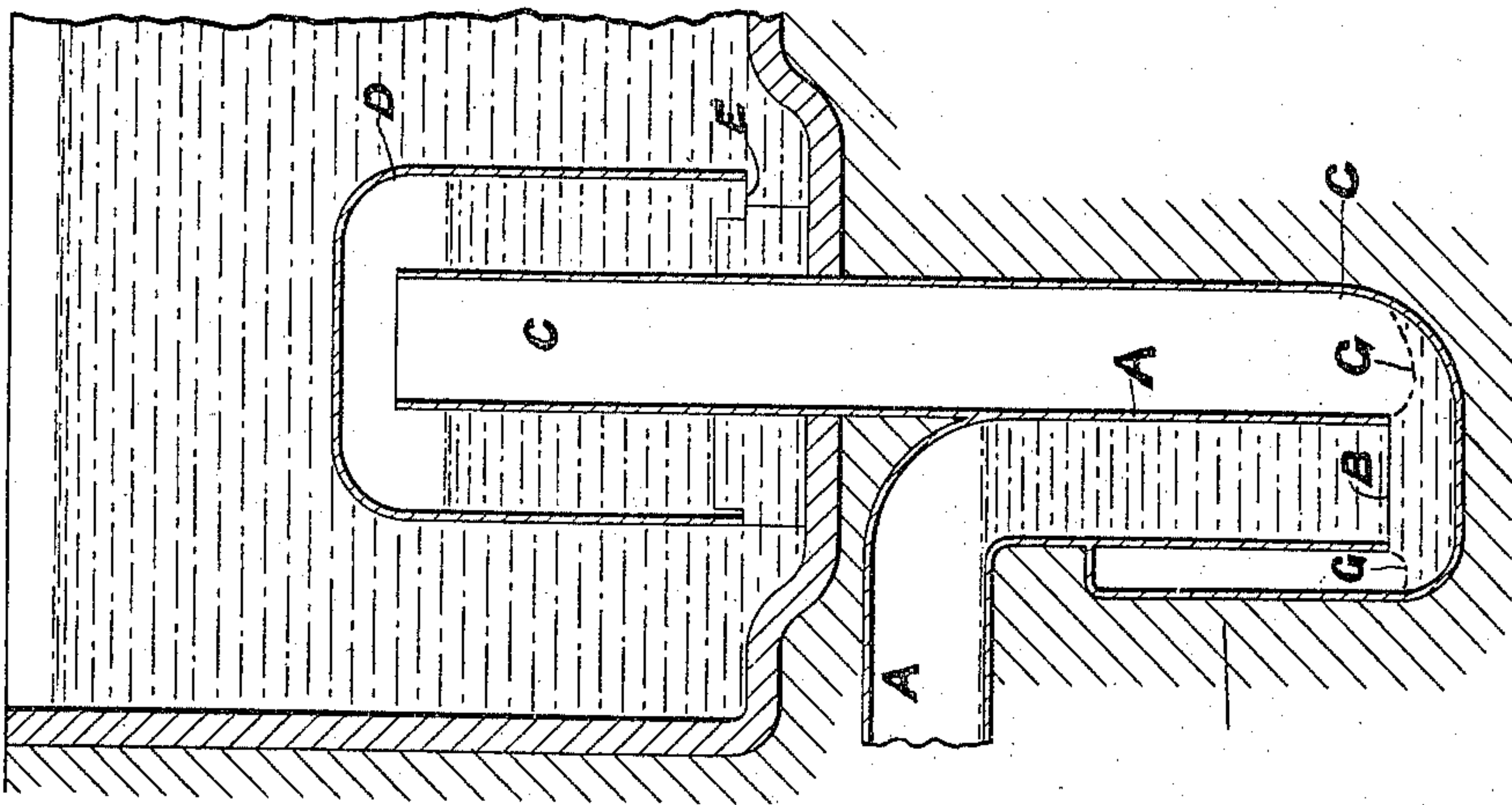


FIG. 2.

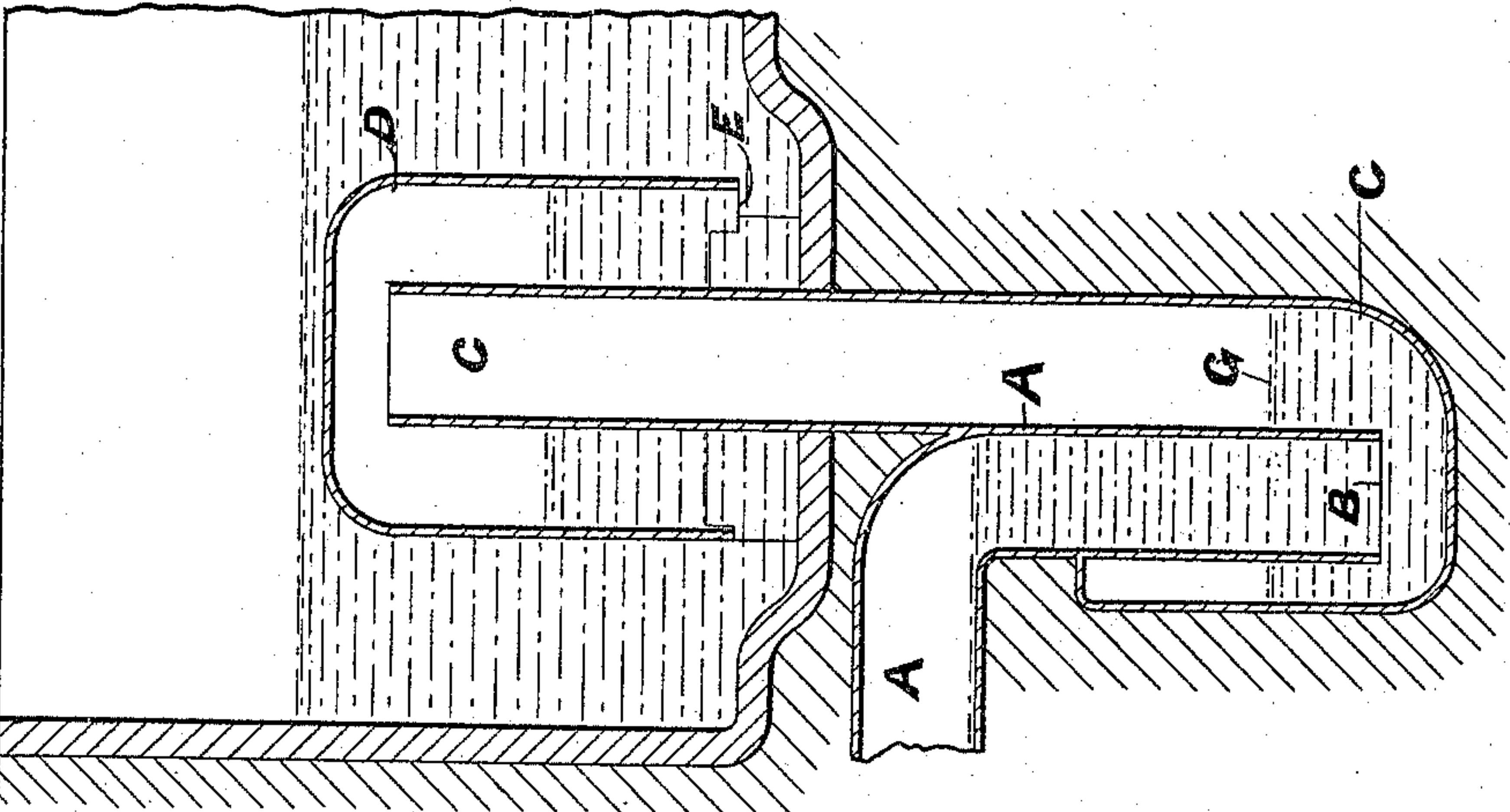
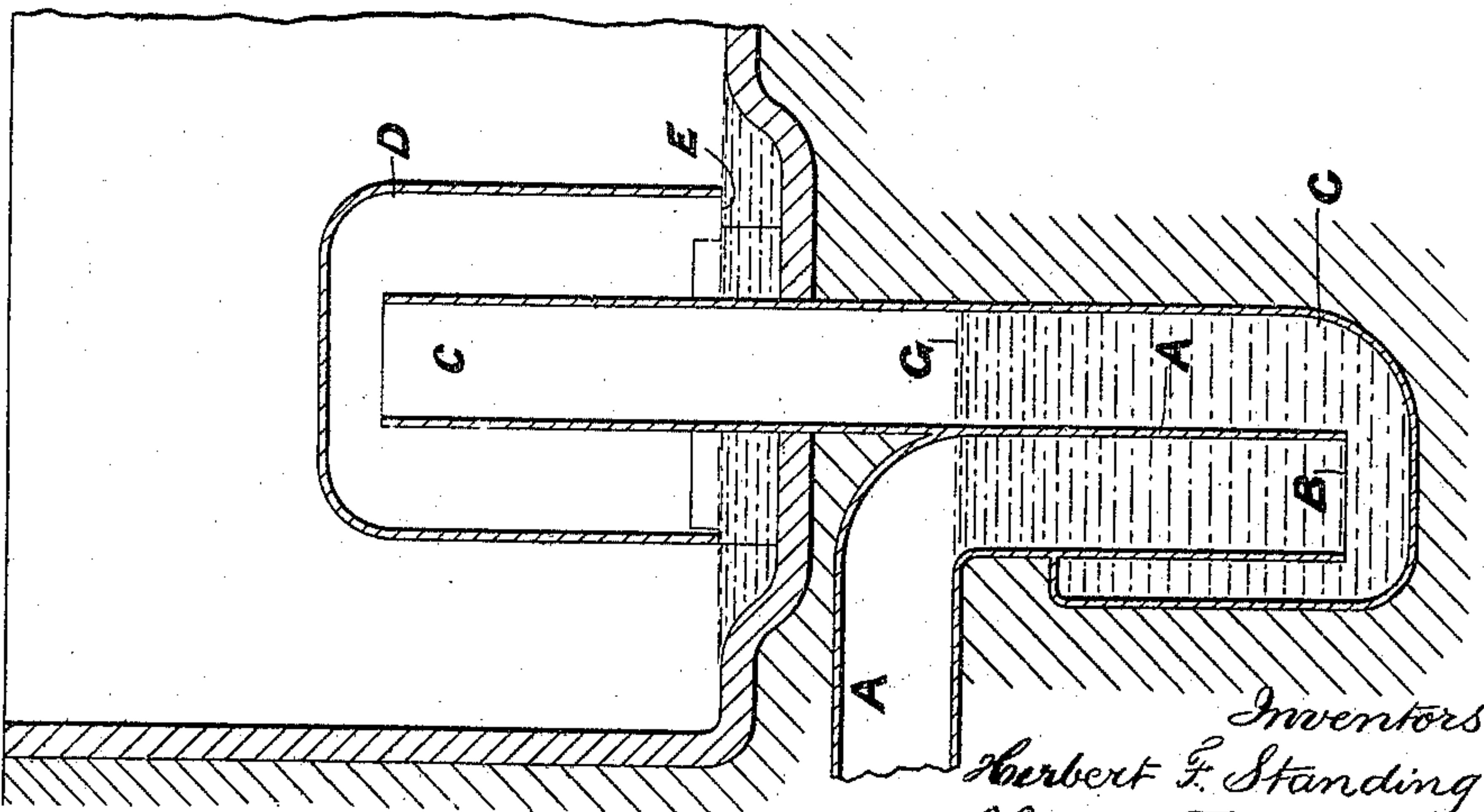


FIG. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

HERBERT FOX STANDING AND CHARLES FOX DIXON, OF LEEDS, ENGLAND.

INTERMITTENT AUTOMATIC SIPHONIC FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 641,160, dated January 9, 1900.

Application filed May 11, 1899. Serial No. 716,368. (No model.)

To all whom it may concern:

Be it known that we, HERBERT FOX STANDING and CHARLES FOX DIXON, subjects of the Queen of Great Britain and Ireland, residing at Leeds, in the county of York, England, have invented certain new and useful Improvements in Intermittent Automatic Siphonic Flushing Apparatus, (for which we have made application for a patent in Great Britain, No. 26,129, bearing date December 10, 1898,) of which the following is a specification.

This invention refers to intermittent automatic siphonic flushing apparatus whereby on liquid being collected in a tank and rising to a predetermined level the entire contents are swiftly withdrawn and utilized for flushing or for other purposes.

In apparatus of the above description it is essential for the discharge to be full and unimpeded, and various siphonic apparatus have been utilized with the object of attaining this result. The chief difficulty has been to suddenly release the air confined between the incoming fluid and the fluid in the trap, for if this air is allowed to dribble away as the liquid rises in the tank the incoming liquid will dribble away also and the siphon will not be discharged at all. Several devices have been employed for this purpose, such as auxiliary bends or valves, which have for their object the removal of the air in the siphon or the increase of the inflow to the tank at the time of discharge; but the first arrangement is liable to become choked when dealing with sewage, and the second is not practicable where control cannot be given to the supply. By our invention we allow the rise of the liquid in the tank to compress the air in the siphon, and this compressed air in pressing on the surface of a seal forces the contents of the said seal to slowly discharge into the drain until the surface of the seal is depressed to the mouth of a discharge-arm, and then when the air has been compressed to its utmost extent its comparatively large volume bursts up, the discharge-arm carrying the liquid with it and leaving the siphon free for a full discharge.

Now the object of this invention is to construct automatic siphonic flushing apparatus in such a manner that when the liquid rises to a predetermined level in the tank the air

which during the rising of the liquid has become compressed releases itself in an entire and sudden manner, thus starting the siphon, which can then discharge the contents of the tank in an unchecked flow.

In the drawings, Figure 1 is a vertical section of a siphon constructed according to our invention, the tank to which the siphon is fitted being empty. Fig. 2 is a similar view of the same siphon with the tank partially full of water, and Fig. 3 shows the siphon with the tank full and ready to discharge.

A is the discharge-arm of the siphon, having a horizontal pending edge B at its base.

C is a casing which surrounds the discharge-arm and forms a portion of the trap, and the upper end of the said casing C is covered by a bell D, the lower edge E of the said bell being situated at a height down to which the liquid is to be withdrawn.

When the tank is empty, as seen at Fig. 1, the horizontal edge B of the discharge-arm A is sealed by the contents of the casing C, the bell D at the same time being empty. The inflow of the liquid gradually fills the tank, and the air in the bell D is compressed by the head of water and presses on the surface G of the siphon-seal, thus forcing the liquid forming the seal up the discharge-arm A of the trap, from whence it drains away, as seen at Fig. 2. This compression continues until the liquid in the seal is depressed to the level of the horizontal pending edge of the discharge-arm of the trap, and the surface of the seal is depressed a short distance farther into a concave form, as seen at Fig. 3, until the pressure of the compressed air overcoming the attraction of the horizontal edge B bursts suddenly under the same and allows the entire body of compressed air to rush up the discharge-arm A and to start the siphonic action with its full force simultaneously. The contents of the tank are thus discharged without check until the siphonic action is broken by the entry of air below the bell.

It is essential that the compressed air in the siphon should rush from a large area, such as the surface G of the seal, to a smaller area, such as that inclosed by the annular edge B. Otherwise the concentrated effect of the compressed air on the remaining liquid in the trap would not be obtained.

We have illustrated our invention by views of one type of siphon; but it will be evident to those conversant with siphonic apparatus that the invention might be applied to almost
5 any existing form of siphon.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

10 In an intermittent automatic siphonic flushing apparatus, the combination with the receiving tank or vessel, of a substantially vertical case or tube C having its upper open end within said tank, and having an enlarged closed portion at the lower end outside the

tank, a bell surrounding the upper portion 15 of the case C and within the tank, and a discharge-pipe A having its open lower end dipping within the enlarged portion of said case C, substantially as and for the purposes set forth.

In witness whereof we have hereunto set our hands in presence of two witnesses. 20

HERBERT FOX STANDING.
CHARLES FOX DIXON.

Witnesses:

GRIFFITH BREWER,
JOHN JOWETT.