

F. N. DU BOIS.
Machine for Making Plumbers' Traps.

No. 234,463.

Patented Nov. 16, 1880.

Fig. 1.

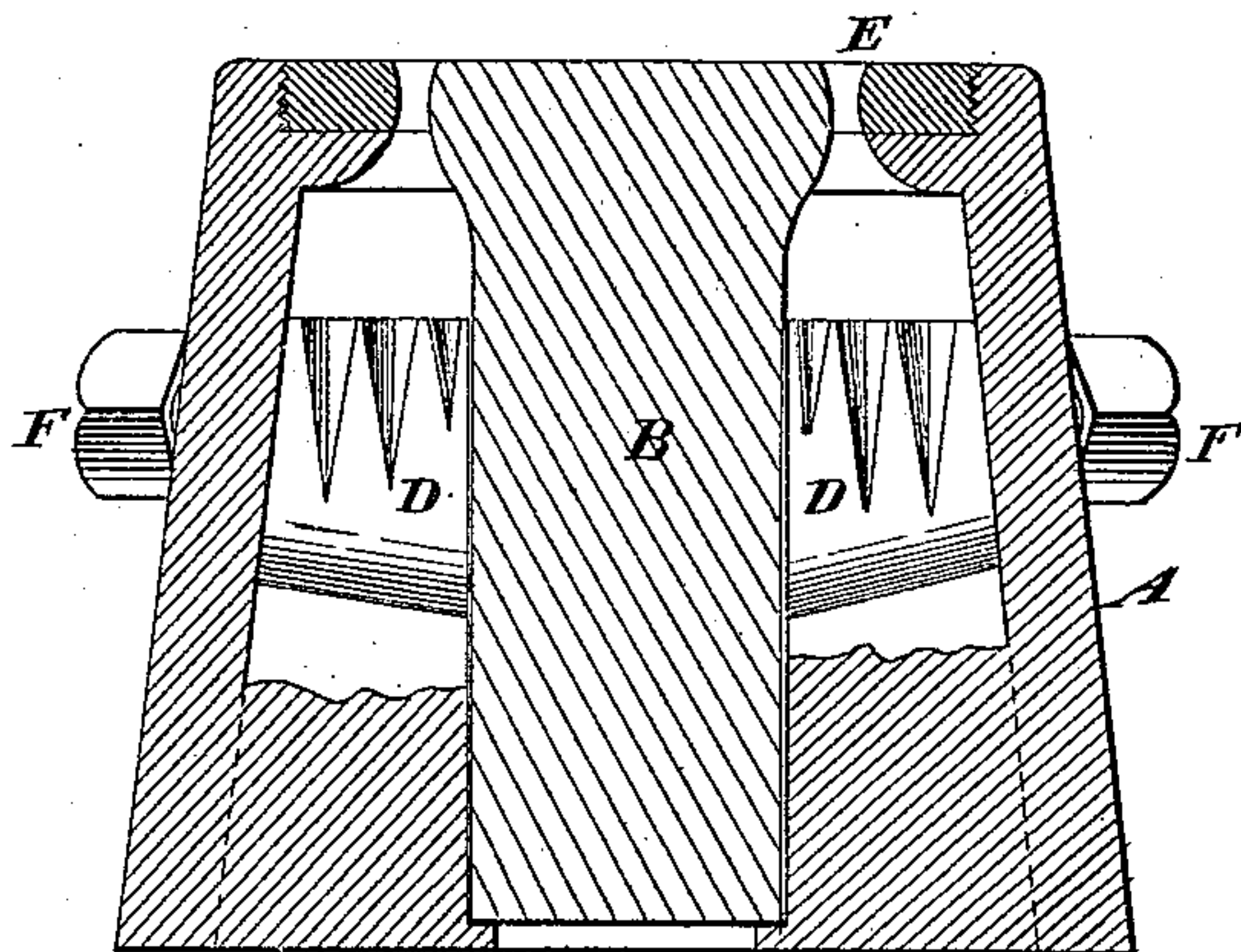


Fig. 2.

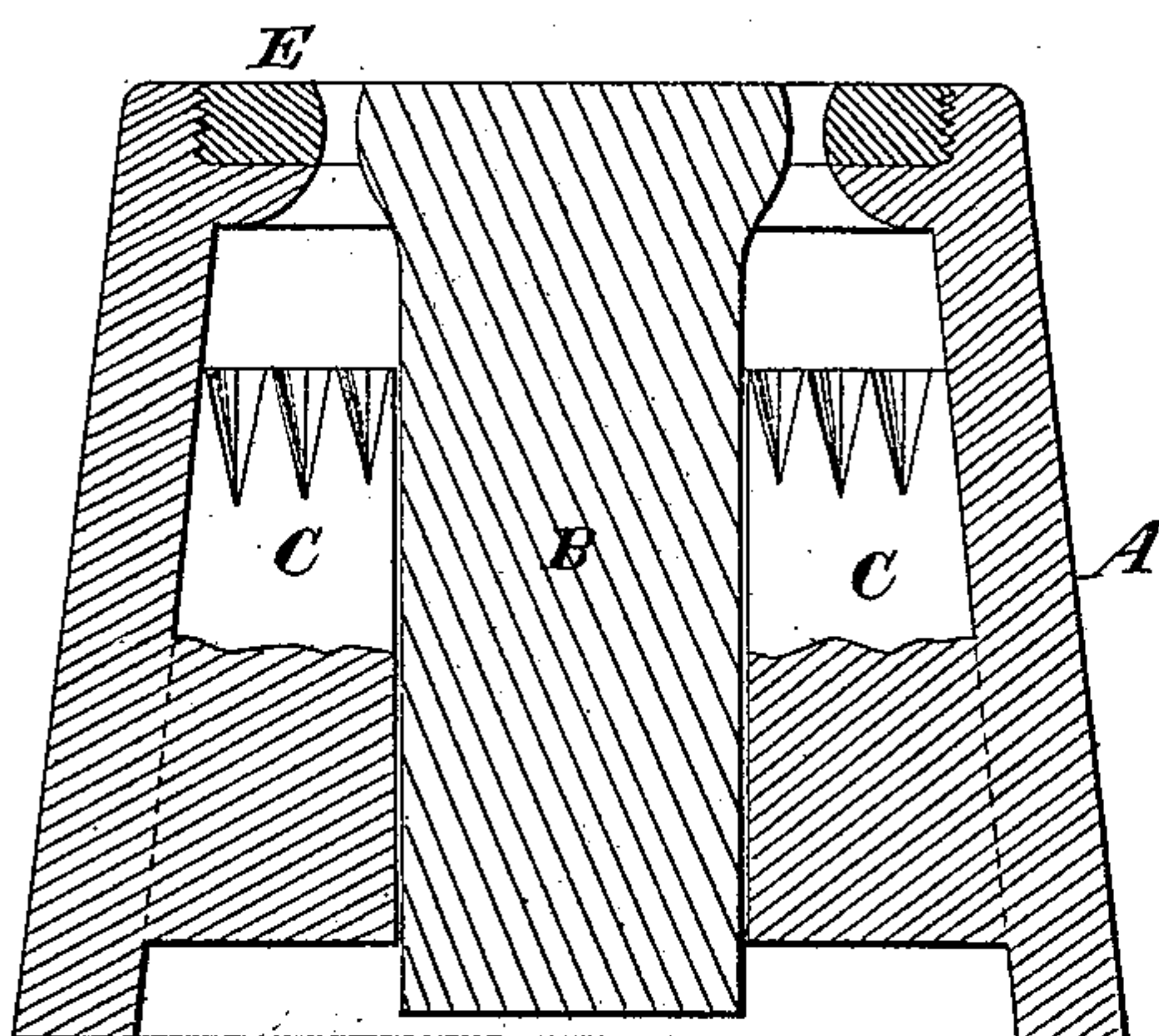
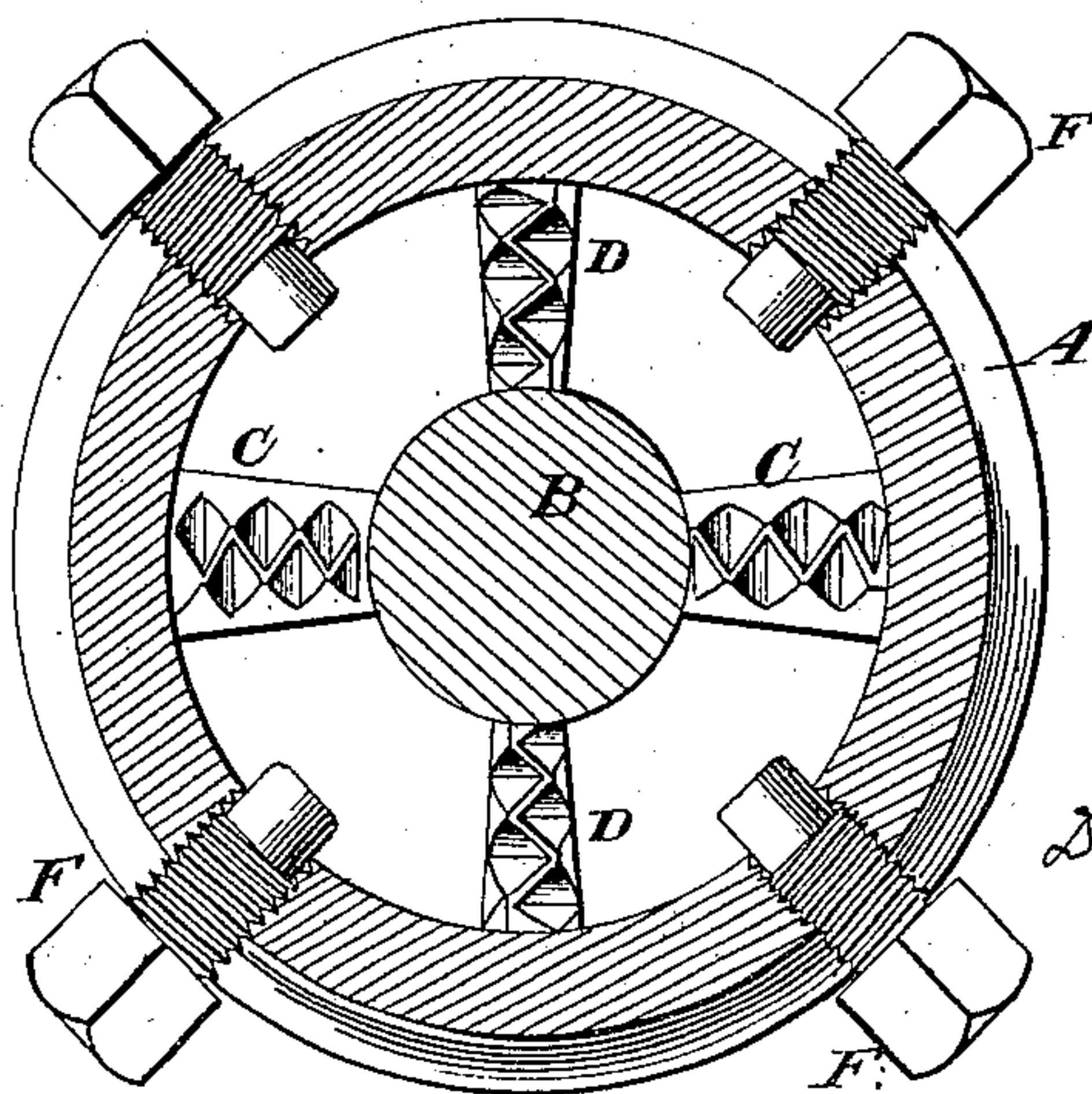


Fig. 3.



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MACHINE FOR MAKING PLUMBERS' TRAPS.

SPECIFICATION forming part of Letters Patent No. 234,463, dated November 16, 1880.

Application filed March 16, 1878.

To all whom it may concern:

Be it known that I, FREDERICK N. DU BOIS, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Machines for Making Plumbers' Lead Traps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

On the 24th day of August, A. D. 1875, I took out Letters Patent (No. 167,076) on a machine for this purpose.

The invention which is the subject of this application relates to improvements in the nozzle, or that part of the machine where the lead issues in forming the trap.

My said original patent contains a full description of the machine, and reference is made to it for supplying an account of parts not necessary to be described herein further than to say that in that machine the pipe is curved by increasing or diminishing the movement of two plungers in relation to each other, so as to cause the lead to move faster on one side of the nozzle than the other, thereby causing it to bend and form a curved pipe.

My improvements consist, first, in causing the lead to emerge through a steel ring or die fastened at the outer orifice of the nozzle, which determines the outer diameter of the pipe, and can be readily removed for repolishing. This I have found necessary, because the lead deposits a hard substance on the surface of the mouth of the nozzle, which soon causes it to scratch the surface of the trap into furrows, which damages the market value of the pipe, and would eventually destroy it. It is very difficult to remove this deposit where the nozzle is all in one piece, and this difficulty I obviate by making the annular die, which can be detached, repolished, and replaced in a few minutes.

Detachable dies have been used in lead-pipe machines; but they have been so located that they could not be detached without taking the machine to pieces. Mine is distinguished from those before known in being tapped into the

outer and exposed end of the nozzle, so that they can be conveniently and readily removed.

In my original patent I illustrated the nozzle as divided by two partitions, the space on each side being the discharge-orifice for one of the presses, the two streams uniting above the partitions to form the pipe. These partitions are placed on each side of the central core.

I have found in practice that it is exceedingly difficult to keep the core immovable in making traps where the pressure on each side is unequal, being alternately heavier on either side, so that the tendency is to force the core to the side of least pressure, and so make the trap thicker on the side from which it bends.

To obviate this the second part of my invention consists in placing partitions on the sides in the plane of the bends, intermediate between the others. These partitions are short and sharpened on both their upper and lower edges. The stream of lead separated by the partitions reunites at the orifice, but the short partitions steady the core and keep it in the center of the nozzle.

My invention does not consist, broadly, in the use of more than two partitions for supporting the central core, for I know that four are shown in Cunningham's patent, No. 139,946, issued June 17, 1873; but in this case the partitions do not extend to the part where a varying motion is caused. On the contrary, the lead in passing between the partitions moves at a uniform velocity, it being impelled by a single plunger; nor do they—the partitions—extend along the central core, so as to support it against side pressure.

My invention is distinguished from all before known in the use, in a machine in which two plungers are made to force different but convergent streams of lead, of the partitions of separation, and also auxiliary partitions set at right angles thereto in the nozzle below the point of convergence of the two streams, to sustain the central core against unequal lateral pressure.

I am aware that in Cunningham's patent, No. 139,946, the core is represented as being held in position by four partitions, which subdivide the stream of lead; but in that case there was a single stream of lead driven by a single plunger, and consequently there was at

that point no excess of pressure on one or the other side of the core, whereas in my machine, as the partitions C C are walls of separation of two streams of lead, independently actuated, and under constantly-shifting pressures, there is a great tendency to force the core to one side, which requires the use of the intermediate braces. In Cunningham's machine these braces or partitions are necessarily below the sliding diaphragm, leaving the outer end of the core without any support whatever, whereas in my machine the partitions extend nearly to the end of the core, leaving only space sufficient for the lead to unite after passing the partitions and before emerging from the die.

I have also found it impossible, where the lead is forced through uniform channels, to permit irregular movement, which would prevent the trap from issuing and moving in the same plane, the tendency being to curl toward one side. The means of obviating this forms the subject of my fourth improvement; and consists in introducing into each of the four channels through which the lead flows the point of a set-screw, by tightening or loosening which the resistance can be increased or diminished in any channel, and thus the tendency to twist laterally counteracted, the flow being accelerated or retarded, as required.

In the annexed drawings, making part of this specification, Figure 1 is a vertical section through the short supplementary partition. Fig. 2 is a similar section through the partitions of separation, and Fig. 3 is a horizontal section.

The same letters are employed in all the figures in the designation of identical parts.

A is the external shell of the nozzle, and B the central core, around which the pipe is formed. C C are the partitions of separation, by which the two streams of lead are kept apart until they unite above the partition to form the pipes by their junction as they emerge through the orifice around the core.

DD are the supplementary partitions, placed midway between the partitions of separation C C, and reduced to a feather-edge above and below. The upper edges of all the partitions are formed in zigzag by cutting them away alternately on each side, as shown.

E is a polished ring of steel set into the end of the nozzle by a screw-thread, and forms the exterior surface of the trap, being brought nearest to the core. Set-screws F F are tapped through the shell of the nozzle midway between the several partitions.

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

1. In combination with the nozzle of a lead-pipe machine, a detachable ring, when said ring is arranged in the outer and exposed end of the nozzle, so as to permit its attachment and removal without the displacement of other parts, substantially as set forth.

2. The combination, in the nozzle of a lead-trap machine in which distinct and independently actuated streams of lead are caused to unite near the mouth of the nozzle, of a central core, B, partitions C C extending along the core to the part where the converging streams are permitted to unite, and which serve to separate such streams, and supplementary partitions D D intermediate between the separating partitions C C, and bracing the core nearly to the outer end thereof, substantially as set forth.

3. The combination, with the nozzle, central core, and partitions of a lead-pipe machine, of the set-screws F, tapped through the nozzle, so that their joints shall enter the channel between the partitions, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

FREDERICK N. DU BOIS.

Witnesses:

F. W. BLAUVELT,
JAMES J. CAMPBELL.