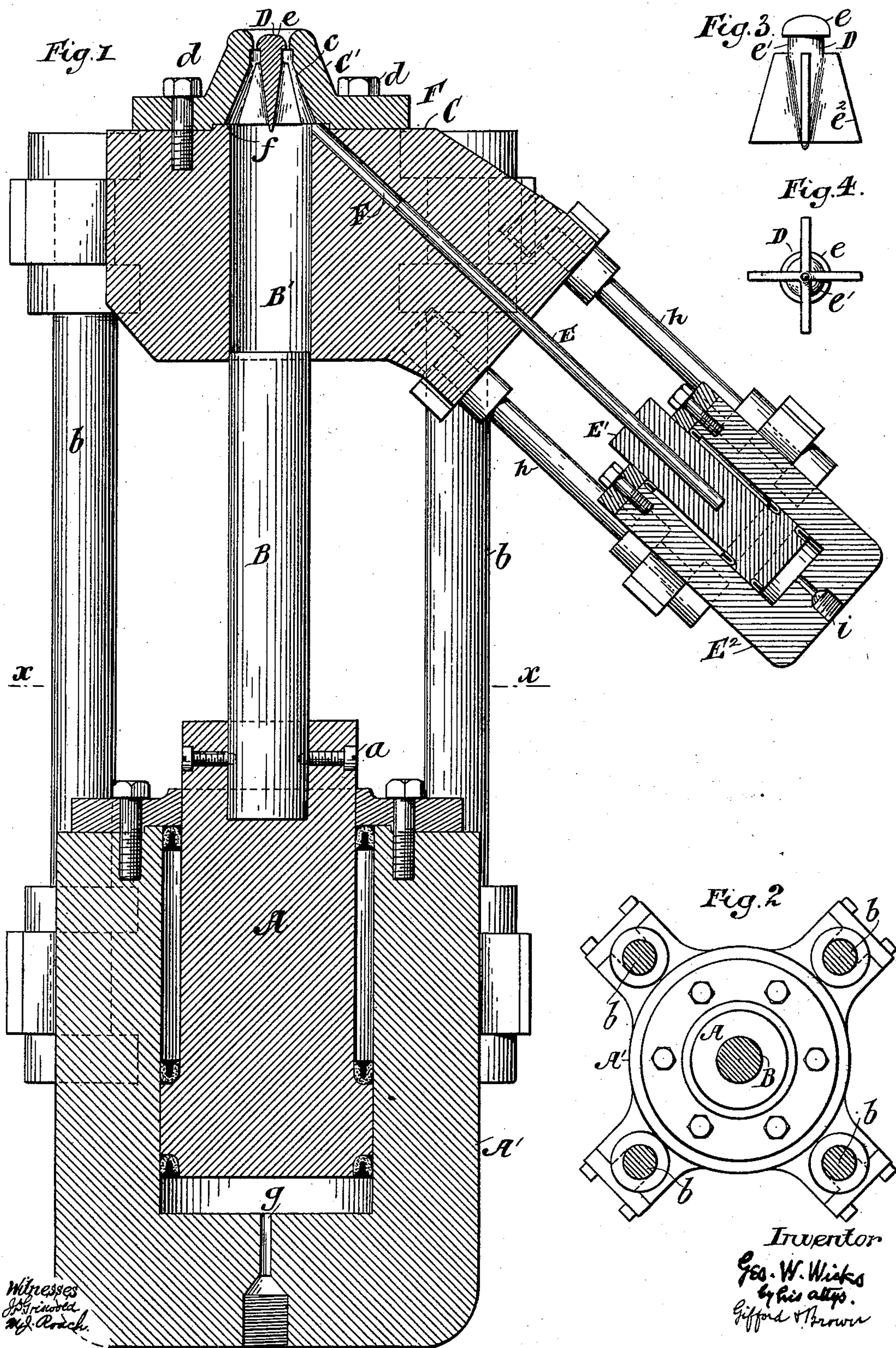


(No Model.)

G. W. WICKS.
MACHINE FOR MAKING CURVED LEAD PIPE.

No. 407,384.

Patented July 23, 1889.



UNITED STATES PATENT OFFICE.

GEORGE W. WICKS, OF BROOKLYN, NEW YORK.

MACHINE FOR MAKING CURVED LEAD PIPE.

SPECIFICATION forming part of Letters Patent No. 407,384, dated July 23, 1889.

Application filed April 19, 1888. Serial No. 271,178. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. WICKS, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Making Curved Lead Pipes, of which the following is a specification.

I will describe in detail a machine embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a longitudinal section of a machine embodying my improvement. Fig. 2 is a transverse section thereof, taken on the plane of the dotted lines xx , Fig. 1. Fig. 3 is a side view in detail of a core employed in the machine. Fig. 4 is a bottom view of the same. Fig. 2 is drawn to a smaller scale than Fig. 1, and Figs. 3 and 4 are drawn to a larger scale than Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

A designates a piston. This piston is adapted to be moved to and fro within a cylinder A' . Secured to the outward end of the piston A, as here shown, by means of screws a , is a plunger B. The other end of the plunger B extends into a cavity B' , formed in a head-block C. The head-block C and the cylinder A' are secured together, as here shown, by means of bolts b . Above the head-block C, in this example of my improvement, is a cap-piece C' . The cap-piece constitutes in effect a portion of the head-block. This cap-piece is provided centrally with an aperture c . This aperture is in communication with the cavity B' , and is shown of slightly-greater diameter at its lower end than is the cavity B' . The aperture c tapers upwardly from the cavity B' , and its outer end is shown as curved or flaring. The cap-piece C' is secured to the head-block C by means of screws d .

D designates a core. This core is provided at one end with a knob-like or rounded head e . Below the knob-like or rounded head e is a shank e' , which shank, in the example of my improvement shown, tapers downwardly to the lower end of the core. Extending outwardly from the shank e' are wings e^2 . These wings are of gradually-increasing width from their upper to their lower extremities. When the core is within the aperture c in the cap-

piece C' , the wings e^2 of the core are in contact with the wall of the aperture and rest upon a flange-like portion f of the head-block C, which flange-like portion is due to the greater diameter of the aperture c at its lower end than the diameter of the cavity B' . The wings e^2 act as steadiments to the core D.

It will be observed that the lower end of the core D is approximately in a horizontal line with a curving device, hereinafter described, so that the core is wholly above the curving device.

Lead or other suitable metal having been poured into the cavity B' through the aperture c in the cap-piece C' is forced outwardly through the outer end of the cavity c by the action of the plunger B, the plunger B being operated by the piston A, which latter, in the example of my improvement shown, is moved outwardly by hydraulic pressure applied through the aperture g in the cylinder A' and against the head of the piston A.

In the class of inventions to which my improvement relates the lead upon being forced outwardly is caused to assume a sinuous form upon cooling. The pipe of lead thus formed may be cut into suitable lengths, as desired, to form plumbers' traps for waste water. In order to cause the pipe of metal as it issues from the aperture c to assume automatically the curve to which I have referred in performing this operation, I employ a plunger E, which plunger is secured to a piston E' , operating in the cylinder E^2 . The cylinder E^2 is secured to the head-block C by means of bolts h , and extends to one side of the head-block, and in the present example of my improvement downwardly and at an angle thereto. The plunger E works in a cavity F, formed in the head-block C and opening at its inner end into the cavity B' at the extremity of the latter. The piston E' is operated by hydraulic pressure acting against the head of the piston and applied through an aperture i in the cylinder E^2 , in manner similar to that of the piston A.

I have shown the plunger E withdrawn approximately to its farthest position. Assuming that the machine is to be put into operation, the plunger E is forced into the cavity F until it substantially closes the same. The cavity B' having been filled with molten

metal, the plunger B is operated to cause the metal to flow through the open outer end of the cavity B'. When it is desired to cause the metal which forms the pipe to curve to one side, the plunger E is withdrawn, thereby causing a flow of metal into the cavity F. The cooled pipe then formed in passing out at the outer end of the cavity B' will curve to one side, because a portion of the metal is withdrawn from one side of the pipe, and there being consequently less metal upon the side of the pipe upon which the portion is withdrawn than upon the other. It is next desirable to cause the pipe to curve in the opposite direction in order to form sinuosities in the pipe. The plunger E is then forced inward, thereby causing an excess of metal to be imparted to the adjacent side of the pipe about to issue from the cavity B', whereby the pipe is caused to curve in the other direction.

It is to be understood that the plunger B moves continuously upward until all the metal is discharged from the cavity B', and that the plunger E makes a number of excursions to and fro during each upward movement of the plunger B.

By my improvement I have been able to form sinuous piping for the manufacture of plumbers' waste-traps very rapidly and almost continuously, while at the same time there is no leakage nor waste of material; nor is it necessary in my improvement that there should be different streams of metal delivered at different velocities, whereby the sides of the pipe are thickened or thinned, as desired.

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

1. In a machine for forming curved lead pipe, the combination, with a head-block provided with a cavity for receiving molten metal, and an aperture beyond said cavity through which the metal may be ejected, of a plunger acting in said cavity, a core for forming the interior of the pipe, and a second plunger operating alternately to withdraw metal from the said cavity and to inject it into the same near said discharge-aperture, substantially as specified.

2. In a machine for forming curved lead

pipe, the combination, with the cap-piece, the head-block, and the curving device, of the core located wholly above said curving device, and consisting of the central piece, laterally-extending wings of gradually-increasing width from top to bottom, said wings commencing at a point below the top of said core, the core above said point being of the form of the interior of the pipe to be produced, substantially as specified.

3. In a machine for forming curved lead pipe, the combination, with a head-block provided with a cavity for receiving molten metal, and an aperture beyond said cavity through which the metal may be ejected, of a core, a plunger acting in said cavity, a piston for operating said plunger, a second cavity in the head-block, a plunger acting in said second cavity, and a piston for operating the second-named plunger to alternately withdraw metal from the said cavity and inject it into the same near the discharge-aperture, substantially as specified.

4. In a machine for forming curved lead pipe, the combination, with a recessed cap-piece, of a block having a cavity for containing the molten metal in communication with the recess of the cap-piece, a plunger within said cavity, and a second cavity in said block opening into said first cavity at a point near where it communicates with the recess of the cap-piece, and a plunger operating in said second cavity, substantially as specified.

5. In a machine for forming curved lead pipe, the combination of a cylinder and head-block secured thereto, said head-block being provided with two plunger-cavities, and a core wholly above the cavities, a plunger operated by the piston, of the cylinder supporting the head-block within one cavity of the head-block, and a second cylinder supported by said head-block and operating the plunger within the other cavity of said head-block at an angle to the first-named plunger, substantially as specified.

GEO. W. WICKS.

Witnesses:

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JAMES D. GRISWOLD.