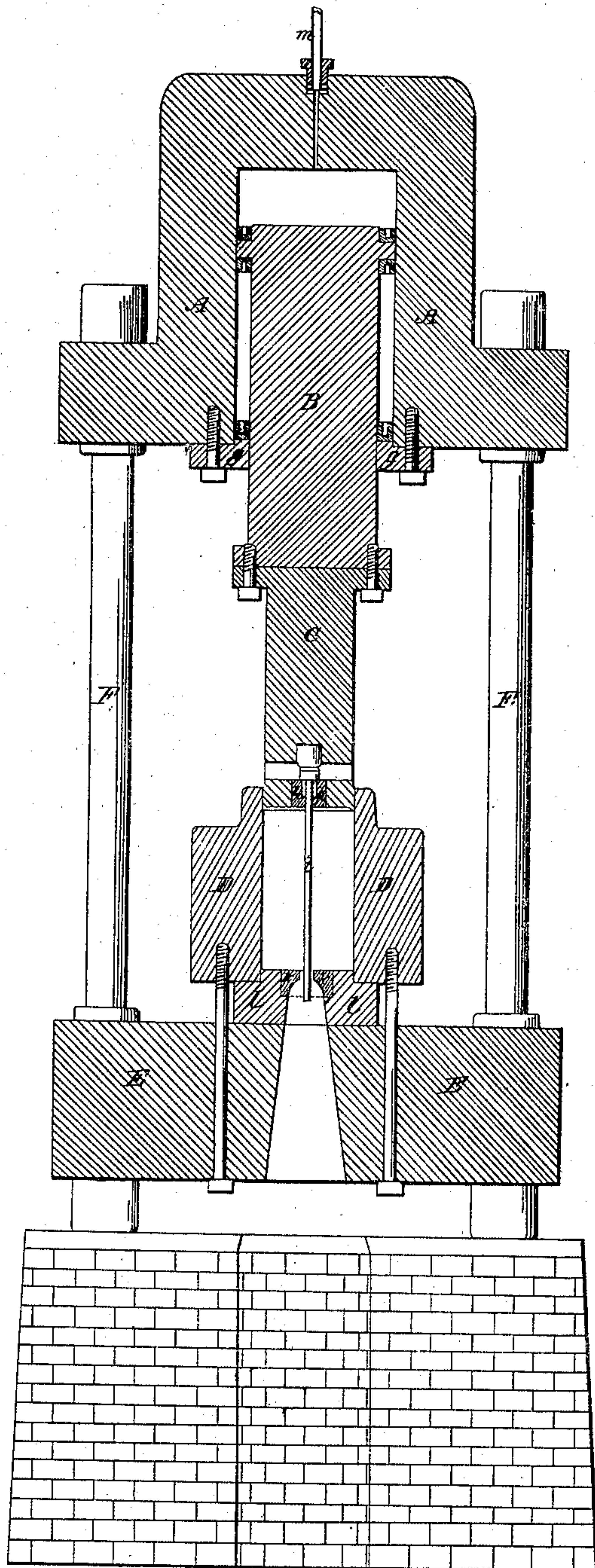


2 Sheets—Sheet 1.

J. ROBERTSON.  
LEAD PIPE MACHINE.

No. 15,620.

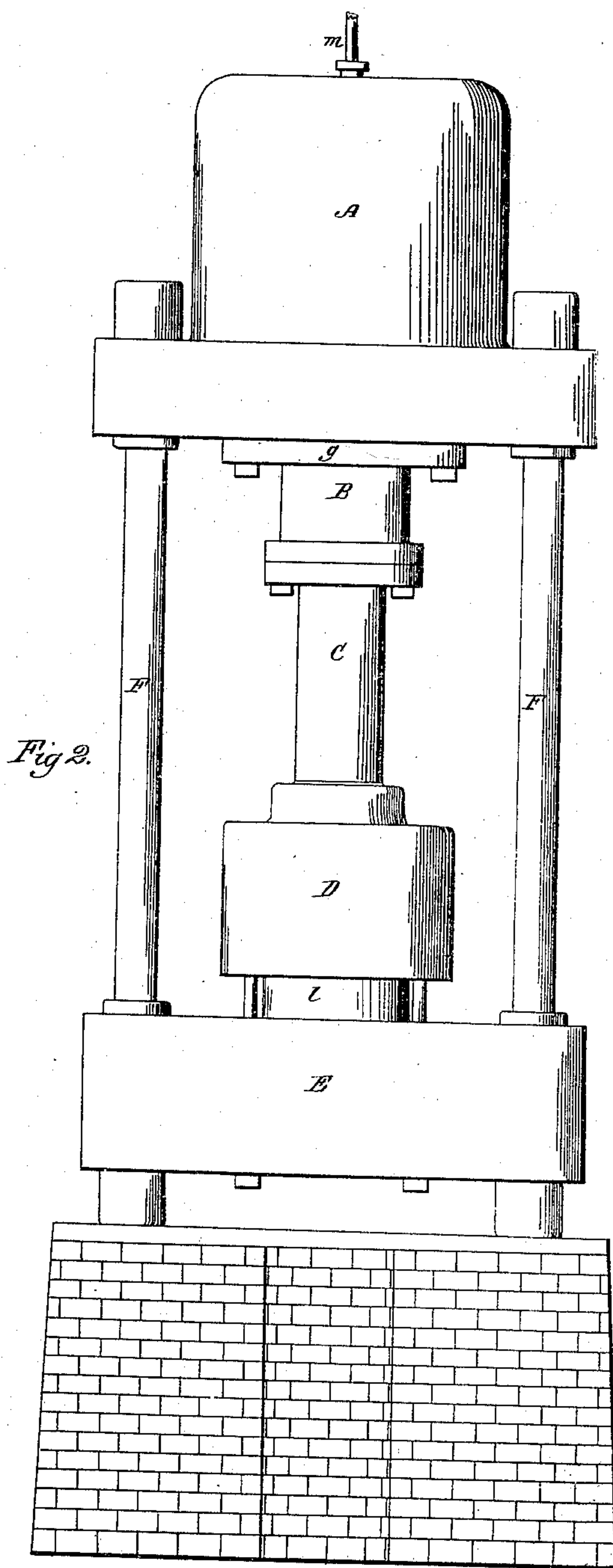
Patented Aug. 26, 1856.



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# UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF BROOKLYN, NEW YORK.

## MAKING LEAD PIPE.

Specification of Letters Patent No. 15,620, dated August 26, 1856.

*To all whom it may concern:*

Be it known that I, JOHN ROBERTSON, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machinery for Making Pipes or Tubes of Lead or other Soft Metal; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making part of this specification.

Figure 1 in No. 1 represents a vertical sectional elevation of the machine for making pipes or tubes. Fig. 2 in No. 2 represents the same machine in an outside elevation.

Like letters indicate like parts in both figures.

My invention of this improvement applies principally to the machinery or apparatus for making or manufacturing pipes or tubes from lead or other metal, capable of being forced by means of great pressure from out of a cylinder or receiver, through or between apertures, dies and cores, when in a solid state, described and set forth in the specification of a patent granted to Thomas Burr in Great Britain.

In the plan described by Thomas Burr, the core is immovably secured to the end of the piston, consequently it moves simultaneously with the piston, through the shrunk uncompressed lead, which is full of holes, caused by the sudden contraction around the inner periphery of the cylinder, likewise around the core; the liability of the core to become bent is only on the first move of the piston, and this same liability continues until the lead is fully compressed into a solid mass and before any pipe is formed. These defects it is the object of my improvement to remedy. In my improvement, the core is not disturbed by the action of the piston until the lead is fully compressed and the pipe begins to issue.

My said improvement may be fully understood by referring to the accompanying drawings and to the explanations contained in this specification.

I use a powerful hydraulic press represented by A A in Fig. 1. B the hydraulic ram, C the piston or lead ram, which is hollowed out in the end, to prevent the lead from escaping between it and the cylinder. D D the cylinder or receiver for holding the lead; E E, the base, to which is secured the

upper part or hydraulic press by means of columns F F. *g, g*, cover for hydraulic press; *h, h*, guide for core in end of piston, which is curved downward toward the core to prevent the lead from escaping between it and the guide. *i*, the core; *k, k*, die; *l, l*, bottom of lead cylinder or die holder; *m* feed pipe for hydraulic press.

The core *i* is held loosely in the end of the piston C by means of the guide *h, h*; there is a small space made in the end of the piston C to receive the head of the core *i* and to allow the piston to move over it a sufficient distance to compress the lead without disturbing the core, as already stated; after the piston has moved sufficiently to compress the lead and the pipe begins to issue from the cylinder the core is no longer liable to become bent or buckled, but has rather a tendency to straighten out and be drawn toward the center of the die, the core then moves with the piston precisely in like manner as in the machine invented by Thomas Burr.

In the operation of this machine the hydraulic ram B is pumped up, carrying the lead piston C with it, high enough to allow the molten lead to be poured into the cylinder or receiver D D. For the first operation there is a ring of brass or other metal or a short piece of lead pipe put in between the core and die and to prevent the lead from running out thereat, the machine being thus arranged, the cylinder or receiver D D being previously heated, is filled with molten lead, which is allowed a few seconds of time to set, having set, the core *i* is firmly held in the partially contracted lead; the piston C being set in motion, moves freely over the core, compressing the lead till the pipe begins to issue, when the core then moves with the piston, the same as already stated until it comes to the bottom of the cylinder; when returning the core *i* being held firmly in the die by means of the compressed lead until the piston C moves up two or three inches, the guide *h, h* then presses against the head of the core and lifts it up with the piston to the proper position to receive the succeeding charge and so on.

I do not claim as my invention any part of the cylinder, nor of the dies, nor of the arrangement thereof in the cylinder, nor the manner of adapting these to the hydraulic press, nor the mode of operation generally, all of which have been substantially de-



scribed in the specifications of the patents of Thomas Burr heretofore referred to but

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

The construction and arrangement of the core *i* with the guide *h*, *h*, in combination

with the piston C for the purpose set forth, as herein described.

JOHN ROBERTSON.

Witnesses:

ANDREW DOW,  
WILLIAM WILBER.