B. TATHAM.

Making Lead Pipe.

No. 8,943. Patented May 11, 1852.

Fig. 3.

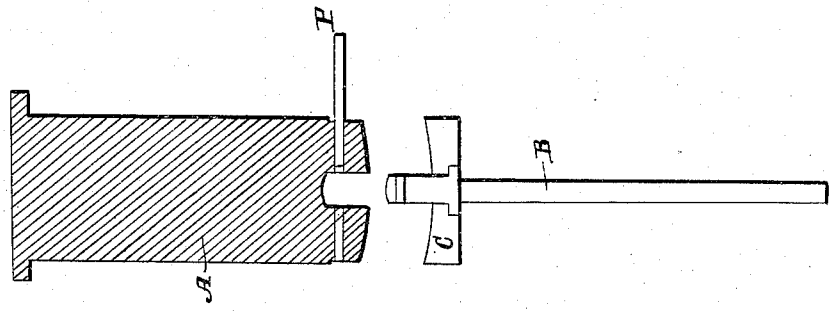


Fig. 2.

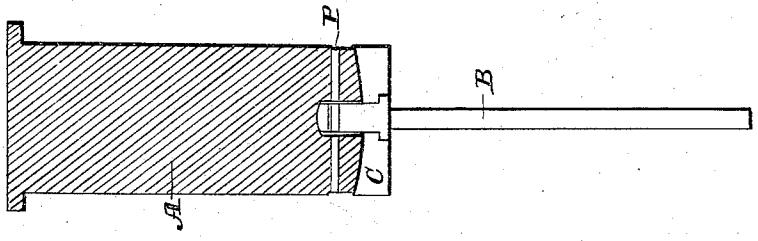
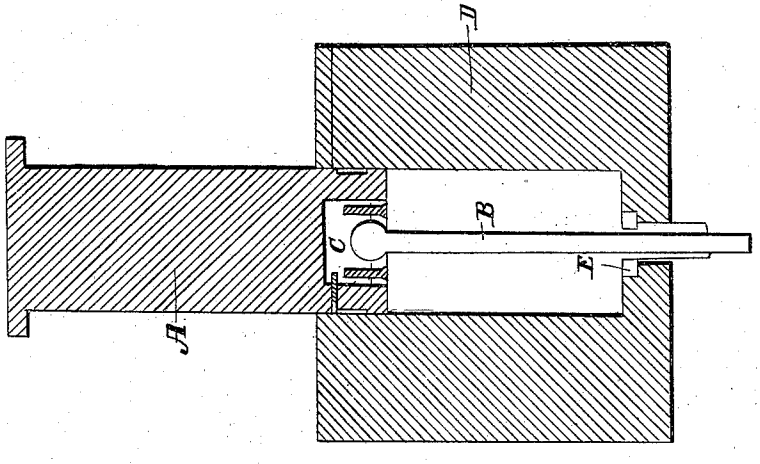


Fig. 1.



Witnesses:

E. B. Tatham

Wm. P. Tatham

Inventor:

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UNITED STATES PATENT OFFICE.

BENJ. TATHAM, OF NEW YORK, N. Y.

LEAD-PIPE MACHINERY.

Specification of Letters Patent No. 8,943, dated May 11, 1852.

To all whom it may concern:

Be it known that I, BENJAMIN TATHAM, of New York, N. Y., have invented a new and useful Improvement in Machinery for Making Pipes and Tubes of Lead and other Substances, and that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

My said invention is an improvement upon the method of making pipes from set or solid lead described in the specification of a patent granted to Thomas Burr, of Shrewsbury, in Shropshire, England, dated the 11th day of April, A.. D. 1820. In Burr's method the machine consists of the following distinct parts (independent of the power required to work it) and each part designed to perform a definite office, namely: 1st, the cylinder to contain the lead which is run into it in the molten state; 2nd, the ram or piston to expel the lead; 3rd, the core attached to the ram to form the caliber of the pipe; 4th, the die to form the exterior of the pipe.

In order to make good pipe (the caliber and exterior thereof concentric) it is indispensable that the core, during the entire operation of the machine, should be kept in a true central position within the aperture of the die. In this respect Burr's machine failed. It was found in practice that the core being firmly attached to the ram and moving with its every motion was liable to become bent, and although pipes could be made by the machine, the thickness of the metal was liable to be irregular. In every other respect, Burr's machine was perfect. The cylinder, the ram and the die performed their respective offices correctly. The difficulty was confined to the operation of the core; but this was so great as to prevent the plan from getting into common use. Several plans have been invented to remedy this defect of Burr's machine. In those which have been successful the arrangement has been such that the ram and the core perform their respective offices independently of each other. The core has been held in a central position by means independent of the ram, so that the latter could perform its office (expel the lead) without moving or disturbing the core.

It has long since been discovered and I have subsequently by a series of experiments substantiated the correctness of the discovery, that when lead, or other soft material, in a homogeneous state, is forced from a cylinder through a small central circular aperture or die, the particles move in a manner very similar to those of a fluid; namely, in lines from the periphery converging toward the center and thence to the central orifice of escape, exerting an equal pressure from all sides, and therefore the motion of the particles has no tendency to force the core from its true central position in the cylinder, but rather to sustain that position. In order therefore to avoid the defect above pointed out in the Burr machine and retain all its advantages I attach the core to the ram by a universal joint or other equivalent connection, so that it may be free to take its position relatively to the die by the pressure of the issuing lead, while at the same time it can be drawn back with the ram and be held in a central position during the reception of a new charge of lead, by the remaining portion of the previous charge.

In the accompanying drawings, Figure 1, is a sectional view of the apparatus in position, and ready for operation. A, is the ram; B, is the core; C, is the box holding the end of the core and with it forming the universal joint. It is secured in its place by a screw pin or otherwise. D is the cylinder. The tint of red color represents the metal.

Fig. 2, is a sectional view of another method of constructing the ram and core, by which the same object can be attained. A is the upper part of the ram; B is the core; C is the face or lower part of the ram. P is a steel pin which connects them all together. This pin fits the hole in the ram exactly, but it is smaller than the hole in the upper end of the core so as to allow of free motion. The upper part of the core is also made smaller than the recess in the ram which receives it, and it is slightly tapered to permit the same free motion.

Fig. 3, shows the parts detached.

The mode of operation so far as refers to forcing out the lead is similar to that described by Thomas Burr.

I do not confine myself to the manner of constructing the parts so long as the

core is connected with or attached to the ram by a joint which will leave free to occupy its central position in the die.

I am aware that it has been attempted to remedy the defects above pointed out in the Burr machine, by casting an ingot of lead to fit the cylinder and with a central hole to receive the core, the said ingot in the solid state being then inserted in the cylinder, the core inserted in the central hole and then the ram applied to express the lead through the die and around the core thus kept in a central position by the ingot of solid lead into which it is previously inserted, but in this method the core is not attached to the ram, and the lead is not cast or run into the cylinder and around the core, nor can it be from the fact that the core is only held by inserting it in the central hole previously, and by other means formed in the ingot of lead. I am aware that the inventor of this machinery describes the core as being forced to the center of the die and retained there by the pressure of the issuing pipe, and therefore I do not claim broadly having the core so that it shall not be affected by the vibrations of the ram.

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

Connecting the core with the ram by means of a universal joint or its equivalent, substantially as specified so that the core shall be retracted with the ram, in combination with the cylinder and die of a machine for making pipe by pressure from lead or other soft metal run into the cylinder and onto the said core in the molten state, substantially as specified, whereby the core is retracted with the ram and held in position while the charge is poured in and during the operation of forming the pipe, the vibrations of the ram do not practically affect the central position of the core in the dies, as herein specified.

BENJN. TATHAM.

Witnesses:
C. Wm. M. Keller,
Cansten Bromer.