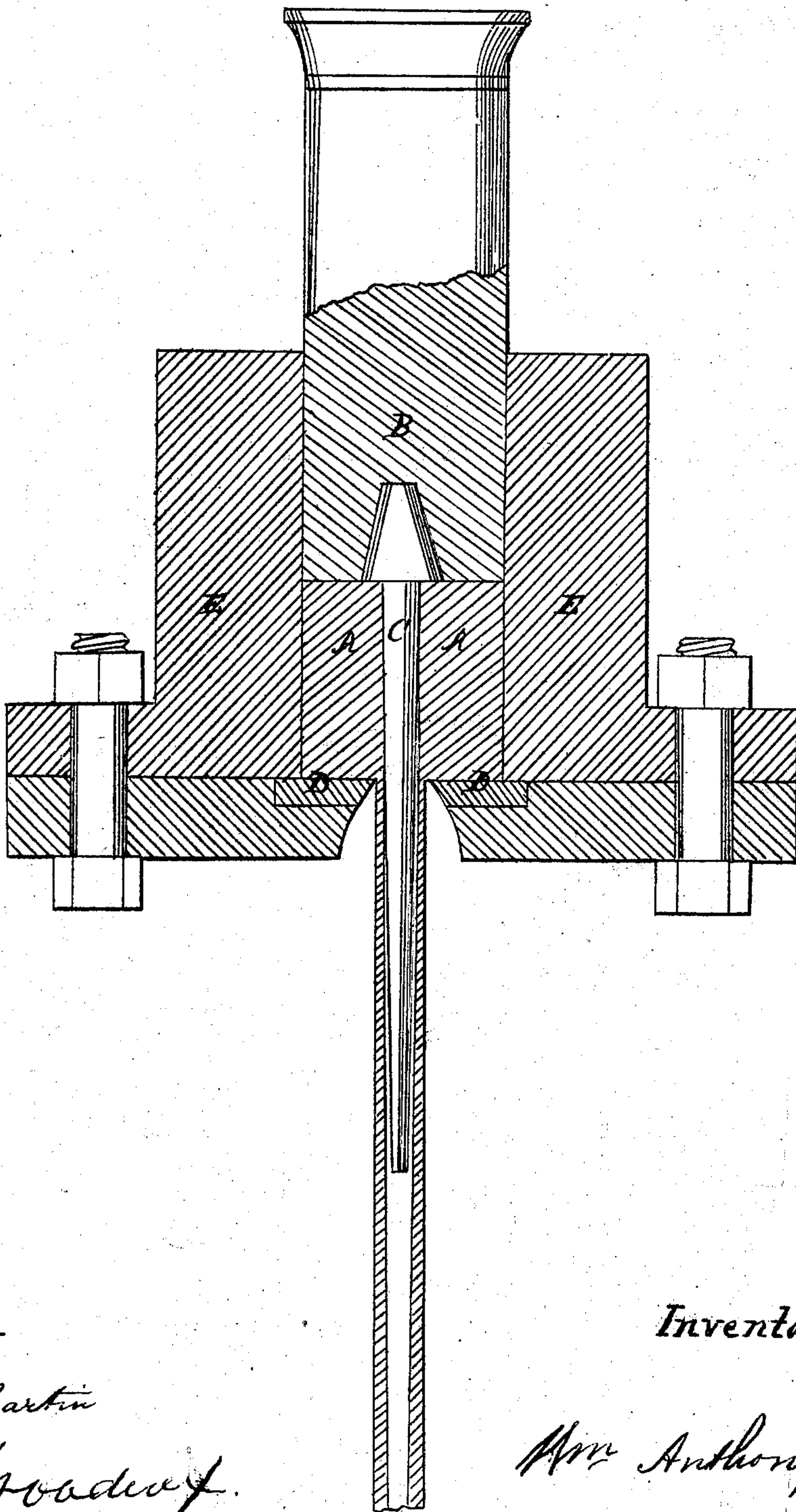


W. A. Shaw.
Manuf. of Tapering Tubes.

No 74.614

Patented Feb. 18. 1868



Witnesses.

John Martin
Amos Woodcock.

Inventor

Wm Anthony Shaw

UNITED STATES PATENT OFFICE.

WILLIAM ANTHONY SHAW, OF NEW YORK, N. Y.

IMPROVED METHOD OF MAKING TAPERING TUBES.

Specification forming part of Letters Patent No. **74,614**, dated February 18, 1868.

To all whom it may concern:

Be it known that I, WILLIAM ANTHONY SHAW, of the city, county, and State of New York, have invented a certain new and useful improvement in the manufacture of pipes or tubes composed of lead or other ductile or plastic metal or material; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, and in which is shown a vertical section through the cylinder, ram, and core or mandrel of a pipe-press with my invention applied thereto.

Metal pipe is made, for the most part, either by pressing, rolling, drawing, casting, or forging, meaning to comprise, in the latter expression, all and only that class of sheet-metal pipe made with a seam, either by riveting, brazing, soldering, welding, or in any other way; and by the expression "cast" I mean only such pipe as is completely formed, when cast, without subsequent rolling, drawing, or pressing to change its form. Now, my invention does not relate to either of these two classes of pipe—that is, the cast or the forged pipe—as above defined, but only to that class of pipe which is formed into the desired shape without a seam by pressing or forcing it through a die, such as lead pipe, tin-lined lead pipe, and, indeed, all sorts of pipe made in this way of ductile metal or other material. This latter class of pipe—say lead pipe, for example, or tin-lined lead pipe—is the pipe chiefly used to convey water or other fluids, and hitherto it has been made parallel along its internal and external diameter, and with the wall thereof of equal thickness through its entire length. To raise water or other fluid, therefore, to a great altitude, this pipe, to sustain the strain at the bottom of the column due to the superincumbent weight thereof, must be, as a whole, much heavier and more expensive than is necessary, for the strain on the pipe at the bottom end of a column of great altitude will be very great, while at the top it will be very light. If, therefore, the wall of the pipe be made thick at the bottom and thin at the top, the column of fluid can be sustained as well, and the pipe, as a whole, can be made much lighter and cheaper.

One of the objects of my invention is to pro-

duce a pressed, rolled, or drawn pipe of this description, and for the purpose above stated; and a second object of my invention is to produce a pipe, as aforesaid, through which more water or other fluid will flow with less friction than through the ordinary pipe or tube with a parallel bore or hole. The first of these objects I accomplish by making the wall of the pipe thicker at one end of the coil or length than at the other; and the second of said objects I accomplish by making the hole through the entire length of the coil of a regular taper or funnel shape. Both of these advantages I can unite in one pipe, or I can separate the features and embody them in separate pipes, as will hereinafter more fully appear.

In the drawing, the retaining-cylinder of a common pipe-press is shown by E, and the ram by B; but, instead of a parallel core or mandrel, I use a taper one, as shown by C, and press the metal or other material through the die D. Now, the size of the die remaining always the same, the external diameter of the pipe will be equal along its whole length; but, the core being taper in form, the hole or bore of the pipe, as the ram advances, will grow continually larger from one end to the other, and the wall of the pipe will grow continually thinner as the charge is worked off. By these means it will be seen that a pipe is formed with a taper or funnel-shaped bore, with a wall constantly decreasing in thickness from the first to the last end thereof, and with an external diameter equal along its entire length, thus uniting the two objects sought after, as above stated, in one pipe.

The form of this pipe may be reversed—that is, the bore may be made parallel and the outside funnel-shaped—either by rolling it between a series of common drawing-rollers or between a pair of rollers geared to recede from and approach to each other, or by drawing it between swages under a steam or atmospheric hammer, or by drawing it between one or more cutting-dies, to cut down and reduce it gradually on the outside from one end to the other; or the pipe may be made funnel-shaped on both the inside and outside thereof by rolling and drawing it, as aforesaid; and various other ways may doubtless be devised for making this style of pipe.

I do not, therefore, intend to confine my

claim to this particular form of machine, as any of the pipe-presses which have substantially the same operation as that here described will answer the purpose; but

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

The manufacture of a pipe funnel-shaped along its interior diameter, and of equal diam-

eter externally, by pressing the material of which the pipe is composed out of a retaining-cylinder through a die, over a taper mandrel, substantially as described.

WM. ANTHONY SHAW.

Witnesses:

PETER D. KENNY,
AMOS BROADNAX.