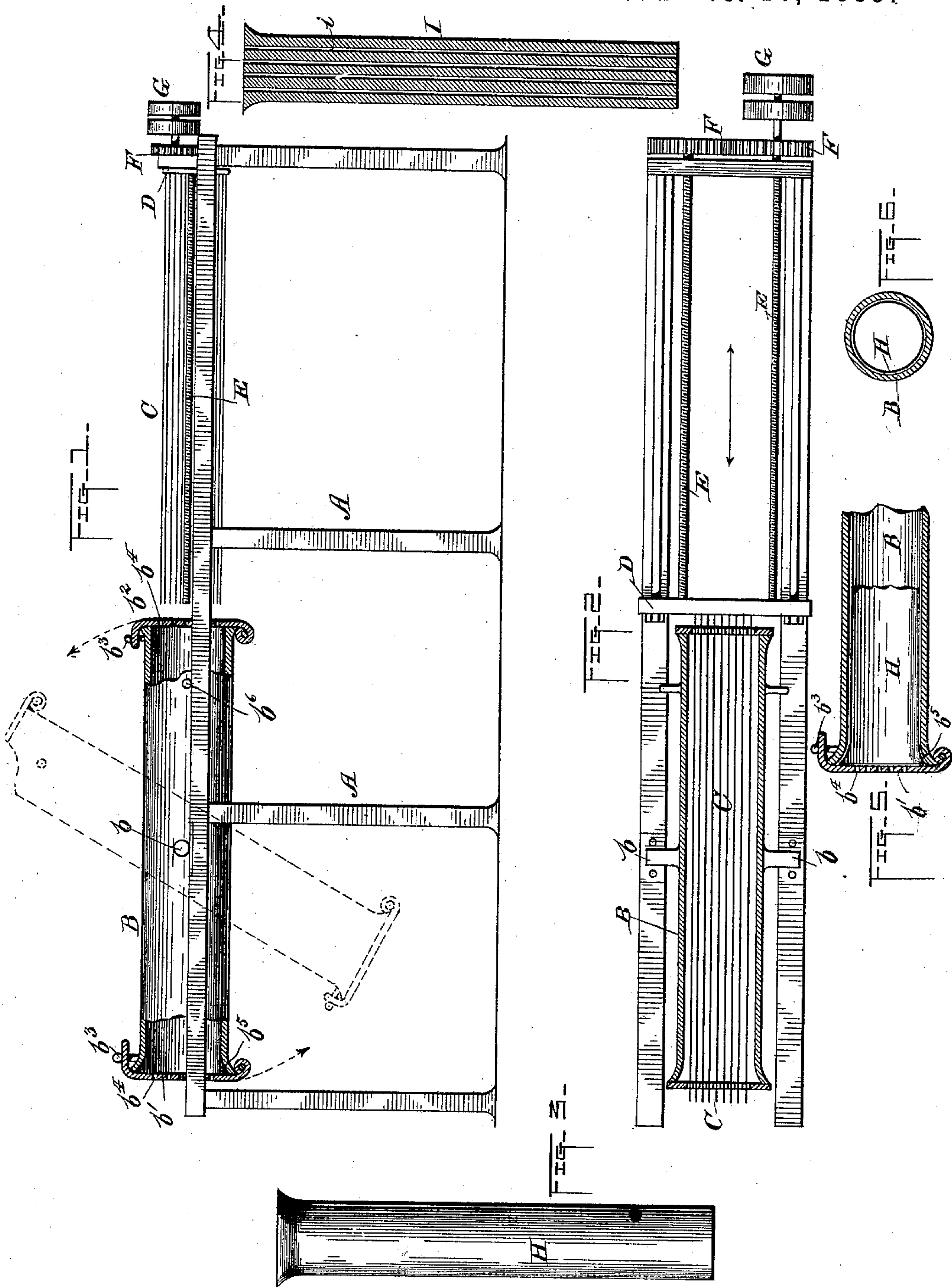


(No Model.)

N. FOUST.
TUYERE MACHINE.

No. 417,164.

Patented Dec. 10, 1889.



Witnesses

Leverance
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Inventor

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By his Attorney

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UNITED STATES PATENT OFFICE.

NATHANIEL FOUST, OF LOCK HAVEN, PENNSYLVANIA, ASSIGNOR TO NEWTON
W. FREDERICKS, OF SAME PLACE.

TUYERE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 417,164, dated December 10, 1889.

Application filed May 25, 1889. Serial No. 312,134. (No model.)

To all whom it may concern.

Be it known that I, NATHANIEL FOUST, a citizen of the United States, residing at Lock Haven, in the county of Clinton and State of Pennsylvania, have invented certain new and useful Improvements in Tuyere-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Figure 1 is a side elevation, partly in section, of the machine. Fig. 2 is a horizontal section of Fig. 1 through the working parts. In this view the needles are shown as driven through the clay in the tuyere-mold. Fig. 3 represents details showing the casing which fits into the mold, and the wire rods which are placed in the tuyere when removed from the mold; Fig. 4, a vertical section of one of the tuyeres. Fig. 5 is a detail in longitudinal section, showing the case placed inside the mold. Fig. 6 is a cross-section of the mold with the case inside.

This invention relates to improvements in machines for making tuyeres; and the novelty consists in the construction of the several parts, their combination, and the machine as an entirety, all as will now be described, as well as pointed out in the claims.

In the accompanying drawings, A denotes any suitable frame-work in which the mold B is adapted to rest and be tilted up and down on the trunnions b , which have suitable bearings in the upper rails or parts of the frame A. This mold has a cap b' and b'' at its respective ends. These caps may be hinged to the mold, as now shown, and be held closed by a catch b^3 ; but I do not wish to be limited to any precise details or mechanism for attaching the caps in position, it being only essential that they shall be so adapted to the mold that it can at either end be easily opened or closed, as desired. Each of these caps is perforated at b^4 .

The needles C are attached at one end to the head D. They are of suitable length to pass entirely through the material in the mold B when the tuyere is being made. They are so fitted into the head D that their opposite ends will when the needles are moved

forward enter the openings b^4 in the caps of the mold. This motion, as well as the return movement, is accomplished by means of the screws E being turned by the gearing F and pulleys G, thereby moving the head D along the screws in any usual or ordinary manner.

In operating this machine the cap on the outer end of the mold having been removed or turned back the sheet-metal case H is inserted, so that its flaring end fits in the flaring end of the mold, and the cap then replaced and secured in position. The mold is then tilted, and the cap at the other or inner end being removed or turned back, clay, cement, or any other material of which the tuyere is to be made is put or forced into it. When the mold has been filled, the cap is returned to its place and the mold turned down into its horizontal position, where it is stopped by the lug b^6 , resting on the top bar of the frame A. At this moment the needles are caused to move forward and are made to pass through the perforations in the caps at that end of the mold (said perforations acting as guides) and also entirely through the material in the mold, as above stated. When the operation has been fully completed, the needles are withdrawn. The mold can now be tilted and the cap at the outer end taken off or turned away, and the case H, with the tuyere I inside, is now taken out of the mold, and after the wires or rods K, each of proper size and length to fill one of said holes, have been placed in the holes i in the tuyere and all of said holes filled it can be set away for drying. When properly dried, the wires are removed and the tuyere removed from the casing and is ready for use.

The advantage of using the wires is that in drying the holes i will be kept straight and true. This is a matter of large importance in this class of devices, because it is an essential point that the air-passages shall be as free and unobstructed as possible.

In the detail of pivoting the mold, also of taking out the tuyere from it, there may be manifold merely mechanical changes over what I have described. The flaring end b^5 of the mold may be located oppositely to what is now shown, so that the tuyere can be removed at the other end of the frame. In

many like minor details changes may be made without departing from the nature or scope of my invention; also, the mold may be used with one or without any cap.

5 What I claim is—

1. In combination with the mold, a metal casing adapted to fit into the same, as and for the purposes set forth.

10 2. The combination of the mold having perforated caps and needles operated, as set forth, with the sheet-metal case II, as and for the purposes set forth.

3. The combination of the frame A with the mold B, having trunnions *b*, and a flaring end *b*⁵, caps *b*¹ and *b*², and the case II, and 15 the needles and operative mechanism, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NATHANIEL FOUST.

Witnesses:

B. T. GEARY,

J. F. FREDERICKS.