

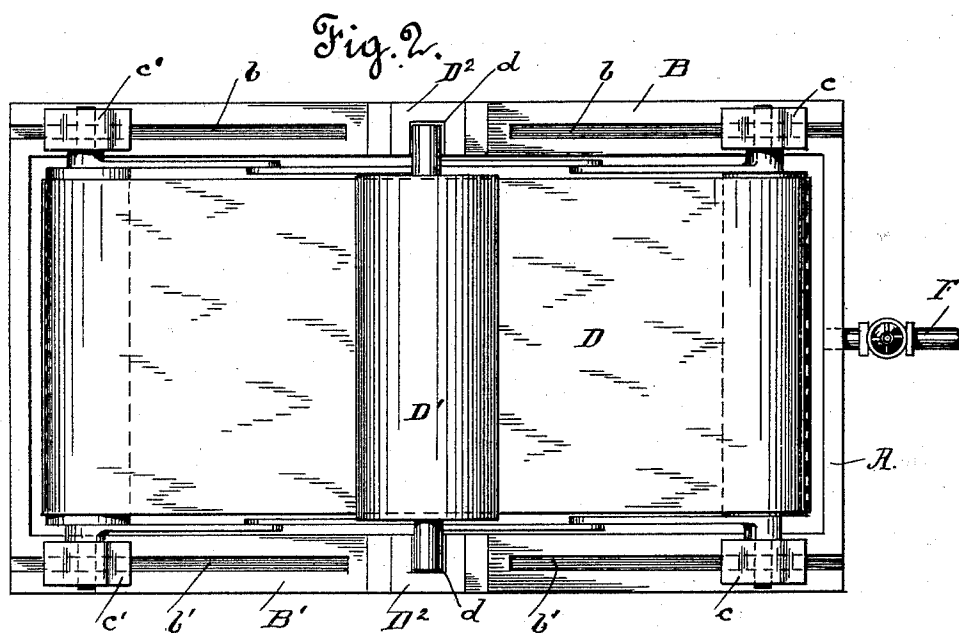
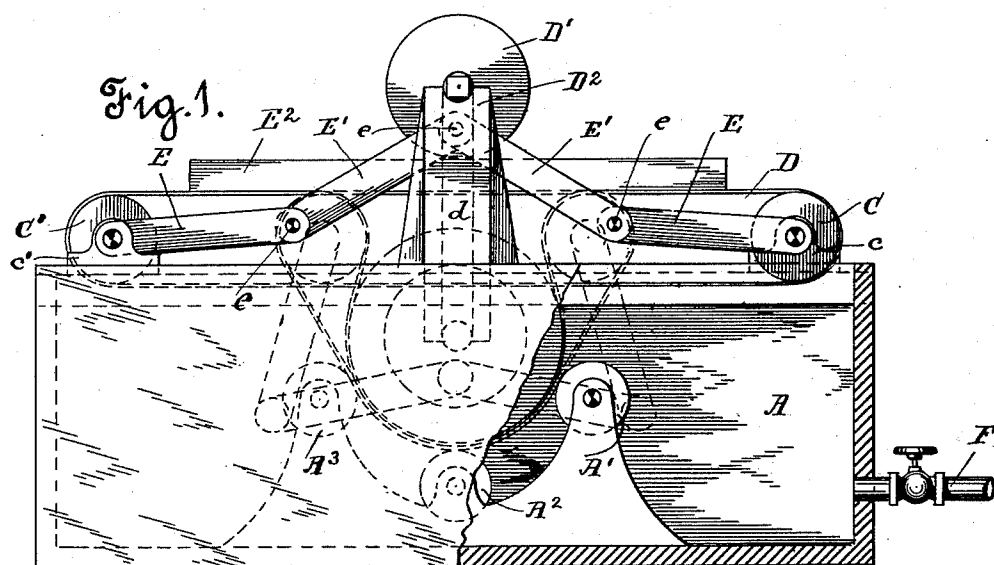
(No Model.)

2 Sheets—Sheet 1.

W. A. TIPSON.  
PIPE MAKING MACHINE.

No. 485,242.

Patented Nov. 1, 1892.



Witnesses.

*H. Houtenwerdt.*

*Geo. S. Brown*

Inventor.

*William A. Tipson*

*by W. A. Tipson*  
*att'y*



# UNITED STATES PATENT OFFICE.

WILLIAM A. TIPSON, OF SAN FRANCISCO, CALIFORNIA.

## PIPE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 485,242, dated November 1, 1892.

Application filed April 11, 1892. Serial No. 428,631. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. TIPSON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Pipe-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly ap-  
10  
20  
25

pertains to make, use, and practice the same. My invention has relation to certain new and useful improvements in pipe-making machinery, which consists in the arrangement of parts and details of construction, as will be hereinafter more fully set forth in the drawings, described, and pointed out in the specification.

Heretofore it has been the practice to construct or form pipes upon a mandrel or other former by winding or rolling the pipe composition under pressure as fed from the hopper or suitable machinery; but pipes when thus constructed are easily destroyed by reason of series of air-bubbles formed therein, due to the uneven pressure upon the composition as formed upon the mandrel.

The object of my invention is to first make what I term a "primary" formation of the pipe—that is to say, rolling the composition into rough formation of a pipe and thence removing the partially-formed pipe and subjecting it to heavy internal pressure in order to thoroughly compact the walls of the same, so that when allowed to cool or harden I will be provided with a pipe free from air-bubbles or weaknesses of any kind whatsoever.

Referring to the drawings forming a part of this application, wherein similar letters of reference are used to denote corresponding parts throughout the entire specification and several views, Figure 1 is a side elevation, partly broken away, of the steam-heating box or chest for the formation of the primary pipe-roll; Fig. 2, a top plan thereof; Fig. 3, a detail view of the collapsible former or pressure-block with casing thereof removed; Fig. 4, a cross-sectional view of the collapsible forming-block with a casing secured there-  
40  
45  
50

secured within said mold; Fig. 6, an end view of the pipe-mold.

The letter A is used to indicate the steam-  
55  
60  
65  
70  
75  
80

chest of the primary former, within which is secured bearing-rolls A' A<sup>2</sup> A<sup>3</sup>, and which is provided with the top guide-pieces B B', and cut therein guideway or passages b b'. Upon the top of said guide-pieces work or slide rolls C C', which rotate within the sliding bearing-boxes c c'. These boxes work longitudinally with the steam-chest and slide within the guideways b b'. Around rollers C C' works endless traveling belt D. The rolls C C' are secured to the vertically-moving pressure-roll D' by means of the fulcrum-arms E E', which are movably connected one to the other by means of bolts or pins e. (Clearly shown in Fig. 1.) The normal position of the roller D' is shown in the full lines, Fig. 1, while the position assumed by the said roller when pressing or forming the pipe in this primary roller is indicated by the dotted lines. Vertically-moving roll D' works within the guideways d, formed by the standards D<sup>2</sup>, projecting upwardly from the steam chest or box. As shown in Fig. 1, there exists between the surface of roll D' and the upper face of belt D a distance equal to the thickness of the sheet from which the pipe is to be made.

In order to provide against the pipe when formed adhering to the surface of the endless traveling belt, I oil or otherwise grease the same, so as to permit of the easy removal of the partially-formed pipe therefrom. Upon the endless traveling belt is placed a sheet of pipe composition, (indicated by E<sup>2</sup>), and thence moved beneath the roll D'.

In order to supply the necessary heat or steam in the chest A, I provide steam-inlet pipe F, leading into one end thereof. The steam introduced into said chest serves to soften the hardened layer of pipe composition located upon the surface of the endless traveling belt, and as the same softens the pressure of roll D' will cause the same to gradually move downward within the steam-chest and move around the surface of the pressure-roll D'. As the roll D' moves downward within the chest, carrying thereby the pipe-layer, the rollers or rolls C C' are gradually drawn toward each other until the endless traveling belt has reached its full down-  
90  
95  
100

ward distance or travel, as shown by dotted lines in Fig. 1. When in this position, the rolls  $A'$ ,  $A^2$ , and  $A^3$  bear upon the surface of the formed pipe. When the pressure-roll has been left in this position—that is shown by dotted lines in Fig. 1—to allow of the meeting of the ends of the pipe-layer, so as to somewhat harden in order to thoroughly unite together, the pressure-roll is then up-  
 10 lifted and the partially-formed pipe removed therefrom and subjected to the pressure of collapsible forming-block, in order to thoroughly compress the same to the thickness necessary to form a hardened wall for the  
 15 pipe. When the partially-formed pipe has been removed from the pressure-roll, it is placed within the pipe-former  $F'$ , which consists of two sections  $F^2$   $F^3$ , hinged together in any suitable manner, so as to allow of the  
 20 same being readily opened to receive the partially-formed pipe, and which are secured together by means of coupling  $f$ . (Fully shown in Fig. 6.) Prior to the introduction of the partially-formed pipe, however, to the pipe-  
 25 former I introduce within the same the collapsible pressure-block, which consists of the right and left hand screw-threaded stem  $G$ , provided with a series of wedge-shaped pressure-blocks  $G'$ . Around these blocks I locate  
 30 a series of removable wall-blocks  $G^2$ , thus forming what may be termed a "removable wooden or metal wall." In order, however, to provide a smooth uninterrupted surface to the pressure-blocks, I secure around the same  
 35 the split casing  $H$ , Fig. 4, which may be made of tin or other metal, as desired. As before stated, this pressure device or block is introduced into the partially-formed pipe, and thence the same—that is, the pipe—is secured  
 40 and locked within the pipe-former. The whole is then introduced into the steam-chest  $H'$ . (Clearly shown in Fig. 5.) When thus secured within the steam-chest, the wall of the partially-formed pipe is thoroughly compressed by  
 45 means of the hand-screw  $H^2$ , secured to the outer end of the screw-threaded stem  $G$ . As the hand-screw is turned, the wedge-shaped blocks are moved downward upon the screw-threaded stem, causing wall-blocks  $G^2$  to move outward,  
 50 which necessarily forces the split ring or casing  $H$  against the inner wall of the pipe, and thus forcing or compacting the same firmly within pipe-former  $F'$ , inasmuch as the outer walls of the pipe bear against the inner wall of the  
 55 former-sections. The pressure upon the pipe is regulated by the distance which the pressure-blocks  $G'$  are moved upon screw-threaded stem  $G$ . The ends of the pipe-former  $F'$  are made such a shape as to provide coupling  
 60 ends for the pipe when formed, which is clearly shown at  $h$   $h'$ . However, in order to force the pipe material to conform to such a shape

it is necessary that the ends thereof when secured within the former be built out or upon.

It will be noticed by my improved pressure-  
 65 blocks I am enabled to force out any and all air which may be contained within the pipe material. By reference to Fig. 5 it will be observed that steam or superheated air is supplied to chest  $H'$  through the medium of inlet-pipe  $I$ . This provision for inlet of steam  
 70 is made in order to soften the partially-formed pipe secured within the pipe-former in case the same should have become hardened prior to being secured therein, for the purpose of allowing the pressure of the movable blocks  
 75 the more readily to act upon the retained pipe material. After the pipe has been sufficiently compressed within the former the adjustable pressure-blocks, wall, and casing may  
 80 be readily removed from within the pipe by unscrewing the screw-threaded stem—that is, by working the same backward—which releases the pressure of the wedge-shaped blocks from the pressure-walls and causes the col-  
 85 lapsing of the casing and walls, consequently causing the whole to fall together, so as to readily permit of the withdrawal thereof from within the pipe. The former is thence removed from within the steam-chest, opened,  
 90 and the collapsing pressure-blocks removed from within the pipe, and the pipe removed from within the former and laid aside to cool and harden.

While I have preferred to operate my adjustable pressure-blocks by means of a hand-wheel, it is obvious that the same may be  
 95 worked by any suitable machinery.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent of the United States, is—  
 100

1. In a pipe-making machine, the combination, with the heating-chest, of the longitudinal traveling rollers, endless traveling belt  
 105 secured thereover, vertically-moving pressure-roll, and the connecting mechanism between the pressure-roll and longitudinally-traveling rollers.

2. In a pipe-making machine, the combination, with the heating-chest, of supporting-rolls  
 110 located therein, longitudinal guide-pieces secured thereto, movable bearing-boxes working within guideways, rollers rotating within bearing-boxes, endless belt working thereover,  
 115 vertically-traveling pressure-roll, and mechanism between pressure-roll and longitudinally-traveling rollers.

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

WILLIAM A. TIPSON.

Witnesses:

J. W. KEYS,  
 N. A. ACKER.