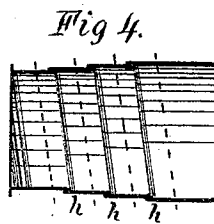
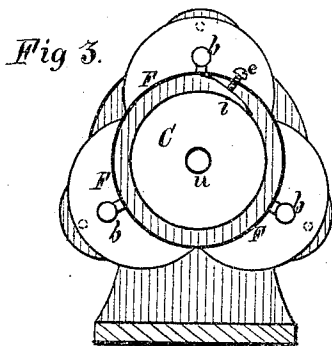
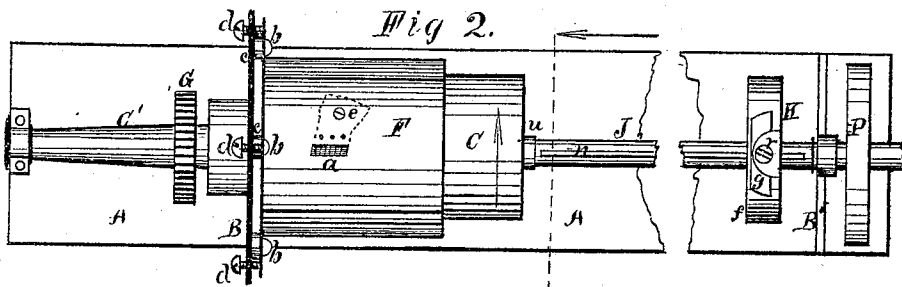
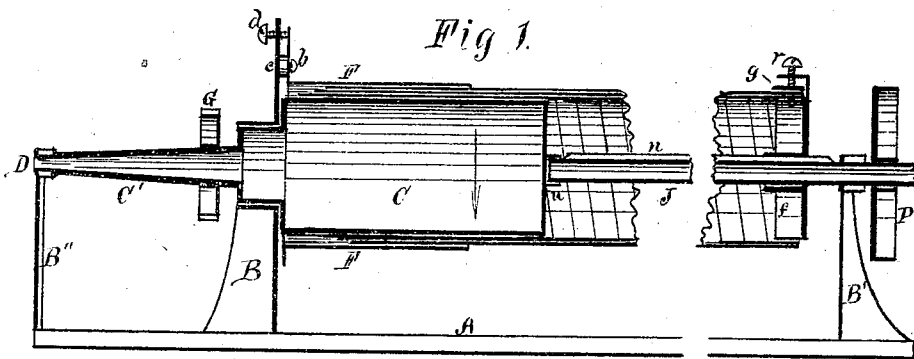


J. S. PATRIC.

Machines for Making Laminated Pipe for Gas, Water, &c.

No. 138,814.

Patented May 13, 1873.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN S. PATRIC, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN MACHINES FOR MAKING LAMINATED PIPE FOR GAS, WATER, &c.

Specification forming part of Letters Patent No. **138,814**, dated May 13, 1873; application filed January 13, 1873.

To all whom it may concern:

Be it known that I, JOHN S. PATRIC, of Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Machines for Making Laminated Pipe for Gas, Water, &c., of which the following is a specification:

This invention relates to the manufacture of the pipe patented by me in 1865, and which is known as "composition" or "laminated pipe" for water, gas, &c. Its nature consists more essentially in the employment of a machine for winding the lamina or splints, which form the body of the pipe, of a peculiar construction, whereby the desired number of layers of splints are wound on and the pipe completed at one operation, and of any desired length. It also consists in the employment of a short hollow forming-mandrel, which may rotate or be fixed, and is heated by the introduction of steam or hot air. It also further consists in the employment of a rotary clamping-head, so arranged upon its driving-shaft as to be permitted to recede to compensate for the winding on of the splints, as more fully hereinafter described.

In the accompanying drawing, Figure 1 is a vertical longitudinal sectional view of my invention, representing a portion of the formed pipe in the machine. Fig. 2 is a top or plan view of the same without the pipe. Fig. 3 is an end elevation of the left end of the machine, looking in the direction of the arrow in Fig. 2. Fig. 4 is a modification of the jacket segments.

The working parts of the machine are supported upon a suitable base, A, in pillow-blocks B, B', and B''. The rotary hollow core C is provided with the hollow supporting-arm C', and is journaled in blocks B and B''. It may be rotated by power communicated through the gear G. Steam or hot air is introduced through any ordinary swiveled coupling at D. The outer or compressor jacket is fixed to the pillow-block B. It may be composed of three or more segments, F. They are provided internally with a series of ribs to direct or gage the "lead" of the splints as they are being laid or wound. The first rib to the left should rest upon the periphery of the core C, and the next succeeding one should lack the thickness

of the splint of projecting as far from the inner face of the jacket, and each succeeding one should be as much less in depth as its preceding one. At each opening *a* for the introduction of the splints, I provide a spring-presser, *i*, to insure a proper and smooth laying of the splints. The tension of said springs may be regulated by set-screws *e*. Each segment of the jacket may be provided with one or more splint-openings *a*, according to the width of the splints to be used. These openings and the internal ribs should be arranged so as to cause each successive layer of the splints to overlap or break joints with the preceding one, as indicated in Fig. 4, by the dotted lines. The segments of the jacket may be clamped to the pillow-blocks B by suitable clutches *b*, with an intervening cushion, *c*, of rubber or other suitable means. Set screws *d* may be used to prevent the outer end of the segments from being pressed outward from any cause. I provide a socket, *u*, on the end of the core, for the support of one end of the hollow shaft J, the opposite end of which is sustained in the pillow-block B'. The clamping-head H is fitted to slide freely upon this shaft J, and is made to revolve with it by the spline *n*. It is provided with two or more clamping segments or followers *g*. The shaft J is driven by a pulley, P, or a gear may be used. It is perforated at the inner end for the introduction of cold water within the formed pipe to hasten the cooling of the asphaltum or cement. It might be desirable to make the segments F of the outer case or jacket as shown in Fig. 4, the gradations in the diameter being made to correspond with the thickness of the splints to be used for the pipe. The shoulders *h* formed by the gradations would constitute the guide for laying the splints. The cement-tank may be placed beneath the former, or at any other convenient locality.

The operation is as follows: A short section of pipe is first made by hand and placed upon the core C. The end of the splints to form the several layers are then inserted and attached to its respective section of the pipe already in the machine. The splints should pass from the reels, upon which they have been previously wound, through a tank of hot cement. The core is heated by steam, prefera-

bly, and is rotated in the direction of the arrow. As the pipe is formed it is forced off from the end of the core. The head H is slid to the left, so as to receive the outer end of the pipe between the rim *f* and followers *g*, where it is firmly secured by the clamping-screws *r*, and the head is thus made to sustain that end of the pipe until it reaches the limit of the hollow shaft J, which may be of such length as is desired for the pipe. Cold water may be injected into the pipe, to cool it as it leaves the end of the core, if desired, through the hollow shaft J. This shaft may be driven by power a little faster than the core, if necessary, so as to secure the close laying of the edge of splints against those already in position; or it may be found desirable to allow the core to be fixed, and effect the forming of the pipe and its discharge from the mold solely by means of the revolving-head H. This would very much simplify and cheapen the machine. When the desired length of pipe is attained, it is cut off and removed. Instead of the pipe J and head H, a series of external supporting and conveying rollers may be used in two rows under the pipe. Their axes being at right angles to the lead of the splints, they would permit of the longitudinal travel of the forming pipe as well as its rotation. The core C may be slightly conical to render easy the discharge of the pipe therefrom. It might be desirable to rotate the jacket around a fixed core, which would probably be quite as practical. The core may be heated by hot water or heated air, if desired.

What I claim as my invention is—

1. In a machine for making pipe formed of several layers of splints wound spirally, the revolving core, in combination with a fixed or stationary jacket, or vice versa, for the purposes set forth.

2. In laminated-pipe winding-machines, either a revolving or a fixed forming-core, constructed to discharge continuously the built-up pipe, and be heated by steam or other suitable means, as described.

3. In combination with the hollow heating and forming core C, or its equivalent, the hollow shaft J for ejecting cold water into the built-up pipe, for the purpose of hastening the cooling of the same as fast as it is forced off from the end of the core.

4. The devices, constructed and arranged to operate substantially as shown and described, for sustaining the outer end of the laminated pipe while it is being formed.

5. The rotary clamping and supporting head H, or its equivalent, in combination with the core C and governing-jacket F, whether either or both are fixed or rotary, for the purposes set forth.

6. The adjustable presser or layer spring *i*, in combination with the core C, constructed and arranged to operate substantially in the manner and for the purposes shown and described.

JOHN S. PATRIC.

Witnesses:

WM. S. LOUGHBOROUGH,
WM. M. BATES.