

A. MULLER.

Machines for Making Drain-Pipes, &c.

No. 142,930.

Patented September 16, 1873.

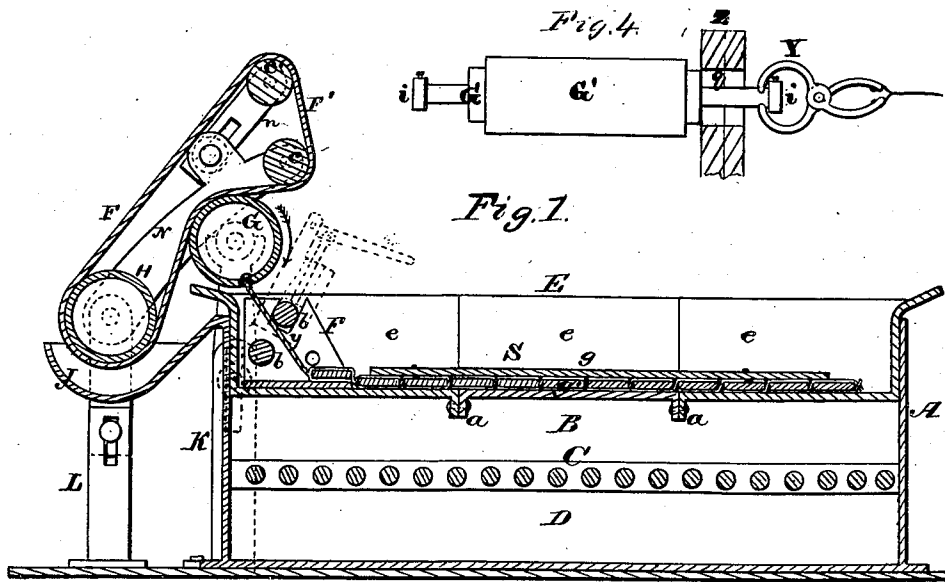


Fig. 1.

Fig. 4.

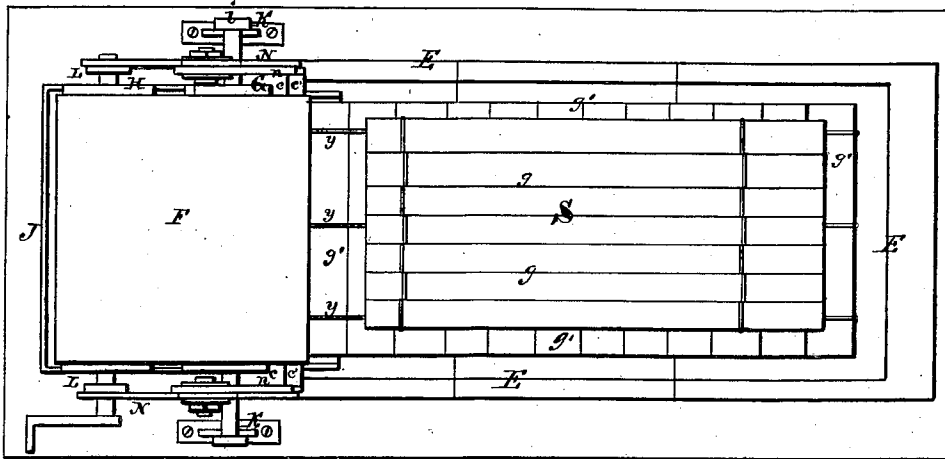
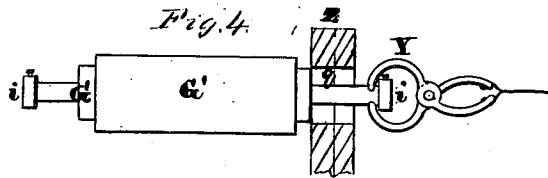


Fig. 2.

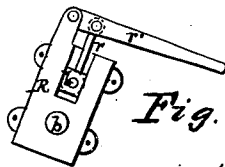


Fig. 3. Inventor.

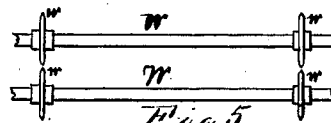


Fig. 5.

Witnesses.
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UNITED STATES PATENT OFFICE.

ADOLPH MÜLLER, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR MAKING DRAIN-PIPES, &c.

Specification forming part of Letters Patent No. **142,930**, dated September 16, 1873; application filed August 21, 1873.

To all whom it may concern:

Be it known that I, ADOLPH MÜLLER, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and valuable Improvement in Machine for Making Drain-Pipes, &c.; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a vertical longitudinal sectional view of the machine. Fig. 2 is a plan view of the same. Figs. 3, 4, and 5 are details.

This invention relates to certain new and useful improvements in the manufacture of wooden pipes from veneers, wherein sheets of thin wooden strips or veneers are treated with bitumen, pitch, tar, or other suitable material possessing adhesive properties, and then wound upon a mandrel, so as to form a pipe of any desired thickness, diameter, or length, composed of alternate layers of the adhesive material and wood. The nature of my invention consists in certain improvements in machines for manufacturing combined wooden and asphalt pipes, which improvements are hereinafter particularly specified and claimed.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawings, A represents four upright walls constituting a furnace, which may be of any suitable length or width. In this furnace, B is the fire-chamber, C the grate, and D the ash-pit, access to which may be had by means of any desired number of doors. Above the fire-chamber B is a boiler or pan, E, which rests by its flanges upon the top of the furnace. This boiler is composed of several transverse sections *e e e*, the united edges of which are flanged externally and secured tightly together by means of bolts and nuts. Should any one or more of these boiler-sections burn out before another the useless one can be readily detached and a new section substituted. I thus greatly economize in the

cost of the boiler or pan E. The bottom of the boiler or pan E is flat and horizontal, and supports the sheets S of veneers of which the pipes are produced. At one end of this boiler or pan E I apply movable bearings F, for journaling the ends of rolling bars *b b*, between or around which the sheets of veneer strips are drawn on their way to the pipe-forming mandrel G. The upper roller *b* may have its end bearings in adjustable blocks which are movable in brackets R, by means of rods *r* and levers *r'*, as indicated in dotted lines, Fig. 1, and in full lines, Fig. 3. By this device the upper roller can be adjusted as may be found necessary. The object of these rollers *b* is to clear the surplus bitumen from the sides of the sheets S, and also to leave that which adheres to the sheets smooth and of uniform thickness. Above the smoothing and clearing rollers just described is the mandrel G, the external diameter of which corresponds to the internal diameter of the pipe to be formed on it. This mandrel is a right cylinder, hollow, and is journaled in the upper forked end of vertically-adjustable standard K. The mandrel is removable from its standards, and it is prevented from receiving end play by means of collars *i i* on the extremities of its journals. Hooks or other suitable attachments are applied into the periphery of the mandrel G at proper distances apart, for the purpose of fastening cords, wires, or other suitable means to the mandrel, which connect the veneer sheets thereto, as shown in Fig. 1. It is by these flexible attachments that the veneer sheets are drawn out of the bitumen-bath and started to wind around the mandrel. F represents a flexible endless band, which is made of any suitable material, and which is passed around three rollers, H *c c'*, shown in Fig. 1. The largest roller H has its journal bearing in the upper ends of vertically-adjustable standards E, and on the journals of this roller H are applied loosely two arms, N, which afford bearings for the rollers *c'*, and also two adjustable arms, *n*, which carry the roller *c*. By adjusting the arms *n* the endless band F can be given any desired degree of tension, and more or less of the band can be

made to impinge on the circumference of the mandrel G. By having the two small pulley-rollers *c c'* applied to arms N, which are pivoted as described, the band can be thrown back free from the mandrel, when it is desired to remove it from its bearings and adjust another in its place. Beneath the large band-roller H, and secured to the upper adjustable sections of the standard L, is a pan or trough, J, for containing water or other suitable liquid, into which the band F dips as it rolls around. This is for the purpose of moistening the band and preventing adhesion of bitumen to it.

The sheets of veneers are, respectively, composed of transverse and longitudinal layers *g g'*, of suitable length and width. The strips composing each layer are sewed together after the manner of making veneer blinds. The two layers are then sewed together to form the sheet.

In the drawing, the top layer of longitudinal strips is of less width and length than the lower layer, but this need not be so, except at the end of the sheets where it is desired to form closely-lapped joints, and leave the pipes at these joints comparatively smooth.

All the veneer strips are subjected to a solution of bitumen long enough to have it permeate the substance of the wood thoroughly; and this not only adds greater solidity and strength to the pipes, but also prevents the wood from decay. This latter treatment of the veneers may be performed in the same boiler A in which the sheets are subsequently coated.

As the sheets of veneers are drawn out of the bath of bitumen in the boiler A, and wound upon the mandrel G, they are left coated on both sides, so that the pipes, when formed, present, in cross-section, a layer of wood and a layer of bitumen, alternating with each other.

One of the principal features of my invention is the endless band F, which covers a large portion of the mandrel and the sheets being wound around it; and, by the weight of the small rollers *c c'*, and the draft of this band and the material, the latter is smoothly and compactly wound layer upon layer, thus producing solid pipes, possessing great strength and rigidity, with smooth external surfaces.

If desired, the pressure of the band upon the material being wound upon it may be augmented to any degree by attaching weights to the swinging arms N.

During the rolling operation the free ends of the swinging arms automatically rise as the thickness of the material increases on the mandrel, so that they always act with a pressure which is nearly uniform.

It is proper for me to state here that manual or other convenient power may be applied to the band-roller H for turning the band, as

indicated by the direction of the arrow in Fig. 1. After the pipes have set on the mandrel they are cut into proper lengths, trimmed, and removed therefrom ready for use.

Before commencing the operation of rolling the pipes the mandrel G is coated with a substance which will prevent the pipes adhering to it. For this purpose I prefer to employ pulverized soap-stone mixed with water to a pasty consistence. With this I coat the mandrel thoroughly, by using either the hands or a brush.

After a pipe, G', is formed, as herein set forth, the mandrel is removable from its bearings, and the pipe is drawn from it. This is done by means of a stripper, Z, which I prefer to make of the wood known as white ash, and which is rigidly confined in a stanchion. Through this stripper a hole, *g*, is made, which is slightly larger in diameter than the mandrel, as shown in Fig. 4. By means of a pair of tongs, Y, one of the journals of the mandrel G is grasped, and the latter is drawn through the said stripper. Previous to stripping the pipe G' from its mandrel the ends of the pipe are trimmed squarely. This I do by pressing the mandrel, with the pipe on it, against circular cutters *m m* keyed on parallel shafts W, and mounted in suitable bearings; and then, rotating the mandrel, cutters *w w* may be arranged on the shafts W W at any desired distance apart, according to the required length of the sections; but there should be cutters so arranged as to trim the ends of the pipe on the mandrel in addition to cutters for dividing the pipe into sections.

If it is desired to have the pipes nearly the full length of the mandrel used then intermediate cutters will not be necessary.

After the pipes are removed from the mandrel one end of each pipe is provided with a coupling-sleeve made of the same material and in the same manner as the pipe. This sleeve may be six inches long, more or less; and it should be of such diameter as to slip over the pipe on which it is applied. The manner of securing a sleeve on a section is to heat the end of the pipe and the interior of the sleeve; then to force the sleeve half its length over the end of the pipe by suitable pressure.

When the asphaltum cools a permanently close joint will be formed. Each section of the pipe is thus prepared with a sleeve before laying it down in the ground.

In laying down the sections of pipes the ends without the sleeves are saturated with benzine or other suitable inflammable fluid, and set on fire, and then forced into the sleeves. While the asphaltum is soft the joint is completed by smoothing it with a hot iron.

I claim—

1. The endless self-adjusting belt F, combined with, and impinging upon, the mandrel G on which the coated veneer sheets are wound to form pipes, substantially as described.

2. The flexible connections *y'* between the

mandrel G and ends of the sheets of veneer for drawing the latter out of the boiler or pan E at the commencement of forming the pipes, substantially as described.

3. In a machine for manufacturing wooden pipe, the pan or trough J for containing a fluid to moisten the exterior surface of belt F, and preventing the adhesion of the bitumen thereto, arranged and combined substantially as described.

4. In a machine for manufacturing combined

wood and asphalt pipe, the troughs J, in combination with the belt F, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

ADOLPH MÜLLER.

Witnesses:

D. D. KANE,
PHIL. C. MASI.