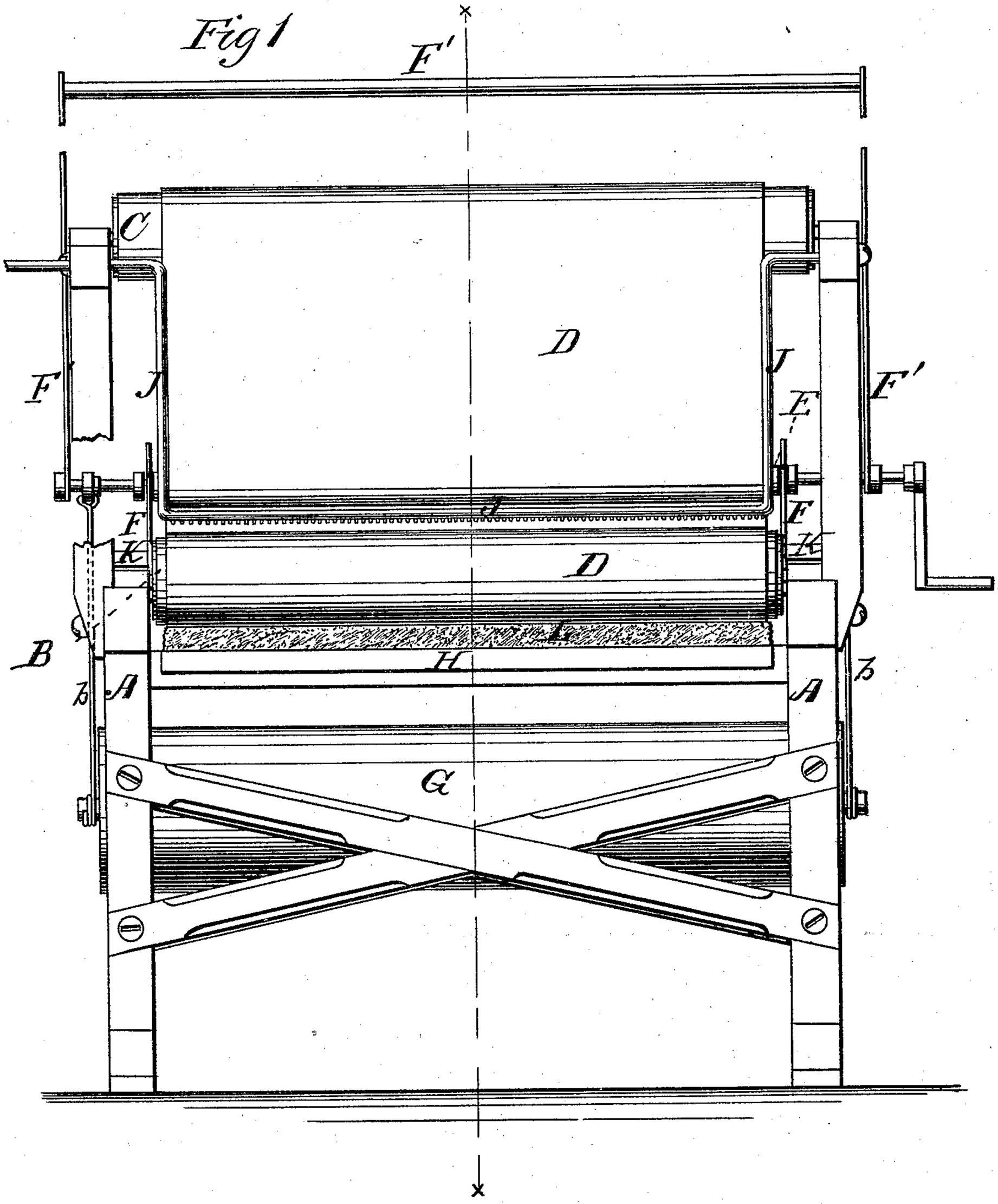
2 Sheets—Sheet 1.

R. M. C. BROAS.

MACHINE AND PROCESS FOR MAKING VENEER PIPE.

No. 171,347. Patented Dec. 21, 1875.

Fig 1



WITNESSES

Robert Everett

Walter C. Mason

INVENTOR

Richard M. C. Broas.

Chipman Hosmer & Co.

ATTORNEYS

2 Sheets—Sheet 2.

R. M. C. BROAS.

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Fig 2

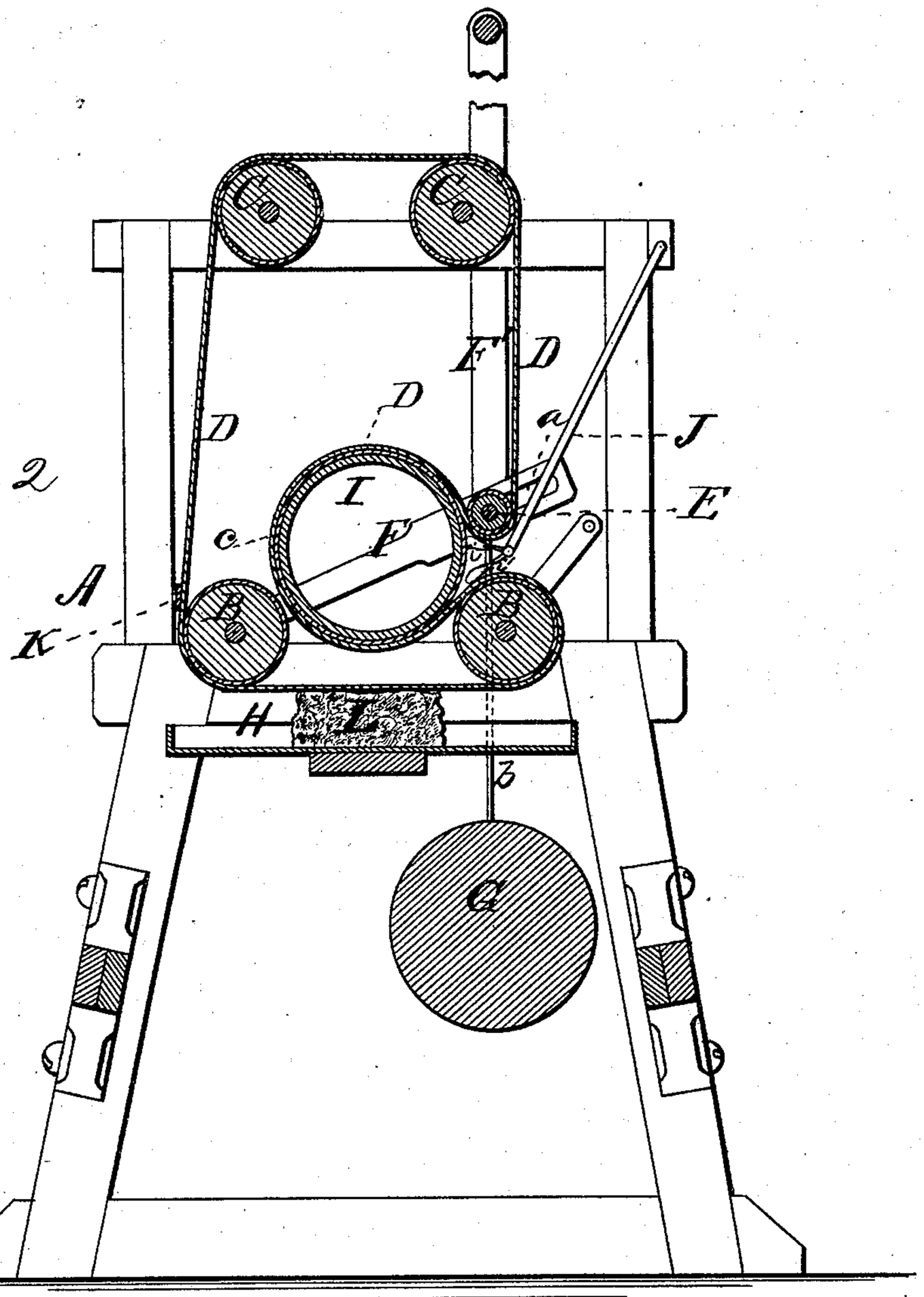
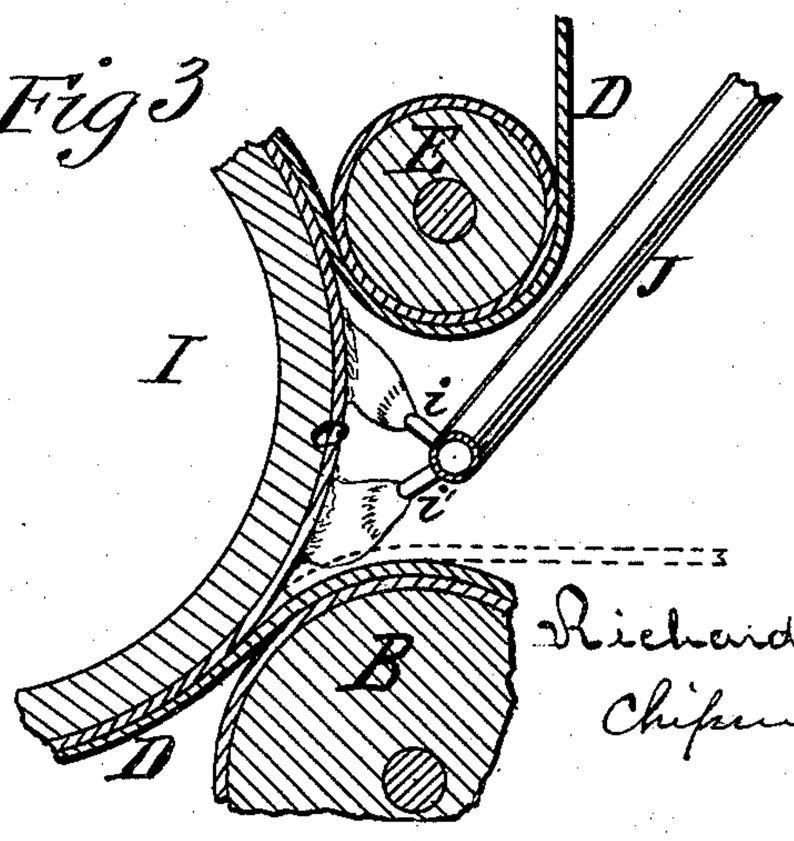


Fig 3



WITNESSES

Robert Everett
Walter C. Mabie

INVENTOR

Richard M. C. Broas.
Chipman Hoomer & Co
ATTORNEYS

UNITED STATES PATENT OFFICE.

RICHARD M. C. BROAS, OF JERSEY CITY, N. J., ASSIGNOR OF THREE-FOURTHS HIS RIGHT TO JACOB KOHLBERG AND THADDEUS H. WALSH, OF NEW YORK CITY, AND JOHN P. CULVER, OF JERSEY CITY, N. J.

IMPROVEMENT IN MACHINES AND PROCESSES FOR MAKING VENEER PIPES.

Specification forming part of Letters Patent No. **171,347**, dated December 21, 1875; application filed November 27, 1875.

CASE B.

To all whom it may concern:

Be it known that I, RICHD. M. C. BROAS, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and valuable Improvement in Machine for Making Veneer-Pipe; 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 rear view of my machine; and Fig. 2 is a longitudinal vertical central sectional view thereof. Fig. 3 is a sectional detail view.

This invention has relation to improvements in machines for manufacturing pipes which are composed exclusively of asphaltum and veneers of wood, or of asphaltum and veneers of wood in conjunction with paper or cloth.

The object of the invention is to produce compact and durable pipes, by so winding, cementing, and compressing them while being made that they will be identical in size, and their inner and outer surfaces concentric.

To this end the nature of the invention consists in the arrangement and novel construction of the various devices employed, whereby the desired results are absolutely attained, as will be hereinafter more fully explained and claimed.

In the annexed drawings, the letter A designates the frame of my improved machine, which is made of wood, or of metal, or of the two combined. This frame affords bearings for two suitably-spaced bearing-rollers, B, which are preferably of metal, and are covered with a woven fabric of close texture, and, at a certain distance above the rollers B, for one or more similarly-constructed rollers, C. Around these rollers is loosely passed an endless belt, D, which may be of rubber or cloth, but is preferably made of canvas, as the latter material absorbs and retains moisture better than any other sufficiently durable and strong substance. E designates a metallic tension-roller, having its end bearings in slots *a*, formed in vertically-vibrating metallic guides F, pivoted in any suitable manner to the frame, or to the journals of the rear roller B, as shown in Fig. 2. Tension-roller E is provided with an operating bail, F′, extending above the frame A, and also with a weight-cylinder, G, suspended from the journals of the same by means of rods or chains *b*, for a purpose hereinafter explained. H represents a preferably-metallic pan, designed to hold water, and suspended or attached to frame A under, and in close proximity to, bearing-rollers B. This pan contains a sponge-like material, L, of suitable size, which, during the operation of the machine, will keep belt D sufficiently moist, but will prevent any excess of moisture from being imparted thereto, thus preventing all drip. I represents a cylindriral metallic mandrel or former, which is preferably tubular, and is smoothly polished upon its outside. This mandrel is entirely detached from the rest of the machine—that is, it has no bearings, and is not journaled in any part of the frame.

When in use mandrel I will be first well oiled. The tension-roller E and its attached weight having been then raised, the said mandrel will then be placed against the face of the belt, and pushed into the opening between the bearing-rollers B. The tension-roller E and its weight will then be lowered. If the front bearing-roller B be then actuated by hand or any other suitable motor the slack of the endless belt D will instantly be taken up by the tension-roller, and the said belt will be made to bind upon the cloth-covered outer surfaces of rollers B C, and of the mandrel I. A cloth wrapper, *c*, will then be passed between the front bearing-roller B and the mandrel, the said wrapper having been previously wet, and will be rolled around the latter through the action of the belt D and rotation of bearing-roller B.

The form of treated veneers of wood, or of wood and cloth or paper of size suitable to produce a pipe of the desired length and thick-

ness, is then inserted in the same manner as the canvas wrapper *c* above mentioned between the front bearing-roller and the mandrel.

As the mandrel revolves, the form is coiled around it by the action of the endless belt, and the opening between rollers B and E being very small in comparison with the diameter of the mandrel the form will make its own "lap"—that is, its inner end will lap under its body. At the same time the form will closely embrace the mandrel, and a closely-jointed compact pipe will be formed when the entire blank is taken up. During the formation of the pipe, the belt D being constantly wet, the form will not adhere thereto, nor will it adhere to the mandrel-wrapper *c*, for the same reason; consequently, when the pipe is completed, the mandrel may be taken from the machine by raising the tension-roller, and the pipe easily drawn off of the same. It is then thrown into a tank of water, where it will readily cool, and, upon cooling, the wrapper *c* will fall from the interior of the tube of itself, and may be readily withdrawn.

In practice, as soon as the blank is once wound around the mandrel and the first lap is about to be made, a gas-pipe, J, containing a number of closely-spaced burners, *i i'*, will be swung into the opening between them, and the gas will then be lighted, when a continuous sheet of flame will be thrown toward the mandrel, and another upon the form or blank. The heat from these flames serves a double purpose: that directed against the mandrel dispels the moisture resulting from contact with the wet belt D, and the other, falling upon the form as it enters the rolls, liquefies the asphaltum and causes an immediate adherence of the surfaces of the blank as fast as they are brought into contact. The belt being wet, there is no danger of its being burnt by the gas-flame. Should any asphaltum drop upon the belt during the formation of the pipe, it will be removed by a scraper-bar, K, arranged, preferably, at the rear of the machine with which the belt is, during its movements, brought into contact.

As shown in Fig. 1, the mandrel is placed between guides F, when thrust into position, so that, although it is not journaled, it will be held against all endwise displacement.

It is evident that the tension-roller E will move outwardly and upwardly from the mandrel as the pipe-blank winds about it, this being due to the fact that the said tension-roller is journaled in slots *a* of guides F.

It will also be evident that mandrels of different diameters may be used in the same machine, through this automatic adjustment, above stated, possessed by the said tension-roller.

The gas-jets above mentioned, in lieu of being applied as above stated, may be thrown upon the under side of the form; but, for reasons not here requisite to mention, I prefer to use the method above fully set forth.

In lieu of the covering *c* above described for the mandrel, I may use a sleeve-covering when the said mandrel is of the species known as "collapsing."

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

1. The combination, with a mandrel, I, of an endless belt, D, nearly surrounding said mandrel, substantially as and for the purpose set forth.

2. In combination with a mandrel, I, the endless belt D, nearly surrounding the said mandrel and passing over bearing-rollers B, and a guide or guide-roller, C, substantially as specified.

3. In combination with the spaced bearing-rollers B, and a guide roller or rollers, C, the detached mandrel I, and the single endless belt D passing over the said rollers and nearly inclosing the said mandrel, substantially as specified.

4. In combination with a mandrel, I, bearing-rollers B, a guide roller or rollers, C, and an endless belt, D, the automatically-adjustable tension-roller E, for taking up automatically the slack of the belt and allowing the blank to be wound about the mandrel, and at the same time continuing an equal pressure, substantially as specified.

5. In combination with a mandrel, I, the detachable textile covering *c* adapted to be wound around the said mandrel, substantially as specified.

6. In combination with the detached unjournaled mandrel I, the lateral guides F, for holding the same against endwise displacement, substantially as specified.

7. In a machine for forming veneer and asphalt pipe, the combination, with the operating-belt D, of a scraper-bar, K, substantially as specified.

8. The combination, with the belt D, operating the forming and bearing rollers, of a pipe-forming machine, the water-pan H, and sponge material L, placed beneath the said belt for wetting it, substantially as specified.

9. In combination with rollers B C, a mandrel, I, and a loosely-applied belt, D, the tension-roller E, having its bearings in slotted guides F, substantially as specified.

10. In combination with a mandrel, I, for rolling veneer and asphalt pipe, the flame-jets *i i*, substantially as specified, and for the purposes set forth.

11. The process herein described of constructing pipe, by winding, by means of a damp endless belt, a blank around a mandrel, first covered with a wet textile band, to prevent adhesion, and drying the surface of said blank, and heating the asphalt covering by jets of flame, substantially as set forth.

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

RICHARD M. C. BROAS.

Witnesses:

WALTER C. MASI,

ROBERT EVERETT.