

No. 648,930.

Patented May 8, 1900.

H. J. DOUGHTY.

MANUFACTURE OF CONTINUOUS TUBINGS OR COVERINGS OF RUBBER.

(Application filed Dec. 17, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1

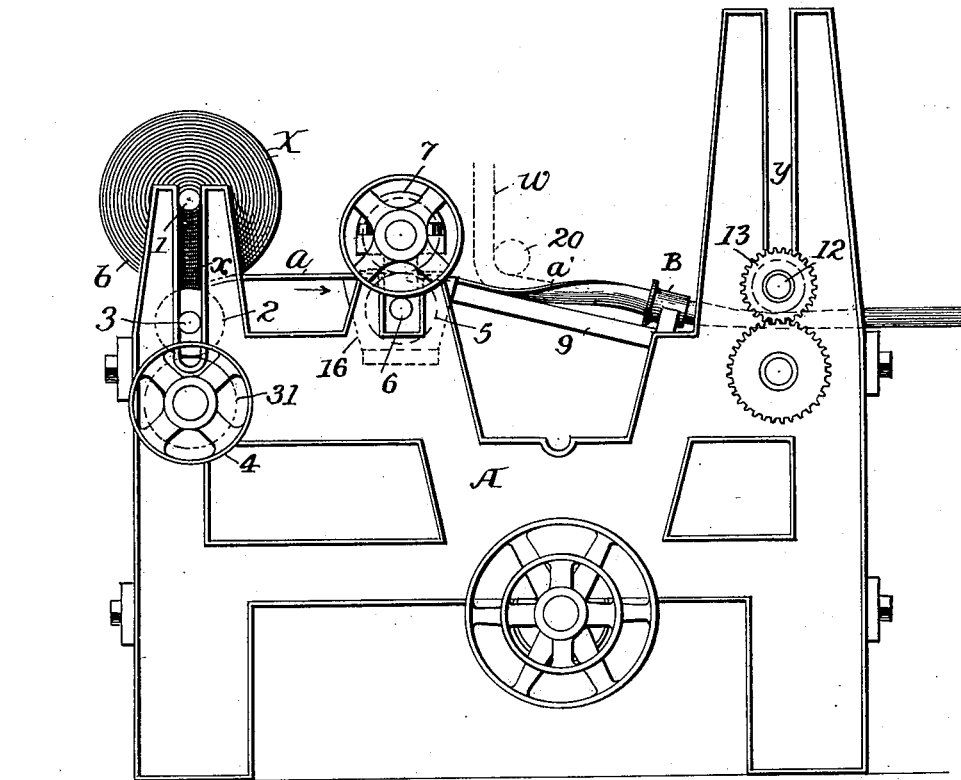


Fig. 7.

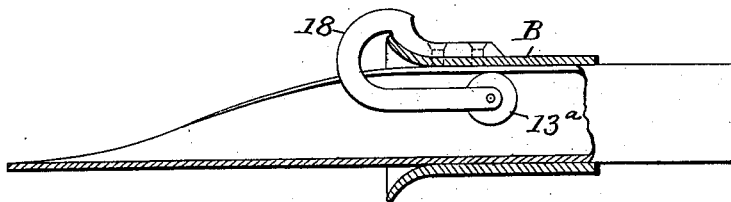
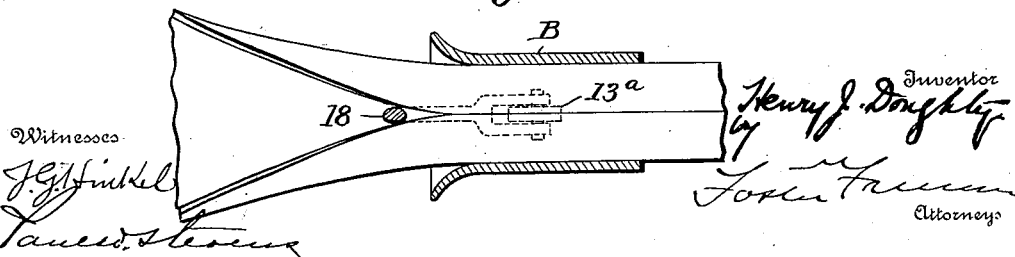


Fig. 8.



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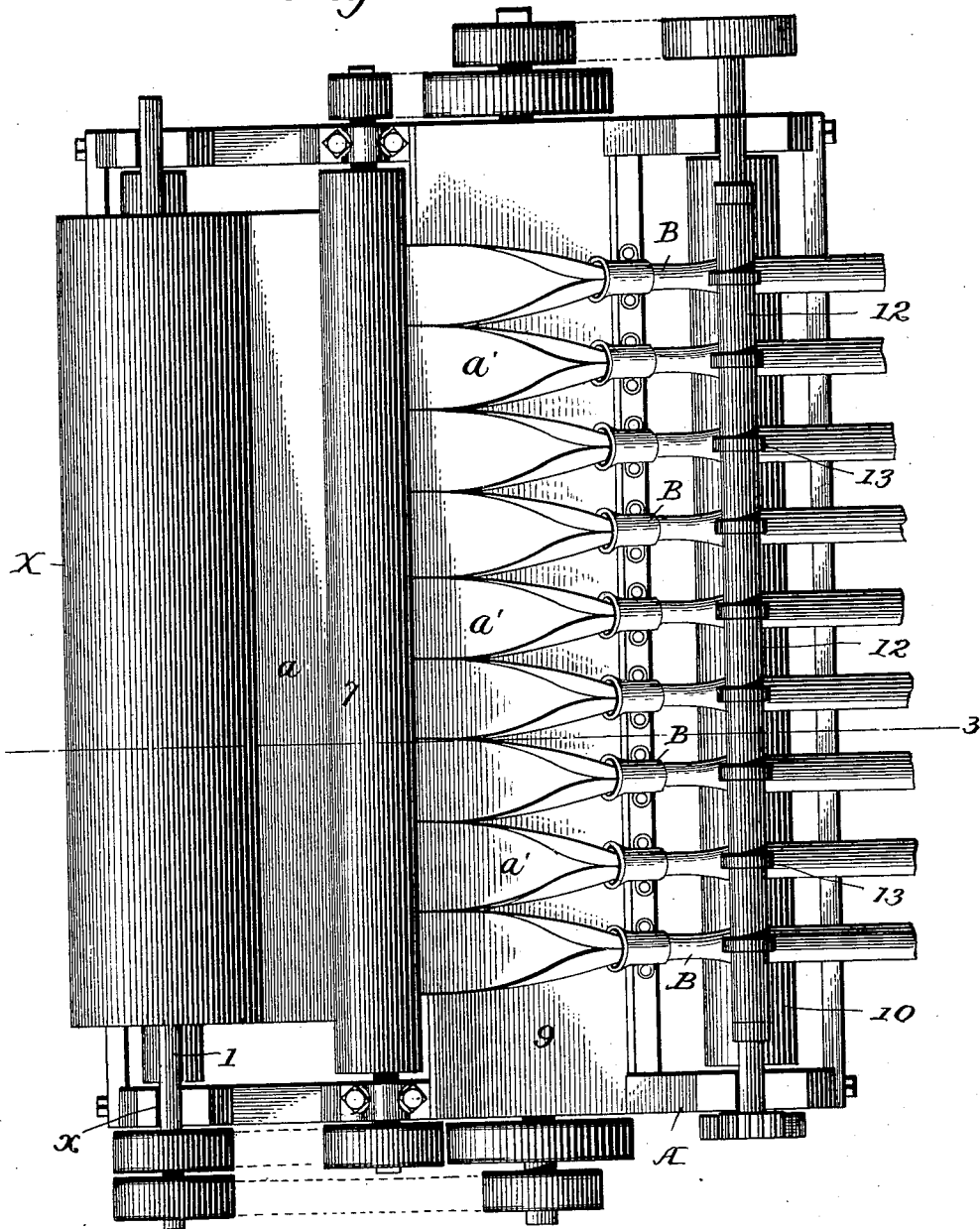
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3 Sheets—Sheet 2.

(No Model.)

Fig. 2



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3 Sheets—Sheet 3.

(No Model.)

Fig. 3.

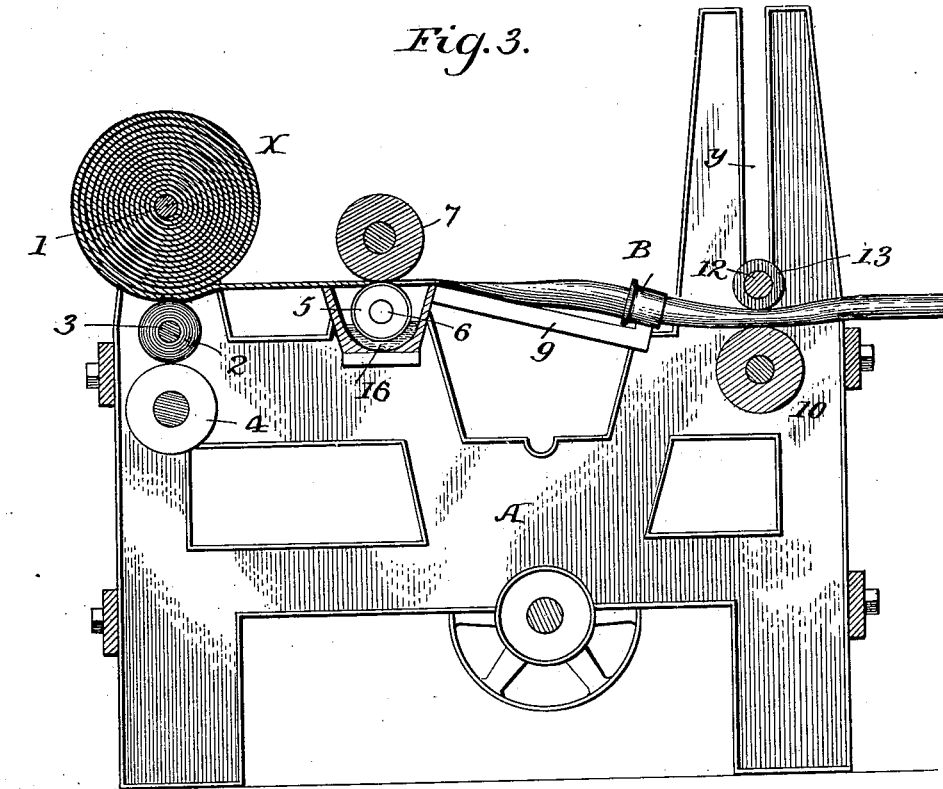


Fig. 4.

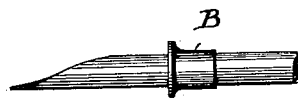


Fig. 6.

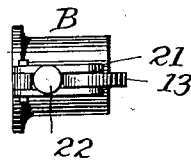
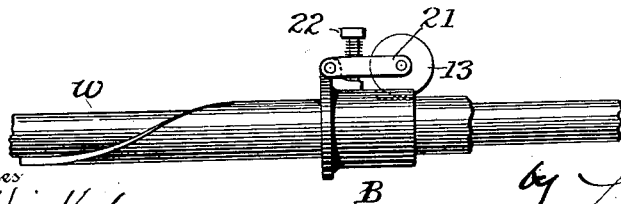


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

HENRY J. DOUGHTY, OF PROVIDENCE, RHODE ISLAND.

MANUFACTURE OF CONTINUOUS TUBINGS OR COVERINGS OF RUBBER.

SPECIFICATION forming part of Letters Patent No. 648,930, dated May 8, 1900.

Application filed December 17, 1898. Serial No. 699,564. (No model.)

To all whom it may concern:

Be it known that I, HENRY J. DOUGHTY, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in the Manufacture of Continuous Tubings or Coverings of Rubber, &c., of which the following is a specification.

My invention relates to the manufacture of practically-continuous tubes or coverings of rubber, caoutchouc, balata, or like soluble material; and my invention consists in means for readily converting sheets of said material into said tubes or coverings, as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying my improvement. Fig. 2 is a plan view of the machine in Fig. 1. Fig. 3 is a longitudinal sectional elevation. Fig. 4 is a detached view showing a folder with a strip passing through the same. Fig. 5 is a detached view showing a modified form of folder with a core and strip passing through the same. Fig. 6 is a plan of Fig. 5. Figs. 7 and 8 are modifications of the holder.

The frame A of the machine is suitably constructed to support the operating parts hereinafter described.

The material from which the tubes or coverings are to be made is rolled upon a spindle or shaft 1, resting upon a roll 2, the trunnions or journals 3 of which, as well as those of the shaft 1, extend into slots *x* in the side pieces of the frame, and the roll 2 rests directly upon a driving-roll, the shaft of which extends through the side pieces of the frame and is provided at one end with a belt-pulley 4.

In case the material of which the tubes or coverings is to be made is of an adhesive nature—as, for instance, rubber or caoutchouc or balata preparation—superposed sheets of the rubber and a suitable fabric are wrapped together, forming a roll X, and as the material is drawn from this roll the sheet *a* of rubber is carried forward, while the sheet *b* of fabric is wrapped onto the roll 2, which gradually increases in diameter as the material is drawn off from the roll X. The sheet of material on the roll X may be of any de-

sired width and may be separated into any number of strips of a width to form the desired size of tubes or coverings, and in the drawings I have shown the sheet *a* as being severed into a number of strips *a'*, and this may be accomplished by any suitable cutters. As shown, the cutters 5 are disk cutters arranged upon a shaft 6, and a roller 7 rests upon the sheet *a*, pressing it downward onto the edges of the cutters, which sever the same into the strips *a'* as the material is brought forward in the direction of the arrow, Fig. 1. Each strip *a'* passes over a suitable table 9 and into the flaring mouth of a folder-tube B of such dimensions and shape that the strip drawn through it will be folded into a cylinder or circle, the edges being brought so as to abut against each other, and from the folder-tube B the folded material passes over a roll 10, the journals of which turn in fixed bearings on the frame, and beneath a roll 13 on a shaft 12, the journals of which extend into slots *y* in the side pieces of the frame, so that the shaft 12 may play vertically in said slot. There is a series of disks or presser-wheels 13, each of which bears upon the center of the tube and is driven by suitable gears, so as to rotate with the roll 10 and to feed and carry the strip forward.

Instead of depending upon a cement to connect together the edges of the strip, which is bent up in tubular form, and to avoid the necessity and the objections incident to overlapping the edges of the strip I deposit upon each edge of the strip a suitable solvent which has time to partially dissolve the material before the strip is carried into the folder B, so that when the edges of the strip are abutted in said folder and held together for a time and as they are pressed under the action of the disks 13 they will be practically united, so that the tube or covering is homogeneous throughout.

Any suitable means may be employed for depositing the solvent upon the edges of the strip; but I prefer to make use of the cutters 5, which rotate in a trough 16, containing a suitable amount of naphtha or other solvent, which adheres to the sides of the cutter-blades and is deposited upon the edges of the strip as the latter is severed.

Where the strip is to be wound around a

core of any kind—as, for instance, a flexible wire or cord *w*—the latter is directed by suitable guide-rolls—as, for instance, a roll 20, dotted lines, Fig. 1—so as to pass with the strip into the folder B, the strip being folded around the core by the said folder. In this case instead of using the disks 13 upon a shaft 12 beyond the folder, as in Figs. 1, 2, and 3, each disk is preferably mounted upon a shaft carried by a swinging frame 21, pivoted to the holder B, which is slotted to permit the roller to pass through and rest upon the covering-strip as it travels through the folder. A set-screw 22 passes through the frame or bracket into a threaded socket in the holder and serves to set the frame so as cause the roller to bear with any desired pressure upon the meeting edges of the strip.

It is not essential that the presser-disk shall bear on the outside of the strip. Thus in Figs. 7 and 8 I illustrate a folder B with a presser-disk 13^a, supported within the folder by a bracket 18, so as to bear on the inside of the strip at the point where the edges of the strips are brought together.

Without limiting myself to the precise construction and arrangement of the parts shown, I claim as my invention—

1. The combination in a machine for forming tubes or coverings from a sheet of soluble material, of means for supporting the sheet, means for cutting the sheet into strips and applying a solvent to the edges of the strips, and means for abutting the opposite edges of each strip and holding them together under pressure, substantially as set forth.

2. The combination in a machine for forming tubes or coverings of a soluble material, of a spindle supporting a roll of said material and superposed textile fabric, a roller for receiving the textile fabric as the material is unrolled, cutters for severing the strip, means for applying a solvent to the edges of the strip, and means for folding the strip and for holding the abutting edges together under pressure, substantially as set forth.

3. The combination in a machine for forming tubes or coverings of soluble material, of a roller supporting a sheet of said material, rotary cutters arranged to sever the material into strips and simultaneously apply a solvent to the edges of each strip, and means for folding the strips and bringing the opposite edges of each strip together, substantially as set forth.

4. The combination with a roll of soluble material, of a series of cutter-disks, a roll pressing against said disks, a trough arranged adjacent to said disks and containing a supply of solvent, and means for folding the strips and holding the abutting edges together under pressure, substantially as set forth.

5. In a machine for forming tubes or coverings of soluble material, the combination with a support for the material, of cutters, and a trough for containing a solvent arranged adjacent thereto whereby the cutters simultaneously sever the sheet into strips and apply the solvent to the edges of the strips, substantially as set forth.

6. The combination of a shaft carrying a series of cutters, a trough beneath the cutters, a roller bearing upon the cutters, a series of folders B, a supporting-roll and a shaft carrying a series of presser-disks 13, substantially as set forth.

7. The combination in a machine for forming tubes or coverings of soluble material, of a spindle supporting superposed layers of said material and a fabric, a roll for receiving the fabric, and means for applying a solvent to the material and for abutting the edges under pressure, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY J. DOUGHTY.

Witnesses:

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