

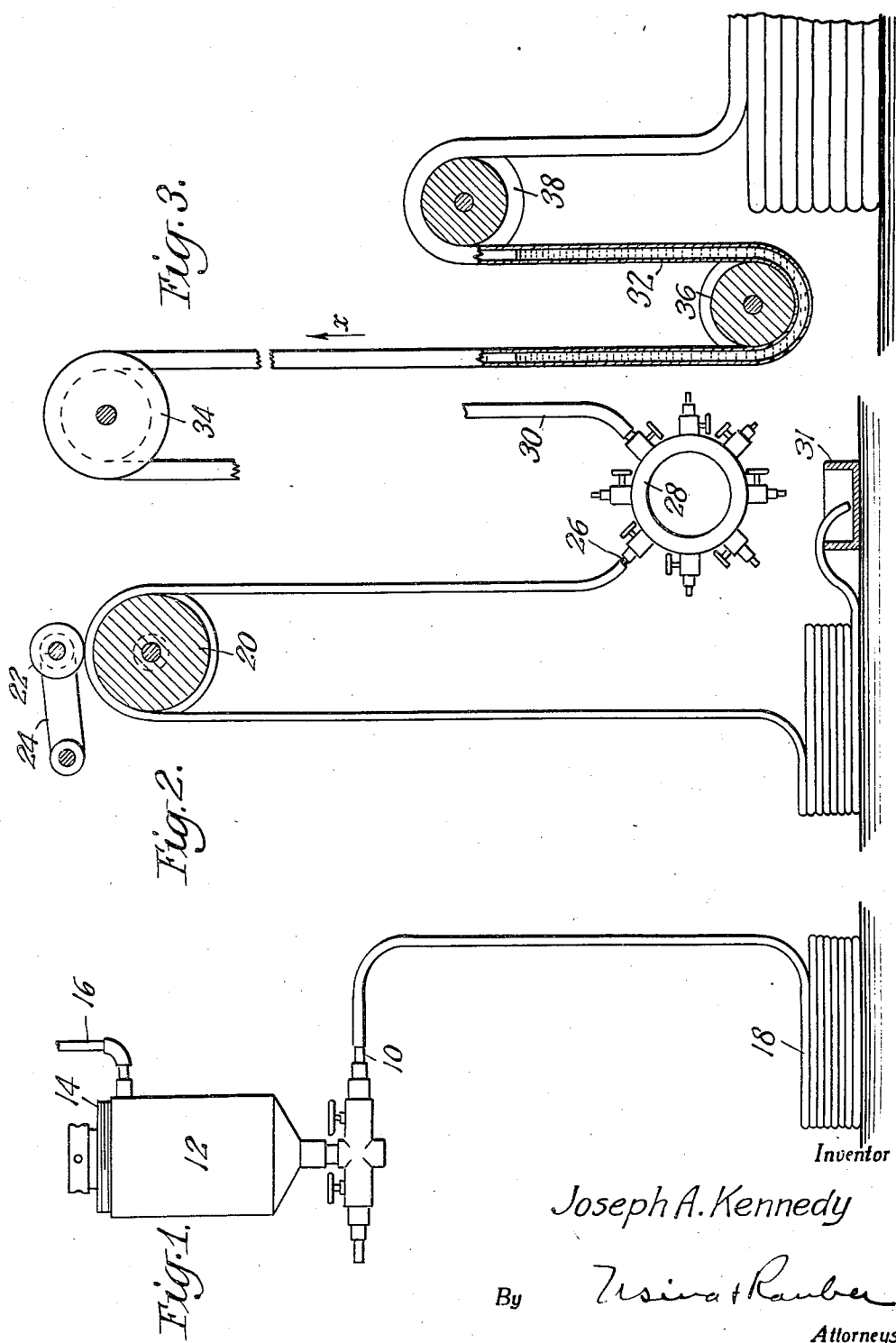
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PROCESS OF RUBBERIZING TUBING

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PROCESS OF RUBBERIZING TUBING

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4 Claims. (Cl. 91—68)

This invention relates to an improved method of applying and intimately bonding a rubber coating or layer to the interior of woven tubing such as one comprising cotton warp strands and a filling of twisted paper helical strands.

The invention will be apparent from the following specification when read in connection with the accompanying drawing, in which—

Fig. 1 is a diagrammatic view illustrating one step in the method;

Fig. 2 is a diagrammatic view illustrating another step;

Fig. 3 is a diagram illustrating an alternative step in the method.

According to my present method, I weave a tube so as to interconnect the warp and filling strands and during the weaving operation I apply an inner coating of latex by extruding the same from a hollow mandrel about which the tube is formed. The tube is then dried and one end is attached to the nozzle 10 of a container 12, filled with a rubber solution. This container has an air-tight cap 14 and air pressure is supplied thereto by means of a pipe 16, leading to a suitable source of compressed air. In treating a length of tubing, say about 500 feet long and having an inside diameter of about $\frac{3}{8}$ of an inch, approximately one pint of liquid is forced into the raceway. The rubber solution is a very thin or watery one, preferably being an aqueous dispersion of latex. During the processing, the tubing can conveniently be coiled, as indicated at 18 in Fig. 1. After a sufficient quantity of latex solution has been forced through the tube, the free end of the coil is passed upwardly over a revolving grooved drum or sheave 20. A coating sheave 22, carried on a pivotally mounted weighted arm 24, serves to maintain the driving engagement between the sheave 20 and the tube undergoing treatment. As the tube travels upwardly from the lower supply coil over the sheave, the latex therein will flow downwardly by gravity. To hasten the gravity flow, air under slight pressure, for example, two or more pounds above atmosphere may be supplied. This is accomplished by connecting the free end of the tube to a valve controlled nozzle 26, connected to the manifold 28 having communication with a pipe 30, communicating with a source of hot air by means of which air can be admitted at a pressure ranging from about five to twenty five pounds per square inch. Any excess material is forced into a vessel 31.

After the excess rubber latex is blown from the raceway, the tube is placed in a dryer, so as to evaporate the water content of the wet latex. This results in retaining a substantial volume of moisture in the raceway. To expel this, I again blow a current of heated air through the tube. The above described process is particularly well suited for treating woven tubing having an inside diameter of the order of $\frac{3}{8}$ of an inch or less.

In the treatment of larger sizes of tubing, substantially the same method is followed, but because of the larger area to be covered in a tube of larger diameter, I provide for retaining a substantial quantity of liquid rubber or latex within the tight or loop portion, indicated at 32 in Fig. 3. This loop is maintained by passing the tube over guide sheaves 34, 36 and 38. In practice, the sheave 34 may be located at a point about fifty feet above the sheave 36. As the tubing travels upwardly in the direction of the arrow x , the latex supply from the loop portion will be carried up a certain extent and will flow down by gravity, thus distributing an even coating over the interior surface of the tube. This operation can be repeated as many times as necessary, so as to secure the desired thickness of wall or lining for the tube.

Various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. A method of treating flexible tubes which comprises forming a looped portion in the tube, retaining a liquid body of coating material in said looped portion, feeding part of the tubing upwardly from the looped portion, so as to carry part of the coating material upwardly and permit it to flow downwardly by gravity.

2. A method of treating flexible tubes which comprises forming a looped portion in the tube, retaining a liquid body of freely flowing coating material in said looped portion feeding part of the tubing upwardly from the looped portion, so as to carry part of the coating material upwardly and permit it to flow downwardly by gravity, then subjecting the interior of the tube to the action of an air current, so as to expel the moisture content of said coating material.

3. In the manufacture of coated flexible tubing, the method which comprises retaining a liquid body of freely flowable coating material in the looped portion of the tube, feeding part of the tube upwardly so as to carry the coating material upward and permit it to flow down by gravity over the interior raceway thereof.

4. In the manufacture of coated flexible tubing, the method which comprises retaining a freely flowable liquid body of rubber latex in the looped portion of the tube, feeding part of the tube upwardly so as to carry the coating material upward and permit it to flow down by gravity over the interior raceway thereof, continuing the movement of the tubing until substantially all of the coating material is distributed over the raceway thereof, then passing a drying current through the raceway, so as to evaporate the moisture content of the coating material.

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