June 17, 1930. E. E. GOLD 1,763,886

NIPPLE INSERTING MACHINE

Filed July 10, 1928

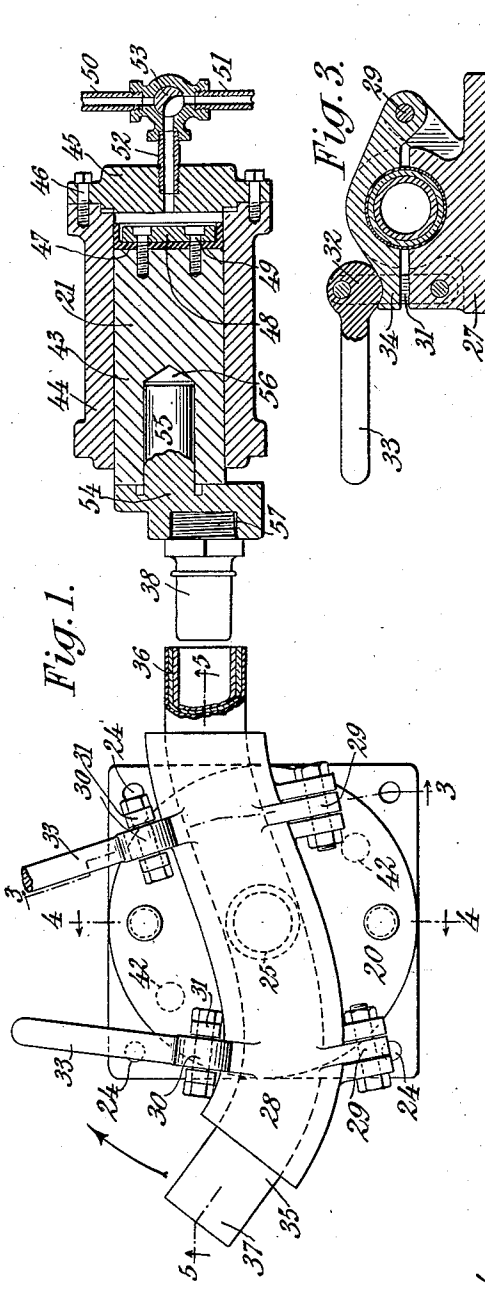


Fig. 1.

Fig. 3.

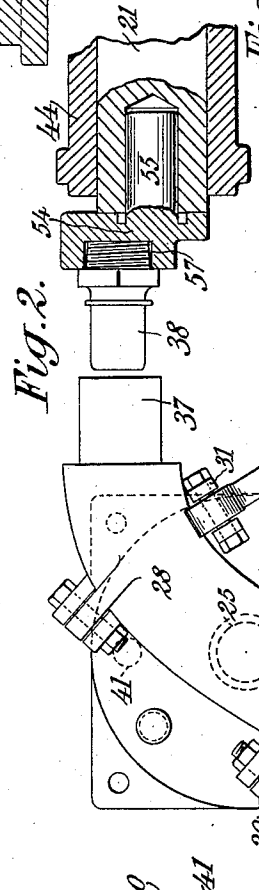


Fig. 2.

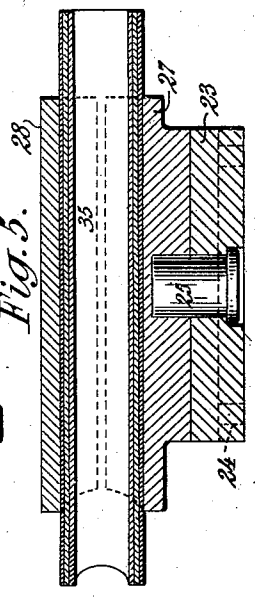


Fig. 5.

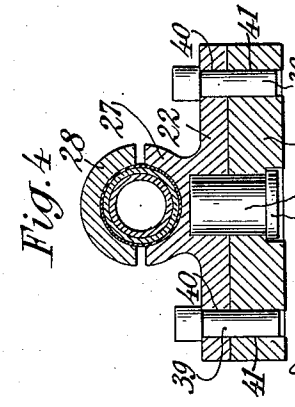


Fig. 4.

INVENTOR :
Edward E. Gold,
By Attorneys,
Fraser, Myers & Manley

Patented June 17, 1930 1,763,886

UNITED STATES PATENT OFFICE

EDWARD E. GOLD, OF NEW YORK, N. Y., ASSIGNOR TO GOLD CAR HEATING & LIGHTING COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK

NIPPLE-INSERTING MACHINE

Application filed July 10, 1928. Serial No. 291,647.

This invention relates to a machine adapted to insert nipples in the opposite ends of curved flexible tubing such, for example, as the flexible train pipe connections disclosed in a pending application Serial No. 291,648, filed July 10, 1928.

It has been the practice, when inserting nipples in the opposite ends of a piece of straight tubing, to clamp the tubing in the holder with one end directed towards a nipple-inserting ram, and, after one nipple has been inserted, to reverse the position of the tubing in the holder so that a nipple may be inserted in the opposite end by the same ram. When thus inserting nipples in a piece of straight tubing it was not necessary to change the relative positions of the tube-holder and the nipple-inserting ram, each of which was premanently mounted on a suitable support.

It is an object of this invention to provide a machine in which nipples may be inserted in the opposite ends of a tube of variable curvature such that a mere reversal of the tube in the tube-holder would not properly position its ends with respect to the nipple-inserting ram. This end has been attained by substituting, for the stationary tube-holder, a holder which may be rotated with respect to the ram and secured in successive positions with the opposite ends of the tube facing in the same direction, and by providing the ram with a nipple-holder having means adapted to hold a nipple in either of two positions corresponding with the positions of the opposite ends of the tube as successively presented.

In the accompanying drawing illustrating the preferred form of the invention,—

Figure 1 is a top view of a nipple-inserting machine embodying the invention, the ram being illustrated at the right and the tube-holder at the left in a position to present one end of a tube in readiness to receive a nipple, the ram being illustrated in cross section and the nipple-holder in one of its two nipple-inserting positions.

Fig. 2 is a like view of the machine, a portion of the ram being omitted, the holder being represented in a position such as to present the opposite end of the tube in readiness to receive a nipple, and the nipple-holder being represented in the other of its two positions corresponding with the change of position of the tube end.

Fig. 3 is a transverse sectional view of the tube-holder, the section being taken along the line 3—3 of Fig. 1 and viewed in the direction indicated by the arrows.

Fig. 4 is a transverse sectional view of the tube-holder, the section being taken along the line 4—4 of Fig. 1 and viewed in the direction indicated by the arrows.

Fig. 5 is a longitudinal sectional view of the tube-holder, the section being taken along the curved axis 5—5 of the holder (Fig. 1) and viewed in the direction indicated by the arrows.

The invention as herein disclosed comprises a tube-holder 20 and a nipple-inserter 21 mounted in a cooperative relation, as indicated in Figs. 1 and 2. The tube-holder 20 consists of a rotatable member or turn-table 22 pivotally secured to a base or mounting member 23, which may be secured to a suitable support by fastening means passed through openings 24. The pivotal connection between the turn-table and the base may comprise a pin 25 having one end held fast in the turn-table by frictional engagement and the other end swiveled in the base. The lower end of the pin may be provided with a head 26 to prevent the separation of the turn-table from the base without withdrawing the end of the pin from the turn-table.

The upper part of the turn-table comprises a pair of tube-clamping elements 27, 28 of a curvature conforming with that of the tube to be held. These clamping elements may be separably connected in any appropriate manner, as by hinges 29 and detachable clamp-securing elements 30. Each of the securing elements 30, as best indicated in Figs. 1 and 3, may consist of a pair of links 31 pivotally secured at one end to the lower clamping element 27 and pivotally secured at their opposite ends to an eccentric end portion 32 of a handle 33. On rotating the handle 33 in a clockwise direction as indicated in Fig. 3, its eccentric end portion 32 will be moved free from its engaging relation with the depressed

portion 34 of the upper clamping element 28, thus permitting the links 31 to be rotated in a counter-clockwise direction and cause the eccentric element 32 of the clamp-securing device to be moved clear of the clamping element 28 and permit the same to be swung about its hinges 29 to an open position, after which a tube 35 may be inserted or removed.

According to the invention as herein disclosed, the holder is of a form adapted to receive a tube 35 of reverse curvature, the radius of curvature being different in different parts of the tube. At its opposite ends the tube is provided with relatively short portions 36, 37 of rectilinear form, each adapted to receive a nipple 38.

Suitable means may be provided whereby the turn-table may be secured in a fixed relation with respect to the base in different positions such as to successively hold the tube 35 with its opposite ends 36, 37 facing in the same direction in readiness to receive a nipple. One appropriate form of fastening device, as illustrated in Figs. 1, 2 and 4, comprises a pair of locking pins 39, which, when the turn-table is in the position indicated in Fig. 1, may be passed through openings 40 in the turn-table and registering openings 41 in the base. When the turn-table has been rotated to the position indicated in Fig. 2 in order to place the end 37 of the tube in its nipple-inserting position, the ends of the pins 39 which were originally received by the openings 41 in the base member may be inserted and held in openings 42, which should register with the openings 40 after the change in position of the turn-table has been effected.

The nipple-inserting device 21, illustrated in Figs. 1 and 2, may be in the form of a ram 43 mounted for reciprocation in a cylinder 44 closed at its rear end by a cylinder head 45 secured to the cylinder by machine screws or other suitable fastening devices 46.

The chamber in the cylinder to the rear of the ram may be rendered fluid-tight by packing 47 of any appropriate character, secured in place by suitable fastening means which may consist of a disk 48 and screws 49.

To provide for the nipple-inserting movement of the ram and its withdrawal after inserting a nipple, the cylinder may comprise means whereby liquid or other fluid may be admitted and exhausted. As herein disclosed, such means consists of a pressure pipe 50, an exhaust pipe 51, a connection 52, and a two-way valve 53 adapted to put the connection 52 in direct communication with either the pressure pipe 50 or the exhaust pipe 51 at will.

The nipple-inserting device 21 is intended to be purely conventional and therefore representative of any fluid pressure ram or press adapted to forcibly insert nipples 38 in the opposite ends of the tube 35.

It will be observed that although the ends 36, 37 of the tube 35 face in the same direction as positioned in Figs. 1 and 2, respectively, the centers of the tube ends are materially spaced apart so as to be differently positioned with respect to the ram. In order that nipples may be inserted in both ends of the tube by the same ram, the invention includes means whereby a nipple may be held by the ram in either of two positions corresponding with the respective positions of the opposite ends of the tube as successively presented. In the form of the invention herein disclosed, this has been accomplished by providing the forward end of the ram with an eccentric nipple-holder 54. The nipple-holder may be swiveled in the face of the ram by means of a pin-and-socket connection 55, 56, and the nipple-holder may be provided with an eccentrically-positioned nipple-receiving socket 57 which may be shifted from the position indicated in Fig. 1 to the position indicated in Fig. 2 by a rotation of the nipple-holder in the socket 56.

In view of the foregoing description, the operation of the device need be but briefly outlined. The tube in which nipples are to be inserted is first placed in the tube-holder 20, the jaws of which are clamped together by the securing devices 30. The holder is then rotated to the position indicated in Fig. 1 and the pins 39 dropped into the openings 41 in the base. A nipple is then inserted in the socket 57 of the nipple-holder, which should be positioned as indicated in Fig. 1 and the valve 53 so turned as to permit fluid to pass from the pressure pipe 50 into the cylinder of the nipple-inserting device 21, thereby causing the ram to move forward and force the nipple into the end 36 of the tube. The inserted nipple may be securely fastened in the end of the tube by any appropriate clamping device indicated generally at 58 (Fig. 2).

After a nipple has been inserted in one end of the tube when placed in the position indicated in Fig. 1, the pins 39 may be lifted so as to be withdrawn from the openings 41 in the base plate and the turn-table rotated to the position indicated in Fig. 2, after which the pins may be dropped into the openings 42, thereby securing the turn-table in the new position. A second nipple may then be inserted in the socket 57 of the nipple-holder 54 and the latter shifted from the position indicated in Fig. 1 to the position indicated in Fig. 2, after which, on admission of pressure behind the ram, the second nipple may be inserted and fastened by a clamp similar to the one indicated at the lower left-hand corner of Fig. 2.

After each insertion of a nipple, the ram may be withdrawn by rotating the valve 53 to the position indicated in Fig. 1 so as to bring the connection 52 into communication with the exhaust pipe 51 and permit the liquid to drain from the cylinder. The return

of the ram may be expedited by the application of pressure to the end in which the nipple-holder is mounted.

The invention is not intended to be limited to the preferred form herein disclosed for purposes of illustration but should be regarded as covering modifications and variations thereof within the scope of the appended claims.

What is claimed is:

1. A machine for inserting nipples in the opposite ends of curved tubes, comprising a ram, a turn-table mounted for rotation about an axis perpendicular to the direction of movement of said ram, tube-clamping means on said turn-table whereby a curved tube may be secured thereto, means whereby said table may be successively secured in positions with the opposite ends of said tube facing in the same direction, and a nipple-holder on said ram comprising means whereby a nipple may be held in either of two positions registering respectively with the opposite ends of said tube as successively presented.

2. A machine for inserting nipples in the opposite ends of curved tubes, comprising a ram having a nipple-holder eccentrically mounted therein, a turn-table mounted for rotation about an axis perpendicular to the direction of movement of said ram, tube-clamping means on said table whereby a curved tube may be secured thereto, and means whereby said table may be successively secured in positions with the opposite ends of said tube facing in the same direction, the relative positions of said ram and table and the eccentricity of said nipple-holder being such that a nipple held by the latter may be caused to align with either of the ends of said tube when presented.

3. A machine for inserting nipples in the opposite ends of curved tubes, comprising a rotatable tube-holder in which a curved tube may be secured and successively held with its opposite ends facing in the same direction, in positions separated to an extent dependent on the curvature of the tube, a nipple-inserting ram so mounted with respect to said holder that an extension of its longitudinal axis would pass midway between the said successive positions of said tube ends, and an adjustable nipple-holder eccentrically mounted in said ram and shiftable to positions adapted to center a nipple held thereby with either of the opposite ends of said tube when presented.

4. A tube-holder adapted for use as a part of means whereby nipples may be inserted in the opposite ends of curved tubes, said holder comprising a base, a turn-table pivotally mounted on said base, clamping means whereby a curved tube may be secured to said table with the plane of its curved longitudinal axis perpendicular to its axis of rotation, and coupling means whereby said table may be secured to said base in either of two positions so related that it may be held fast in successive positions with the opposite ends of the tube facing in the same direction.

5. A nipple-inserting ram adapted for use as a part of means whereby nipples may be inserted in the opposite ends of curved tubing, said ram having a nipple-holder eccentrically mounted therein adapted to be shifted to positions such as to hold a nipple in either of two laterally separated positions with its axis parallel but non-coincident with the axis of movement of the ram.

In witness whereof, I have hereunto signed my name.

EDWARD E. GOLD.