M. LOWY.

MECHANISM FOR FORMING NIPPLES ON TUBES.

APPLICATION FILED APR. 5, 1921.

1,432,073. Patented Oct. 17, 1922.

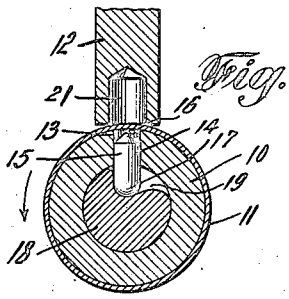


Fig. 2.

Fig. 1.

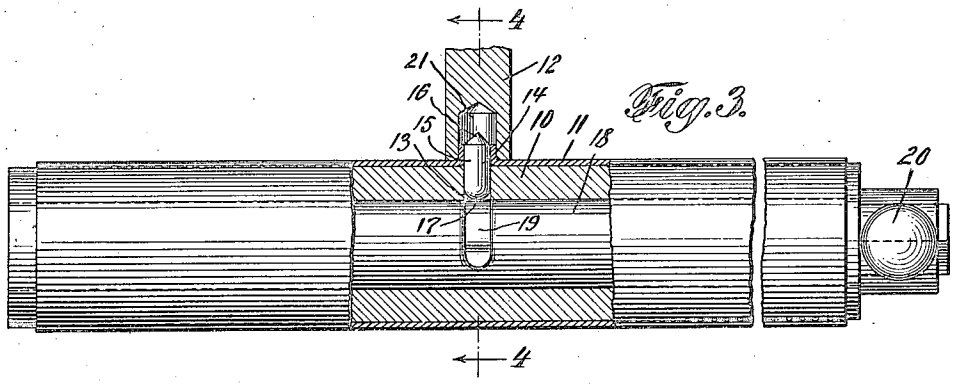


Fig. 3.

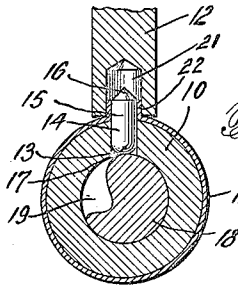


Fig. 4.

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UNITED STATES PATENT OFFICE.

MORRIS LOWY, OF NEW YORK, N. Y.

MECHANISM FOR FORMING NIPPLES ON TUBES.

Application filed April 5, 1921. Serial No. 458,867.

To all whom it may concern:

Be it known that I, MORRIS LOWY, a citizen of the United States, and resident of the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Mechanisms for Forming Nipples on Tubes, of which the following is a specification.

The present invention relates to a mechanism for forming nipples or small tubular protuberances on tubes, and has for its main object to provide a simple and efficient device of this type.

Another object of the invention is to produce a mechanism of the character mentioned which is capable of being attached to punch-presses of any preferred type, without necessitating material changes in the construction of the latter.

With these and other objects in view, which will more fully appear as the nature of the invention is better understood, the same consists in the combination, arrangement and construction of parts hereinafter described, pointed out in the appended claims and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and details of construction within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

One of the many possible embodiments of the present invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a front elevation, partly in section, of a nipple forming mechanism constructed in accordance with the present invention; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a view similar to the one shown in Fig. 1 with the elements in other positions; and Fig. 4 is a section taken on line 4—4 of Fig. 3.

In the drawings, the numeral 10 indicates a tubular block, over which the work, that is to say a tube 11, may be drawn, the outer diameter of the said block corresponding to the inner diameter of the work. This block is fastened in any suitable manner to the work support of a punch-press, not shown, and is provided, in alignment with a reciprocating die 12 on the punch-press, with an aperture 13. This aperture extends radially through the block in vertical direction and has reciprocably mounted therein a combined piercing and forming die 14. The die 14 includes a cylindrical shank 15, having a conical outer end 16 and a hemispherical inner end 17. The shank of the die 14 snugly fits the aperture 13, it having a diameter corresponding to the inner diameter of the tubular protuberance to be formed. In the block 10 is oscillatably mounted a spindle 18, provided with a peripheral cam groove 19, that co-operates with the die 14. One end of the spindle extends beyond the block 10 and has fixed to it an operating handle 20.

The die 14 constitutes the male die of the mechanism, while the die 12 is a female die, it being provided with a cylindrical recess 21, the diameter of which corresponds to the outer diameter of the nipple to be formed.

The operation of this device is as follows: The tube 11, on which the nipple is to be formed, is drawn over the block 10, the die 14 being disposed wholly within the aperture 13. Any suitable gage may be mounted upon the block or on the work support, in order to bring the work in proper relation to the dies. After the tube has been properly positioned on the block, the female die is forced against the work, the elements being then in the positions shown in Figs. 1 and 2 of the drawings. The operator shifts then the handle 20 in the proper direction, to cause a movement of the spindle 18 around its axis in the direction of the arrow shown in Fig. 2 of the drawings, whereby the conical outer end 16 of the die 14 pierces the tube 11 and, in the further movement of the said die, the shank of the die, in co-operation with the recess in the female die, forms a nipple 22 on the tube 11, said nipple projecting outwards, as clearly shown in Figs. 3 and 4 of the drawings. The cam groove in the spindle 18 is so shaped that a gradual and continuous outward movement of the die 14 is obtained. After the nipple has been so formed, the female die is caused to recede from the work and the operating handle 20 swung back to its original position, the die 14 moving downwards either by gravity or, if necessary, by a force applied to the same by the operator. The work may then be removed from the block 10.

What I claim is:—

1. A mechanism for forming nipples on

tubes, comprising a tubular block over which the work is adapted to be drawn, said block being provided with a radial aperture, a combined piercing and forming die reciprocably mounted in said aperture, said die having a shank corresponding to the inner diameter of the nipple to be formed and a piercing outer end, a female die co-operating with said first-mentioned die having a recess corresponding to the outer diameter of the nipple to be formed, and means disposed within said block for causing a movement of said first-mentioned die toward and into said female die.

2. A mechanism for forming nipples on tubes, comprising a tubular block over which the work is adapted to be drawn, said block being provided with a radial aperture, a combined piercing and forming die reciprocably mounted in said aperture, said die having a shank corresponding to the inner diameter of the nipple to be formed and a piercing outer end, a female die co-operating with said first-mentioned die having a recess corresponding to the outer diameter of the nipple to be formed, a spindle oscillatably mounted in said block having a cam groove adapted to co-operate with said first-mentioned die for causing a movement thereof toward and into said female die.

Signed at New York, in the county of New York and State of New York, this 23rd day of March, 1921.

MORRIS LOWY.