

H. EHRHARDT.
METHOD OF PRODUCING TUBES.
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1,059,354.

Patented Apr. 22, 1913.

Fig. 1.

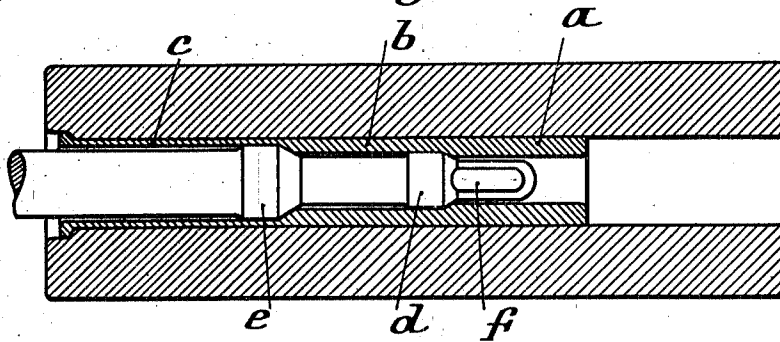


Fig. 2.

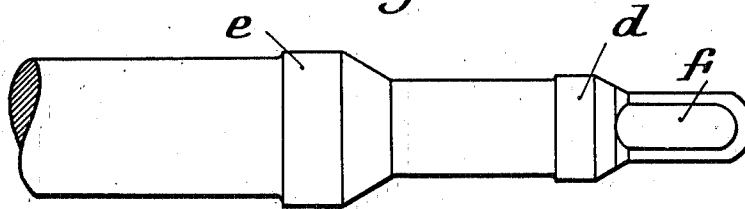
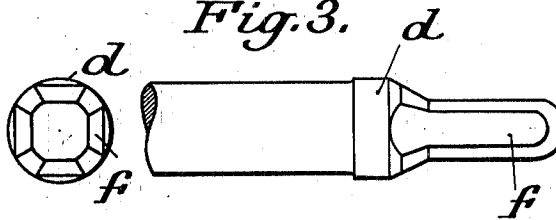


Fig. 3.



WITNESSES

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METHOD OF PRODUCING TUBES.

1,059,354.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HEINRICH EHRHARDT, engineer, a subject of the German Emperor, residing at 20 Reichsstrasse, Dusseldorf, Germany, have invented certain new and useful Improvements in or Relating to Methods of Producing Tubes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a method of producing tubes, pipes or the like by drifting with the aid of a mandrel which is forced through a short tubular blank or work suspended by means of a marginal collar or thickened portion at one of its ends.

It has already been proposed to produce tubes from a short tubular blank or billet supported in this manner and without additional support during the drifting action, but in this case during the expanding action a back support is required, or else two mandrels are required acting on the billet in opposite directions so that after the initial operation of expanding and securing the ring billet in the die has been completed one of the mandrels is moved out of action by the other, which latter alone continues to draw out the ring billet into tubular form.

In contradistinction to these known methods the present invention consists in using a tubular blank suspended in a matrix by means of a marginal collar or thickened portion at one of its ends and employing a single mandrel so dimensioned as to first act initially with an expanding effect whereby the outer material of the blank is forced against the matrix walls and the blank is thereby held in position without any additional support while the drifting operation is proceeding with the aid of the same mandrel. A manner of carrying this method into effect is illustrated by way of example in the accompanying drawing, in which—

Figure 1 is a sectional view of the matrix with the blank and the mandrel inserted therein. Fig. 2 is a slightly enlarged view of the mandrel, and Fig. 3 shows a modified form of the mandrel.

In Fig. 1 *a* indicates that portion of the tubular blank which still has its original thickness. *b* is the part of the blank after its preliminary expansion and *c* is the finished or actual pipe portion thereof. The

mandrel is provided with a preliminary or expanding head *d* and with a final or drifting head *e*. These two heads are connected by a short stem and the expanding head *d* is provided with a guide portion *f*. This mandrel has the object to first expand and firmly press the material of the blank against the matrix walls by means of the expanding head *d* thereby producing a strong frictional grip which prevents the pipe portions *c* from being torn away from the wall of the matrix by the action of the drifting head *e*. As therefore the outer material of the blank firmly adheres to the matrix wall the tube is completed solely by the displacement of the inner material of the blank by the drifting head. As shown, the matrix (the length of which is about equal to that of the article to be produced) is provided at one end with an enlargement to form a seat for the marginal collar shown at the left-hand end of the blank.

The guide portion *f* is provided with recessed faces so that only the remaining concentric portion is caused to bear against the blank so as not to cool it too much. In Fig. 3 these faces are shown continued on to the expanding head *d*, but are not extended along the whole circumference of this head so as not to interfere with its action. These faces may of course be provided on both heads of the mandrel if desired.

Having now particularly described the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. The herein described method of producing tubes, pipes, or the like from a short tubular blank provided with a marginal collar, which consists in suspending said blank within a matrix having about the length of the article to be produced and provided at one end with an enlargement to form a seat for said collar of the blank, and then forcing lengthwise of the blank, in the direction away from said seat, a mandrel constructed to first expand the blank and then to elongate or draw it while said expanded blank is held in position solely by its frictional contact with the matrix walls.

2. The herein described method of producing tubes, pipes, or the like from a relatively short tubular blank provided with a marginal collar, which consists in placing said blank within a matrix provided at one end with an enlargement to form a seat for

said collar on the blank, and then forcing lengthwise of the blank, in the direction away from said seat, a mandrel constructed to first expand the blank and then to elongate or draw it while said expanded blank is held in position by contact with the matrix walls.

3. A mandrel for drawing tubes or the like, provided with an expanding head, a drawing head, and with a guide portion having recessed surfaces for the purpose of reducing the cooling action.

4. A mandrel for drawing tubes or the like, provided with an expanding head, a drawing head, and with a guide portion having recessed surfaces extended on to the adjacent head.

5. A mandrel for drawing tubes or the like, provided with a head having recessed surfaces to reduce the cooling of the blank.

6. A mandrel for drawing tubes or the like, provided with a head and with a guide adjacent thereto, said guide having recessed surfaces to reduce the cooling of the blank.

7. A mandrel for drawing tubes or the like, provided with a head and with a guide adjacent thereto, said guide having recessed surfaces extending on to said head.

8. An apparatus for drawing tubes and the like, comprising a matrix having an enlargement or seat near one end, and a mandrel having a head to expand the blank and another head to draw the blank.

In testimony whereof I affixed my signature, in presence of two witnesses.

HEINRICH EHRHARDT.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.