

A. FASSL.
METHOD OF ROLLING TUBES.
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988,634.

Patented Apr. 4, 1911.

Fig. 1

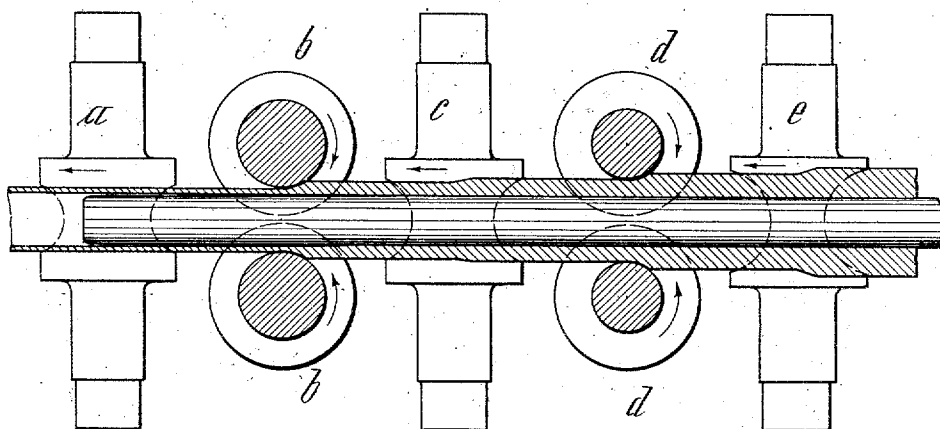
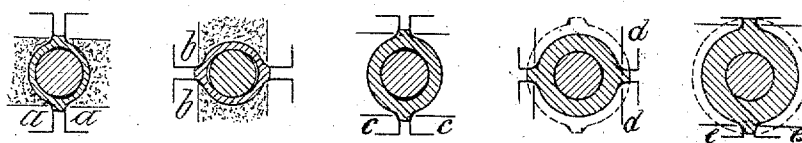


Fig. 2



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UNITED STATES PATENT OFFICE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALOYS FASSL, a citizen of the German Empire, and resident of Dinslaken, Rhine Province, Germany, engineer, have invented new and useful Improvements in Methods of Rolling Tubes, of which the following is a specification.

In the method of rolling tubes, when the so called continuous rolling-mills are used, a special grooving is employed in order to move the mandrel which passes freely with the material through the rolling mill at the same speed as the circumferential speed of the last pair of rolls. For this purpose, the first pair of rolls have oblate passes, and the last pair have circular passes. As the speed of the mandrel and the circumferential speed are equal, the mandrel must be equal in length to the rolled out tube. To roll out long tubes, long mandrels must be used which besides being very unwieldly, often cause great difficulties when pulling the rolled out tubing from the mandrel. These disadvantages are avoided by providing the rollers with grooves described hereinafter, and the pulling off of the rolled out tubing from the mandrels is much facilitated and the cost of the mandrels greatly reduced. The passes of all rolls have an oblate form, those of the first pair of rolls being less than those of the last pair of rolls. By thus grooving the rolls, the mandrel cannot move forward with the circumferential speed of the last pair of rolls but with little if any more than the circumferential speed of the first pair of rolls. The material being rolled is moved forward on the smooth mandrel by means of the friction in the passes of the last pair of rolls which are kept rough, and the mandrel moves on at little if any more than the speed of the roll-passes of the first pair of rolls, because a greater friction is produced in these than in the last pair of rolls, firstly, on account of the slight oblateness of the pass of the first pair of rolls, and secondly because of the considerable reduction of material between the mandrel and the final or last pair of rolls. Therefore the mandrel is checked a little during the rolling, in comparison with the material being rolled and need only be a little longer than the rolling of the first pair of rolls would require. Thus if the first rolls have only the half or a third

of the circumferential speed of the last rolls, the mandrel can be correspondingly shorter only a little being added for the entire rolling out at the end of the rolling process. As mandrels are liable to wear out and must be continually renewed, short mandrels are a great saving. By the oblate form of the pass between the last pair of rolls, the rolled out tubing is also oblate and so can be very easily pulled off from the mandrel, which is not the case with the round passes.

In the accompanying drawing, Figure 1 shows such an arrangement of rolls, the material having been rolled on the mandrel in the manner described. Fig. 2 represents the forms of the passes of the rolls illustrated in Fig. 1.

It is shown that the mandrel in the first pair of rolls is completely surrounded by the material, on the one hand by the comparatively slight oblateness of the passes, and on the other hand, by the considerable reduction of material being rolled, therefore the friction between the mandrel and the material is much greater than in the last pair of rolls which, owing to the oblateness of the passes, loosens the material sidewise from the mandrel, thereby reducing the friction and effecting a forward movement of the material corresponding to the circumferential speed of the rolls *a, b*, while the mandrel can follow only at the average circumferential speed of the rolls *d, e*.

Having thus fully described my invention what I desire to secure by Letters Patent is:

The method of rolling tubes in a continuous mill from a longitudinally apertured blank over a mandrel capable of movement in the direction of rolling as the same progresses, which consists in subjecting the blank, when assembled on the mandrel, to a rolling action in said mill, and decreasing the contacting area of the successive passes in the mill and the cross sectional area of the blank, so that the speed of the mandrel is determined and controlled by the friction imparted through the work by the rolls at the entering end of the mill.

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Witnesses:

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