

H. SCHILLING.
 ROLLING MILL FOR MAKING PIPES.
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1,052,848.

Patented Feb. 11, 1913.

Fig. 1

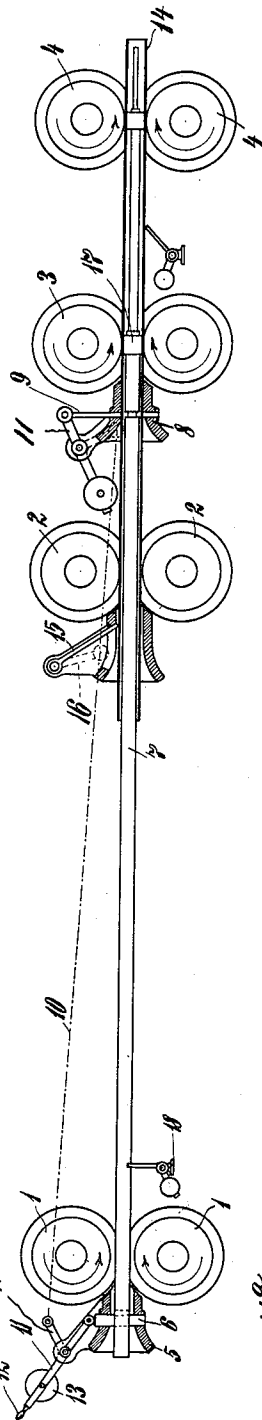


Fig. 2

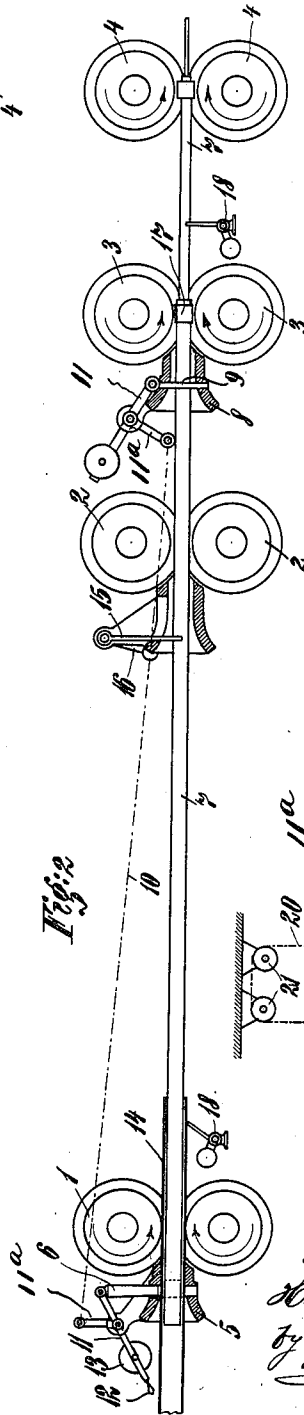
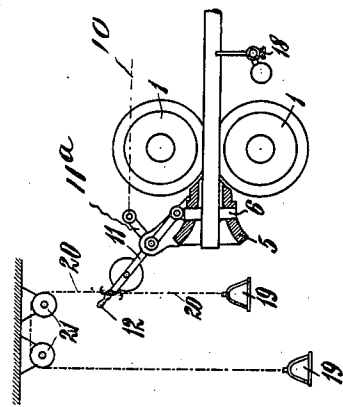


Fig. 3



Witnesses.
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UNITED STATES PATENT OFFICE.

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ROLLING-MILL FOR MAKING PIPES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HANS SCHILLING, director, a citizen of the German Empire, residing at Siegen, Prussian Province of Westphalia, Germany, have invented certain new and useful Improvements in Rolling-Mills for Making Pipes; 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to a rolling mill for making pipes. Said mill is provided with pairs of rolls arranged behind each other and with a mandrel common to said rolls and subject to tension. This mandrel smoothens the inside of the pipe and reduces the thickness of the wall thereof. The mandrel is held by supports which are actuated by a common device.

The essential feature of the invention consists in providing in front of the working rolls two pairs of guide rolls which can also be arranged as reducing rolls for decreasing the diameter of the pipe, one mandrel support being provided in front of the first pair of working rolls, and another mandrel support in front of the first pair of guide rolls, while in front of the second pair of guide rolls there is a device adapted to be actuated by the work and then to put one of the mandrel supports into operation and the other one out of operation as soon as the pipe work piece enters between the second pair of guide rolls.

On the drawing illustrating the invention, Figure 1 shows the rolling mill with a pipe or pipe work piece 14 passing between the working rolls. Fig. 2 shows the mill at the moment in which the pipe work piece passes between the first pair of guide rolls. Fig. 3 represents the first pair of rolls 1 and means for operating the bolt moving mechanism by foot power.

1 and 2 are the guide rolls which can also be used as reducing rolls, that is, they may be so formed as to reduce the diameter of the pipe work piece. Between the pairs of rolls 1 and 2 any desired number of pairs of guiding or reducing rolls may be provided in any desired position in regard to each other. 1 and 2 are therefore the first and

last pairs of guide rolls, thus the principal guide rolls.

3, 4 are the working rolls. These can be provided in any desired numbers behind each other and in any suitable angle. For the sake of simplicity said rolls are shown in one and the same plane in the drawing. 5 is a guide arranged in front of the first pair of guide rolls. Through this guide the pipe work piece 14 passes to the first pair of rolls 1. This guide 5 has a transverse bolt 6 of a wedge, fork, or other shape, and, in the position shown in Fig. 1 it holds the mandrel 7 to resist the pull of the rolls.

In front of the pair of working rolls 3 a second guide 8 is provided, which has a transverse bolt 9 adapted to be put out of operation, when the bolt 6 is in the operating position, and into operation so as to hold the mandrel 7, when said bolt 6 is put out of operation. Fig. 2 shows this second position where 9 engages the mandrel and 6 has been disengaged therefrom.

The bolt 6 is connected with the bolt 9 by a rod 10 and levers 11 11^a. The lever mechanism is disposed in front of the first pair of guide rolls 1 and can have a handle 12 provided with a counter weight 13 as shown in the drawing. This mechanism connecting the bolts 6 and 9 can however also be adapted to be operated by foot power, Fig. 3 as for example by two stirrups 19 connected by ropes 20 to handle 12, one of which ropes is guided on overhead pulleys 21. If the handle 12 is moved out of the position shown in Fig. 1 into that shown in Fig. 2 the bolt 6 of the guide 5 will be put out of operation, and, at the same time, the bolt 9 of the guide 8 will be caused to enter into engagement with the mandrel. Said bolts are preferably so actuated that the bolt to be put into operation is moved before the bolt to be released is actuated.

If the pipe or pipe work piece 14 is conducted to the first pair of rolls 1, as shown in Fig. 2, the bolt 6 must be out of operation, while the bolt 9 holds the mandrel 7. When, on the other hand, the pipe 14 is near to the rolls 3, as shown in Fig. 1, the bolt 6 must hold the mandrel 7, while the bolt 9 is out of operation. As the pipe 14 can never be brought between the first pair of rolls 1, unless the parts are in the position shown in Fig. 2, the bolt 6 cannot be broken. In order to avoid fracture of the bolt 9 the following device is adapted.

In the path of the pipe work piece 14, in front of the second pair of guide rolls 2, a stop 15 is arranged which is connected with the rod 10 by the lever arm 16. When the end of the pipe 14 strikes against this stop 15 (Fig. 2), the stop will be moved into the position shown in Fig. 1, and the rod 10 will be so moved that the bolt 9 is moved out of engagement with the mandrel 7, the bolt 6 being put simultaneously or rather somewhat beforehand into operation that is to say before the bolt 9 has been entirely disengaged from the mandrel 7, the bolt 6 will have been simultaneously moved into engagement therewith. In this way an automatically operating safety device is provided.

Between the working rolls 3, 3; 4, 4 bushes 17 are arranged on the mandrel 7 in known manner. Pivoted devices 18 are disposed between the rolls to support the pipe or mandrel.

What I claim and desire to secure by Letters Patent of the United States is:

1. In a rolling mill, the combination with roll sets and a cooperating mandrel; of holding means to engage and hold the mandrel at a point adjacent the first set of rolls, and similar means to engage the mandrel at another point adjacent another set of rolls, and means to cause the simultaneous opposite movement of the holding means whereby the mandrel is first held at one point and released at another and vice versa.

2. In a rolling mill, the combination with the roll sets thereof and a cooperating mandrel; of holding means adjacent the

first roll set to engage and hold the mandrel at one point, and simultaneously oppositely operable holding means to engage and hold the mandrel at another point thereof adjacent another roll set, the engagement of the mandrel by one of said holding means being effected before the release of the other and vice versa.

3. In a rolling mill, the combination with roll sets and a cooperating mandrel; of means to hold the mandrel at one point, similar means to hold the mandrel at another point thereof, and means actuated by the work as it progresses along the mandrel to positively and automatically cause the release of one holding means and the simultaneous engagement of the other, and vice versa.

4. In a rolling mill, the combination with roll sets and a cooperating mandrel; of a counter-weighted lever-operated device to engage and hold the mandrel at a point adjacent the first roll set, a similar counter-weighted, lever-operated device adjacent another roll set, a rod connecting and movable with said devices, and lever mechanism connected to said rod and actuated by the movement of the work along the mandrel to simultaneously and oppositely operate said devices.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

HANS SCHILLING. [L. s.]

Witnesses:

HELEN NUFER,
ALBERT NUFER.