June 17, 1930. G. ASBECK 1,764,598

ROLLING MILL

Filed July 21, 1926

Fig. 1.

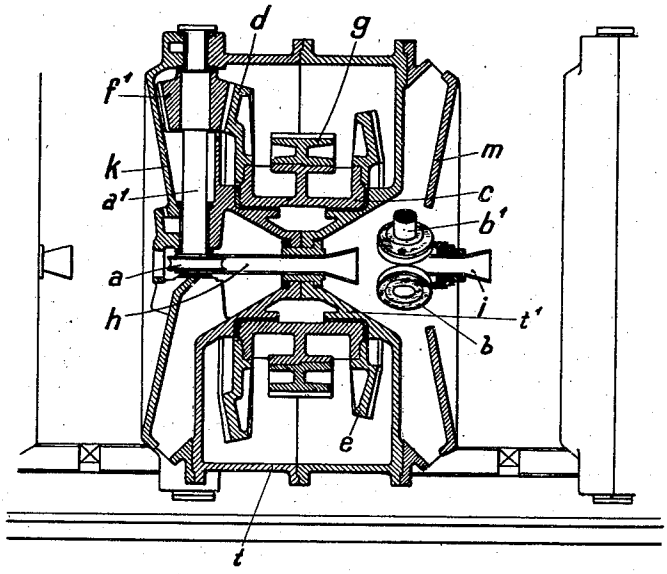
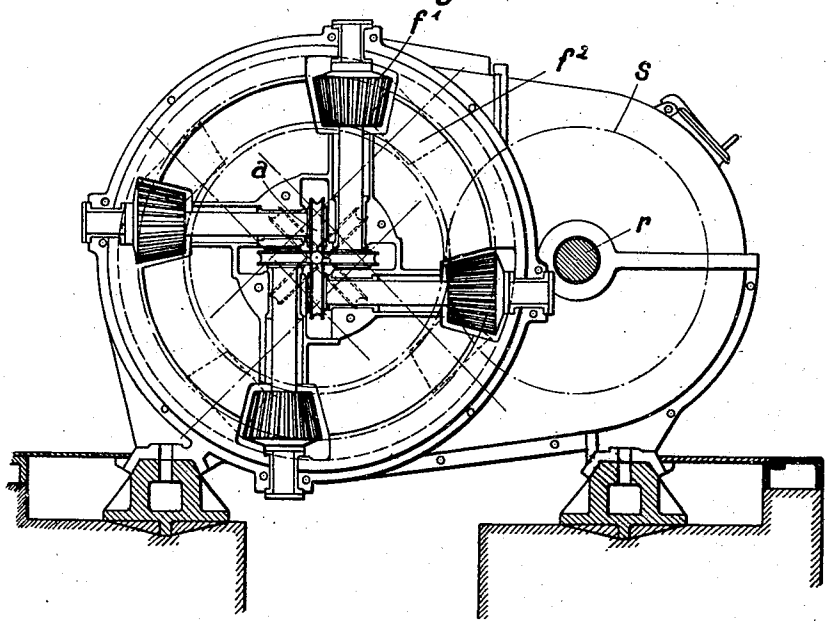


Fig. 2.



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UNITED STATES PATENT OFFICE

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ROLLING MILL

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My invention relates to improvements in rolling mills, and more particularly in mills comprising one set or a plurality of sets of rolls located in the direction of the movement of the blank one behind the other. Rolling mills of this type are used for example for reducing pipes. The object of the improvements is to provide a mill of this type which is simple in construction, and in which the operative parts are readily accessible. With this object in view my invention consists in providing a common driving member for both sets of rolls, which driving member is located between the said sets and is connected with the rolls by suitable intermediate driving members.

For the purpose of explaining the invention and example embodying the same has been shown in the accompanying drawings, in which the same reference characters have been used in all the views to indicate corresponding parts. In said drawings,

Fig. 1 is a sectional elevation showing a rolling mill comprising two sets of rolls and a driving member formed with hyperbolic gear wheels and located between the said sets,

Fig. 2 is an elevation looking from the left in Fig. 1.

In the example shown in Figs. 1 and 2 the rolling mill comprises a frame t having two sets of rolls a and b mounted therein on shafts a^1 and b^1. As shown in Fig. 1 each set comprises four rolls and shafts, and the rolls and shafts of the sets are displaced with relation to each other at angles of 45°. The frame t comprises a median substantially cylindrical portion t^1 on which a cylindrical driving member c is rotatably mounted. To the said driving member a spur gearing g is fixed which is in driving engagement with a gear wheel s keyed to a main driving shaft r. Further, to opposite ends of the driving member c, hyperbolic gear wheels or the like d and e are secured which are in mesh with pinions f^1 and f^2 keyed to the shafts a^1 and b^1 respectively. As appears from Fig. 2, the shafts a^1 and b^1 and pinions f^1 and f^2 are not disposed with their axes in radial planes including the axis of the blank being rolled, but they are spaced from the said planes and parallel thereto according to the radii of the rolls. Fig. 2 also shows the relative position of the pinions f^1 and f^2, the pinions f^2 and rolls connected therewith being shown in dotted lines.

The cylindrical portion t^1 of the frame includes a bearing for a guide h. A similar guide i is provided at the right hand part of the frame. At the ends the frame t is closed by heads k and m. After removing the said heads the rolls are readily accessible.

When imparting rotary movement to the driving member c the rolls are driven through the intermediary of the gear wheel g and the gear wheels d, f^1 and e, f^2.

While in describing the invention reference has been made to a particular example embodying the same I wish it to be understood that my invention is not limited to the construction shown in the drawings, but that one or more sets of rolls can be arranged, further that, instead of 4 rolls, shown in the drawings, also 2, 3, 5 or more rolls in one set can be applied, and that various changes may be made in the general arrangement of the apparatus and the construction of its parts without departing from the invention.

I claim:

1. In a rolling mill, a set of work-shaping rolls grouped to form a pass for the work and comprising a plurality of pairs of rolls with the center of the pass of the rolls in each pair rotating in a common plane intersecting the axis of the work at an angle with respect to the plane of rotation of the other rolls, each roll having an axis positioned out of radial relation to the work pass and provided with a gear, and a common driving gear meshed with the gears on the roll axes and rotatably mounted in concentric relation to the work pass.

2. In a rolling mill, work-shaping rolls mounted and arranged radially in a circular row and with the centers of the passes of the rolls coincident, each of said rolls having an axis and the axes of said rolls extending in relatively opposite directions with respect to the work pass and out of radial alignment therewith, each roll axis being provided with a gear, and a common driving gear meshed

with the gears on said axes and rotating in concentric relation to the work pass.

3. In a rolling mill, spaced sets of work-shaping rolls, the rolls in each set being grouped to form a pass for the work with the centers of the passes of the rolls coincident and each roll having an axis positioned out of radial relation to the work pass and provided with a gear, a driving member rotatably mounted between the roll sets for rotation about an axis coinciding with the work pass, and spaced driving gears of relatively different diameters carried by said member and respectively directly meshed with the gears on the axes of the respective sets of shaping rolls to drive the rolls in each set at uniform speed and at a relatively different speed with respect to the rolls in the other set.

4. In a rolling mill, spaced sets of work shaping rolls, the rolls in each set being grouped to form a pass for the work, a rotatably supported power transmitting member, and direct driving connections between said member and the rolls in each set to drive the rolls in each set at a uniform speed and at a relatively different speed with respect to the rolls in the other set.

In testimony whereof I hereunto affix my signature.

GUSTAV ASBECK.