

898,901.

A. LAMBERTON.
METHOD OF ROLLING PLATES.
APPLICATION FILED APR. 6, 1907.

Patented Sept. 15, 1908.
2 SHEETS—SHEET 1.

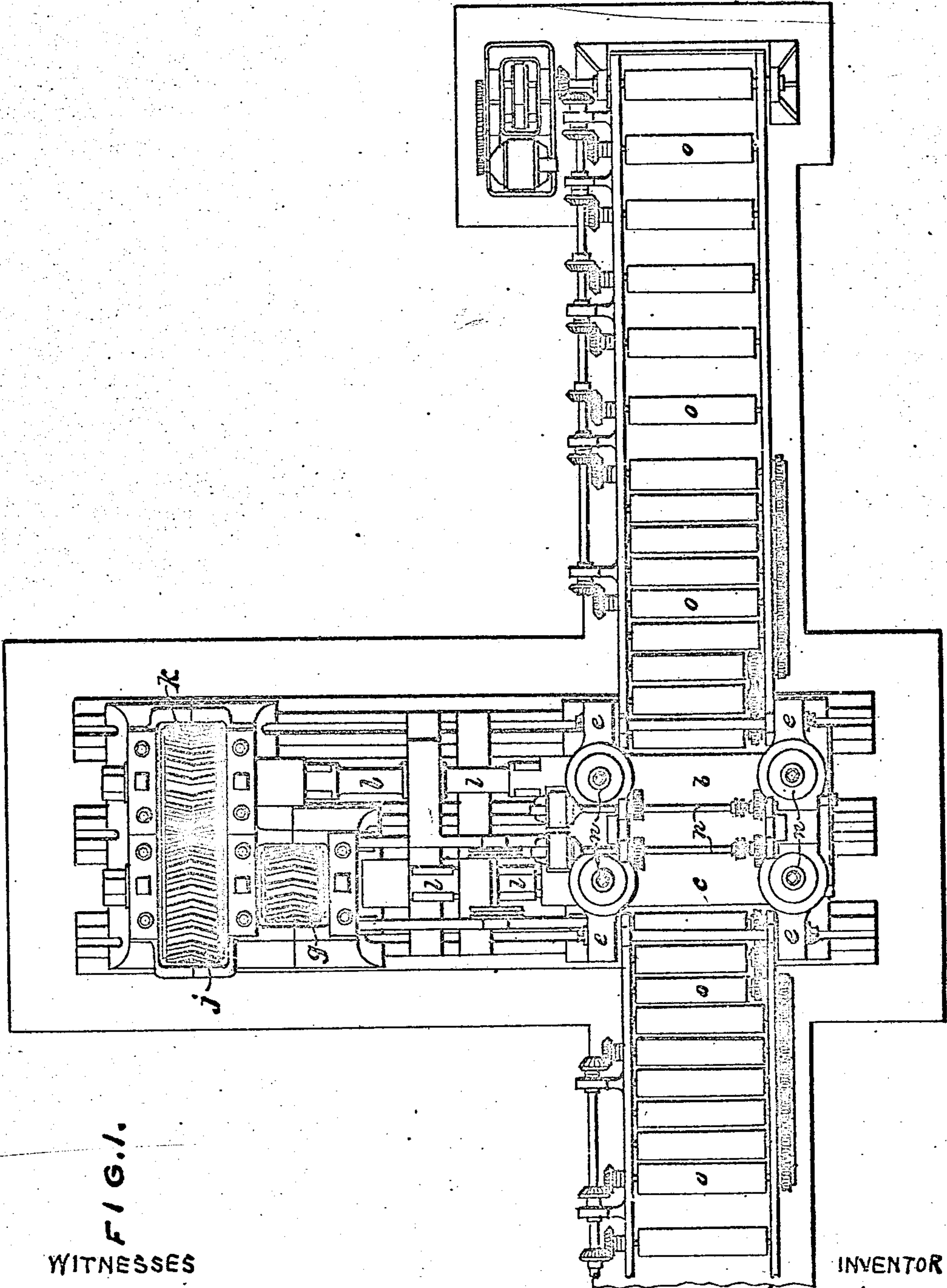


FIG. 1.

WITNESSES
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ATTORNEYS

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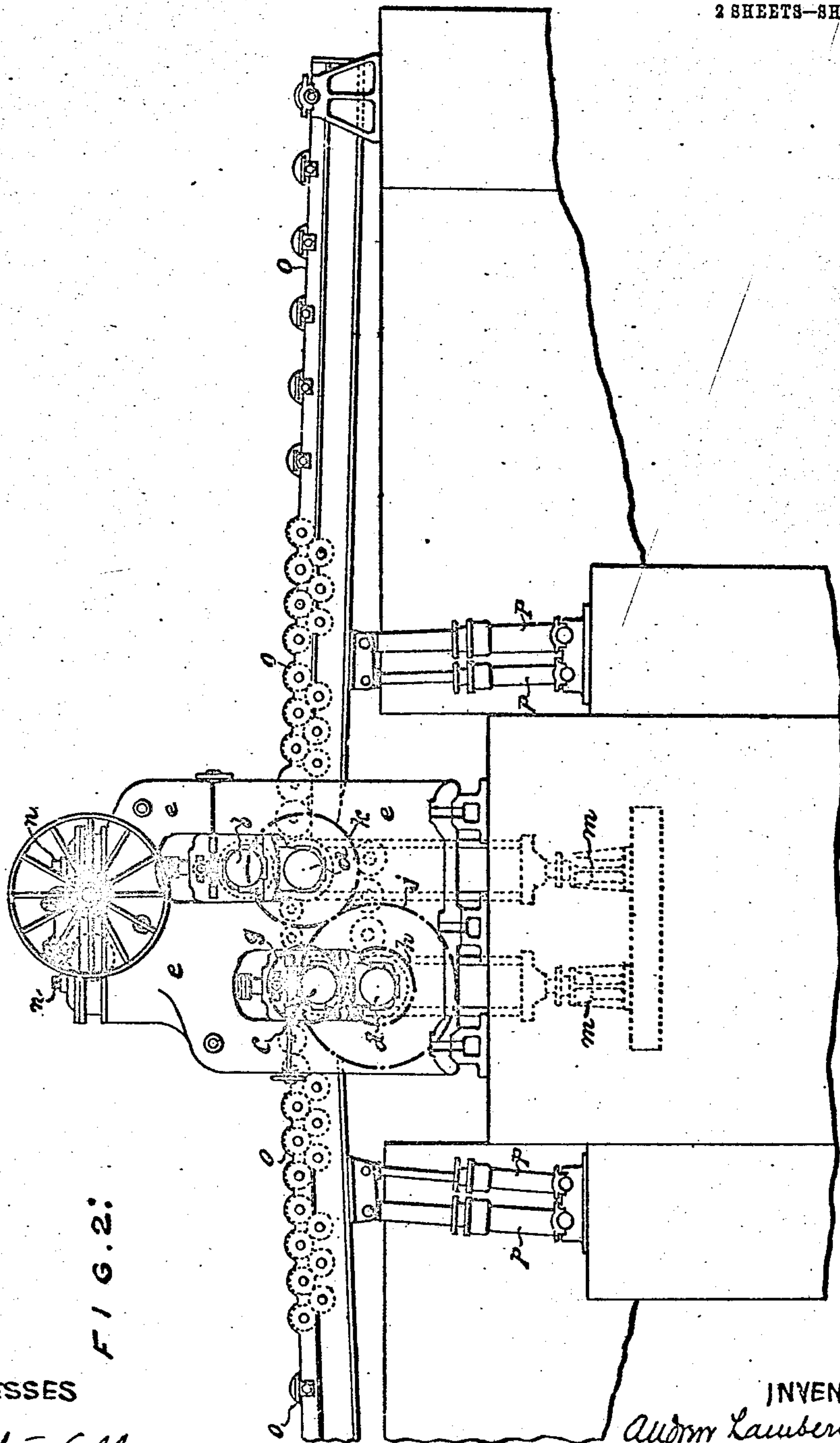


FIG. 2.

WITNESSES

Walter Allen
L. H. Grote

INVENTOR

Audrey Lambertson
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ATTORNEYS

UNITED STATES PATENT OFFICE.

ANDREW LAMBERTON, OF COATBRIDGE, SCOTLAND.

METHOD OF ROLLING PLATES.

No. 898,901.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed April 6, 1907. Serial No. 366,745.

To all whom it may concern:

Be it known that I, ANDREW LAMBERTON, a subject of the King of Great Britain and Ireland, and a resident of Coatbridge, in the county of Lanark, Scotland, have invented certain new and useful Improvements in the Methods of Rolling Plates, and of which the following is the specification.

This invention relates to rolling mills of the class used for the production of plates, sheets, strips, and the like, of iron, steel, or other metal. Hitherto, for this purpose a pair of two-high reversing mills side by side, the one roughing and the other finishing have been used, the plates after a sufficient number of passes through the roughing rolls being transferred sidewise to the finishing rolls. Or, alternatively, three-high non-reversing rolls have been used. With these the lateral transference of the plates is unnecessary, but the wear upon the rolls—particularly upon that in the center—is excessive.

A mill made according to my invention is non-reversing and may therefore be driven by a high class and economical engine or other motor running continuously in one direction. In it, the necessity for lateral transference of the plate and also the duplicate live-roller feeding tables of the usual two-high mill are avoided, while also the rolls are not, as in the three high mill subjected to excessive wear, nor are they, as in it, difficult of adjustment for draft.

My invention consists essentially in arranging in a single or in separate housings two pairs of non-reversing rolls running in opposite directions, preferably one roll at least of which is not driven. The pairs of rolls are arranged upon different levels, the lower roll of the upper pair being parallel with and above or on the same level as the upper roll of the lower pair. Live roller feeding tables of usual form and which may, in usual manner, be brought level with the gap of either pair of rolls are provided, and the usual balance and draft adjustment devices are applied to one roll of each pair.

In order that the invention and the manner of performing the same may be properly understood, there are hereunto appended two sheets of explanatory drawings showing in plan in Figure 1, Sheet 1, and in side elevation in Fig. 2 Sheet 2, an example of the improved non-reversing rolling mill.

According to this example the two pairs,

A, B, C, D, of rolls are arranged in a single housing, E, the pair, A, B, being at a higher level than the pair, C, D. Both rolls, C, D, are driven, the first motion drive being upon the shaft of the lowest roll, D. The upper roll, C, of this pair is driven by a pair of pinions, G, H, while the lower roll, A, of the other pair of rolls is driven by a pair of pinions, J, K. As will be seen in Fig. 1, this gearing is carried in usual manner in a separate housing and drives the rolls through the usual coupling shafts, L. It is, of course, to be understood that this particular arrangement of gearing is only given by way of example and that the pairs of rolls may be driven at any desired relative speeds and in any desired manner and all of the rolls may be driven.

Usual balance means, M, and draft-adjustment gear, N, are provided.

Live roller feeding tables, O, of usual form and which may be brought level with the gap of either pair, A, B, C, D, of rolls by hydraulic cylinders, P, in usual manner, are provided.

In operation, and supposing the lower pair, C, D, of rolls to be roughing, the upper, A, B, finishing, the lower rolls, C, D, are adjusted to the draft by means of the gear, N, the upper roll, B, of the upper pair, A, B, is raised to pass the plate freely. The live roller tables, O, are then brought opposite the lower pair, C, D, and the plate is passed. The tables, O, are then raised, and the plate passed back freely through the upper rolls, A, B. The tables are then lowered (and with them the plate) to the lower rolls, C, D, and the plate again passed, and so on until roughing is concluded. The top finishing roll, B, is then lowered to its operative position above its companion roll, A, the roughing rolls, C, D, adjusted to pass the plate freely, and the plate is then passed and re-passed through the upper or finishing pair of rolls, A, B, in the same manner as it was passed through the lower rolls, C, D, for roughing. Thus the high speed and economy in power associated with the three-high mill is attained with the accuracy of drafting only possible with a two-high mill.

What I claim is:—

The method of rolling plates in a mill provided with roughing and finishing rolls arranged in tandem on different levels and driven in opposite directions which consists in passing the plate between the closed roughing rolls, bringing it to the level of the

finishing rolls, returning it between the open
finishing rolls, bringing it to the level of the
roughing rolls, passing it again through the
latter and repeating this process until the
5 plate is ready for the finishing rolls, and then
passing the plate between closed finishing
rolls, bringing it to the level of the roughing
rolls, passing it back between open roughing
rolls, bringing it to the level of the finishing
10 rolls and passing it again between the latter

and so on until the finishing is completed,
substantially as described.

In testimony whereof I have signed my
name to this specification, in the presence of
two subscribing witnesses.

ANDREW LAMBERTON.

Witnesses:

DAVID FERGUSON,
WILFRED HENRY.