May 19, 1936. E. G. CROZIER ET AL 2,040,979

ROLLING MILL GUIDE

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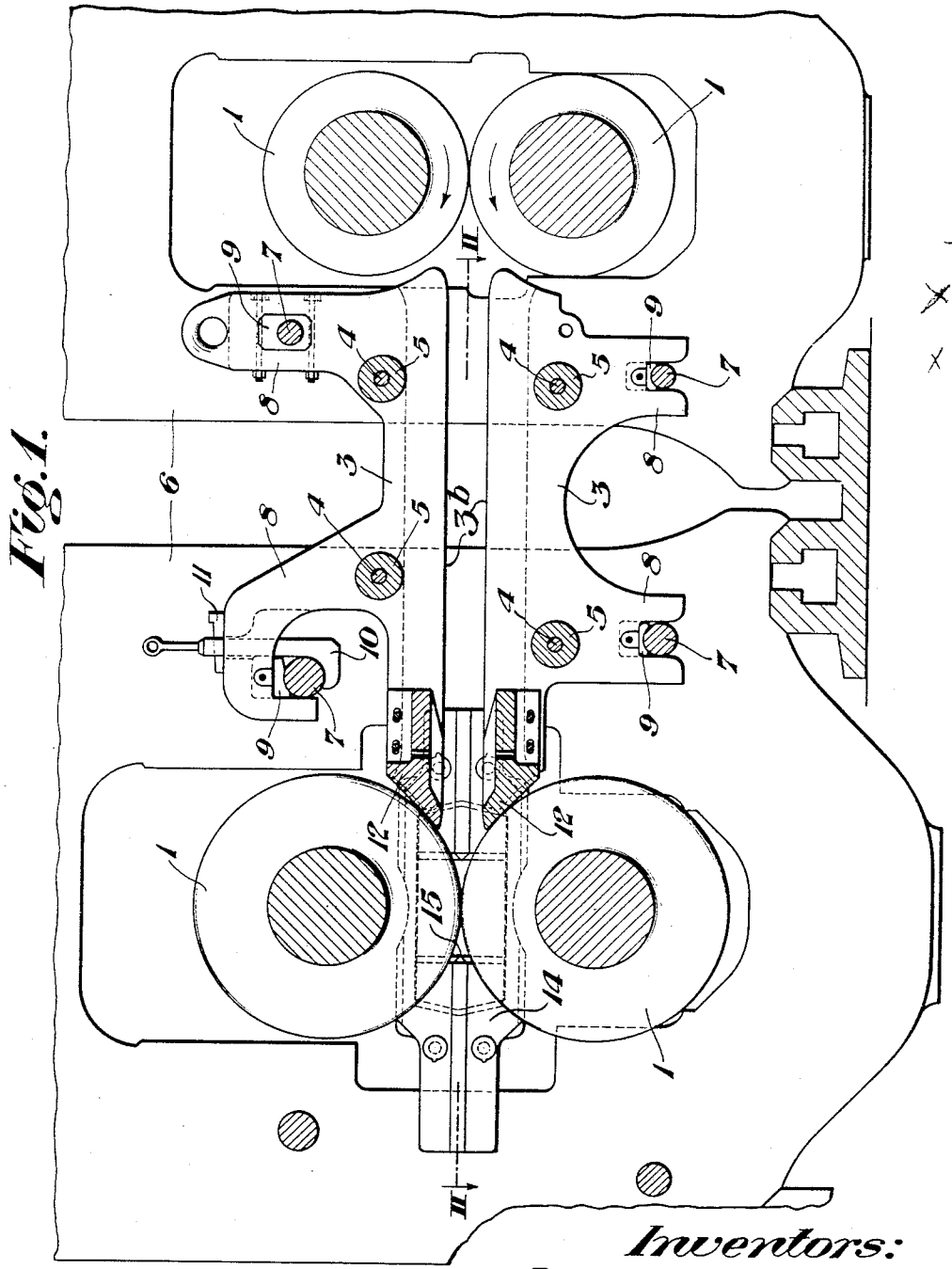


Fig. 1.

5414
X193-1
X5749

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Fig. 2.

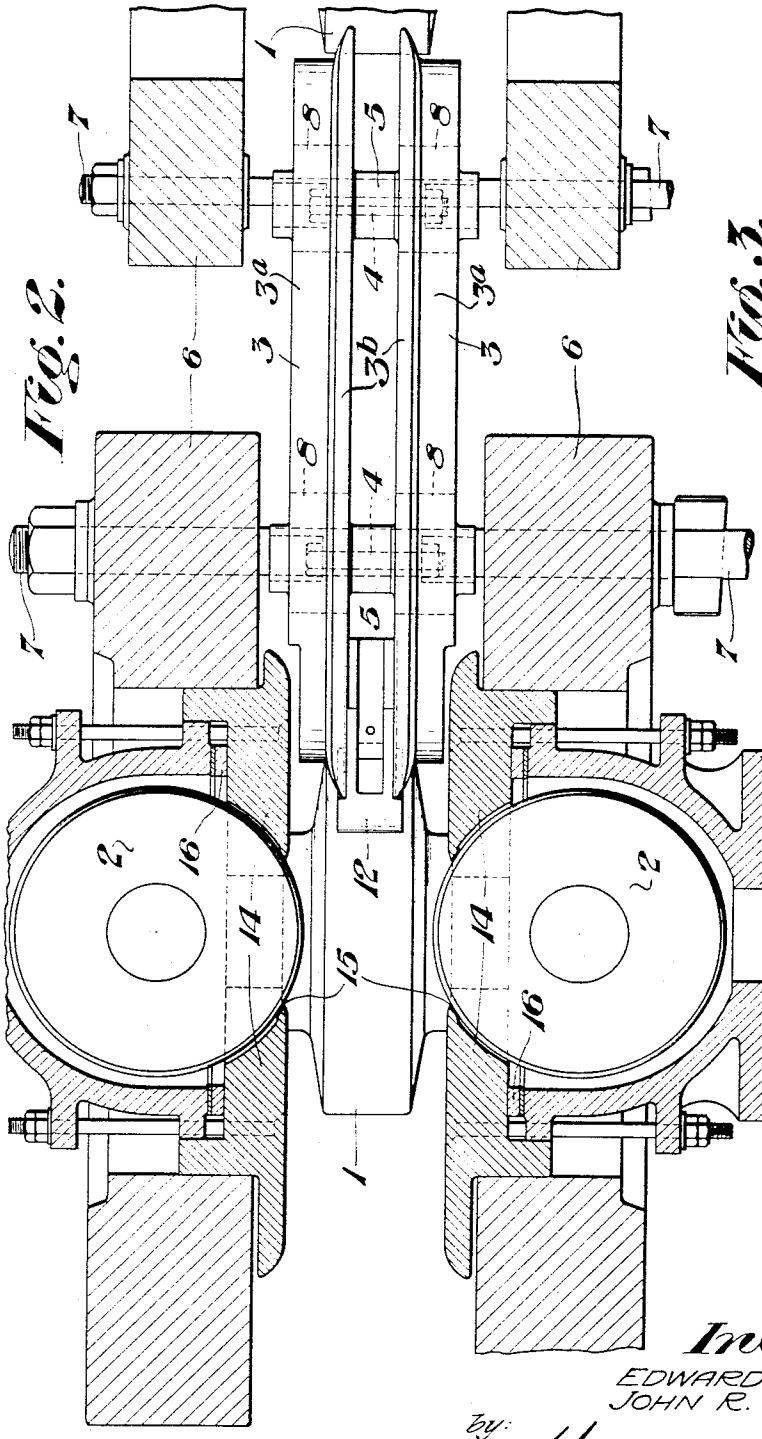
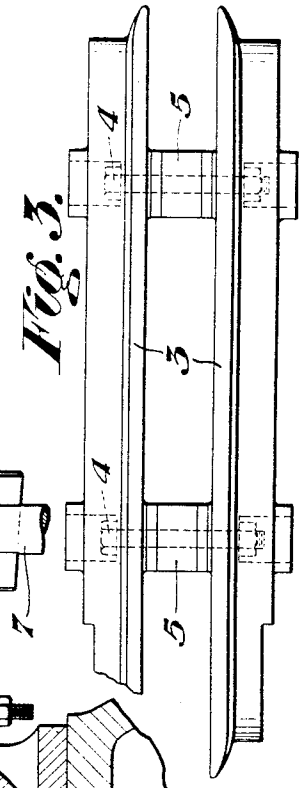


Fig. 3.



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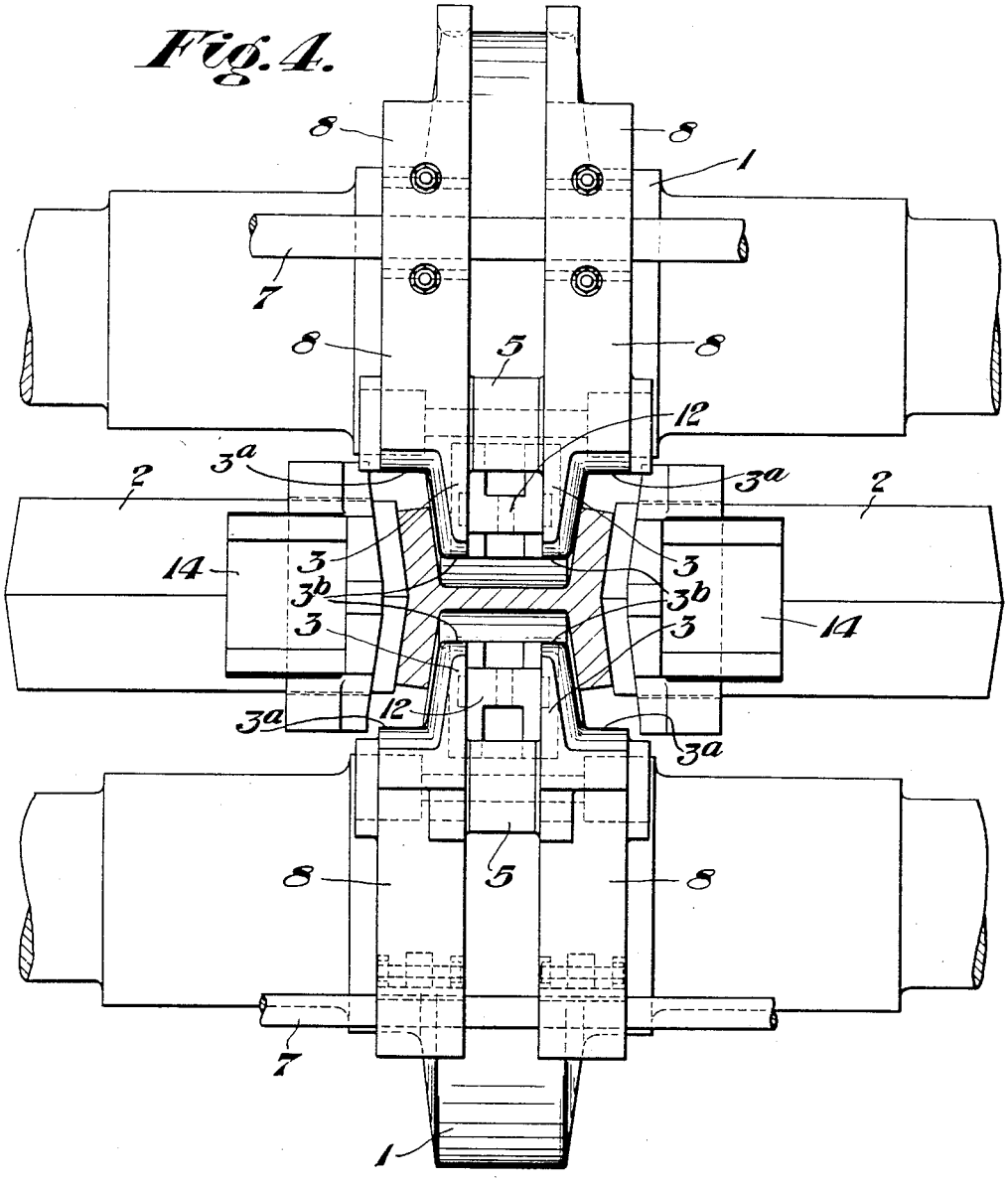
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May 19, 1936. E. G. CROZIER ET AL 2,040,979

ROLLING MILL GUIDE

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Fig. 4.



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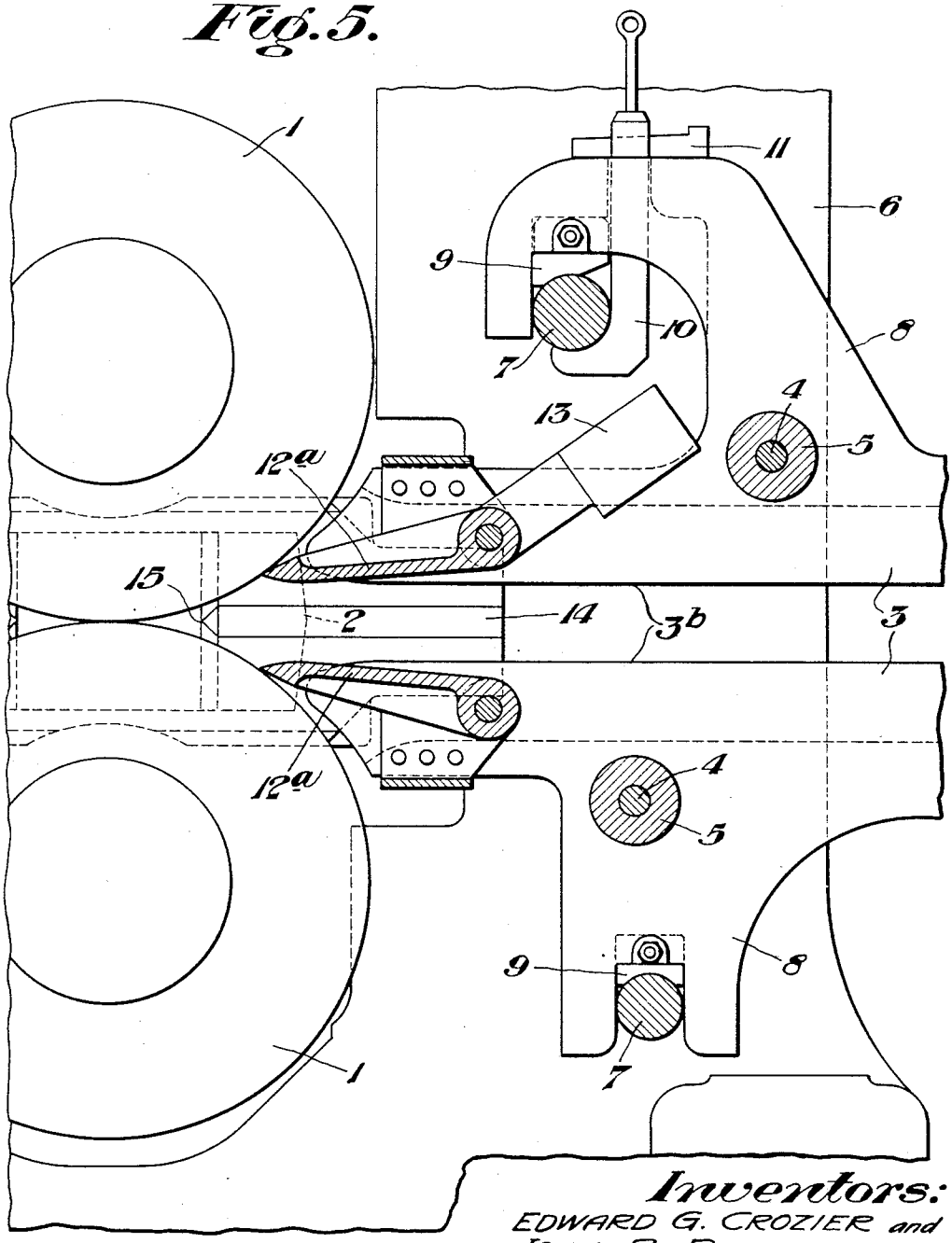
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ROLLING MILL GUIDE

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Fig. 5.



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Patented May 19, 1936

2,040,979

UNITED STATES PATENT OFFICE

2,040,979

ROLLING MILL GUIDE

Edward G. Crozier and John R. Post,
Munhall, Pa.

Application July 30, 1932, Serial No. 627,002

4 Claims. (Cl. 80—51)

This invention relates to rolling mills and particularly to those which turn out large shapes. One of the objects is to provide an improved guide means which will operate successfully when handling such heavy work. Other objects may be inferred from the following:

Referring to the drawing—

Figure 1 is a vertical longitudinal cross-section.

Figure 2 is a horizontal longitudinal cross-section.

Figure 3 is a detail from Figure 2.

Figure 4 is a vertical lateral cross-section.

Figure 5 is a modified detail from Figure 1.

These drawings illustrate a part of a large reversing mill. It includes two sets of shape rolls 1 which are arranged rather closely together for tandem operation. The left-hand set of rolls is provided with vertical side rolls 2. It is necessary to guide the work from one set of rolls to the other through the proper passes. Heretofore, this has been done by a number of guides and sections which were strung between the two sets. These occasioned much difficulty in setting and required much time for removal should an accident occur to the work which they were guiding.

In the present instance, the work is guided by a unitary guide arranged between the two sets of rolls. This particular guide is intended to lead beam sections from one of the roll sets and force them to enter the pass of the other.

Specifically, the guide includes upper and lower pairs of parallel elongated integral members 3 which are held together in each instance by bolts 4 and provided with interposed replaceable spacers 5. These spacers are substituted by others of different size to accommodate differently sized beam sections.

The roll sets are mounted in the usual manner by frames 6 which have horizontal cross tie members 7. These tie bars serve to mount the guide. This is done by providing the members 3 with supports 8 which are constructed and arranged for application to these tie bars. In each instance, replaceable saddle members 9 are interposed between the supports and tie bars. By replacing these saddles by others of different sizes, the members 3 may be adjusted to proper guiding positions.

The supports 8 of the lower pair of parallel members 3 are gravitationally held directly on their mounting tie bars. The right-hand supports of the upper pair are journaled on their mounting tie bar while the left-hand supports comprise goose-necks which rest on their mounting tie bar and are constructed to permit their longitudinal movement when the tie bar to which they are journaled is removed. These goose-necks are held against upward movement by hooks 10 having shanks which project upwardly through the supports and are held by keys 11.

Thus, the upper guide as a unit may be quickly swung upwardly if an accident occurs at the left hand stand and may, if necessary, be quickly removed completely by removal of the right hand tie bar, the goose-necks permitting sufficient movement so they can be slid from beneath the upper roll of the right hand stand and swung in an upward direction away from the left hand stand.

In the present instance, the left-hand set of rolls form the finishing set and it is desirable to maintain very close guiding with respect to the work passing therethrough. For this reason the parallel members 3 are in each instance provided with an adjustable nose piece 12 arranged to move towards the rolls to compensate for their wear. If desired, the nose pieces may be pivotally mounted, as illustrated by the modified form 12^a, to swing towards the rolls. It should be noted that the guides provide main guiding surfaces which extend practically from stand to stand and which are at one end augmented by auxiliary guiding surfaces for the purpose of providing extreme roll-approaching guiding.

The lower nose pieces drop into their proper positions because of their weight and the counterweight 13 urges the upper nose pieces to their positions. These nose pieces are of relatively light construction and are not to be confused with somewhat similar constructions which function as strippers or guards and are consequently of a very heavy construction.

As shown by the drawings, the members 3 are constructed to each provide two guiding surfaces that are respectively at different levels. Therefore, the members may guide wide-flanged shapes by contacting their flange edges, and narrow-flanged shapes by contacting their webs, the surfaces 3^a functioning in the first case and the surfaces 3^b functioning in the second. The members 3 are illustrated as being angle shapes to provide the two sets of surfaces.

The vertical rolls 2 bear against the flanges of the beam section being rolled and there is danger of these relatively thin parts being torn loose and following around the rolls. Consequently, strippers or guards are here necessary.

Heretofore, these have consisted of pivotal members which bear heavily against the rolls and difficulty has been experienced in keeping the

rolls free from metal picked up from these dragging parts.

In the mill being described, these strippers or guards have their edges set at fixed positions with respect to the rolls and do not actually contact with them. Specifically, they comprise heavy integral pieces **14** having edged openings **15** and are arranged so that the rolls project through these openings. These pieces may be bolted directly to the chucks **16** supporting the rolls.

If this is done, replaceable spacers **16***a* may be interposed to secure the proper relative positions of these strippers or guards and the rolls with which they are associated.

If desired, these members may be constructed with sufficiently long faces to act as entering and leaving guides for the structural shapes.

I claim:

1. A rolling mill including tandem stands of shape rolls and upper and lower guides for leading work from one of these stands to another, the upper one of said guides being constructed as a single unit of sufficient length to extend between the rolls of said stands to positions adjacently spaced therebetween and provided with releasable means for securing it in its operative position and which, when released, permits it to move away from between the rolls of one of said stands so that its end adjacent thereto can be swung upwardly.

2. A rolling mill including tandem stands of shape rolls and having upper and lower guides for leading work from one of said stands to another, said guides being constructed and arranged to provide a plurality of substantially parallel guiding surfaces at different levels for respectively contacting the flange edges of wide-flanged shapes and the webs of narrow-flanged shapes.

3. A rolling mill including tandem stands of rolls including frame tie bars and upper and lower guides for leading work from one of said stands to another, the upper one of said guides being a single unit mounted at one end by engagement with one of said tie bars and provided at its other end with a goose-neck constructed to releasably engage another of said tie bars and, when released, to permit horizontal movement of said upper guide.

4. A rolling mill including tandem stands of rolls including frame tie bars and upper and lower guides for leading work from one of said stands to another, said guides being constructed as single units each including respectively integral parallel members bolted together with interposed spacers and providing main guiding surfaces extending practically from one of said stands to another, the upper one of said guides being journaled at one end on one of said tie bars and provided at its other end with a goose-neck constructed to releasably engage another of said tie bars and, when released, to permit horizontal movement of said upper guide.

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