

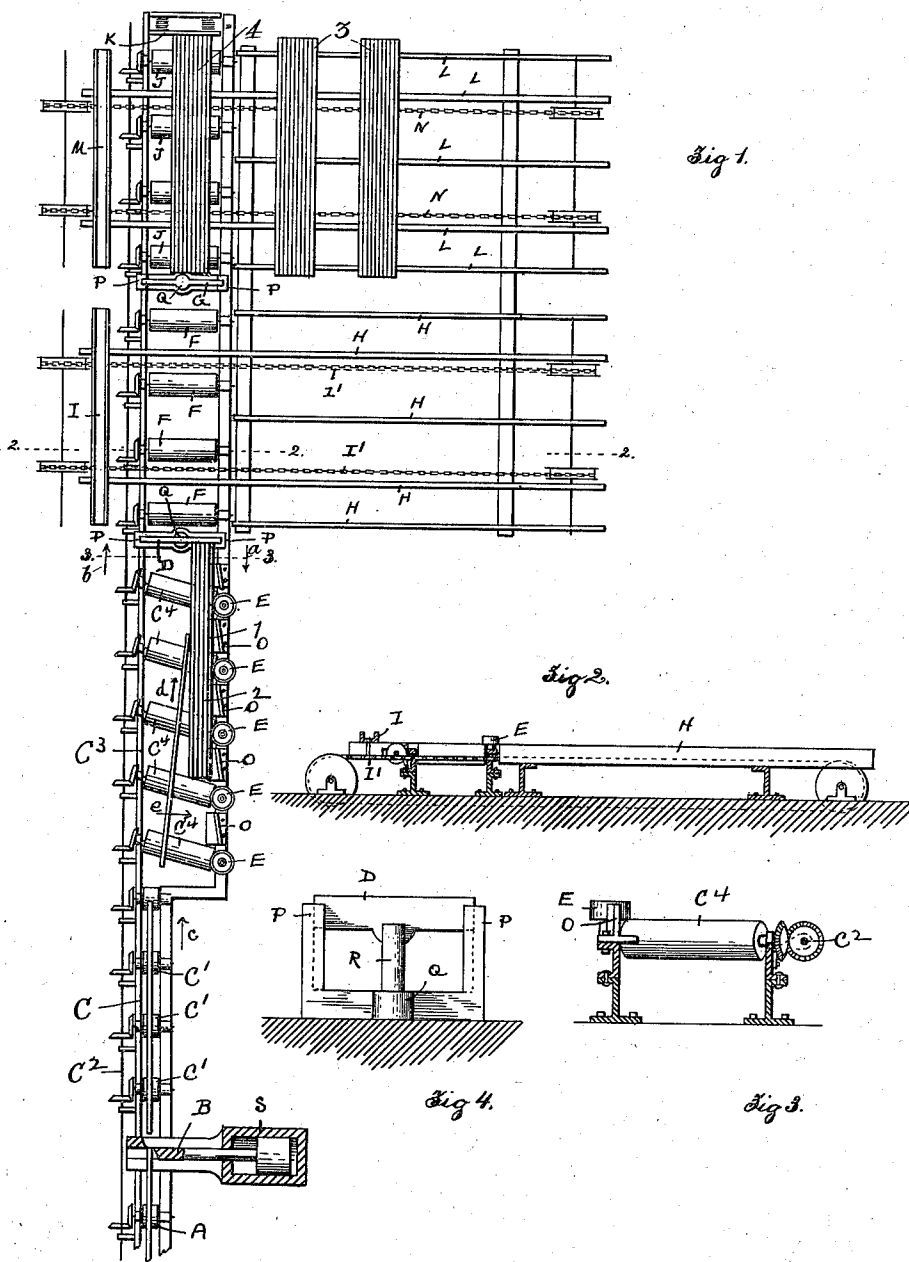
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M. A. NEELAND.  
COOLING BED FOR METAL BARS OR RODS.

APPLICATION FILED JULY 6, 1901.

NO MODEL.



Witnesses:

*H. M. Rugg*  
*Gloucester C. Cook*

Inventor:

*Marvin A. Neeland*

By *Rufus B. Fowler*  
Attorney

# UNITED STATES PATENT OFFICE.

MARVIN A. NEELAND, OF YOUNGSTOWN, OHIO, ASSIGNOR TO MORGAN CONSTRUCTION COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## COOLING-BED FOR METAL BARS OR RODS.

SPECIFICATION forming part of Letters Patent No. 744,874, dated November 24, 1903.

Application filed July 6, 1901. Serial No. 67,270. (No model.)

To all whom it may concern:

Be it known that I, MARVIN A. NEELAND, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented a new and useful Improvement in Cooling-Beds for Metal Bars or Rods, of which the following is a specification, accompanied by drawings, forming a part of the same, in which—

Figure 1 represents a plan view of a cooling-bed for metal bars embodying my invention. Fig. 2 is a sectional view on line 2 2, Fig. 1. Fig. 3 is a sectional view on line 3 3, Fig. 1, looking in the direction of the arrow *a*; and Fig. 4 is a sectional view on line 3 3, Fig. 1, looking in the direction of the arrow *b*. Similar reference letters and figures refer to similar parts in the different views.

My invention relates to an apparatus for taking care of the products of a rolling-mill and comprising the following instrumentalities: first, means for severing the rod or bar delivered from the rolling-mill into desired lengths; second, means for straightening the separate lengths as they are severed from the continuous rod or bar and assembling the severed lengths into a group; third, means for moving the assembled groups longitudinally into alinement with any one of the several sections of a cooling-bed, and, fourth, means for moving the groups by a sidewise movement upon the cooling-bed; and my invention consists in the combination of these instrumentalities in a single operating mechanism and in the novel details of construction and arrangements of parts, as hereinafter described, and set forth in the annexed claims.

Referring to the accompanying drawings, A denotes the finishing-rolls of a rolling-mill from which a continuous rod or bar is delivered.

B denotes a shear of any known form of construction by which the continuous rod or bar is severed into desired lengths.

C denotes a conveyer, by which the severed rods or bars are moved away from the shear B, said conveyer consisting of a series of positively-driven rolls *C'*, operatively connected with a driving-shaft *C<sup>2</sup>*, by which the rolls are

rotated to move the severed rods in the direction of the arrow *c* upon an assembling-table *C<sup>3</sup>*, consisting of a series of conveyer-rolls *C<sup>4</sup>*, which are placed with their axes at an oblique angle to the line of motion of the rod as it is delivered from the finishing-rolls A, so that a compound motion will be imparted to the severed rod as it is moved upon the conveyer-rolls *C<sup>4</sup>*, consisting of an endwise movement in the direction of the arrow *d* and a sidewise movement in the direction of the arrow *e*. The endwise movement of the rods in the direction of the arrow *d* is limited by a stop-plate D, and the sidewise movement of the rods in the direction of the arrow *e* is limited by a series of side rolls E, turning loosely upon vertical studs, with the inner sides of the peripheries of the rolls E arranged in a straight line, so that the first rod moving over the assembling-table will be carried against the side rolls E, and as the rod is in a heated state when delivered from the rolling-mill the movement of the rod against the peripheries of the roll causes the rod to be straightened and to be brought into the position 1 in contact with the rolls E and with its forward end in contact with the stop-plate D. The second rod delivered to the assembling-table will likewise be moved endwise and sidewise by the rolls *C<sup>4</sup>* into the position 2, lying against the side of the rod 1 and with its forward end in contact with the stop-plate D. The individual rods as they are severed from the continuous rod will be assembled in a group upon the assembling-table, as represented in Fig. 1. When a sufficient number of rods have been assembled, the stop-plate D is lowered below the plane of the rolls *C<sup>4</sup>*, thereby releasing the group of rods on the assembling-table and allowing them to be moved endwise over a series of conveyer-rolls F against a stop-plate G and opposite the parallel supporting bars or skids H, forming the first section of the cooling-bed, upon which the group of rods can be moved by a sidewise motion by means of the pusher-bar I, carried by a pair of positively-driven chains I' I'. The stop-plate G, however, can be lowered, if desired, below the plane of the conveyer-rolls F, thereby

allowing the group of rods to be carried forward over the conveyer-rolls J against a stop-plate K and opposite the skids L, which form the second section of the cooling-bed, upon which the group of rods can be moved by a sidewise movement by a pusher-bar M, carried upon a pair of moving chains N N, each group being distributed on the skids of the cooling-bed, as represented at 3 and 4, Fig. 1, from which the groups may be removed into a car or truck or lifted by an overhead crane.

I have shown in the plan view of Fig. 1 the cooling-bed as comprising two sections; but the number of sections may be increased as desired.

Between each of the side rolls E are guide-plates O, substantially filling the space between the rolls and placed slightly oblique to the line connecting their axes. The guide-plates O serve to prevent the advancing end of a rod from passing between the rolls E and to conduct it over the periphery of the rolls.

The stop-plates D, G, and K are capable of a vertical movement in ways P and are provided with suitable actuating mechanism, by which they are raised and lowered. In the present instance the stop-plate-actuating mechanism consists of a hydraulic cylinder Q, provided with the usual and well-known valve mechanism, and the stop-plates are mounted upon the piston-rods R of the hydraulic cylinders, as represented in Fig. 4. In like manner the shear B is operated in the usual and well-known manner by a hydraulic cylinder S.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a cooling-bed for metal bars, or rods, the combination of the following instrumentalities; means for severing the bar into desired lengths, means for assembling the several lengths into groups of parallel bars, means for moving the bars in a group simultaneously by an endwise movement, means for checking the endwise movement of a group at a desired point, and means for moving the bars in the group by a sidewise movement, substantially as described.

2. In the assembling mechanism of a cooling-bed for metal bars, the combination of means for severing a rod, or bar, into lengths as it is delivered from the rolling-mill, and means for straightening and assembling the severed lengths into groups consisting of a series of rotating rolls in the same horizontal plane, with their axes placed at an oblique angle to the line of motion of the rod as it is delivered from the rolling-mill, whereby an endwise and a sidewise movement are imparted to the severed rod, a series of rolls in alinement with each other and placed in the path of the rod to limit its sidewise movement, and a stop by which the endwise movement of the rod is checked, substantially as described.

3. In the assembling mechanism of a cooling-bed for metal bars, the combination of

means for moving the individual bars endwise, means for moving the individual bars sidewise, means for checking the sidewise movement of the individual bars, a stop by which the endwise movement of each individual bar is checked, whereby the bars are assembled in a group of parallel bars, and means for periodically removing said endwise stop from the plane of the assembled bars to permit their simultaneous endwise movement, substantially as described.

4. The combination with a cooling-bed for metal bars, of an assembling-table comprising means for the endwise and sidewise movement of individual bars thereon and means for checking the sidewise movement of the individual bars, a stop for checking the endwise movement of the individual bars, whereby said bars are assembled in a group of parallel bars, means for removing said endwise stop from the path of the assembled bars to permit their endwise movement upon a series of conveyer-rolls, a series of conveyer-rolls, a stop for checking the endwise movement of the group of assembled bars on said rolls in alinement with said cooling-bed, substantially as described.

5. The combination of a series of rotating rolls, a common driving-shaft by which said rolls are rotated, said rolls having their axes placed at an oblique angle to said driving-shaft, said rolls with their axes at right angles to the plane of said driven rolls, guide-plates between said side rolls, a movable stop-plate, and means for periodically operating said stop-plate, substantially as described.

6. The combination of a series of rotating rolls, forming an assembling-table, with their axes at an oblique angle to the endwise movement of the bars on said table, whereby a sidewise movement is imparted to each bar, stops for limiting said sidewise movement, a stop-plate for limiting said endwise movement, whereby the bars are assembled in a group, and means for periodically operating said stop-plate, substantially as described.

7. In the assembling mechanism of a cooling-bed, the combination of a cutting mechanism for severing a bar as it is delivered from the rolling-mill, a conveyer for the bars as they are severed by the cutting mechanism, said conveyer comprising a series of rolls arranged to impart a simultaneous endwise and sidewise movement to the bars supported thereon, means for rotating said rolls, means for checking the sidewise movement of the bars, a stop interposed in the path of the bars for checking their longitudinal movement, and means for periodically removing said stop to permit the simultaneous endwise movement of the assembled bars, substantially as described.

Dated this 27th day of June, 1901.

MARVIN A. NEELAND.

Witnesses:

PAUL JONES,  
CAMERON CAMP.