

G. H. BARBOUR.

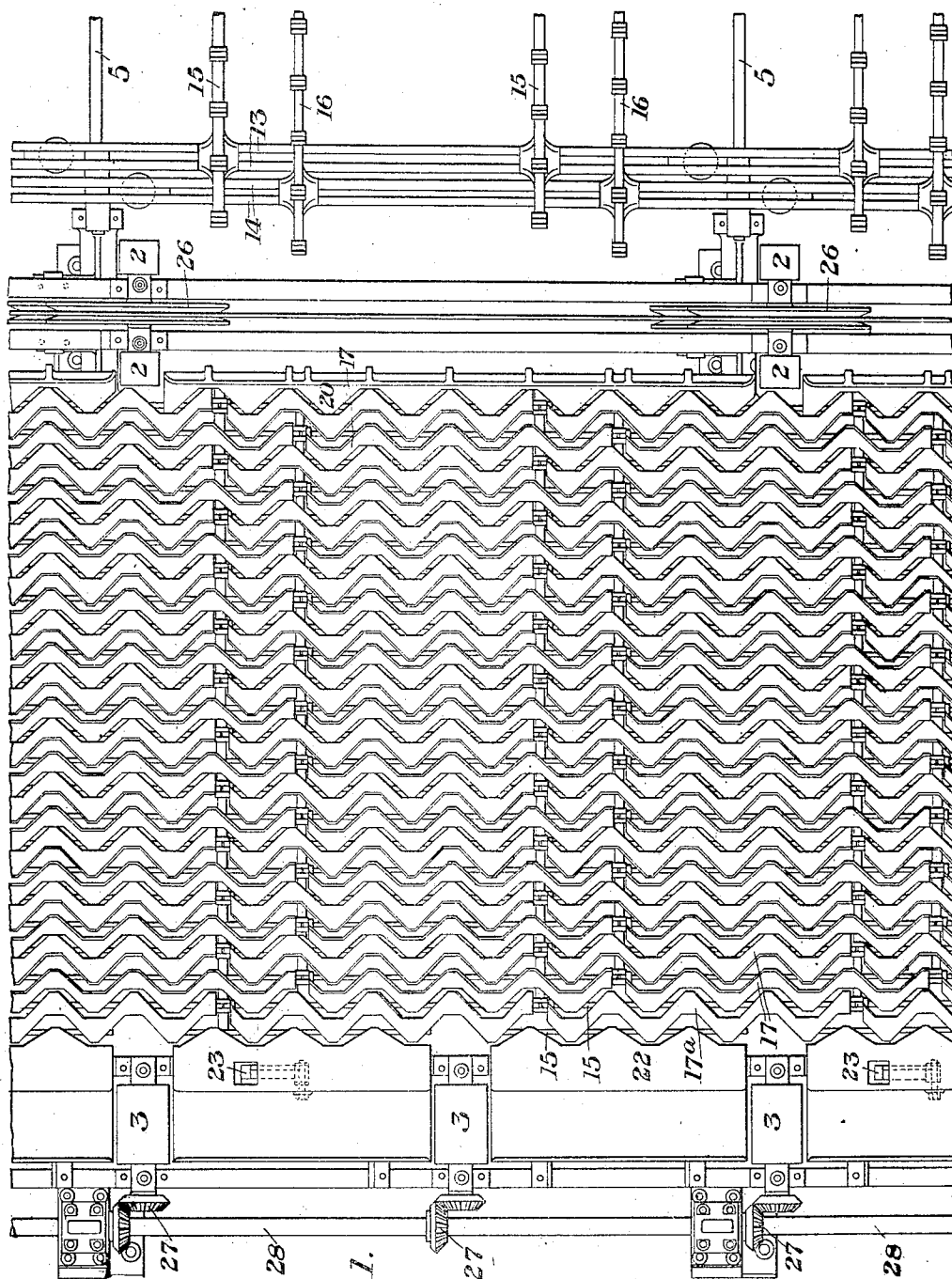
HOTBED.

APPLICATION FILED MAR. 6, 1909.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 1.

943,373.



WITNESSES

R. A. Balderson
Walter Farnsworth

Fig. 1.

INVENTOR

Geo. H. Barbour,
J. Bahense, Dymers Cammiller,
his Atty

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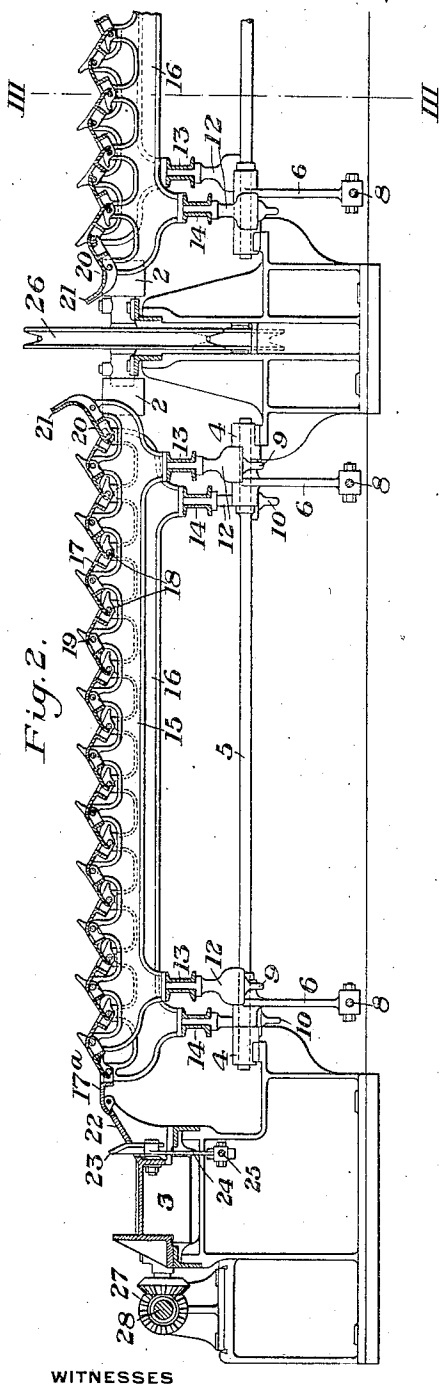


Fig. 2.

WITNESSES

R. H. Balderson
Walter Pamariss

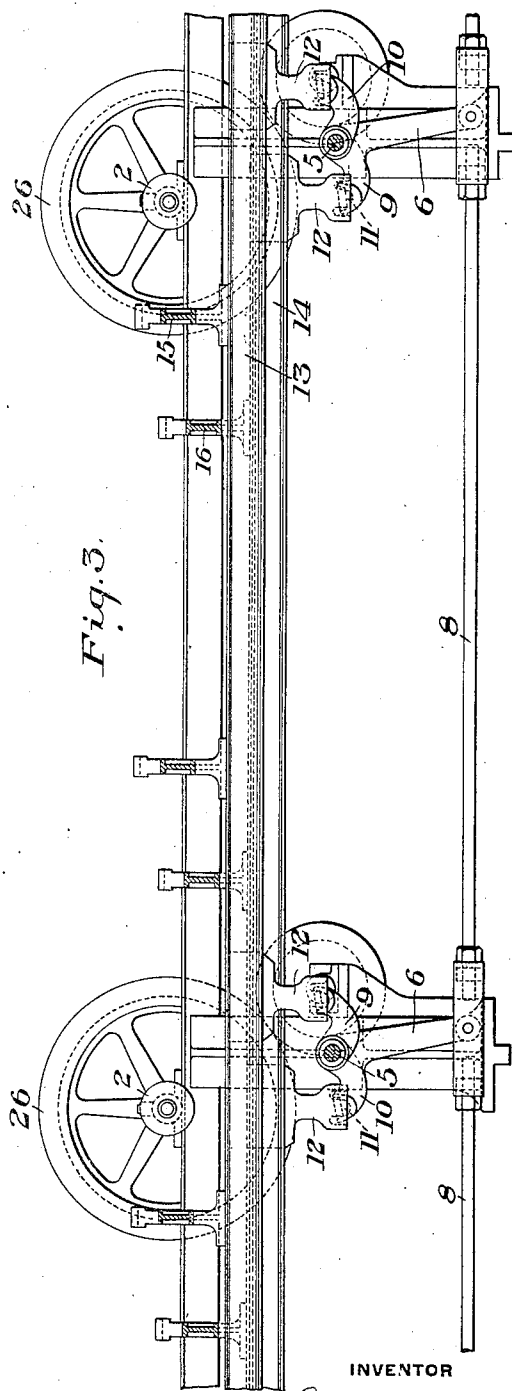


Fig. 3.

INVENTOR

Geo. H. Barbour
by Balderson, Rymer & Pamariss
his Attys.

G. H. BARBOUR.

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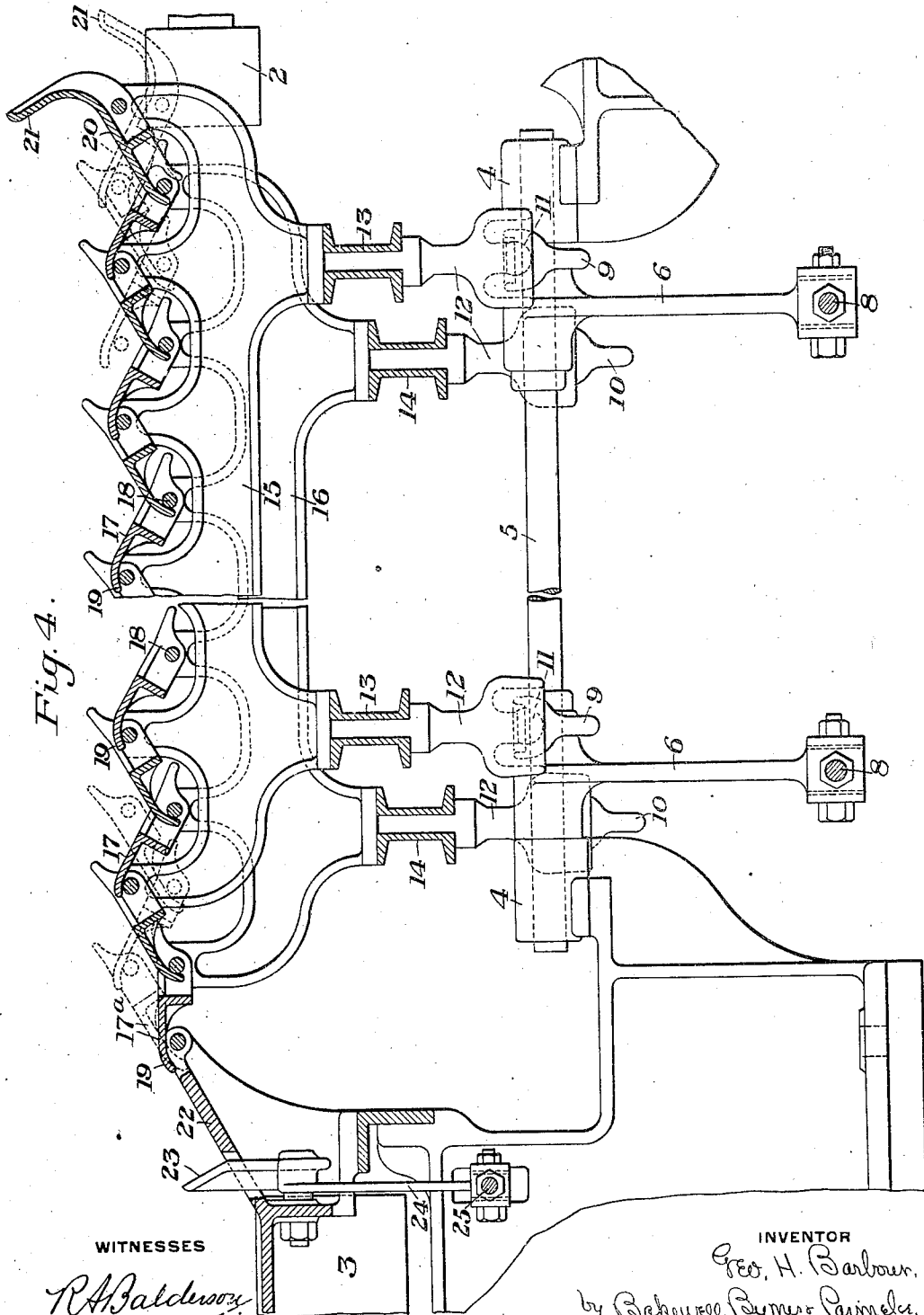


Fig. 4.

WITNESSES

R. A. Baldwin
Walter Pamariss

INVENTOR

Geo. H. Barbour,
by Bechewe, Syme & Parinels,
his Attys

G. H. BARBOUR.

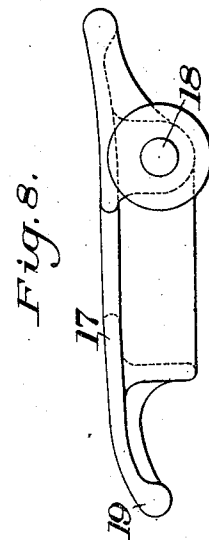
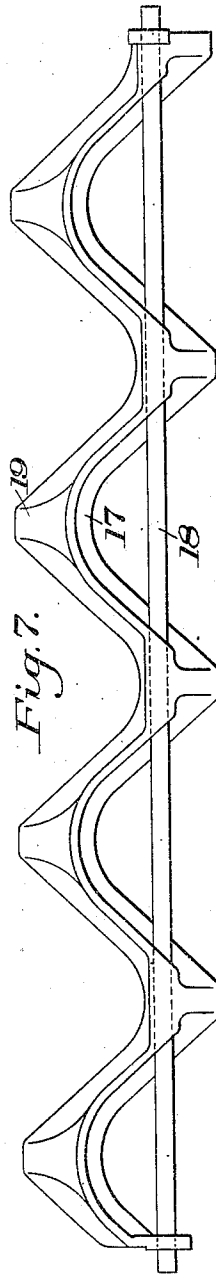
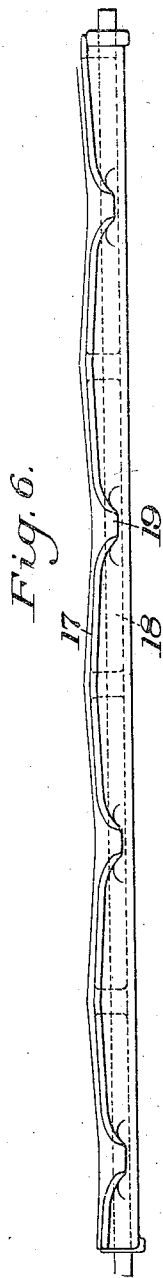
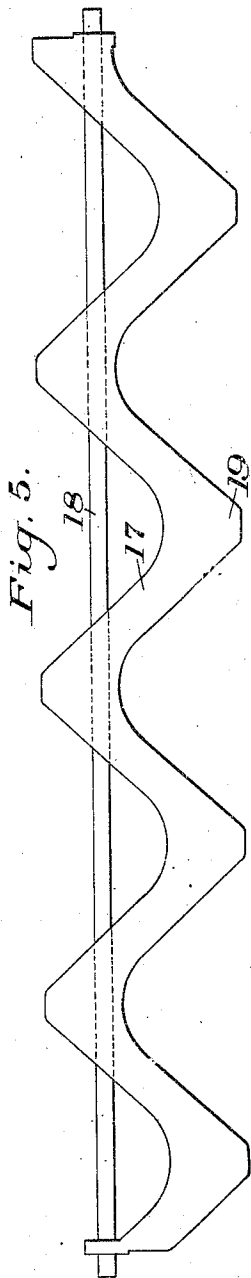
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4 SHEETS—SHEET 4.

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WITNESSES

R. A. Balderson
Walter J. Mariss

INVENTOR

Geo. H. Barbour,
by Baker, Byrnes, Palmer, & Co.,
his Attys

UNITED STATES PATENT OFFICE.

GEORGE H. BARBOUR, OF PITTSBURG, PENNSYLVANIA.

HOTBED.

943,373.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed March 6, 1909. Serial No. 481,565.

To all whom it may concern:

Be it known that I, GEORGE H. BARBOUR, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Hot-bed, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan showing a portion of a double hot bed constructed and arranged in accordance with my invention; Fig. 2 is a sectional end elevation showing one bed and a portion of the other bed of the double hot bed shown in Fig. 1; Fig. 3 is a longitudinal sectional elevation on the line III—III of Fig. 2; Fig. 4 is a detail sectional end elevation on a larger scale showing the receiving and delivery sides of one of the beds of Figs. 1, 2 and 3, the connecting central portion of this bed being broken out; Fig. 5 is a top plan, Fig. 6 a side elevation, Fig. 7 is an inverted bottom plan, and Fig. 8 is an end elevation showing a detail of one of the rocking plates forming part of my invention.

My invention relates to apparatus employed in handling metal bars, hoops and similar materials, and it more particularly relates to such apparatus employed in handling such materials while being cooled from the hot state in which they are delivered from the rolls of rolling mills in which such materials are manufactured.

The object of my invention is to provide improved means for handling such materials, by which the bars or other materials are removed from the receiving table or other device on which they are delivered from the rolls or other place of supply alongside the hot bed in position to be removed and to be shifted transversely of their length to a delivery table, to which they are transferred from the hot bed, and on which they are delivered to the shears or other place of disposal.

A further object of the invention is to provide bar handling apparatus having improved means for supporting the bars whereby damage or distortion of the materials is prevented while being handled and to provide improved mechanism for actuating the bar-handling apparatus.

In the drawings 2 represents the rollers of a roller receiving table, on which the materials are delivered from the rolls of the rolling mill, alongside the hot bed or trans-

fer mechanism in position to be moved across the width of the hot bed, and 3 represents the rollers of a delivery table, upon which the materials are received from the hot bed and by which they are delivered to the shears or other place of disposal.

Mounted in suitable bearings 4 are the rocking shafts, 5, on which are the rocking arms 6, which are connected together and to a suitable operating motor (not shown) by the reciprocating rods 8. The shafts 5 are provided with the arms 9 and 10, which extend in opposite directions on the shaft. A ball-and-socket connection 11 is formed between the ends of the arms 9 and 10, and the vertical movable supports 12, on which are the longitudinally extending beams 13 and 14. Mounted on the longitudinally extending beams 13 and 14 are the pivot supports 15 and 16, these pivot supports being arranged, together with the longitudinal beams 13 and 14, to be reciprocated in a vertical direction when the rocking shafts 5 and the arms 9 and 10 are actuated through the rods 8 connected with the motor. The axes of the rocking shafts 5 are arranged as shown, at right angle to the axes of the rocking plates. Pivottally mounted in the pivot bearings on the supports 15 and 16 is a series of rows of flat, rocking plates 17, provided with pivot shafts 18 by which they are secured in place on the supports 15 or 16. The opposite side or edge of the plates 17 is provided with curved lip portions 19, which engage with and slide upon the pivot shafts 18 of the adjacent rows of supporting plates. The row of tilting plates 20 nearest the receiving rollers 2 are provided with hook portions 21, which are arranged so as to be below the line of feed of the materials being delivered on the rollers 2, and which are arranged to lift and transfer the materials from the rollers 2 to the rocking plates 17 forming the supporting surfaces of the hot bed. The opposite side of the beds is provided with a series of inclined chutes 22, on which the materials slide when they are finally transferred from the hot bed by the tilting operations of the rocking plates. A stop 23 is provided to hold and collect a number of bars until such time as the stop 23 is actuated through the lever arm 24 and connecting rods 25, by a suitable rocking motor (not shown,) so as to permit the collected materials to slide downwardly onto the delivery rollers 3.

As shown in the drawings, the receiving rollers 2 are driven by means of the sheave wheels 26, through a suitable rope drive, and the rollers 3 arranged to be driven through the bevel gears 27 and the line-shaft 28 by means of any suitable motor.

In the operation of my improved apparatus, the materials are delivered on one or the other of the sets of rollers 2 forming the receiving tables into position alongside the hot bed to which the materials are to be transferred.

In delivering the materials on the rollers 2 of the receiving table, the hook portion 21 of the end rocking plate is in the position shown dotted in Fig. 4. The rocker shafts 5 are then actuated to reciprocate the supports 15 and 16 in a vertical direction so as to bring the series of rocking plates from the position shown dotted into that shown by full lines in Fig. 4. With this movement of the rocking plates, the bar or other material on the rollers 2 is lifted therefrom and is caused to slide or roll downwardly until in engagement with the rocking plates. The rocking plates are again caused to rock by the connecting mechanism so as to again bring the plates into the position shown dotted in Fig. 4. This movement advances the bar a further step into contact with the next set of rocking plates. Each raising and lowering movement of the plates advances the bars one step toward the opposite side of the hot bed and finally reaches the end rocking plate 17^a, from which it is delivered into the chute or slide 22.

It will be seen by reference to Figs. 5, 6, 7 and 8, that the rocking plates are arranged to overlap each other so that the bars being transferred are always in contact with each plate at a plurality of points in the length of each rocking plate and that the bar is substantially supported along its entire length while being transferred across the width of the hot bed. This is of importance, especially when very thin and flexible materials are being handled causing these materials to be transferred without buckling, kinking or damaging the edges or surfaces of such materials.

The above described operations are repeated from time to time, as the materials are received on the receiving rollers 2, and are gradually transferred across the width of the hot bed, reaching the opposite side of the hot bed in a comparatively cold state, in which they can be handled without liability of damage to the finished materials.

The advantages of my invention will be apparent to those skilled in the art. The apparatus is simple, and is easily kept in repair. By means of my improved construction, a hot bed or transfer apparatus is provided which will handle materials of any cross-section, and which will deliver these

materials from one side of the storage bed to the other without liability of damage to such materials.

The materials are supported along substantially their entire length while being transferred instead of at a series of separated points as in the apparatus heretofore used for this purpose.

Modifications in the construction and arrangement of the parts may be made without departing from my invention. But one hot bed may be employed instead of the double arrangement of transfer apparatus shown; and devices for delivering the materials to and from the hot bed other than roller tables shown may be used.

I claim:—

1. Bar handling apparatus comprising a plurality of rows of members having flat bar-supporting portions and overlapping side edges, means on which said surfaces are pivotally mounted, and mechanism arranged to tilt the pivoted bar-supporting portions into planes at an angle to a horizontal plane, and transfer bars from row to row of the supporting members; substantially as described.

2. Bar handling apparatus comprising a plurality of rows of members having flat bar-supporting portions and overlapping side edges, means on which said bars are pivotally mounted, and mechanism arranged to tilt adjoining rows of pivoted bar-supporting portions into planes at opposite angles to a horizontal plane, and transfer the bars from row to row of said members; substantially as described.

3. Bar handling apparatus comprising a plurality of rows of members having flat bar-supporting portions and overlapping side edges, means on which said bars are pivotally mounted, and mechanism arranged to tilt adjoining rows of said portions into planes at opposite angles to a horizontal plane, and transfer the bars from row to row of said members, substantially as described.

4. Bar handling apparatus comprising a plurality of rows of members having flat bar-supporting portions and overlapping side edges, means on which said bars are pivotally mounted, and mechanism arranged to tilt adjoining rows of said portions into angularly opposite planes to a horizontal plane, and transfer the bars from row to row of said members; substantially as described.

5. Bar handling apparatus comprising a plurality of rows of members having flat bar-supporting portions and overlapping side edges, means on which said bars are pivotally mounted, and mechanism arranged to tilt adjoining rows of said portions into angularly opposite planes to a horizontal plane, the said members being tilted alternately in an opposite direction, and transfer bars from row to row across the width of said hot bed; substantially as described.

6. Bar handling apparatus comprising a plurality of longitudinally extending members arranged side by side, said members having flat bar supporting portions, lifting frames movable in a path extending vertically, means arranged to move said frames in said path, the members being pivotally mounted on the frames and the members and frames being so constructed and arranged that by a movement of the frames the flat bar supporting portions will be inclined at an angle to a horizontal plane and will transfer bars from one member to another transversely of the bed; substantially as described.

7. Bar handling apparatus comprising a plurality of longitudinally extending members arranged side by side and having flat bar supporting portions, said members being arranged to incline at opposite angles to the horizontal and transfer bars side wise from one member to another, vertically movable lifting frames on which said members are pivotally mounted, and means for actuating said frames to incline said members; substantially as described.

8. Bar handling apparatus comprising a plurality of longitudinally extending pivoted members arranged side by side and having flat bar supporting portions, pivoted supports on which said members are mounted, and means arranged to move said pivot supports and incline the supporting portions of adjoining rows of members at opposite angles to a horizontal plane, and transfer bars from row to row across the width of the apparatus; substantially as described.

9. Bar handling apparatus, comprising longitudinally extending members, having flat bar supporting portions arranged to be moved in alternate planes to the horizontal

movable supports for said members and means for moving the supports and inclining said members, the bar supporting portions of one row being moved in the opposite direction to the adjoining rows in transferring bars from row to row across the width of said apparatus.

10. Bar handling apparatus, comprising a plurality of rows of longitudinally extending members having flat bar supporting portions, and overlapping side edges, and means for tilting said members, the adjoining rows of supporting members being arranged to tilt the flat supporting portions in opposite directions and transfer bars sidewise from row to row across the width of the apparatus; substantially as described.

11. Bar handling apparatus comprising longitudinally extending pivoted members having flat bar supporting portions, pivoted supports for said members and means for moving the supports and tilting the members at an angle to the horizontal and to thereby transfer bars on the flat supporting portions from row to row across the width of said apparatus; substantially as described.

12. A bar handling apparatus, comprising a plurality of longitudinally extending members arranged side by side, and having flat bar supporting portions, said members being arranged to incline at an angle to the horizontal and transfer bars sidewise from one member to another, vertically movable lifting frames on which said members are pivotally mounted, and means for actuating said frames; substantially as described.

In testimony whereof, I have hereunto set my hand.

GEORGE H. BARBOUR.

Witnesses:

WM. J. SAUNDERS,
J. C. BILY.