

R. H. STEVENS.
 DRAG-OUT FOR HOTBEDS.
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959,813.

Patented May 31, 1910.

4 SHEETS—SHEET 1.

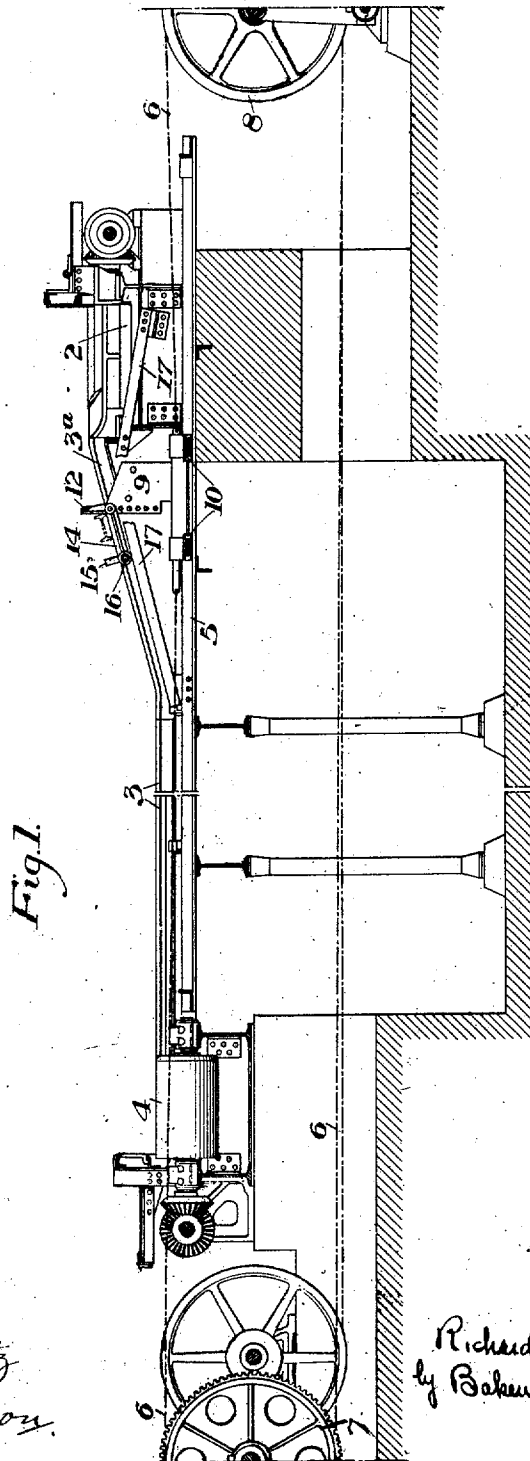


Fig. 1.

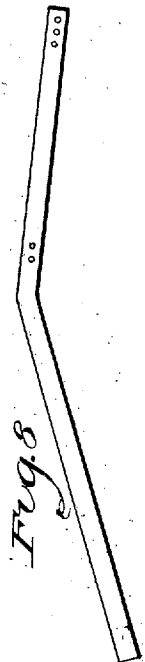


Fig. 8.

WITNESSES
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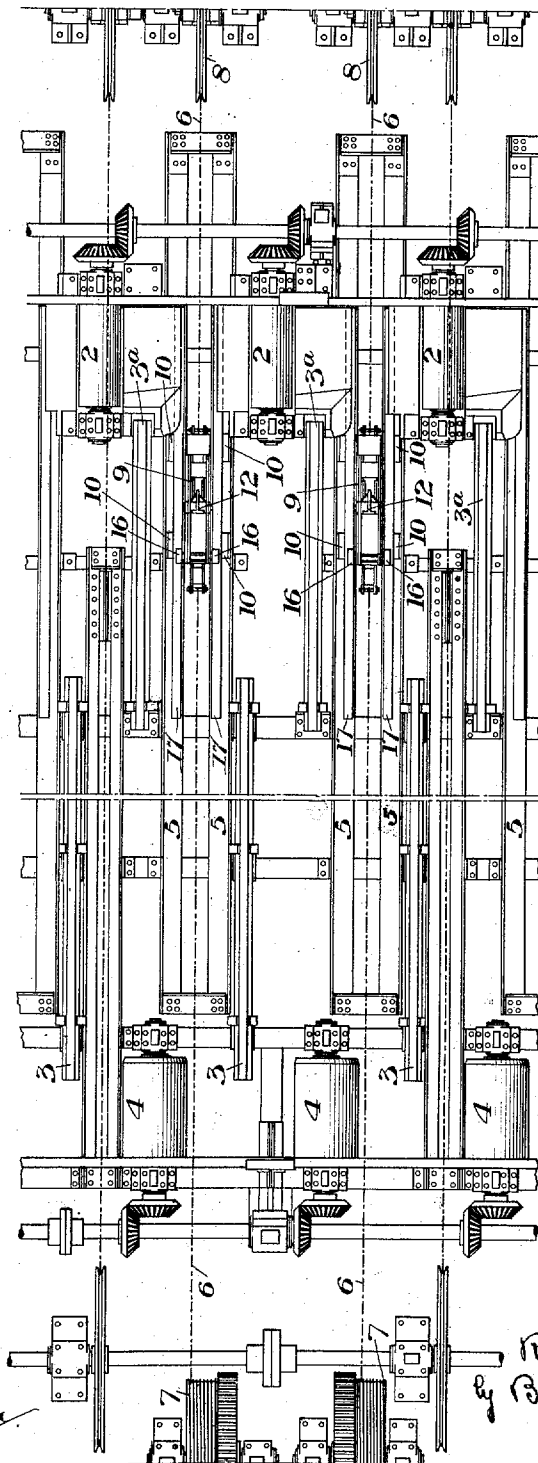
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4 SHEETS—SHEET 2.

Fig. 2.



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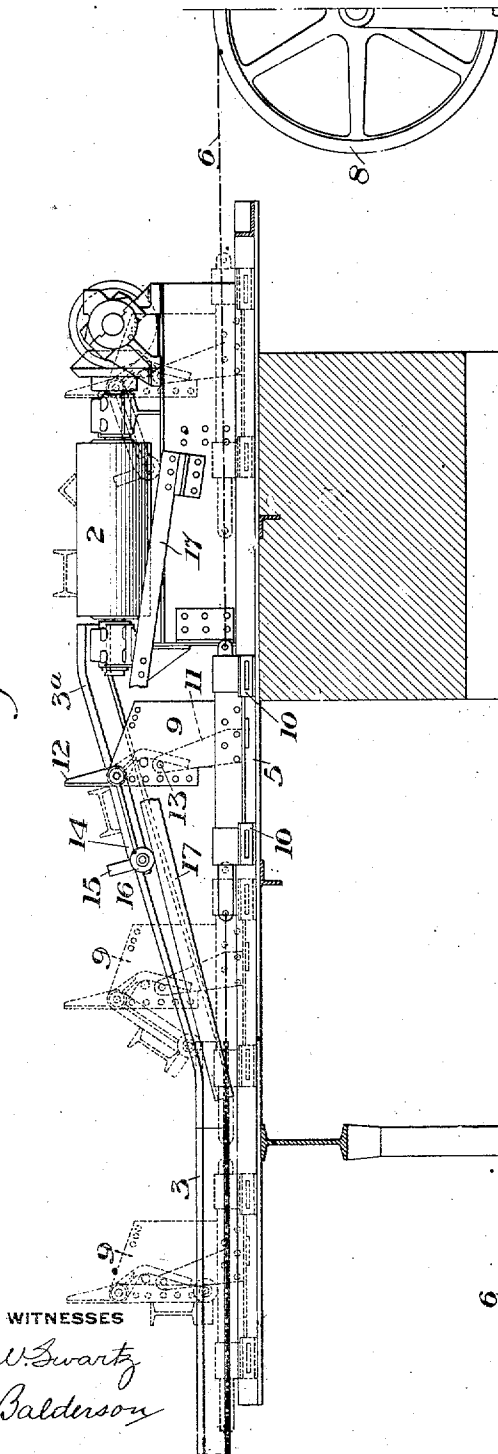
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4 SHEETS—SHEET 3.

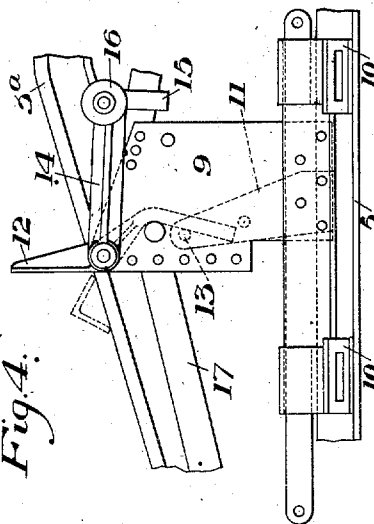
Fig. 3.



WITNESSES

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Fig. 4.



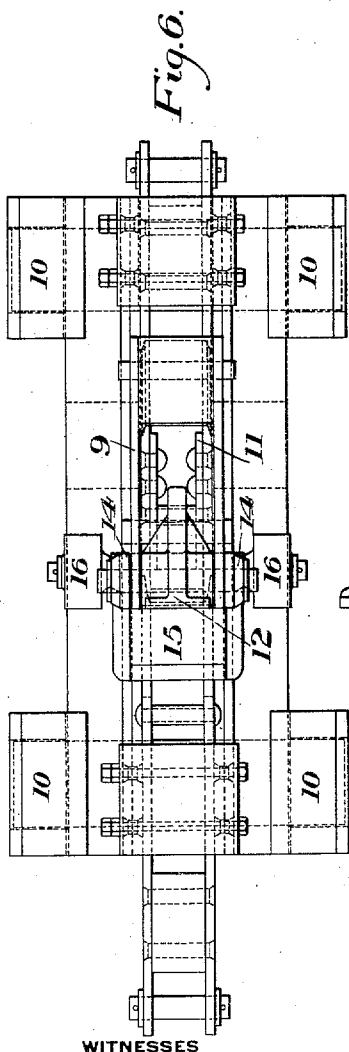
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4 SHEETS—SHEET 4.



WITNESSES

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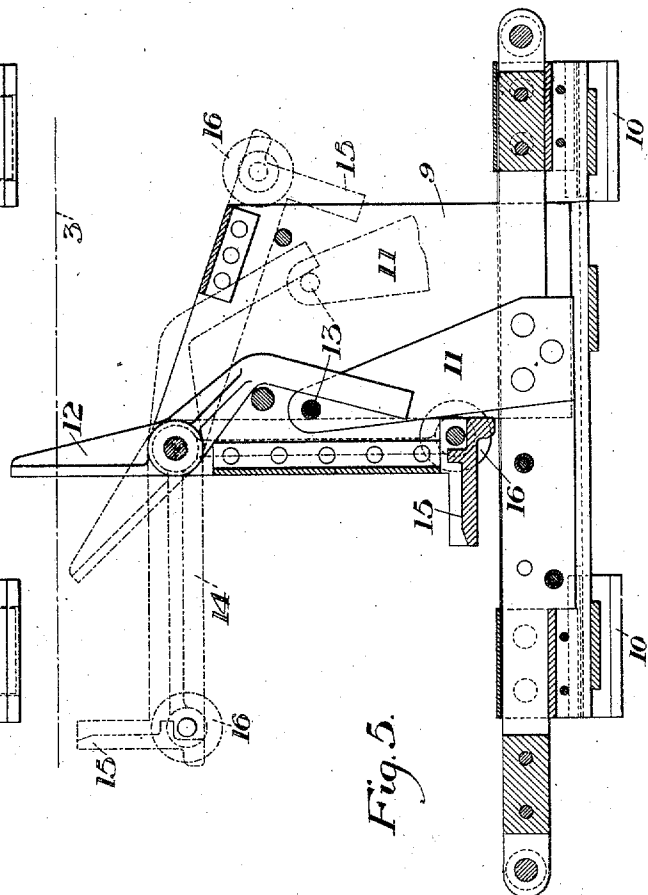
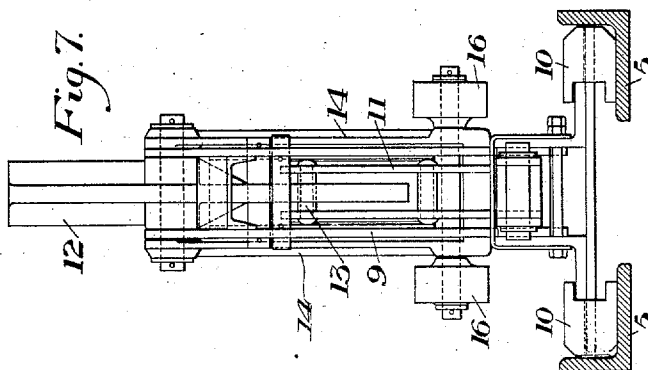


Fig. 5.

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UNITED STATES PATENT OFFICE.

RICHARD H. STEVENS, OF MUNHALL, PENNSYLVANIA.

DRAG-OUT FOR HOTBEDS.

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Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, RICHARD H. STEVENS, of Munhall, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Drag-Outs for Hotbeds, 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 sectional side elevation partly broken away showing the hot bed equipped with apparatus constructed in accordance with my invention; Fig. 2 is a top plan view of the same; Fig. 3 is a detail side elevation on a larger scale of the receiving end of the hot bed showing the different positions assumed by the drag out on the hot bed in turning materials while moving across the top of the hot bed; Fig. 4 is a detail side elevation of the drag out of my invention showing the swing arm thrown into its inoperative position; Fig. 5 is a detail side elevation of the drag out showing the pivoted dog and swinging arm in their extreme upper and lower positions relative to the top of the hot bed; Fig. 6 is a plan and Fig. 7 a rear end elevation of the apparatus shown in Fig. 5. Fig. 8 is a side elevation of one of the guide rails employed for turning the work.

My invention relates to mechanism employed in shifting rolled metal shapes laterally from the delivery table across the skids forming the hot bed or similar place of storage and it more particularly relates to apparatus for transferring rolled metal shapes having one transverse dimension greater than the other, such as I-beams and channels.

Heretofore with such devices, the beams or other materials have been shifted laterally from the roller delivery table and have been moved across the skids of the hot bed without turning such shapes, in which case, the center line through the web and flanges of the shape is in a horizontal plane. In other cases the beams are delivered lengthwise from the rolls of a rolling mill or other source of supply onto the delivery roller table until opposite the hot bed, when they are first turned until the center line through the web and flanges of the shape is in a vertical plane. The shapes are then shifted laterally across the top of the skids forming the hot bed in the usual manner, by means

of the transfer mechanism. In such cases, either the shapes are not turned or they are turned by a separate operation, the moving of the materials laterally on the skids being interrupted or suspended until the turning operation has been completed.

The object of my invention is to provide improved mechanism for transferring rolled metal shapes from the rollers of the delivery table to the skids of the hot bed and for storing such materials in such manner as will very greatly increase the capacity of the hot bed.

Another object of the invention is to provide improved means by which the shapes are automatically turned without interruption of the shifting operation and to provide apparatus which when desired, can easily and quickly be changed so as to transfer materials from the roller table across the hot bed without turning the materials.

The invention consists in an improved drag-out having means for shifting rolled metal shapes from the roller delivery table across the skids of the hot bed and for automatically turning such shapes so as to deliver the shapes to any point in the width of the hot bed with the center line of the shape at right angles to that in which it is delivered in front of the hot bed by the delivery roller table.

In the drawings 2 represents the feed rollers of a delivery roller table on which the materials being handled are delivered from the rolls of the rolling mill, and 3 the skids forming in this case the hot bed to which the materials are transferred sidewise from the rollers 2. As shown, the rollers 2 are located at a higher elevation than the horizontal portion of the hot bed, the ends 3^a of the skids being inclined upwardly to the elevation of the top of the rollers 2. Rollers 4 on the opposite side of the hot bed are provided for the purpose of transferring materials lengthwise from the hot bed. The feed rollers 2 are driven by means of spur gearing in the usual manner.

Located at suitable intervals in the length of the hot bed below the level of the skids 3 are horizontally extending track-rails or ways 5 on which the drag-outs are mounted and they are connected by flexible connections 6 with the winding drums 7 and tightening pulleys 8 located at opposite sides of the hot bed. The winding drums are con-

5 nected by slow-down gearing with any suitable type of driving motor, (not shown). The carriers 9 forming part of the drag-out mechanism are provided with shoes 10 which are mounted on the track rails 5 located below the skids of the hot bed. A shifting frame 11 is movably mounted in the carrier 9 and its frame is connected by the flexible connections 6 with the winding drum 7 by which the drag-outs are caused to move back and forth across the width of the hot bed.

10 Pivotaly mounted on the carrier 9 is a tilting dog 12. The frame 11 is provided with the projection 13 which engages with the dog 12 to depress the dog and bring its upper end below the level of the top of the skids 3. Also pivotaly mounted on the carrier 9 is a swinging arm 14 having a projecting lug or foot 15 on its lower end. The lower end of the arm 14 is also provided with anti-friction rollers 16 which travel upon inclined track rails or ways 17 located at the receiving end of the hot bed above the carrier track rails 5. The arm 14 is arranged to be swung back so as to be out of engagement with the materials while they are being transferred across the hot bed, when such materials do not require turning from the position in which they are delivered on the roller delivery table, the arm in this position being shown in Fig. 4.

30 In the operation of my improved apparatus, the beams or channels are delivered lengthwise on the rollers 2 of the delivery table until they are opposite the hot bed. The rope driving wheel 7 is then actuated and through the endless rope 6 the carrier 9 is moved across the width of the hot bed. As the tension is put upon the rope 6, the frame 11 and the projection 13 are shifted on the carrier 9 so as to permit the dog 12 to assume its vertical position as shown by full lines in Fig. 5. As the carrier is moved, the dog 12 contacts with and moves the shape on the rollers of the delivery table across the width of the rollers, and on to the skids of the hot bed. As the shape is moved forward it slides downwardly on the inclined portion 3^a of the skids 3 until its weight rests upon the swinging arm 14 and projecting foot 15 on the drag-out. It will be seen that the carrier 9 travels in a horizontal plane at all times while the arm 14 is tilted by means of the inclined track rails 17 on which the rollers 16 on the lower end of these arms travel. As the carrier 9 is moved forwardly the arm 14 is gradually moved from the substantial horizontal position until it is in a vertical position, this action causing the beams which have been resting upon the flange edges of the roller table to rest upon the flange of the skids forming the hot bed. When the carrier 9 reaches the horizontal portion of the skids, the beam has been turned through an angle of 90

degrees, and it is then pushed forwardly on the skids until it is in the desired location on the hot bed. The carrier 9 is then retracted by reversing the direction of rotation of the rope driving drum 7. When the movement of the carrier is reversed, the sliding frame 11 is shifted relatively to the carrier in which it is mounted and the projection 13 on the upper end of the carrier engages with the lower depending end of the dog 12 and depresses the top of the dog until it is below the level of the top of the skids 3 on the hot bed as is shown by dotted lines in Fig. 5. The carrier 9 is moved across the width of the hot bed, until it is again in position to engage with another beam, which in the meantime has been delivered into position opposite the hot bed on the rollers 2 of the delivery table, when the above described operation is again repeated.

85 When transferring materials, such as angles or other shapes which do not require turning, the arm 14 is turned back into the position shown in Fig. 4, so as to place it in its inoperative position. The pivoted dog 12 in this case operating as before to transfer the materials from the roller table and across the top of the hot bed.

The advantages of my invention will be apparent to those skilled in the art. The materials are removed from the roller delivery table to the hot bed and when desired, are automatically turned so as to bring their smallest dimension in a horizontal plane, in this way reducing the space occupied by the shape on the hot bed and very largely increasing its capacity. Instead of performing the turning operation separately from the shifting operation, the materials are automatically turned while being transferred laterally without interruption of the shifting operation, in this way reducing the time necessary to transfer the materials to the hot bed. By means of the shifting frame on the carrier, the tilting dog is depressed so as to be below the level of the top of the skids when the carrier is being returned into position to again engage with another shape, and in this way the material is not brought forcibly into contact with the comparatively thin edges of the flanges of the shapes, and damage to the shapes from such contact is avoided.

The apparatus is simple and easily kept in repair.

Variations in the arrangement and construction of the parts may be made without departing from my invention.

I claim:—

1. The combination with a hot-bed, of a drag-out comprising a carrier having an element mounted thereon arranged to engage with and move a work piece transversely of the hot-bed, connections arranged to move the carrier across the hot-bed, a

turning device mounted on said carrier and adapted to turn materials being transferred on the hot-bed, and means on the hot-bed engaging with and operating said turning device so as to turn the work as it moves across the hot-bed, substantially as described.

2. The combination with a hot-bed, of a drag-out comprising a carrier having an element mounted thereon and arranged to engage with and move a work piece transversely over the hot-bed when the carrier is actuated, connections arranged to move the carrier across the hot bed, a turning device pivotally mounted on the carrier and adapted to engage with and turn the work piece being transferred across the hot-bed, and means on the hot-bed engaging with and operating said turning device so as to turn the work as it moves across the hot-bed, substantially as described.

3. The combination with a hot-bed, of a transferring and turning mechanism co-operating therewith comprising an element arranged to engage with and move or transfer a work piece transversely of the bed, connections for moving the same, an element for turning the work piece during its transfer, and means coöperating with means on the hot-bed and said turning element constructed and arranged to operate said turning element when the transferring element moves along the bed, substantially as described.

4. The combination with a hot bed, of a drag-out comprising a movable carrier, connections arranged to move the carrier transversely across the width of the hot bed, a turning arm pivotally mounted on said carrier and arranged to turn the materials on the hot bed during the movement of the carrier across the width of the hot bed, and means on the hot bed arranged to actuate said turning arm; substantially as described.

5. The combination with a hot bed, of a drag-out comprising a movable carrier arranged to transfer materials across the bed and having connections arranged to move the same, an arm mounted on said carrier arranged to turn the materials, and means located on the hot bed arranged to swing said arm when said carrier is being moved in a forward direction; substantially as described.

6. The combination with a hot bed, of the combination of a transverse supporting member, a transverse track member, a movable carrier carried by the track member, said carrier having an arm mounted thereon extending above the transverse supporting member and adapted upon movement of the carrier to transfer materials from one portion of the supporting means to another portion of the same, and mechanism connected to the supporting means constructed and arranged to coöperate with the arm in such a

manner as to swing the same and thereby turn the materials during the time of transfer; substantially as described.

7. The combination with a hot bed, of a drag-out comprising a movable carrier having connections arranged to move the carrier across the hot bed, an arm pivotally mounted on said carrier and arranged when swung to axially rotate materials on the hot bed, and means on the hot bed supporting the free end of said arm and arranged to swing the arm when said carrier is advanced on the hot bed; substantially as described.

8. The combination with a hot bed, of a drag-out comprising a movable carrier having connections arranged to shift said carrier across the width of the hot bed, a swinging arm arranged to turn materials on the hot bed as the carrier transfers the same and when the arm is actuated, and means on the hot bed supporting the swinging end of said arm arranged to actuate the arm when said carrier is moved across the hot bed; substantially as described.

9. The combination with a hot-bed, of a drag-out comprising a movable carrier, a swinging arm on said carrier adapted to turn materials and at the same time cause them to move transversely over the hot-bed, and a support located on said hot-bed for the swinging end of said arm as the carrier is moved, substantially as described.

10. The combination with a hot bed, of a drag-out comprising a carrier, means for moving said carrier transversely across the hot bed, a tilting arm on said carrier arranged to engage with materials being moved across the hot bed, and means on the hot bed contacting with the free end of said arm and arranged to control the tilting of said arm as said carrier is moved across the hot bed; substantially as described.

11. The combination with a hot bed, of a drag-out comprising a carrier, means for moving the carrier across the width of the hot bed, a swinging arm on said carrier arranged to turn material in transit over the hot bed, and means on the hot bed contacting with the free end of the swinging arm and arranged to tilt said arm at the beginning of the forward movement of said carrier across the hot bed; substantially as described.

12. The combination with a hot bed, of a drag-out comprising a carrier movable across the width of the hot bed, having connections arranged to move the carrier, a turning member mounted on the carrier arranged to axially rotate materials simultaneously with the movement of the carrier across the width of the hot bed, and means on the hot bed arranged to actuate said member as the carrier is moved; substantially as described.

13. The combination with a hot bed, of a

drag out comprising a carrier, means for moving the carrier across the width of the hot bed, a swinging arm pivotally mounted on said carrier and means on the hot bed contacting with the free end of the swinging arm and arranged to control the swinging movement of the arm during the movement of said carrier; substantially as described.

14. A hot-bed, including work-supporting rails, a carrier working in the direction of the rails and adapted to move work along the rails, a work-turning device upon the carrier, and means to operate the work-turning device, said work-turning device mounted so as to be moved to an inoperative position when not required for turning the work.

15. A hot-bed, including work-supporting rails, a carrier working in the direction of the rails and having means to engage and push work along and upon the rails, a work-turning device upon the carrier adapted to support work independent of the rails, and means to operate said work-turning device and turn the work preparatory to discharging the same upon the hot bed, said work-turning device mounted to be moved to an inoperative position substantially as described.

16. A hot bed having an upper portion, a lower portion, and a portion extending between the upper and lower portions of the bed, a carrier working back and forth along the hot bed, and an element pivoted upon

the carrier at a point between the upper and lower portions of the hot bed to engage work on the hot bed and turn the same, said element being mounted so as to be moved beneath the top of the upper portion of the hot bed to pass beneath work thereon when the carrier is being moved to said portion of the hot bed, substantially as described.

17. The combination of a feed table, a hot bed having an upper portion adjacent and at the level of the feed table, a lower portion below the level of the feed table, a guide portion inclined downwardly from the upper portion to the lower portion, a carrier working back and forth across the feed table and the several portions of the hot bed, and an element upon the carrier to engage and move work from the table and along the several portions of the hot bed, said element being pivoted to the carrier at a point below the top of the feed table and above the lower portion of the hot bed and capable of being moved beneath work on the feed table when the carrier is moved back to the feed table, substantially as described.

In testimony whereof, I have hereunto set my hand.

RICHARD H. STEVENS.

Witnesses:

GEO. B. BLEMING,
R. D. LITTLE.