United States Patent

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[54] CONVEYOR FOR STACKED FLAT BARS
2 Claims, 2 Drawing Figs.

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[50] Field of Search ..... 198/34, 34 (A), 35, 103, 29; 214/1 (P), 6, 2.5, 8.5

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ABSTRACT: A device for dropping individual rolled flat bars moved crosswise in a stack over an inclined rake-type cooling bed on an adjacent horizontal roll-type cooling bed comprises inclined transport rolls having crescent-shaped bar stops with a maximum height corresponding to the top of the bar stack and rotatable to decrease the crescent level for dropping the bars successively on the roll-type cooling bed.

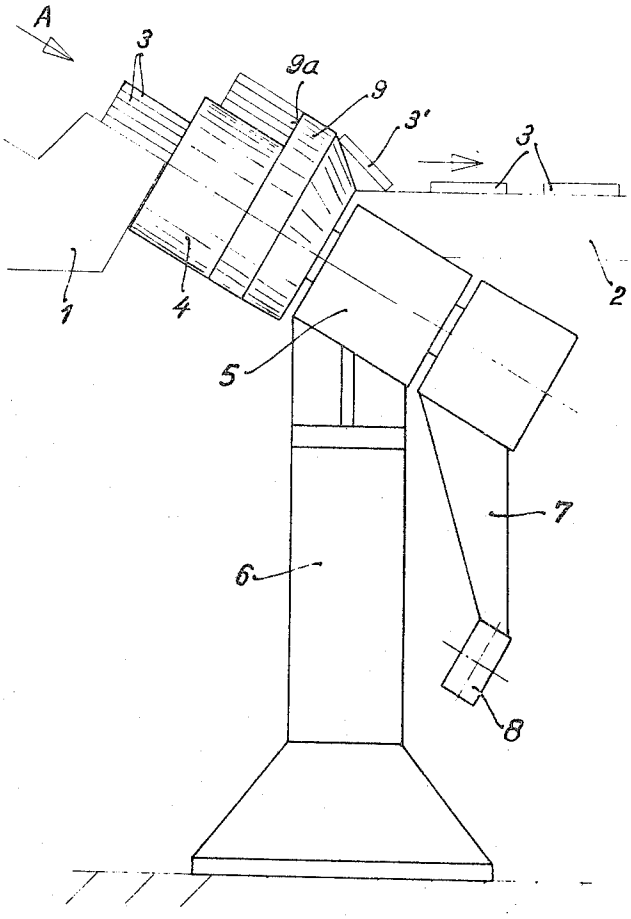
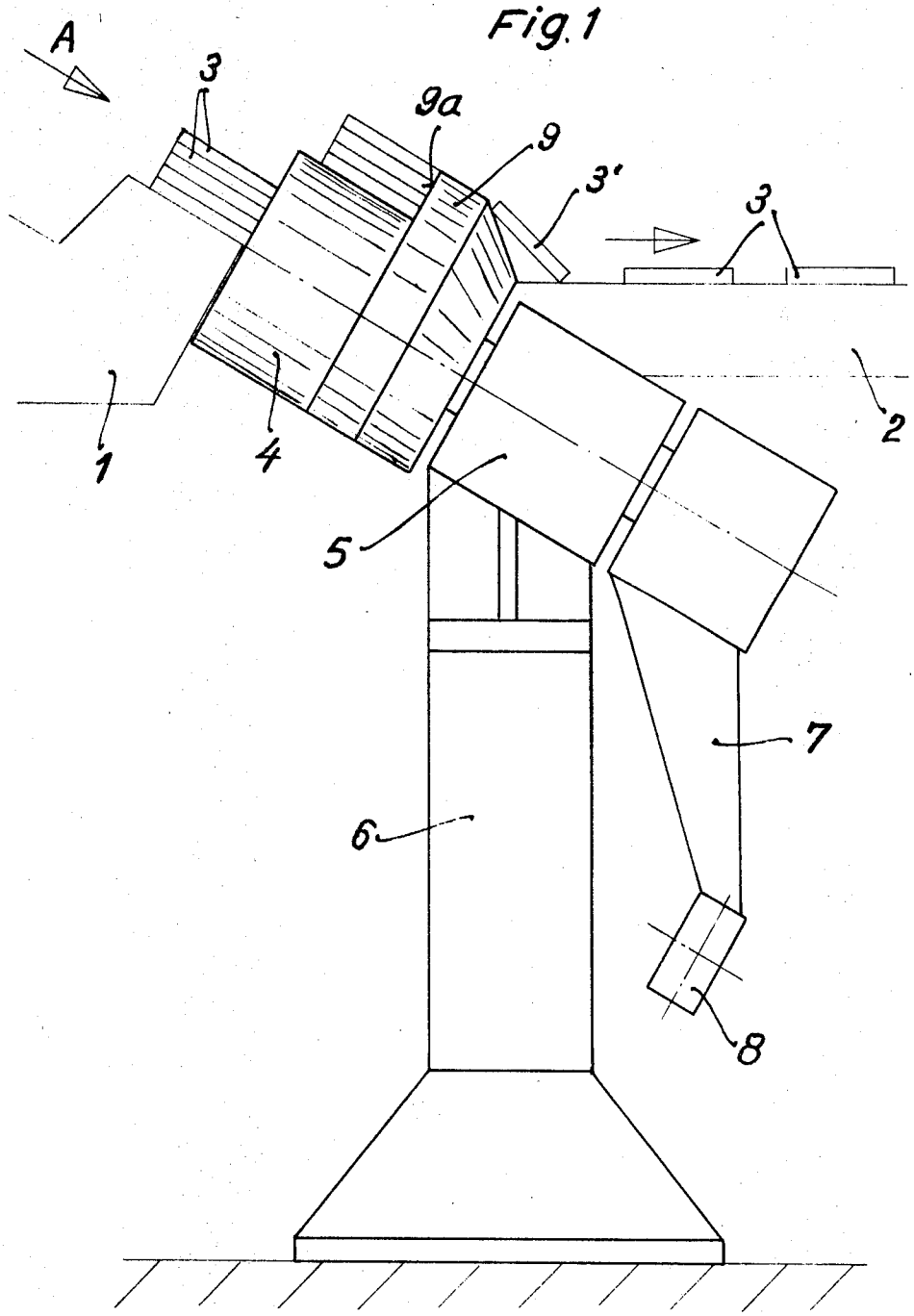


Fig. 1



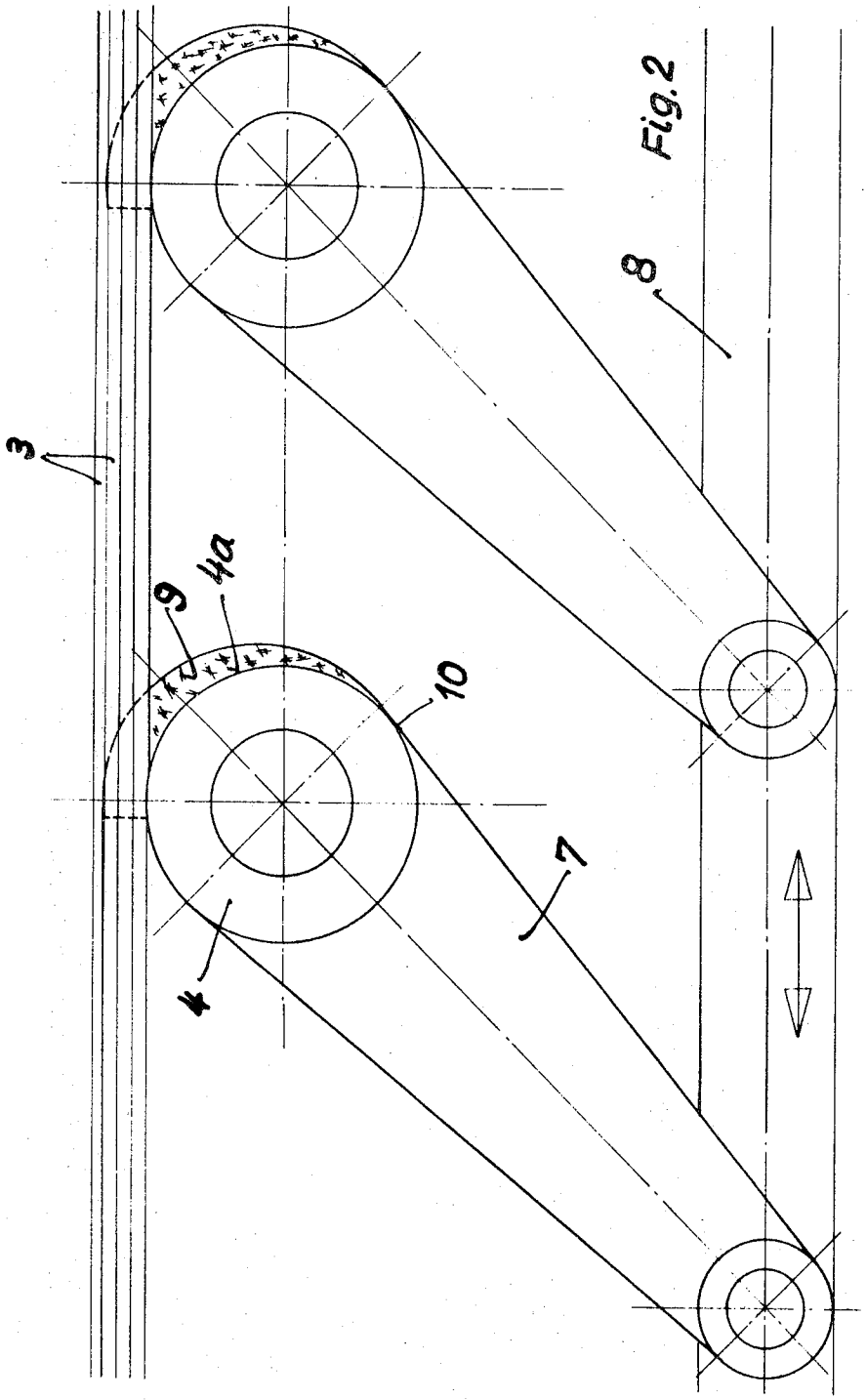


Fig. 2

CONVEYOR FOR STACKED FLAT BARS

The novel device according to the invention permits the individual separation of a group or stack of flat bars while moving crosswise over a rake-type cooling bed. The cooling of rolled flat bars in stacks is indicated particularly for high quality steel products in order to reduce the cooling speed at the end of the cooling process or at the transition from the individual cooling operation a device is required which separates or unstacks the bars.

According to the invention a device for separating individual flat bars consists of a number of inclined support rolls for receiving a stack of flat bars and provided with bar stops presenting a crescent-shaped abutment surface rising from the periphery of the support rolls and whose maximum radial elevation above the support roll periphery corresponds to the height of a stack of flat bars. The support rolls with their bar stops may be rotated along the arcuate dimension of the crescent-shaped abutment surface and the roll axes are inclined beyond the friction angle of the stacked flat bars. The peripheral surfaces of the support rolls as well as the crescent-shaped abutment surfaces extending thereto constitute each a pocket for a stack or group of flat bars, when the maximum radial elevation of the abutment surfaces lies in a plane, the stack of bars being dropped by the stroke of an oscillating cooling rake or by other suitable means into these pockets. To the extent that upon rotating the inclined support rolls and the abutment surfaces the radial height of the crescent-shaped abutment surfaces becomes smaller the lateral support of the top bar disappears gradually and due to the inclination of the support roll axes at an angle in excess of the friction angle of the stacked bars each top bar slides down successively. The lowermost flat bar of a bar stack slides down over the edge of the support roll periphery lying outside of the arcuate extent of the crescent-shaped abutment surfaces.

Since the arcuate dimension of the crescent-shaped abutment surfaces may be chosen at will, it is possible to adjust the support rolls with their bar stops over lever arms and coupling trains in their rotational position.

The features and advantages of the invention will further appear from the following description made in reference to the accompanying drawings and shown in an embodiment of the bar separating device according to the invention.

In the drawing:

FIG. 1 is a side view of a support roll seen in the direction of movement of the separated bars.

FIG. 2 is an axial plan view of the abutment surfaces of two adjacent support rolls seen in the direction of arrow A of FIG. 1.

The novel bar-separating device of the invention shown in the drawing is mounted between a rake-type cooling bed 1 and a roll-type cooling bed 2. The flat bars are moved in stacks of five bars on the rake-type cooling bed crosswise to the direction of movement of the separated bars on the roll-type cooling bed and are cooled slowly. The bars are cooled further individually on the roll-type cooling bed.

The device for separating the bars individually consists of a number of inclined support rolls 4 which are journaled in bearings 5 of support stands 6 and may be rotated over lever arms 7 with a conventional coupling train 8. Bar stops 9 rise from the cylindrical periphery 4*a* of the support rolls 4 over an arcuate dimension of about 120° and present crescent-shaped abutment faces 9*a* which are disposed perpendicularly relative to the peripheral surface 4*a* of the support rolls 4 and constitute with them pockets for receiving a group of flat bars 3 when the radial elevation of the crescent-shaped abutment surfaces 9*a* is disposed perpendicularly as in FIG. 2. In this position the crescent-shaped abutment faces 9*a* retain four bars which are deposited by the rake stroke on the support rolls 4. The fifth flat bar 3' slides immediately over the edge of bar stops 9 and drops on the rolls 2 of the adjacent roll-type cooling bed. When the coupling train 8 is moved either progressively or continuously to the right the radial height of the crescent-shaped abutment face 9*a* decreases in such a way that successively the flat bars 3 encounter no longer a lateral stop and due to the inclination of the support rolls 4 which must be greater than the friction angle of the stacked flat bars they slide laterally onto the roll-type cooling bed. The lowermost flat bar of each stack slides down when the lever 7 has been moved for greater distance than the arcuate extent of the crescent-shaped abutment faces 9*a* and when for example at point 10 a continuous peripheral line of the circumference 4*a* of the support rolls 4 is in a vertical plane.

I claim:

1. Device for dropping individual flat bars moving in a stack crosswise over a rake-type cooling bed on an adjacent roll-type cooling bed, the improvement comprising inclined support rolls (4) for receiving stacked flat bars (3) against bar stops (9) presenting a crescent-shaped abutment face (9*a*) rising from the periphery 4*a* of the support rolls 1, said abutment face having a maximum elevation above the support roll periphery corresponding to the height of a stack of flat bars (3), said support rolls (4) with their bar stops (9) being rotatably mounted for movement beyond the arcuate extent of the crescent-shaped abutment face (9*a*) and their roll axes being inclined beyond the friction angle of the stacked superimposed flat bars.

2. Device according to claim 1 wherein the support rolls are rotatable over lever arms (7) and coupling trains (8).