June 19, 1951 J. R. BJORLO 2,557,170

HOTBED ATTACHMENT

Filed June 5, 1945 2 Sheets-Sheet 1

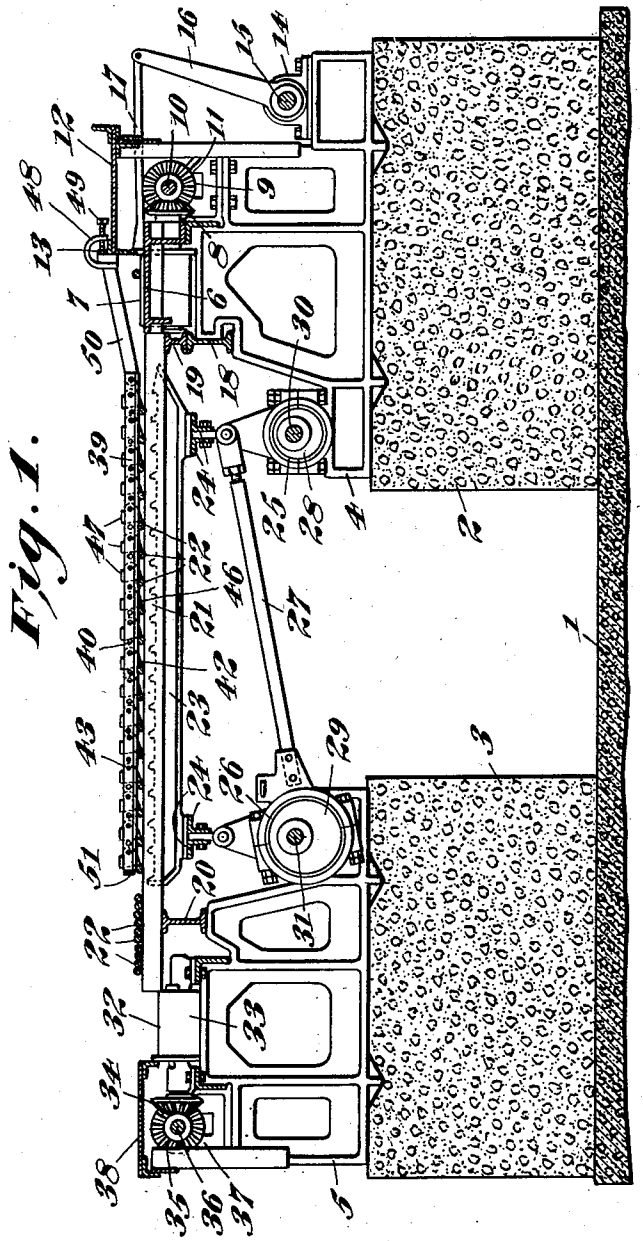


Fig. 1.

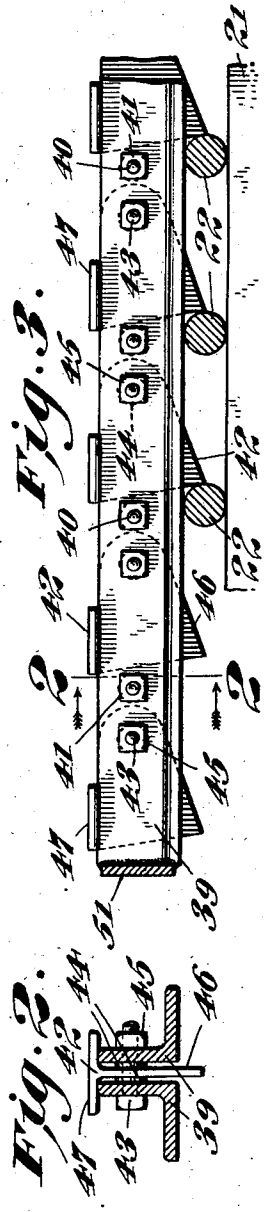


Fig. 2.

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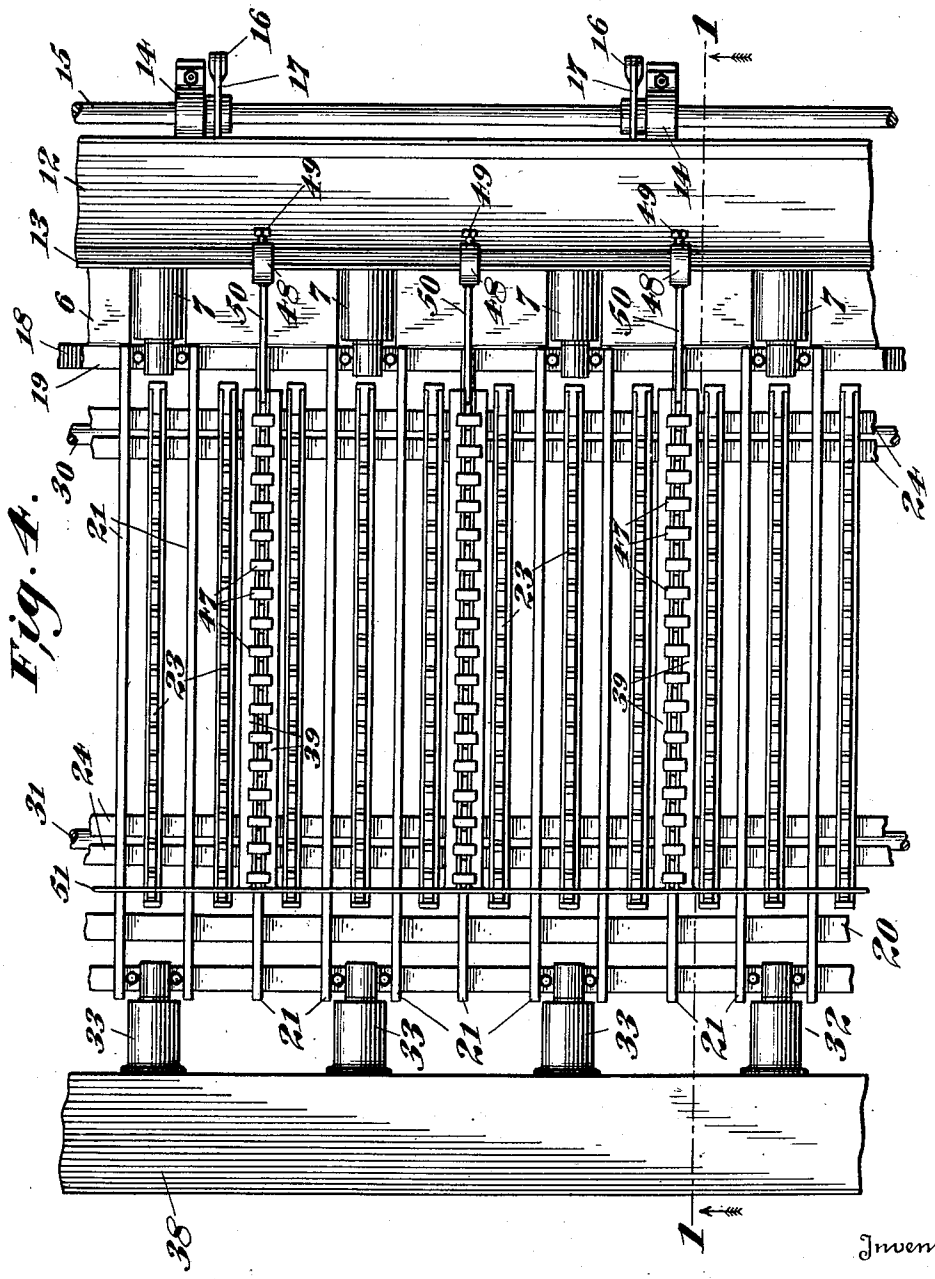


Fig. 4.

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2,557,170

HOTBED ATTACHMENT

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3 Claims. (Cl. 198—225)

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My invention relates in general to conveying or transfer mechanisms for metal articles, and more particularly to a bar-stop device for use in connection with cooling tables and hot beds of standard reciprocating type.

The mechanical delivery table for bars which is in most common use in merchant mills comprises: (*a*) a runout conveyor, which has live rolls for delivering the hot bars from the finishing stand; (*b*) a pusher for transferring the bars from the runout conveyor; (*c*) a hot bed proper, that is, a wide reciprocating rack by means of which the bars are moved laterally away from the runout conveyor; and (*d*) a receiving conveyor, also provided with live rolls, by which the bars are delivered to the shears.

This is in general a satisfactory arrangement, except for the fact that on the hot bed the small round bars, of about ¾" diameter, have a tendency during the rest intervals between reciprocations to roll back upon the adjacent bars and consequently to become twisted together. Whenever this happens, the hot bed men are required to re-roll the bars forward to their proper position with tongs, which is exhausting work in hot weather, and with some losses of material and time, due to bent and crooked bars and occasional resultant shutdowns, still to be expected.

One object of my invention, therefore, is to provide simple and positive means for preventing rounds from rolling back on the hot bed.

Another object is to increase production by saving rounds that might otherwise be lost and by preventing mill stoppages due to twisted rounds.

A further object is to decrease the amount of arduous physical labor required of hot bed men and correspondingly to increase their efficiency.

Additional objects, purposes and advantages of the invention will appear hereinafter in the specification and in the appended claims, and in order that my invention may be more readily understood, I shall now refer to the two sheets of drawings hereto annexed and in which like characters of reference indicate like parts:

Figure 1 is a transverse section of a conventional delivery table having a hot bed equipped with my bar-stop taken on the line 1—1 of Fig. 4;

Fig. 2 is a sectional view of the bar-stop taken on the line 2—2 of Fig. 3;

Fig. 3 is an enlarged side elevation of a portion of the bar-stop; and

Fig. 4 is a broken top plan view of the delivery table and hot bed with bar-stop shown in Fig. 1.

Referring now to Figs. 1 and 4 of the drawings,

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the numeral 1 designates the floor of the mill, 2 and 3 are concrete blocks which serve as foundations for the cooling table, and 4 and 5 are supporting stand members. Mounted on the stand member 4 is a runout conveyor 6, in which are journaled live rollers 7 driven by a bevel gear 8 and meshing bevel gear 9 on shaft 10 mounted in bearings 11 beneath an apron plate 12 having an upright flange 13. Also mounted on the standard member 4 is a bearing 14, in which is journaled a shaft 15 adapted to intermittently actuate the levers 16 each pivoted to a kicker or pusher arm 17.

Superposed I-beams 18 and 19 on said stand member 4, and I-beam 20 on the stand member 5 support fixed flat-top parallel rest bars or rails 21, on which the hot round bars 22 are given a step-by-step sliding movement by means of the toothed shuffle bars 23 spaced alternately parallel between the fixed bars 21 on transverse end members 24 pivoted to the straps or collars 25 and 26 joined by the connecting rod 27 and longitudinally and vertically reciprocated by the eccentrics 28 and 29 fixed to the shafts 30 and 31 respectively.

Mounted on the stand member 5 is the receiving conveyor 32, in which are journaled live rollers 33 driven by bevel gear 34 and meshing bevel gear 35 on shaft 36 mounted in bearings 37 beneath an apron plate 38.

The shafts 10, 15, 30, 31 and 36 may be driven from any suitable source or sources of power, not shown, in an understood manner, and in other details also this general type of delivery table is sufficiently well known in the art to require no further description.

The present invention, however, is particularly concerned with a mechanism for use in connection with such delivery tables, to hold the hot bars 22 from rolling back on the fixed bars 21 after being pushed ahead by the shuffle bars 23. This mechanism, as illustrated in detail in Figs. 2 and 3, comprises a plurality of parallel pairs of rolled members, such as the angle bars 39, the members of each pair being held back to back in spaced relation as shown in Fig. 2 by the bolts 40 and nuts 41 and suitable spacers (not shown), and resting on the hot bars 22 above and parallel to the fixed bars 21. Said angle bars 39 are provided with a plurality of interposed tilting dogs 42 pivoting on the bolts 43 upon which are spacing washers 44 and nuts 45. Said tilting dogs 42 may be made by cutting metal T-bars to shape as shown in Fig. 3, with the stem 46 of each T-bar shaped substantially in the form of a tri-

angle rounded at the apex and with a portion of the top table 47 retained for a stop to prevent the dog from tilting backward.

A so-called horseshoe clamp or C-clamp 48 secured adjustably to the upright flange 13 by a set-screw 49 is welded or otherwise secured to a suspension bar 50 pivoted to each of the pairs of angles 39, which at the opposite end of the bar stop are held in parallel spaced relation by the welded end bar 51.

In operation, assuming the pusher arm 17 to have first kicked the hot bars 22 onto the fixed bars 21 of the hot bed, on each forward stroke of the shuffle bars 23 the dogs 42 will tilt or trip on contact with said bars 22 to permit them to pass thereunder, but when the shuffle bars 23 are lowered on the return stroke the dogs 42 will hold the bars in position for the next forward stroke. The bar stop thus rests lightly on the hot bars 22 without marking them, while the tilting dogs 42 permit their movement only in the desired direction. The entire device may easily be lifted up or removed when hot bed repairs must be made, or when other shapes, such as flats, are being rolled.

Although I have hereinabove described my invention in considerable detail, I do not wish to be limited narrowly to the exact and specific particulars disclosed, but may use such substitutes, modifications, or equivalents as are included within the scope and spirit of the invention or pointed out in the appended claims. For example, hollow rounds such as pipes or tubing are desired to be comprehended equally with solid rounds or bars within the term "rounds" as used in the claims.

Having described my invention, I claim:

1. A bar-stop attachment for use on a delivery table for rounds including a hot bed, said hot bed having a series of stationary rest members and a series of reciprocating members to advance the round thereover, comprising, in combination, a series of clamps attached to said delivery table, suspension members rigidly secured to said clamps, arms of rolled sections pivoted to said suspension members and resting crosswise on the rounds, and stop means downwardly extending

and pivoted on said arms and adapted to hold the rounds in place between strokes of the reciprocating members.

2. A bar-stop attachment for use on a delivery table having a hot bed for conveying rounds comprising, in combination, a plurality of suspension arms clamped to said delivery table, parallel pairs of spaced angle-bars pivoted at one end to said suspension arms and adapted to rest crosswise on the rounds, a plurality of downwardly extending T-shaped dogs pivoted between the angle-bars of each pair for engaging the rounds laterally and keeping them from rolling backward, and an end-bar secured to the angle bars for spacing and strengthening said angle-bars.

3. A bar stop attachment for use on a delivery table for hot metal rounds including a hot bed, said hot bed having a series of stationary rest members and a series of reciprocating members to advance the rounds thereover, comprising in combination a plurality of arms pivoted at one end over the hot bed and resting crosswise on the rounds, clamping means secured to the arms for attachment to the hot bed, and a plurality of downwardly extending stop means pivoted in evenly spaced relation on said arms and adapted to hold the rounds in place on the stationary rest members between strokes of the reciprocating members.

JOHN R. BJORLO.

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