

UNITED STATES PATENT OFFICE.

MICHAEL BAACKES, OF CLEVELAND, OHIO.

MECHANICAL HOOKER-BOY FOR ROD-MILLS.

SPECIFICATION forming part of Letters Patent No. 647,461, dated April 17, 1900.

Application filed March 3, 1899. Serial No. 707,590. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL BAACKES, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Mechanical Hooker-Boys for Rod-Mills, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a top plan view of as much of the floor of a rod-mill as will illustrate my invention, one stand of rolls and the repeater therefor being illustrated; Fig. II, a transverse section of the floor; Fig. III, an edge view of the chain; Fig. IV, a side view of the endless chain and its sprocket-wheels; Fig. V, an edge view, and Fig. VI a side view, of another form of chain.

Heretofore in the art of rolling wire rods in mills constructed on the so-called "Belgian" plan, in which the rod is passed from one pass to another of axially-aligned or axially-parallel rolls, the overfeed between one roll-pass and the next in the shape of a loop of greater or less length is usually prevented from buckling, kinking, or snarling as it passes over the floor at the side of the roll-standing by a so-called "hooker-boy," who engages the loop of the rod with a hook and runs down the floor away from the rolls, drawing the loop of overfeed with him, and thereby prevents the loop from kinking or snarling in its passage over the floor. This occupation of a hooker-boy is a very dangerous as well as arduous occupation, as the rod travels with great speed, is red-hot, and the loop is liable to jump or kink on account of the great speed of the rod. It is not an unusual occurrence in a rod-mill that a hooker-boy has a leg or arm taken off by the sudden tightening of the loop of red-hot rod, and still more serious accidents frequently happen. The boys must

be very bright and active, must not easily tire, and must not be afraid, for which reason, on account of the danger involved, such boys command exceptionally-large wages. The floor of each side of the roll-standing has been made with an incline downward from the rolls to cause the loop to travel by its gravity, and means have been devised for otherwise disposing of the rod-loop and for properly guiding the same. The inclined floor, however, has not proven absolutely capable of dispensing with the hooker-boys, although in certain instances reducing the number required, and it is not always convenient to construct a mill with an inclined floor. For the purpose of disposing of the necessity for an inclined floor and for the employment of hooker-boys I have devised a mechanism arranged in the mill-floor at the side of the roll-standing, which mechanism provides a series of projections which travel away from the rolls and which may loosely engage and again slip the loop in such manner that the loop may be held taut and be prevented from kinking and snarling without any undue resistance or draft upon the loop, thus performing the act of a perfectly-trained hooker-boy without endangering human life or limb.

A stand of rolls A is illustrated in Fig. I of the drawings at the end of the floor B, in which the device operates, and said stand has a repeater C, of the usual construction, for guiding the rod from one roll-pass to the succeeding pass. The floor for each repeater or stand of two sets of rolls has vertical flanges b or partitions at its edges to confine the loops of rod and has a longitudinal slot b'. A rib b'' projects from the floor parallel with and close to said slot. An endless carrier formed by a chain D passes around sprocket-wheels D' or pulleys at the ends of the slot in the floor in such manner that one side of the endless chain will travel at a level with or slightly below the level of the slot in the floor. Suitable means for driving one or both of said wheels are provided. Rounded projections d extend through the slot from the chain and are of such character as to admit of their engaging the rod-loop and carrying it with them when no resistance to such movement is offered and of allowing the loop to slip off when

obstruction is offered. The projections, particularly as illustrated in Fig. IV, are simply flat rounded lugs projecting upward from flat links in the chain; but they may be formed by lentil-shaped disks journaled in the double links of the chain, as illustrated in Figs. V and VI, or they may be in any round or yielding form which will permit them to engage and hold the rod-loop when no resistance is offered and to allow the loop to slip off and be engaged by the succeeding projection if any obstruction to the forward passage of the loop is met with. Any suitable form of belt or rope may of course be substituted for a chain. The speed of the endless carrier away from the roll-stand must be greater than the greatest speed with which the loop may extend down the floor, which is the speed of overfeed, and may be computed as the difference between the speed and reduction of the delivering set of rolls and the speed of the receiving-rolls of that particular pair of roll sets the overfeed of which the particular device is designed to attend to.

In practice as the loop is formed by the doubled rod said loop will slide over the floor, riding upon the rib at one side of the slot in the floor. The projections upon the rapidly-traveling carrier will engage the loop and draw it toward the lower end of the floor, away from the roll-stands, thereby preventing kinking or snarling of the loop, and the loop will slip off from one projection to be engaged by a subsequent projection whenever the speed of the engaging projection exceeds the speed with which the loop is formed, so that the action of the projections is a series of consecutive nibbles or slight pulls away from the rolls, without, however, any undue strain being exerted upon the loop.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed provided the principle of construction set forth, respectively, in the following claims is employed.

I therefore particularly point out and distinctly claim as my invention—

1. The combination with a rod-mill roll-stand having a pair of roll-passes between which a loop is formed and a floor along which such loop may travel, of a projection traveling along said floor and away from the rolls and constructed to engage the loop and retain

the same in shape during its passage over the floor, substantially as set forth.

2. The combination with a rod-mill roll-stand having a pair of roll-passes between which a loop is formed and a floor along which such loop may travel, of a projection traveling along said floor and away from the rolls and constructed to engage the loop and carry it with it along the floor and to allow the loop to slip when offering resistance to such travel, substantially as set forth.

3. The combination with a rod-mill roll-stand having a pair of roll-passes, between which a loop is formed and a floor along which such loop may travel, of a series of projections traveling along said floor and away from the rolls and constructed to successively engage and carry along the loop and to let it slip when offering resistance to such engagement, substantially as set forth.

4. The combination with a rod-mill roll-stand having a pair of roll-passes between which a loop is formed and a floor along which such loop may travel, of an endless carrier traveling along said floor and provided at intervals with projections constructed to engage and carry along the loop and to let it slip when offering resistance to such engagement, substantially as set forth.

5. The combination with a rod-mill roll-stand having a pair of roll-passes between which a loop is formed and a floor along which such loop may travel, of an endless carrier traveling in the floor and provided at intervals with rounded projections extending above the face of the floor to engage the loop and to let it slip when offering resistance to such engagement, substantially as set forth.

6. The combination of a rod-mill roll-stand having a pair of roll-passes between which a loop is formed, a floor along which such loop may pass and formed with a longitudinal slot and a rib parallel to the slot, and an endless carrier traveling beneath said slot and provided at intervals with projections engaging and slipping the loop, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 24th day of December, A. D. 1898.

MICHAEL BAACKES.

Witnesses:

WM. SECHER,
K. C. WINDING.