No. 816,323. PATENTED MAR. 27, 1906.

J. A. HELLSTROM.

HOTBED.

APPLICATION FILED AUG. 21, 1903.

4 SHEETS—SHEET 1.

Fig. 1.

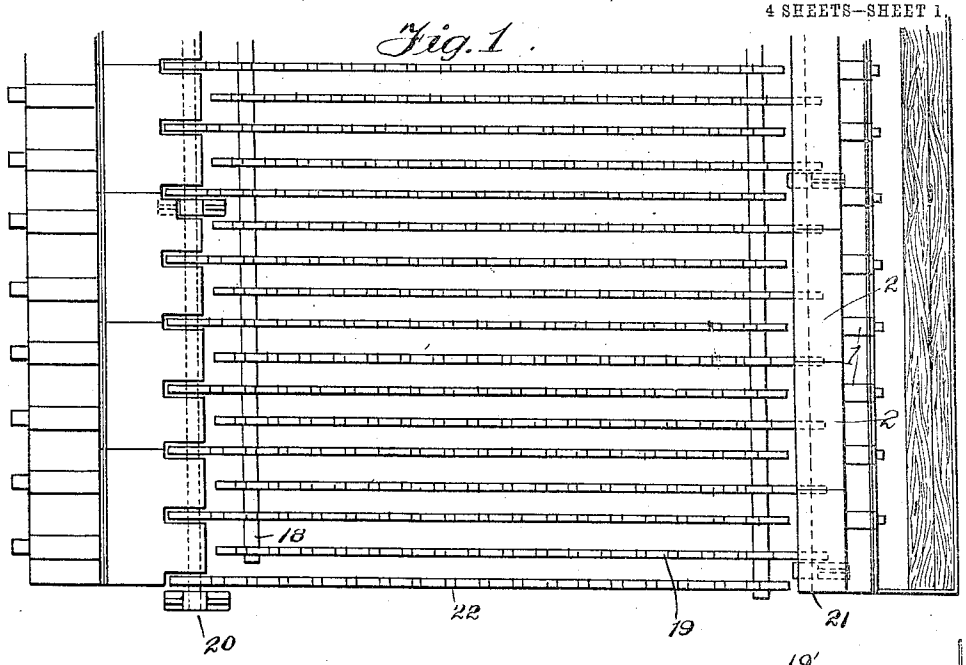


Fig. 3.

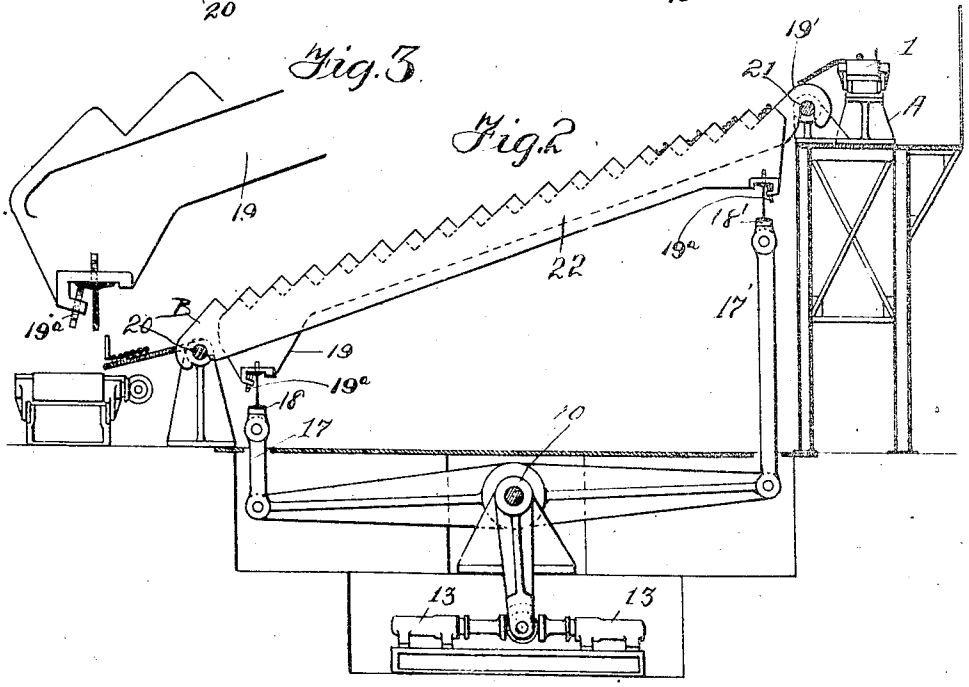


Fig. 2.

WITNESSES.

C. F. Williams

James C. Herron

INVENTOR.

John A. Hellstrom

by John H. Roney

his ATTORNEY.

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4 SHEETS—SHEET 2.

Fig. 4

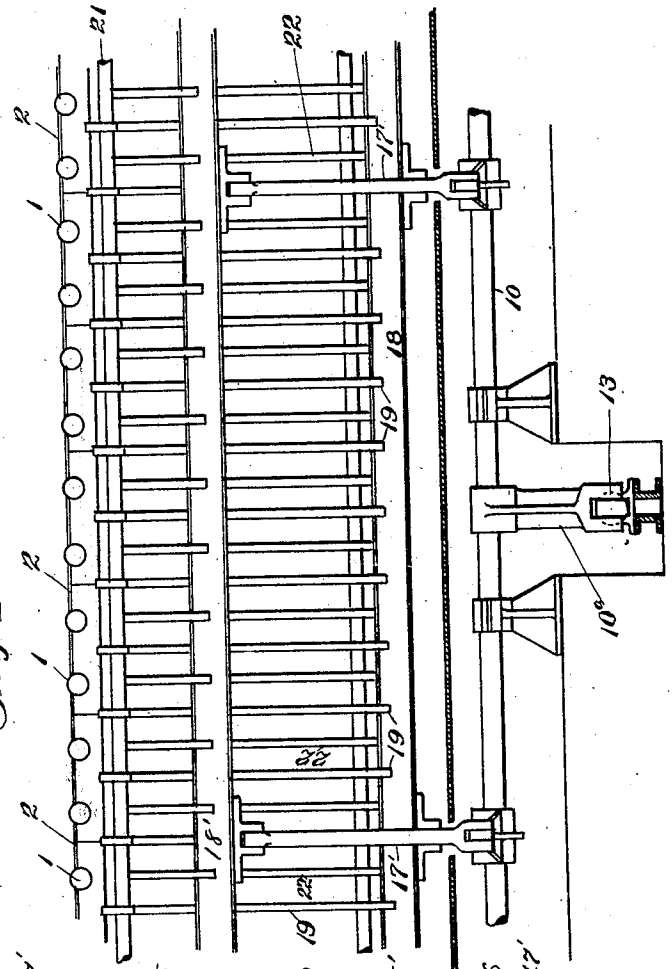


Fig. 5

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4 SHEETS—SHEET 3.

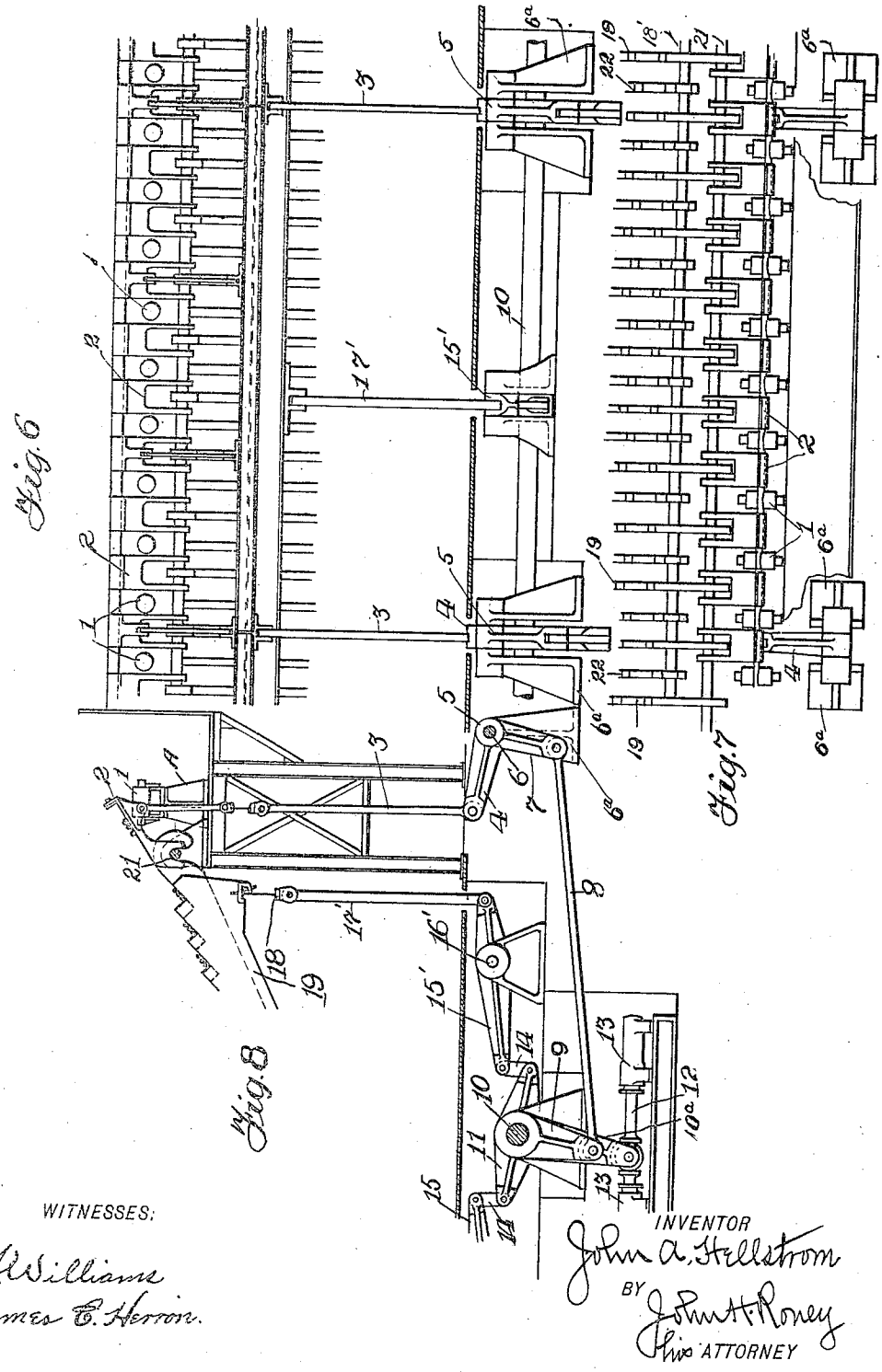


Fig. 6

Fig. 7

Fig. 8

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4 SHEETS—SHEET 4.

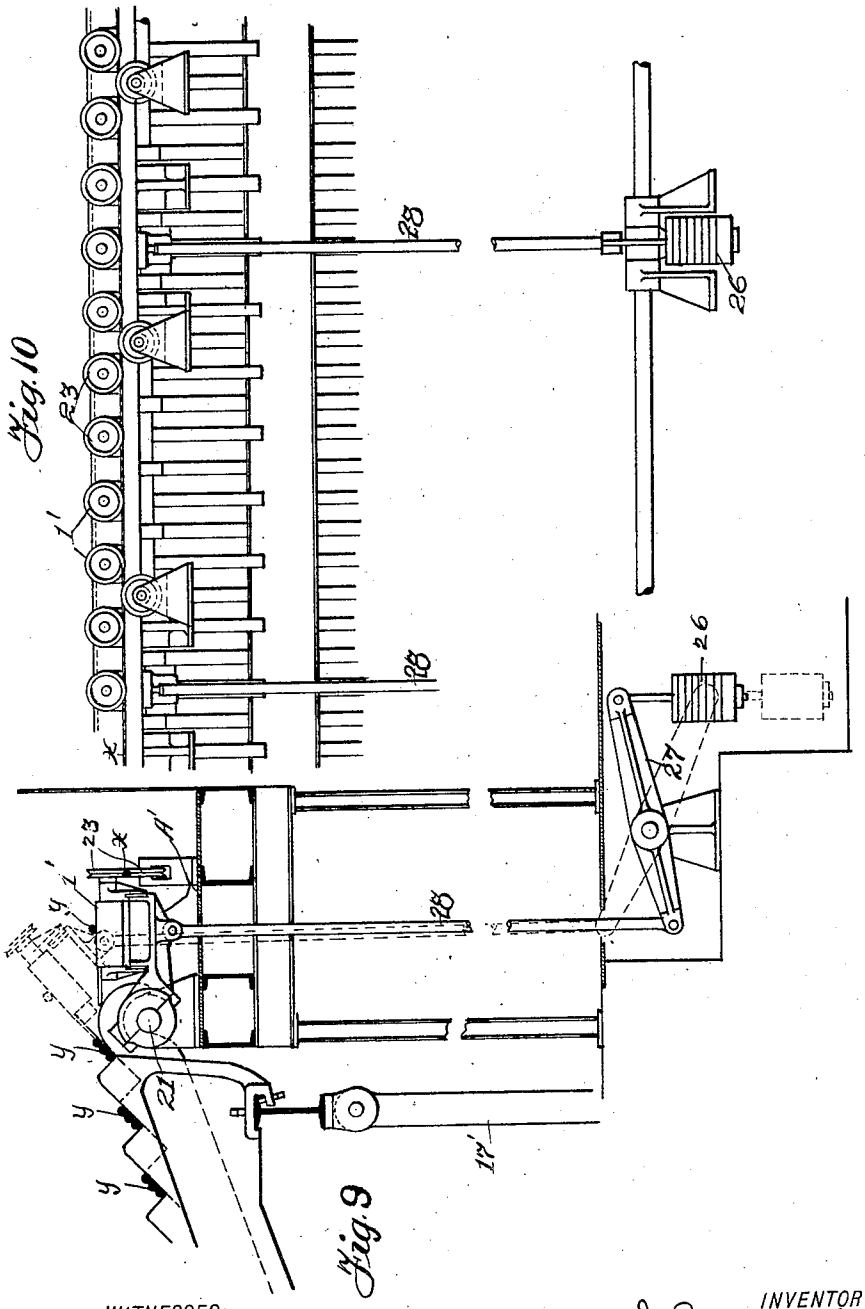


Fig. 10

Fig. 9

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN A. HELLSTROM, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO WILLIAM S. HAUGH, OF ALLEGHENY, PENNSYLVANIA, AND ONE-THIRD TO JOHN T. ROWLEY, OF PITTSBURG, PENNSYLVANIA.

HOTBED.

No. 816,323. Specification of Letters Patent. Patented March 27, 1906.

Application filed August 21, 1903. Serial No. 170,241.

To all whom it may concern:

Be it known that I, JOHN A. HELLSTROM, a subject of the King of Sweden and Norway, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Hotbeds, of which improvement the following is a specification.

My invention relates to improvements in hotbeds for rolling-mills.

The object of my invention is to produce a bed that will take the bars or rods from the rolls and automatically transfer the same to the shears, the bars being cooled during the operation; and to accomplish this object my invention consists in the novel construction and arrangement of parts hereinafter specifically described, reference being had to the accompanying drawings, forming part hereof, in which—

Figure 1 is a plan view of the hotbed; Fig. 2, a side elevation thereof; Fig. 3, an enlarged detail of the adjusting mechanism for the rack; Fig. 4, an elevation looking from the right toward Fig. 1; Fig. 5, a modified form of mechanism for operating the rack; Fig. 6, a view like Fig. 4, showing the form of transfer mechanism of Figs. 5 and 8 for conveying the bars or rods from the rolls to the racks; Fig. 7, a plan view of the upper portion of Fig. 6; Fig. 8, a side elevation of the machine of Fig. 6; Fig. 9, a side elevation of a modified form of transfer mechanism for conveying the bars or rods to the racks, and Fig. 10 a rear elevation thereof.

Referring to said drawings, and particularly to Figs. 1, 2, 3, 4, 5, 6, and 7, A is a frame or table in the sides of the top of which rollers 1 1 are mounted and are adapted to be driven by any suitable means.

2 2 are a series of apron-plates arranged between said rollers and are hinged to or pivotally supported upon the vertically-disposed rods 3 3, the lower ends of which, respectively, are pivotally connected to members 4 of the cranks 5, respectively. The said cranks are mounted on the shaft or pin 6, supported in bearings 6^a, and the other member 7 of said crank is connected to the shaft or rod 8, which is connected to the lower end of the oscillating arm 9, which is mounted on the shaft 10. A lever 10^a is mounted on said shaft 10, the lower end of which is connected to the piston 12 of the cylinders 13. A double lever 11 is mounted on said shaft 10, the ends of said double lever 11 being connected to links 14, which are connected to the double levers 15 15′, which are mounted on shafts or pins 16 16′, supported in bearings 16^a and are adapted to be oscillated or swung thereon by the movement of said pistons transmitting through the aforesaid levers. The outer ends, respectively, of said levers 15 15′ are pivotally connected to the vertically-disposed bars or rods 17 17′, the upper ends of which, respectively, are attached to the girders 18 18′, arranged at the lower and upper ends, respectively, of the sets of toothed bars 19 and 22, and connect the bars of the respective sets 19 and 22 together, so that the bars of each set move in unison and are so arranged that each toothed bar can be adjusted by set-screws 19^a.

The girders 18 and 18′ are longitudinally disposed at the top and bottom of said toothed rack, which comprises the bars 19, the upper edges of which are serrated, toothed, or grooved and the upper ends of which terminate in hooks 19′, engaging the shaft 21 and the bars 22, which are similar in construction to bars 19, the lower ends of said bars 22 in hooks B engaging the shaft 20, whereby when the vertical shafts 17 and 17′ are simultaneously reciprocated vertically the said bars 19 and 22 are oscillated, respectively, at their upper and lower ends upon the shafts 21 and 20 as pivotal points. In other words, the lower ends of the bars 19 are elevated simultaneously, the upper ends of bars 22 are lowered, and vice versa, transferring the material resting in the grooves or teeth of the bars successively from one set of bars to the other set and progressively moving the material down said toothed rack, the movement of the material being due to gravity.

In Figs. 1, 2, 4 the toothed rack is shown as being operated by a single oscillating lever 11, directly connected to rods 17 and 17′. It is unimportant which means is employed to operate the rack.

In Figs. 9 and 10 the table A′ is shown as being provided with feed-rollers 1′ 1′, which are mounted in the sides of the top thereof

and are driven by the wire rope *z*, which operates under the sheaves 23, which are mounted on the roller-shafts, the said rope being driven by a drum or other suitable means (not shown) over which it passes. In said Figs. 9 and 10 the said table is shown as being hinged upon the shaft 21, which extends longitudinally thereof and is capable of being tilted thereon, as shown in Fig. 8, by means of the motor or by hydraulic lifts, (not shown,) the counterweight 26 thereof being connected to one end of the lever 27, the opposite end of said lever being connected to the vertically-disposed rods 28, which are secured to the under edge of the frame of said table. The sheaves which operate the table are carried out of engagement with the rope when said table is tilted, as shown in Fig. 9, to transfer the bars *y* therefrom to the rack, and consequently are not operating during the tilting operation.

The operation of my device is as follows: The bars or rods being rolled are transferred to the table and are carried by the rollers mounted therein opposite the upper end of the hotbed. When in this position, by tilting the table or apron-plate, as heretofore specified, the bars or rods are transferred to the rack, the oscillation of the members of which transfers the bars or rods from one set of toothed bars of the rack to the other set—*i. e.*, from the set 19 to the set 22—until the same arrives at the bottom of the bed and are transferred therefrom to any suitable apparatus to convey same to the shears. The bars or rods are cooling during their progress down or over the hot bed or rack. I have shown the bed as being arranged upon an incline. This is not essential, however, as the bed may be arranged horizontally.

I claim as my invention and desire to secure by Letters Patent—

1. In a bed for cooling metal rods or bars, the combination of two sets of relatively bodily displaceable bars located side by side and having serrations which are placed staggered on one set of bars relatively to the serrations on the other set of bars for engaging and transferring the rods from one set of bars to the other set thereof, and means for relatively bodily displacing said bars.

2. In a bed for cooling metal rods or bars, the combination of two sets of relatively bodily displaceable bars operating simultaneously side by side up and down in opposite directions having serrations placed staggered on one set of bars relatively to the serrations on the other set of bars for engaging and holding the rods, one set of bars automatically effecting transfer to the other set thereof by their relative movement, and means for relatively bodily displacing said sets of bars.

3. In a bed for cooling metal rods or bars, the combination of two sets of independently-pivoted oscillating bars operating simultaneously side by side up and down in opposite directions, each set of bars having serrations, the serrations on one set of bars being set staggered relatively to the serrations on the other set of bars for engaging and transferring the rods from one set of bars to the other set thereof by the relative movement of the bars, and means for oscillating said sets of bars simultaneously in opposite directions.

4. In a bed for cooling metal rods or bars, the combination of two sets of bars located side by side, one set being pivoted at one end thereof and the other set being pivoted at the opposite end thereof, whereby the bars are adaptable for relative oscillation, said sets of bars having serrations, the serrations of one set of bars being set staggered relatively to the serrations on the other set of bars for engaging and transferring the rods from one set of bars to the other set thereof by the relative movement of the bars, and means for oscillating the sets of bars simultaneously in opposite directions.

5. In a bed for cooling metal rods or bars, the combination of two sets of inclined bars, each set being adapted for bodily displacement up and down, staggered sets of stops on the two sets of bars for holding and transferring the rods, step by step, from one set of bars to the other set from the upper part of the bed to the lower part thereof by the relative displacement of said sets of bars, and means for moving each set of bars up and down.

6. In a bed for cooling metal rods or bars, the combination of two sets of bars relatively pivoted for relative bodily displacement and located side by side and having serrations, the serrations on one set of bars being placed staggered relatively to the serrations on the other set of bars for engaging and transferring the rods from one set of bars to the other set thereof, and means for relatively bodily displacing said bars.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN A. HELSTROM.

In presence of—
CLARENCE A. WILLIAMS,
JOHN H. RONEY.