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P. NELSON

MACHINE FOR SWEEPING HOT SHEET BARS

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Fig. 1.

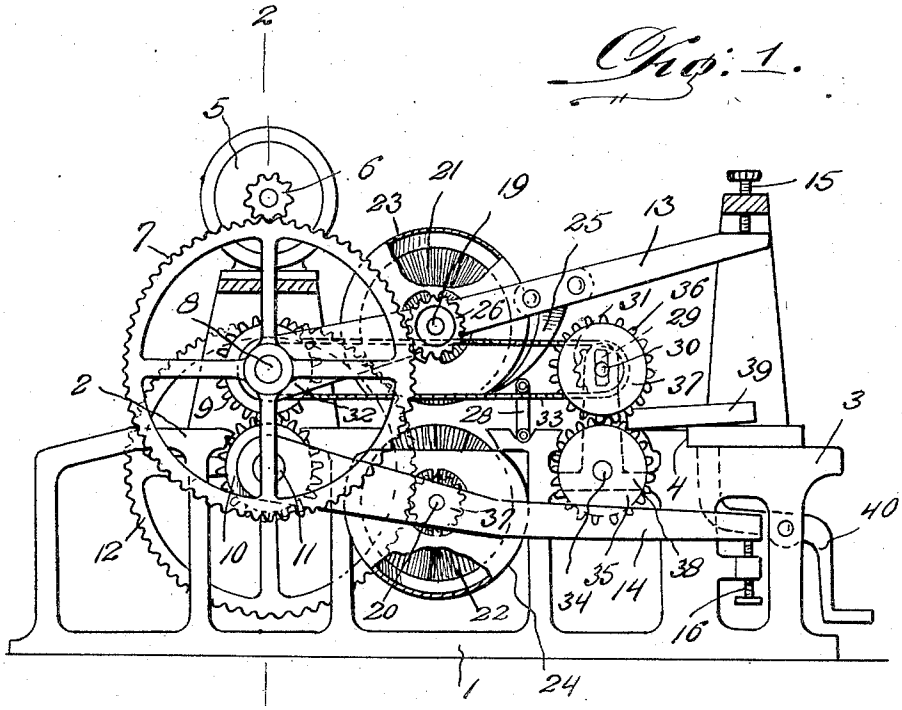
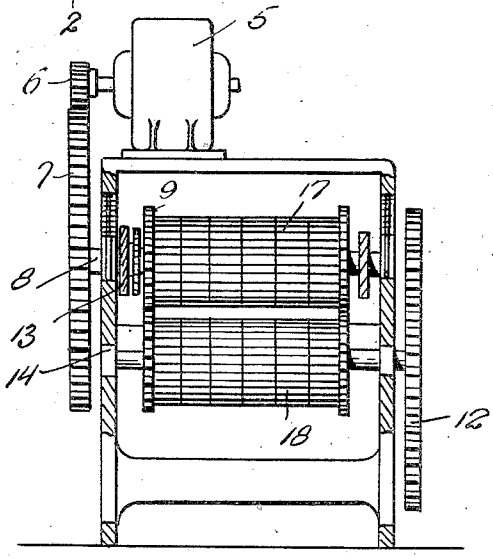


Fig. 2.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR SWEEPING HOT SHEET BARS.

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To all whom it may concern:

Be it known that I, PAUL NELSON, a citizen of the United States, residing at Morgantown, in the county of Monongalia and State of West Virginia, have invented certain new and useful Improvements in Machines for Sweeping Hot Sheet Bars, of which the following is a specification.

This invention relates to machines for sweeping hot sheet bars to prepare them for rolling into plates for making thin plates and it consists in the novel features hereinafter described and claimed.

An object of the invention is to provide a machine of the character stated adapted to be used for sweeping the dust and scale and other foreign substances from the surfaces of hot bars that the bars may be put in proper condition for rolling into sheets.

In the present method for preparation, it is practice to sweep the bars by hand and with a wire broom in order to remove the foreign substances. This method is slow in that but one side of the bar may be swept at the same time and there is much negligence in that workmen shirk the labor and will sweep the bars only when they are compelled to do so. In the present invention both side surfaces of the bar are swept simultaneously and consequently much time and labor is saved.

With the above objects in view, the machine comprises a frame having corrugated feeding rolls journalled at one end and corrugated ejecting rolls journalled at the opposite end portion thereof. Both of these sets of rolls are operatively connected together for simultaneous rotation. Means are provided for spacing the ejecting rolls at suitable distances apart in order that they may receive between them bars of different transverse thicknesses. Cylindrical wire brushes are journalled upon the frame between the feeding and ejecting rolls and are adapted to brush the opposite side surfaces of the bars as they pass over the bed of the frame from the feeding to the ejecting rolls. Hoods are provided around the outer parts of the brushes and prevent the particles of dust and the scales which are removed from the bars from being thrown into the air. Means are provided and located between the feeding rolls and the brushes for directing fine streams of water upon the opposite side surfaces of the bars in order that the dust and the scales may be loosened thereon before such substances and material are encountered by the brushes.

In the accompanying drawing:

Figure 1 is a side elevation of the machine for sweeping hot steel bars with parts thereof broken away and parts shown in section.

Figure 2 is a transverse sectional view of the machine cut on the line 2—2 of Figure 1.

The machine for sweeping hot steel bars comprises a frame 1 having a bed 2 and provided at one end with a shelf 3, the upper surface of which is located in the plane parallel with and below the plane in which the upper surface of the bed 2 lies. The shelf 3 is spaced from the upper surface of the bed 2 by a vertical shoulder 4. A motor 5 is mounted upon the frame 1 and its shaft carries a gear wheel 6 which meshes with the teeth of a gear wheel 7 mounted upon a shaft 8. The shaft 8 is journalled in the frame 1 and is disposed transversely across the bed 2 and spaced from the upper surface thereof. Gear wheels 9 are mounted upon the end portions of the shaft 8 and mesh with gear wheels 10 mounted upon a shaft 11 which is journalled in the frame 1 and disposed transversely of the bed 2 and below the plane of the upper surface thereof. A gear wheel 12 is mounted upon the shaft 11 and is located at the opposite side of the frame from that side at which the gear wheel 7 is located. The gear wheels 7 and 12 are of the same diameter. Levers 13 are pivotally mounted upon the shaft 8 and levers 14 are pivotally mounted upon the shaft 11. Screws 15 and 16 are journalled in the frame 1 and bear against the free end portions of the levers 13 and 14 respectively, and as best shown in Figure 1 of the drawing. It is obvious that by turning the screws 15 and 16, the free end portions of the levers 13 and 14 may be moved toward each other or away from each other.

Corrugated rolls 17 and 18 are carried by the shafts 8 and 11 respectively. The roll 17 is disposed above the plane of the upper surface of the bed 2 and the upper portion of the periphery of the roll 18 is disposed approximately at the level of the plane of the upper surface of the bed 2. Shafts 19 and 20 are journalled in the levers 13 and 14 respectively, and the shafts respectively carry cylindrical brushes 21 and 22, the

bristles of which are formed from strands of wire radially disposed with respect to the shafts 19 and 20. The outer portions of the brushes 21 and 22 are encased within hoods 23 and 24 and pneumatic means (not shown) may be connected with the said hood for blowing the dust and foreign substances which are removed by the brushes from the steel plates as hereinafter described. A guard or guide member 25 is carried by the levers 13 and is disposed between the hood 23 and that end of the bed 2 at which the shelf 3 is located. A gear wheel 26 is carried by the shaft 19 and meshes with the gear wheel 7. A gear wheel 27 is carried by the shaft 20 and meshes with the gear wheel 12. Thus means are provided for rotating the brushes 21 and 22 from the shafts 8 and 11 respectively. A water pipe 28 is disposed transversely of the bed 2 below the guard or guide 25.

Bearing blocks 29 are mounted for vertical sliding movement in the frame 1 and a shaft 30 is journalled for rotation in the said bearing blocks. A sprocket wheel 31 is mounted upon the shaft 30 and a sprocket wheel 32 is mounted upon the shaft 8. A sprocket chain 33 is trained around the sprocket wheels 32 and 31 and is adapted to transmit rotary movement from the shaft 8 to the shaft 30. A shaft 34 is journalled in the frame 1. Gear wheels 35 are mounted upon the shaft 34 and mesh with gear wheels 36 mounted upon the shaft 30. Corrugated rollers 37 and 38 are carried by the shafts 30 and 34 respectively. The steel bars to be brushed are indicated at 39. A foot operated treadle or lever 40 is fulcrumed upon the frame 1 and its upper end is disposed approximately at the upper surface of the shelf 3 in the vicinity of the shoulder 4.

In operation, a steel bar 39 is laid upon the shelf 3 with its edge in contact with the shoulder 4 whereby the longitudinal dimension of the bar 39 is disposed at a right angle to the path of movement of the bar over the bed 2 of the frame 1. The operator then presses down the outer end of the lever 40 with his foot, whereby the inner end of the said lever is raised and the inner edge of the bar 39 is lifted along the shoulder 4 and disposed above the upper surface of the bed 2 of the frame. The bar 39 is then moved inwardly toward the rolls 37 and 38 and is gripped between the said rolls and carried along the bed 2. Streams of water are directed from the pipe 28 against the opposite side surfaces of the bar 39 thus loosening the dust and the scales at the said side surfaces of the bar. The bar 39 then passes between the brushes 21 and 22 and the loosened scales and dust are removed by the said brushes. The guard or guide 25 prevents the scales or dust from being cast upon the feeding rolls. After one bar has passed between the feeding roll it is forced between the brushes by the next bar following. When the lever 40 is depressed the lower bar is elevated so that its side edge clears the upper edge of the shoulder 4 and consequently the said bar may be moved over the bed and between the feeding rolls.

From the foregoing description taken in conjunction with the accompanying drawing, it will be seen that a machine of simple and durable structure is provided and that the same is especially adapted to be used economically and to advantage for removing dust, scales and other foreign substances simultaneously from opposite sides of a steel bar preparatory to placing the bar in condition for rolling into thin plates.

Having described the invention, what is claimed is:

A machine for brushing bars comprising a frame, ejecting rolls journalled thereon, means for rotating the ejecting rolls, levers pivoted upon the axes of the ejecting rolls, means mounted upon the frame for moving the levers toward and away from each other, brushes journalled in the levers, means for rotating the brushes from the ejecting rolls, and feeding rolls journalled upon the frame, and means for rotating the feeding rolls from the ejecting rolls.

In testimony whereof I affix my signature.

PAUL NELSON.