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CLIPPING OR PLUCKING SCISSORS IN WIRE ROLLING MILLS

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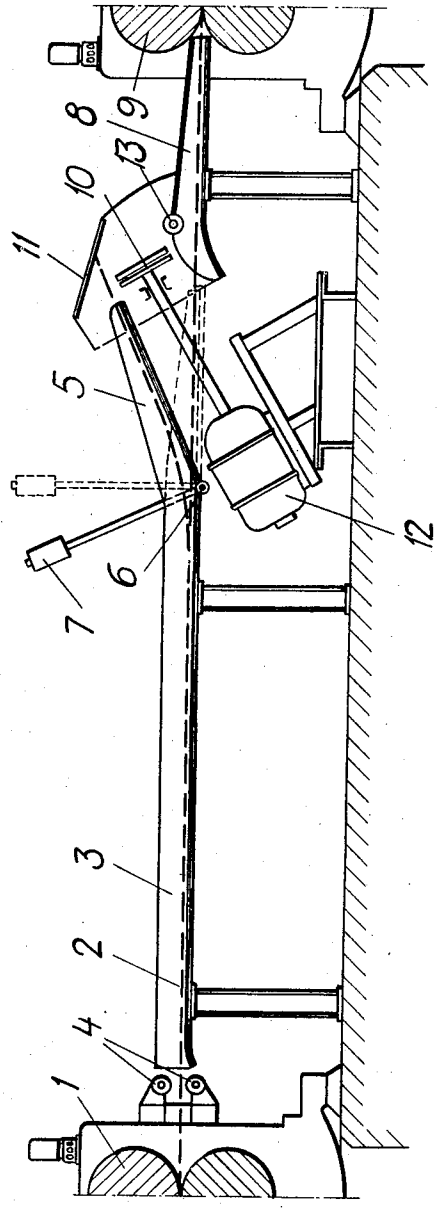

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CLIPPING OR PLUCKING SCISSORS IN WIRE ROLLING MILLS

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2 Claims. (Cl. 164—61)

The present invention relates to an arrangement in clipping or plucking scissors in wire rolling mills. In such mills it is a conventional provision to arrange clipping scissors for cutting away the leading end of the hot work. After reduction of the work to a certain size in wire rolling mills, in continued reduction cracks or the like will occur in the leading end of the work, and due to this, if said end is not removed, it will become bifurcated and will jam during the continued rolling operation. Consequently it is a common expedient to arrange clipping or plucking scissors at a suitable place in the wire rolling mill. Said scissors are commonly arranged to operate in an automatic manner e. g. in such a way that the leading end of the work will strike against impulse generating means, e. g. a "flag," which via electrical switches actuates air valves or in another convenient way generates impulses to clipping scissors, such as a cylinder including a pneumatically operated plunger, which operates to guide the leading end of the work between the scissors so as to cut away said end. Such arrangements are relatively complex and difficult to operate in a satisfactory manner. In the first place it is practically impossible to obtain a constant scrapping length, and due to this the waste material will be excessive.

The present invention now deals with an arrangement in clipping or plucking scissors or shears in a wire rolling mill, wherein said impulse generating members are omitted and the length of the cut-away end may be kept relatively constant. The arrangement according to the invention is mainly characterized by the provision in a guide chute protruding from the wire rolling mill at its delivery side and extending forwardly beyond the shears of a rockable chute portion, which is normally kept in such a rocked-up position that it will guide upwardly out of the chute to a position above the shears the leading end of the work passing in the guide chute from the rolling mill, and wherein for defining said position there is placed in the path of the work a stop member, constituting a sloping plane providing an abutment against which the work is adapted to be bent or urged in between shears to be cut and returned into the guide chute and furthermore to swing downwardly the rockable chute portion to accommodate the fixed portion of the chute located beyond the shears, so that the work after being cut may freely pass out of the guide chute for continued rolling or other treatment.

The invention will now be more fully explained with reference to the attached drawing, which diagrammatically shows part of a wire rolling mill between two sets of rolls and scissors or shear means arranged therein.

In the drawing reference numeral **1** designates a pair of rolls, from which the hot work, the approximate path of which is indicated at **2**, is passed into the guide chute **3**, preferably between rollers **4**. The guide chute **3** has a portion **5**, which may be rocked about a fulcrum **6**. The rockable portion is held in the position shown in full lines by means of a counterweight **7**. Beyond the said rockable portion the guide chute terminates in a fixed portion **8**, which leads to the next set of rolls **9**. Arranged above the rotary shears **10** is a work piece deflecting means in the form of an inclined plane or deflecting surface **11**. The rotary shears **10** are operated in a way not shown by a motor **12**. Arranged on the fixed portion of the guide chute beyond the shears with respect to the direction of motion of the hot work in the top of said guide chute is a roller **13** for urging the work downwardly towards the base of said chute after the cutting operation.

The operation of the arrangement is as follows: The rockable portion **5** is arranged normally to occupy its topmost position as indicated by full lines in the drawing. When the leading end of the hot work is passed upwardly leaving the guide chute the rockable portion adjusted into said position, the said end will strike against the deflecting surface or inclined plane **11**, to provide a cam action so that the work will be urged downwardly between the shears **10**, and the end cut away. The deflecting surface or inclined plane **11** is disposed in such a position that a predetermined length thereof will be cut away. During the cutting operation the portion **5** is caused to rock downwardly in a clockwise direction as viewed in the drawing. This downward rocking movement of the portion **5** is initiated by engagement of the leading end of the work piece with the deflecting surface or inclined plane **11**. As the work piece passes between the rotary shears **10** to sever the end of the work piece the action of the shears **10** will also tend to move the work piece and the portion **5** downwardly. The downward movement of the portion **5** is also assisted by the tendency of the work piece to travel in a straight horizontal line, rather than to bend and travel up the incline provided by the portion **5** prior to full downward movement to horizontal position. In such connection the counterweight is suitably adjusted in such a way that the portion **5** is caused to pass beyond its position flush with the fixed portions **3** and **8** through a short distance during a short period of time of such a length as to allow the leading end of the cut work to enter below the roller **13**. When the portion **5** has returned to the position shown in dotted lines flush with the fixed portions of the guide chute, it is retained there by the hot work until the entire work has passed beyond portion **5**.

As is evident from the above description the roller **13** will urge the work down against the base of the chute subsequent to the cutting operation and consequently also the rockable portion **5** in the position shown in dotted lines.

Obviously, the invention is not restricted to the embodiment shown but may be modified in various aspects within the scope of the claims.

The arrangement may be used for rolling all kinds of material, as well iron metals as non-iron metals, e. g. aluminium and aluminium alloys.

Having now described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. Feeding and cutting apparatus for disposition between first and second pairs of rolls in a wire rolling mill, said apparatus comprising a substantially horizontal guideway for receiving a work piece from said first pair of rolls, a guideway section pivotally mounted at the discharge end of said guideway for movement about a horizontal axis from an upwardly inclined position to a substantially horizontal position in alignment with said guideway, a counterbalance for yieldably maintaining said guideway section in said inclined positon, a rotary shear disposed adjacent the discharge end of said guideway section and below the inclined position thereof, a fixed substantially horizontal chute following said shear and in alignment with said guideway and said second pair of

rolls and work piece deflecting means comprising an inclined plane disposed in the path of movement of the work piece discharged from said guideway section in said inclined position whereby said work piece moving along said guideway section in said inclined position will engage said deflecting means to move said work piece and said guideway section downwardly by said shear to sever the end of said work piece and move said guideway section into alignment with said chute to direct the remainder of said work piece therethrough to said second pair of rolls and upon removal of said work piece from said guideway section said counterbalance will operate to return said guideway section to said inclined position.

2. Apparatus as defined in claim 1, in which said chute is provided with a work piece engaging guide roller disposed adjacent the entrance end and above said work piece to facilitate entry of said work piece into said chute.

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