

[54] **ADJUSTABLE GUIDE TABLE FOR STRIP APPROACHING A CROSS-CUT SHEAR**

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[58] Field of Search..... **83/449, 420, 732; 226/199, 21, 22, 23**

[56] **References Cited**

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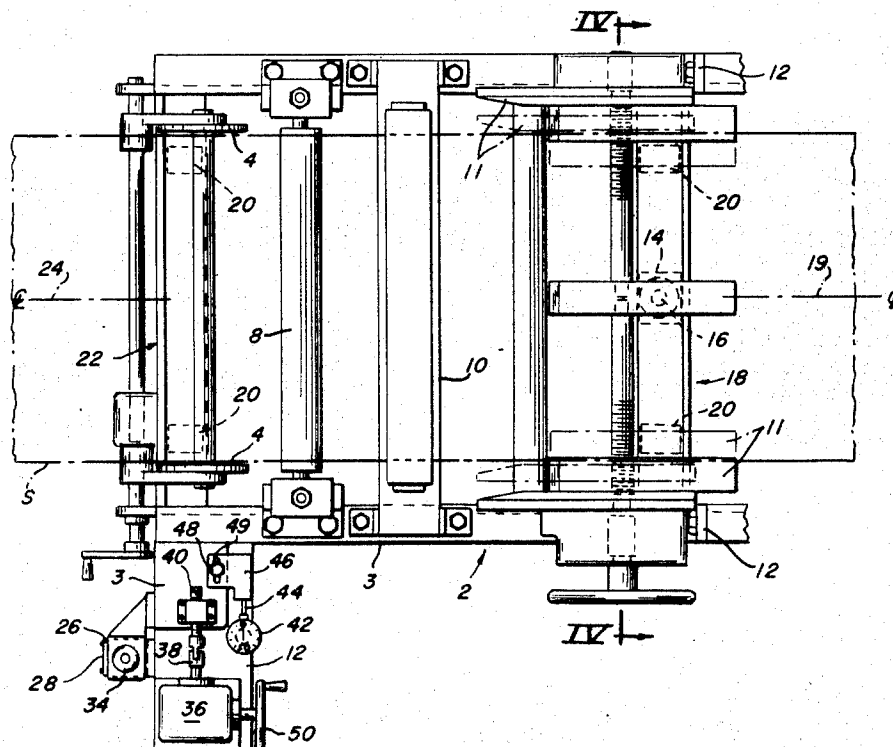
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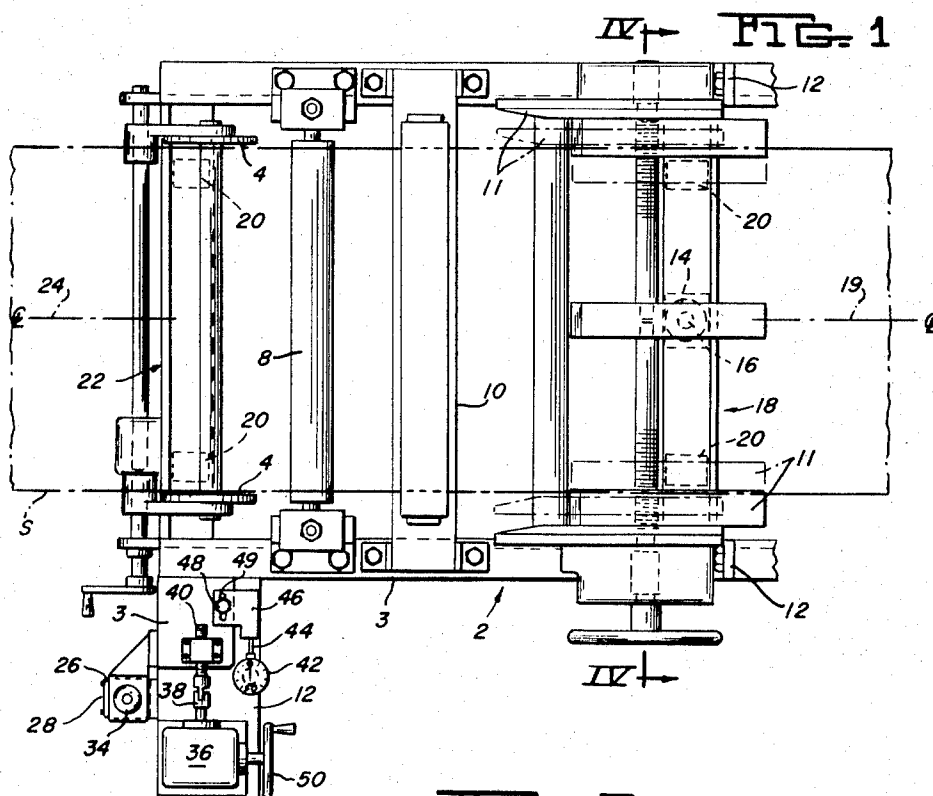
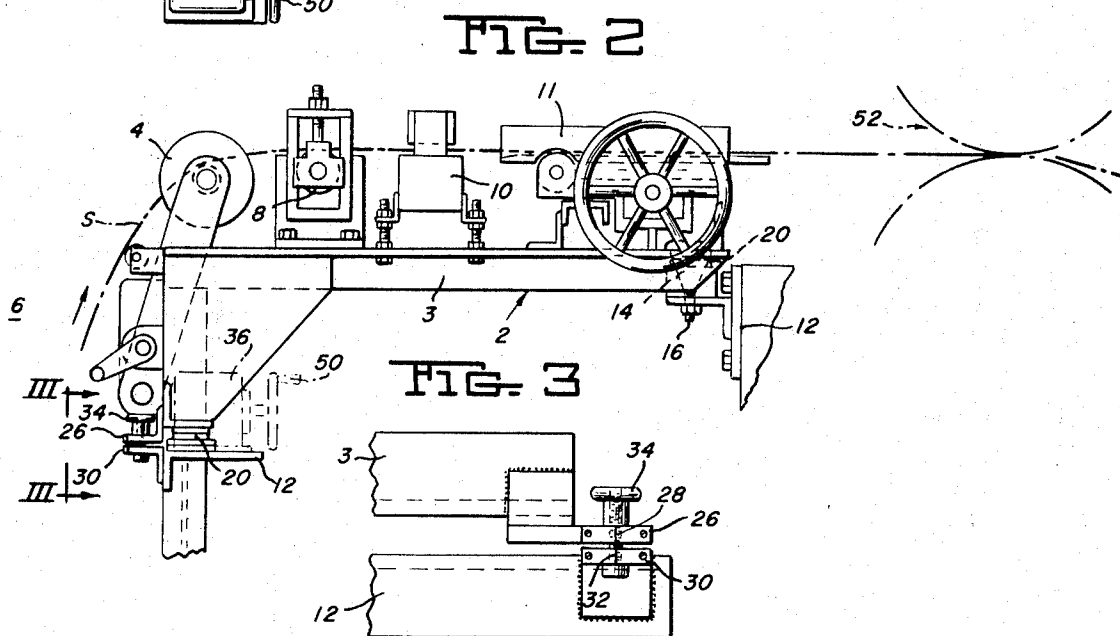
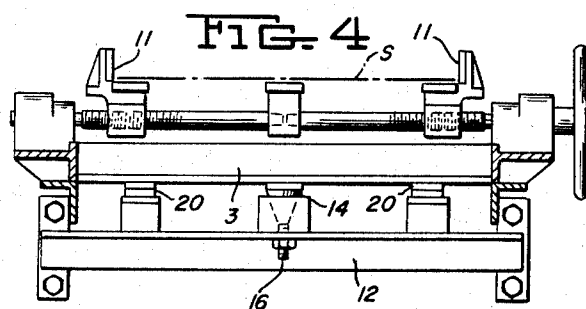
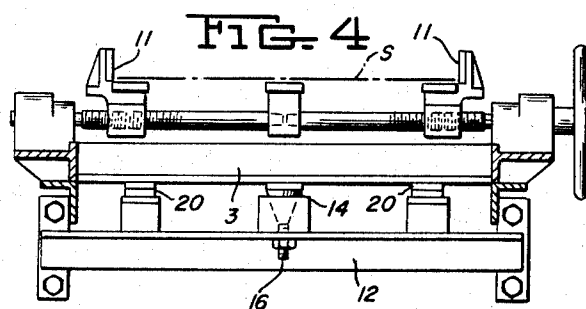
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[57] **ABSTRACT**

Apparatus includes a strip guide table mounted on a fixed base frame for pivotal movement about a pivot point at its discharge end intermediate its sides toward a cross-cut shear in a strip processing line. Means are connected with the entry end of the table for pivoting the table to correct for camber or other irregularity in the strip shape so that the strip approaches the cross-cut shear at right angles after it leaves the guide table. An indicator means is mounted on the base frame in engagement with the guide frame. The indicator mean is calibrated to indicate the variation of the longitudinal centerline of the guide table from the longitudinal centerline of the processing line so that it can be ascertained when the guide table is in proper position for correcting for the amount of camber or other irregularity in the strip and to cause the strip to approach the cross-cut shears at right angles thereto.

4 Claims, 4 Drawing Figures





ADJUSTABLE GUIDE TABLE FOR STRIP APPROACHING A CROSS-CUT SHEAR

The present invention relates generally to material handling equipment and more particularly to an adjustable guide table for strip traveling to a cross-cut shear in a continuous strip processing line.

Although not limited thereto the present invention is particularly adaptable for utilization in a continuous electrolytic tinning line for altering the angle of approach of a strip moving longitudinally in a horizontal plane to a cross-cut shear in the line. Therefore, the invention will be described hereinafter in connection with an electrolytic strip tinning line.

In the operation of a conventional continuous electrolytic tinning line, a coil of steel strip is positioned at the entry end of the tinning line with its eye extending in a horizontal plane. The leading end of the coiled strip is then uncoiled and welded to the trailing end of a strip already being processed. As the untreated strip enters the tinning line, it is passed through a looping pit or strip accumulator, a pickler for cleaning and then tin coated electrolytically. After the tin coating has been applied the strip continues to advance longitudinally along the line while it is chemically treated and electrostatically oiled. The tin coated and treated strip is then cooled by continuing to advance it longitudinally over a set of conveyors and rolls after which it is passed into a looping pit and looped onto a stationary table bearing a set of guide rolls, a magnetic roll, and a pinhole detector. It then continues to advance longitudinally through a roller leveler and into a cross-cut shear which cuts the strip into predetermined lengths, generally termed sheets. The cut sheets are finally carried on a belt conveyor through a classifying station to a piler at the end of the processing line.

One of the criteria of high quality tin plate requires the shear cut to be square within a very small tolerance. Sheets are periodically removed at the classifying station and tested to insure that the shear cut is square. A non-square corner on one sheet would indicate that this defect was present on others since this condition results from the strip not entering the shear at exactly a right angle. Causes for this can be a general curvature or camber in the strip itself or a non-uniform width defect. The defect could possibly be remedied by side guide plates adjustably mounted on the guide table but this would result in the yield of a lower quality edge on the sheet.

The apparatus of the invention contemplates the elimination of the out-of-square shear cut problem discussed above without applying pressure to the sides of the advancing strip by providing an adjustable guide table which can be pivoted in such a manner that the strip looping onto the guide table is forced, if necessary, to change direction by a precise adjustable amount and enter the shear at a right angle.

It is, accordingly, the primary object of our invention to provide a guide table for a continuous strip processing line for guiding a strip to a cross-cut shear in the line so that the strip approaches the shear at right angles thereto.

It is a more specialized object of our invention to provide a guide table as set forth by the object stated above wherein the table includes a table platform having two sides, an entry end and a discharge end pivoted

at a point adjacent its discharge end intermediate the sides thereof on a fixed base frame; indicator means on the base frame engaged by the table platform indicating the amount of variation of the centerline of the table platform from the centerline of the processing line; and means connected with the entry end of the table platform for pivoting the table platform about its pivot point to properly align strip passing through processing equipment on the table platform so that it approaches the cross-cut shear at a right angle as it leaves the discharge end of the table platform.

The above and other objects will become more apparent after referring to the following specification and attached drawing in which:

FIG. 1 is a plan view of a preferred embodiment of the adjustable guide table of the invention;

FIG. 2 is an elevational view of FIG. 1;

FIG. 3 is a partial elevational view looking at the left side of FIG. 2 and taken along the line III—III; and

FIG. 4 is a cross-sectional view taken substantially along the line IV—IV of FIG. 1.

Referring more particularly to the drawing, reference numeral 2 designates generally the adjustable guide table of the invention (shown in an electrolytic tinning line) which bears on the table platform 3 thereof, in tandem, disc side guides 4 for receiving strip S as it loops from a looping pit 6 adjacent the guide table onto the guiding table; a magnetic roll 8; a pinhole detector 10; and an adjustable side guide 11. With the exception of the table platform 3, the elements listed above are conventional and are not claimed as our invention.

The table platform 3 is pivotally mounted on a fixed base frame 12 by means of a pivot connection 14 with the base frame, as best shown in FIG. 4. The pivot point 16 of table platform 3 is disposed adjacent its discharge end 18 substantially on its centerline 19. The table platform rests on four symmetrically placed wear strips 20 so that the entry end 22 of the table platform 3 is able to pivot in a horizontal plane about the pivot point 16.

Initially, the centerline 19 of the table platform 3 is aligned with the centerline 24 of the tinning line. A machined bar 26 with an inscribed mark 28 on its free end is secured by welding or similar means, to the entry end of the table platform 3. Another machined bar 30 with a mark 32 inscribed on the end thereof is welded or otherwise securely affixed to the base frame 12 under the bar 26. After alignment of the centerline of the table platform with the centerline of the tinning line, the marks 28 and 32 are accurately lined up. The bars are then bolted together by a bolt 34. Hence, to precisely align the respective centerlines in the future, it is only necessary to line up marks 28 and 32 again.

A worm gear speed reducer 36 is mounted on the fixed base frame 12 and connected with the table platform 3 by means of a universal joint 38 and drive screw 40. A Starrett Dial Indicator 42 which measures thousandths of an inch (0-50 in either direction) is mounted on the base 12 with its indicator pin 44 touching an adjustable bracket 46 mounted on the side of the entry end 22 of table platform 3 by means of a bolt 48 fitted into an elongated slot 49 in the bracket.

After the marks 28 and 32 have been lined up by alignment of the respective centerlines 19 and 24, the Starrett Dial Indicator 42 is calibrated by loosening

bolt 48 and moving the bracket 46 in such a way as to depress the indicator pin 44 until the needle on the face of the dial reads 50. The bolt 48 is then tightened to lock the bracket 46 in place and the needle on the face of the indicator dial is manually turned back to 0. This operation is necessary because initially the indicator pin 44 could only be depressed and not pulled; hence, it could only measure a change in position of the table platform in only one direction. Now, by removing the bolt 34 and turning the handwheel 50 of the speed reducer 36 clockwise or counterclockwise, the table platform 3 will move right or left relative to the centerline 24 of the tinning line, with such movement being recorded on the dial indicator.

In operation, assume that a periodic measurement of a cut sheet at the classifying station (not shown) indicates the sheet is out-of-square by 0.030 inches. Another sheet must then be removed after noting its exact position as it entered the cross-cut shear 52. This is necessary so that the table will be moved (after removal of the bolt 34) in the correct direction to compensate for the out-of-square error. If the strip was found to be entering the shear 52 from the right side, as viewed looking from the discharge to the entry end of the table platform 3, the table platform must be moved to the left by turning the handwheel 50 clockwise until the needle of the dial indicator reaches 30 on the dial face. The direction of the strip will then be corrected so that it enters the shear at a right angle.

While we have shown but one embodiment of our invention, other adaptations and modifications may be

made without departing from the scope of the following claims.

We claim:

1. In a continuous strip processing line the improvement therewith of an adjustable guide table for strip approaching a cross-cut shear in said processing line which comprises a fixed base frame, a horizontally disposed table platform having an entry end and a discharge end, guide means on said platform for guiding the side edges of said strip strip processing means mounted in tandem on said platform, means advancing said strip toward said shear from the discharge end of said table platform, said table platform being pivotably mounted on said base frame about a vertical pivot axis at a point adjacent the discharge end of said table platform intermediate the sides thereof whereby said table platform can be adjustably pivoted laterally about said pivot point to align the strip approaching said cross-cut shear substantially normal to said cross-cut shear.

2. Apparatus as defined by claim 1 including indicating means on said frame engaged by said table platform to indicate the variation of the longitudinal centerline of said table from the longitudinal centerline of said strip processing line.

3. Apparatus as defined by claim 1 including means mounted on said frame and connected with said table platform for pivoting the same about said pivot point.

4. Apparatus as defined by claim 1 including a plurality of wear plates interposed between said fixed base frame and said table platform.

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