

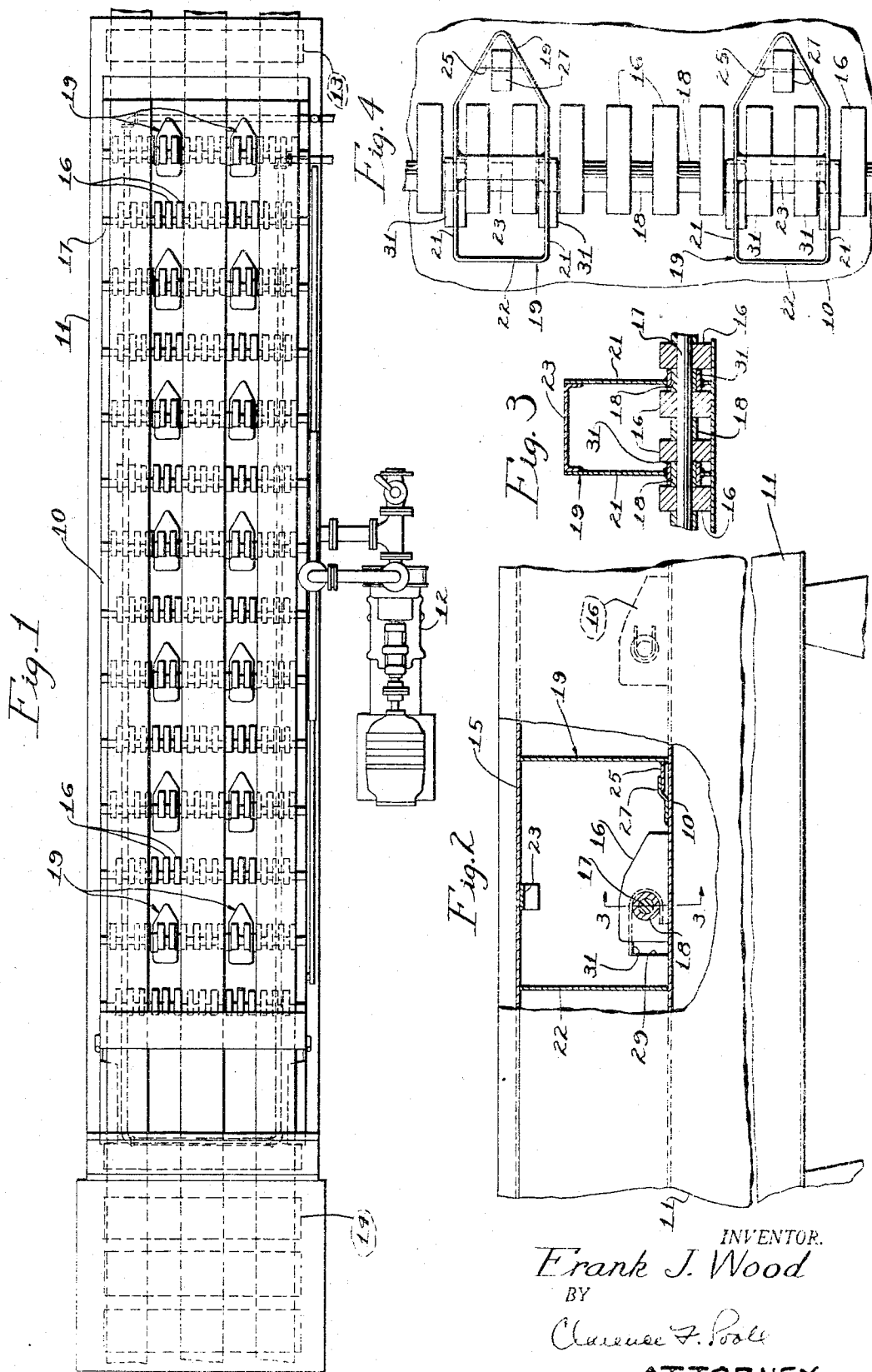
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F. J. WOOD

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CONTINUOUS STRIP PICKLING AND CLEANING APPARATUS

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CONTINUOUS STRIP PICKLING AND
CLEANING APPARATUS

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5 Claims. (Cl. 266—7)

This invention relates to improvements in continuous strip pickling and cleaning apparatus, and more particularly relates to a new and improved form of pickling trough and centering guiding arrangement therefor, arranged to guide a plurality of strips of metal through the trough.

In the pickling and cleaning devices for continuous strips of metal heretofore used, of the type where the metal is pushed through a trough of pickling fluid, it has been necessary to provide a separate pickling trough for each strip of metal where it is desired to simultaneously pickle a plurality of strips of metal. These troughs are usually arranged side by side and extend over and along a pickling tank, which receives pickling fluid from the ends of the troughs, where it settles and is recirculated through the troughs. This pickling trough arrangement is expensive and inflexible in that the maximum width of strip which can be pickled is limited to the width of the narrow troughs.

A more specific object of my invention is to provide a detachable guide and centering means along a single pickling trough substantially as wide as the pickling tank disposed therebeneath, which guide and centering means may be adjusted in accordance with the width of the metal pickled and may be so arranged as to guide a plurality of strips of metal through the pickling trough, side by side, or to guide one wide strip of metal through the same trough, by merely removing the centering guides.

A more specific object of my invention is to provide a simplified form of detachable centering guide for a pickling and cleaning trough, adjustable to permit the centering and guiding of various widths of metal through a single pickling trough.

Other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawing wherein:

Figure 1 is a top plan view of a pickling and cleaning trough having a centering guiding arrangement constructed in accordance with my invention associated therewith;

Figure 2 is a fragmentary view in side elevation of a part of the trough shown in Figure 1, with certain parts broken away and certain other parts shown in longitudinal section;

Figure 3 is an enlarged detail view taken substantially along line 3—3 of Figure 2; and

Figure 4 is an enlarged partial fragmentary

plan view of the pickling trough, showing certain details of construction of the centering guides.

In the drawing, a portion only of a continuous strip pickling and cleaning device is shown. The part shown includes a trough 10 extending over a pickling tank 11, for receiving pickling fluid discharged from the ends of said trough, where it is recirculated into said trough by means of a suitable motor driven pump 12. Pinch rolls indicated generally by reference character 13 are provided at the entering end of said trough, for pushing the metal therethrough, and squeegee and scrubbing and brushing rolls indicated generally by reference character 14 are provided at the discharge end of said trough, for squeezing pickling fluid from the metal and for washing and brushing the metal and further pushing it through the system. Said pickling and cleaning device is of a type such as is generally illustrated and described in my prior Patent No. 2,141,732, so will not herein be shown or described in detail except in so far as is necessary to make my present invention readily understandable.

The pickling trough 10, as herein shown, is of a rectangular cross section and is provided with suitable covers 15, 15 extending over the top thereof, to prevent the spilling of pickling fluid from said trough during the pickling operation (see Figure 2). Said pickling trough is preferably constructed from an acid resisting sheet material, such as stainless steel, and is provided with a plurality of parallel spaced blocks 16, 16, for supporting the metal above the bottom of the trough as it travels therealong. Said blocks are mounted on longitudinally spaced transversely extending shafts 17, 17, mounted on their ends in the sides of said pickling trough. Spacing collars 18, 18 are provided on said shafts, to space said blocks apart. Said blocks, as herein shown, each have an upper surface which is inclined upwardly from the forward end thereof at a gradual inclination and which terminates into a horizontal supporting portion. Said blocks may be made from any smooth material which will not scratch the sheet metal as it is passing there-through during the pickling operation, and are preferably made from an acid resisting smooth non-scratching plastic such as Havg, but may be made from any other suitable plastic material, or may be made from glass or any other non-abrasive smooth material, if desired.

Referring now in particular to the novel form of guiding and centering means of my invention, for centering the strip as it passes through the

pickling trough 10, a plurality of centering guides 19, 19 are provided. Said guides, as shown in Figure 1, are spaced longitudinally along the pickling trough 10 in laterally spaced relation with respect to each other, and are detachably mounted on the shafts 17, 17, to provide three passageways for the strip metal. It may readily be understood, however, that said centering guides may be so arranged as to provide one or two passageways through said trough, or may be entirely removed from said trough, to permit metal of substantially the width of said trough to pass therethrough, if desired. Each of said centering guides extends from the bottom of the trough to the underside of the cover 15 and has a forward end portion of a substantially V-shaped formation, the sides of which diverge from a common longitudinal central portion and which terminate into parallel spaced longitudinally extending side walls 21, 21, which are connected together by a rear end wall 22 to form a guide with a substantially pointed forward end and with parallel spaced sides disposed parallel to the sides of the trough 10. A reinforcing strip 23 extends across the top of said side walls, adjacent the transverse center of said guide, for stiffening said guide.

A retaining piece 25 is placed within said guide and extends across the sides of the V-shaped forward end thereof. Said retaining piece is adapted to be slidably engaged with and overlapped by a retaining clip 27, secured to the bottom of the trough 10 and having an engaging end spaced upwardly from the bottom of said trough, which engages the top of the piece 25, for holding the front end of said centering guide from upward movement during the centering operation.

Slots 29, 29 opening towards the bottoms of the sides 21, 21 of the centering guides 19, 19 are provided in said sides (see Figure 2). Said slots extend longitudinally forwardly from the open portion thereof and terminate into an arcuate forward end adapted to fit over one of the collars 18, for holding the rear end of said centering guide in position. Reinforcing members 31, 31 extend along said slotted portions from the forward part of the open portion thereof around the arcuate portion thereof and upwardly along the top portion thereof, to increase the bearing area in engagement with said spacing collars.

The centering guides 19, 19 may thus be readily attached to the bottom of the pickling trough 10 at various desired positions therealong, by passing the open portions of the slots 29, 29 over the collars 18, 18, until said centering guides engage the bottom of said trough. Each centering guide may then be pushed in a rearward direction until said collars engage the reinforcing members 31, 31 extending around the forward ends of the slots 29, 29 and the retaining clip 27 engages the top of the retaining piece 25. This provides a simplified form of guide means which may readily be attached to a pickling trough at various points therealong, to guide strips of varying widths or to guide more than one strip of metal through a single trough, without necessitating the provision of a separate trough for each strip of metal.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting my invention to the specific

embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. In a continuous pickling and cleaning apparatus for strip metal, a pickling trough through which the strip metal is adapted to pass during the pickling operation, a plurality of laterally and longitudinally spaced blocks along the bottom of said pickling trough and forming a means for supporting the metal above the bottom of said trough as it passes therethrough, transversely extending shafts spaced along said pickling trough forming a mounting for said blocks in said pickling trough, and means adjustably mounted on the bottom of said pickling trough for guiding a plurality of strips of metal therethrough in side by side relationship including a plurality of centering guide members detachably mounted on said shafts in laterally spaced relationship with respect to each other.

2. A centering guiding arrangement adapted to guide a plurality of strips of metal through a pickling trough including a plurality of guide members adapted to be detachably mounted on the bottom of the pickling trough, each of said guide members having a pair of parallel spaced side walls converging towards each other at their forward ends, said side walls being longitudinally slotted and having a portion thereof opening towards the ground, and said slotted portions forming a means for detachably connecting said guide to the bottom of the pickling trough.

3. A centering guiding arrangement adapted to guide a plurality of strips of metal through a pickling trough including a plurality of laterally spaced guide members spaced along the pickling trough and adapted to be detachably mounted on the bottom thereof, each of said guide members having a pair of parallel spaced side walls converging towards each other at their forward ends, said side walls being longitudinally slotted and having a portion thereof opening towards the ground and said slotted portions forming a means for detachably connecting said guide to the bottom of the pickling trough, a retaining piece extending across the inside of the forward end of each guide member, and a clip on the bottom of said trough adapted to engage said retaining piece to hold the forward end of said guide member from vertical displacement.

4. In a continuous strip pickling and cleaning apparatus, a pickling trough through which the strip metal is adapted to pass during the pickling operation, a plurality of parallel spaced transversely extending shafts extending along said trough, a plurality of laterally spaced blocks mounted on said shafts and forming a means for supporting the metal above the bottom of said trough as it passes therethrough, a plurality of guide members detachably mounted on said shafts for guiding a plurality of strips of metal along said blocks and through said trough, each of said guide members having a pair of parallel spaced side walls converging towards each other at their forward ends, and said side walls being longitudinally slotted and said slotted portions each having a rear portion opening towards the ground to fit over said shafts so said guides can be lockingly engaged with said shafts by moving said guides rearwardly with respect to said shafts.

5. In a continuous strip pickling and cleaning apparatus, a pickling trough through which the strip metal is adapted to pass during the pickling operation, a plurality of parallel spaced transversely extending shafts extending along said

trough, near the bottom thereof, a plurality of laterally spaced blocks mounted on said shafts and forming a means for supporting the metal above the bottom of said trough as it passes there-through, a plurality of guide members adapted to be detachably mounted on said shafts, for guiding a plurality of strips of metal along said blocks and through said trough, each of said guide members having a pair of parallel spaced side walls converging towards each other at their forward ends, said side walls being longitudinally slotted

and said slotted portions each having a rear portion opening towards the ground and adapted to fit over said shafts so said guide members can be lockingly engaged with said shafts by moving said guides rearwardly with respect to said shafts, a retaining piece extending across the inside of the forward end of each guide member, and a clip on the bottom of said trough adapted to engage said retaining piece to hold the forward end of said guide member from vertical displacement.

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CERTIFICATE OF CORRECTION.

Patent No. 2,320,499.

June 1, 1943.

FRANK J. WOOD.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 22, for "A more specific object of my invention is to" read --The device of my present invention has as its--; line 34, for "objection" read --invention--; second column, line 31, for "risisting" read --resisting--; page 2, second column, line 22, for "throuah" read --through--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office. Signed and sealed this 29th day of June, A. D. 1943.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.