Nov. 29, 1927. 1,650,607

H. D. COOK

METHOD OF AND APPARATUS FOR FORMING PIPE SKELP

Filed April 21. 1926 2 Sheets-Sheet 1

Fig. 1.

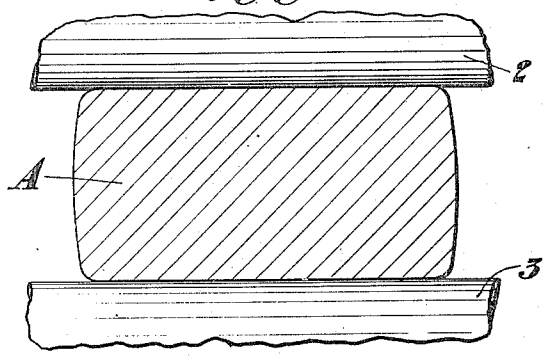


Fig. 2.

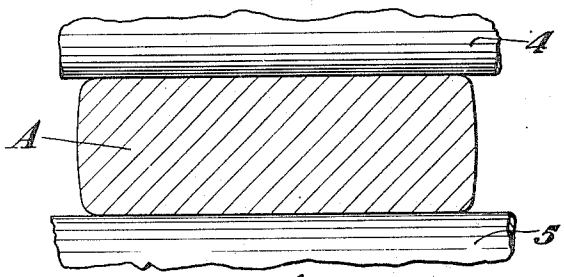


Fig. 3.

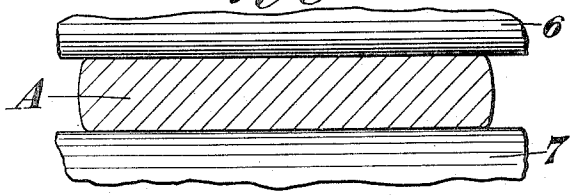


Fig. 4.

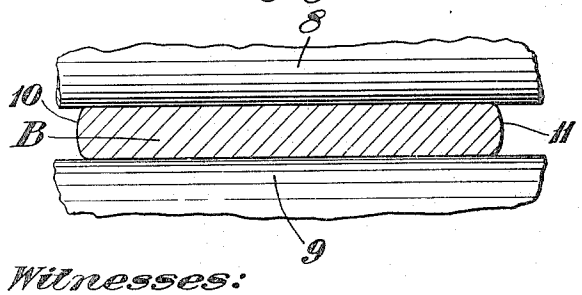


Fig. 5.

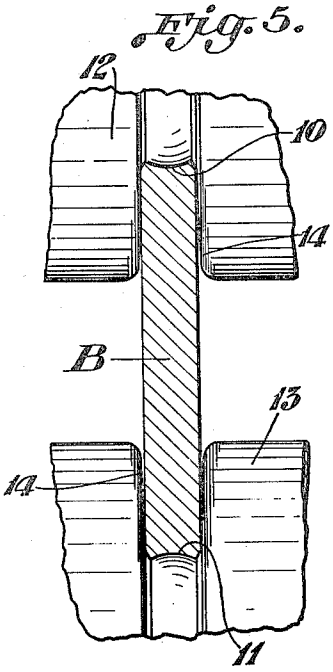
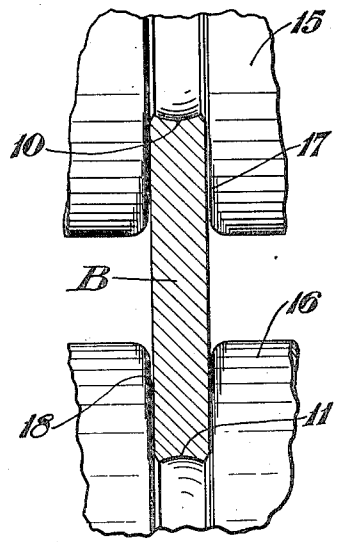


Fig. 6.



Witnesses:
Edwin Trueb

Inventor:
HOWARD D. COOK,
by: D. Anthony Howard
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METHOD OF AND APPARATUS FOR FORMING PIPE SKELP

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Fig. 7.

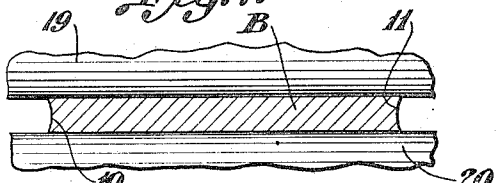


Fig. 8.

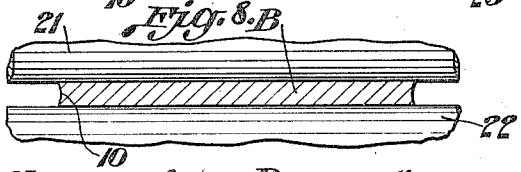


Fig. 9.

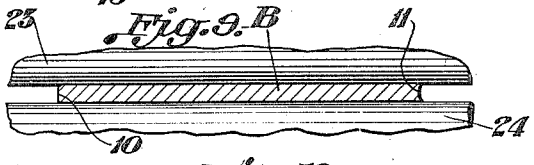


Fig. 10.

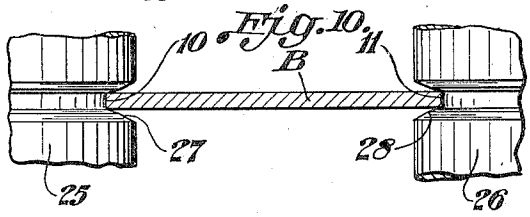


Fig. 11.

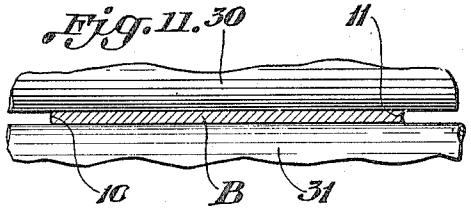


Fig. 12.

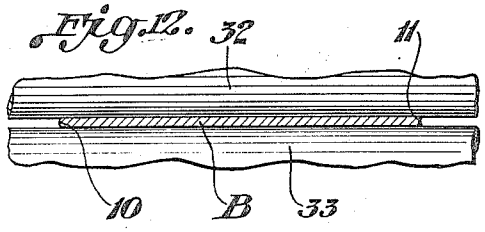
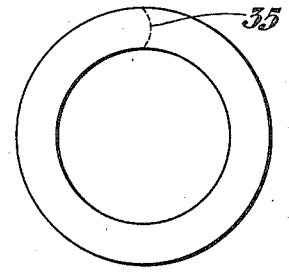


Fig. 13.



Witnesses:
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Inventor:
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his Attorney.

Patented Nov. 29, 1927. 1,650,607

UNITED STATES PATENT OFFICE.

HOWARD D. COOK, OF ELYRIA, OHIO, ASSIGNOR TO NATIONAL TUBE COMPANY, A CORPORATION OF NEW JERSEY.

METHOD OF AND APPARATUS FOR FORMING PIPE SKELP.

Application filed April 21, 1926. Serial No. 103,515.

This invention relates to the manufacture of pipe skelp and more particularly to a method of rolling a novel form of pipe skelp having one convex and one concave longitudinal edge, which edges are adapted to be interfitted when a pipe is formed from the skelp.

One object of the invention is to provide a method whereby uniform edge surfaces will be produced so that stronger butt-welds may be made when forming pipe from the skelp.

Another object of the invention is to provide a novel method whereby the novel concave and convex edges may be formed on varying sizes of skelp.

In the drawings—

Figures 1 to 12, inclusive, of the drawings illustrate the successive roll passes used to carry out the method of this invention.

Figure 13 is an end elevation of a pipe formed from skelp made by the method of this invention.

The novel method will be described and reference made to the drawing.

A heated billet A is first passed successively through reducing passes formed by the pairs of rolls 2 and 3, 4 and 5, 6 and 7, and 8 and 9, to reduce and draw out or elongate the billet and form a skelp blank B of rectangular cross-section having convex edges 10 and 11. The blank B is then turned and passed through an edging pass between the rolls 12 and 13, which rolls are provided with convexly curved bottom wall grooves 14 adapted to depress the edges 10 and 11 to concave form.

The once edged blank is then passed through a second edging pass between the rolls 15 and 16 which have convexly curved bottom wall grooves 17 and 18, respectively. The bottom wall of the groove 17 has a materially less radius than the bottom wall of the groove 18 so that the concave edge 10 of the blank B is depressed to a materially greater depth than the concave edge 11.

The blank B with its concave edges 10 and 11 is then again turned and passed flatwise successively through a plurality of reducing passes between the rolls 19 and 20, 21 and 22, and 23 and 24 to further reduce and elongate or draw out the blank. The draft of the rolls 19 and 20, 21 and 22, and 23 and 24 is so proportioned that the concave edge 11 of the blank will be filled by the flow of metal in the first two passes and then the metal will flow out at the center of this edge in the last pass between the rolls 23 and 24 forming a convex edge, while the edge 10 due to its materially greater depth will not be filled by the flow of metal, but on the contrary, the metal will flow more or less evenly over the entire edge and maintain the concave shape.

The blank B is then passed through an edging pass between the vertical rolls 25 and 26 having grooves 27 and 28, respectively, therein. The groove 27 has a concave bottom wall, while the groove 28 has a convex bottom wall, which walls are adapted to shape and size the edges 10 and 11 of the blank, which edges have substantially the same radius so as to interfit with each other.

After the blank B has passed through the edging pass between the rolls 25 and 26 it may be shaped to form a pipe blank, or it may be passed through further reducing passes between the rolls 30, 31 and 32, 33 to further reduce and elongate or draw out the blank if desired.

If the blank B is passed through the reducing passes between the rolls 30, 31 and 32, 33 the draft is gaged so as not to destroy the previously formed concave and convex edges of the blank, since said edges are of substantially the same radius so that the convex edge 10 will fit within the concave edge 11, when the skelp is bent to form a pipe, as shown in Figure 2, in which the dotted line designated by the numeral 35 illustrates the line of contact of the edges 10 and 11.

A pipe skelp when rolled in accordance with this invention has substantially uniform edges, which, due to their novel shape provide approximately twenty per cent more welding area than obtainable from skelp as heretofore formed, and resulting in stronger and smoother welds.

While I have described and illustrated one specific series of steps for carrying out the method of my invention, it will be understood that I do not wish to be limited thereto, since some of the steps may be omitted or others substituted or added, without departing from the scope of my invention as defined in the appended claims.

I claim—

1. A method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which includes as

steps, edging a blank to form both longitudinal edges concave, one of said concave edges having a greater depth than the other, then passing said blank flatwise through at least one reducing pass to reduce its thickness, elongate said blank and to force the concave longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave, and again edging said blank to true up said convex and concave edges.

2. A method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which includes as steps, edging a blank to form both longitudinal edges concave, one of said concave edges having a lesser depth than the other, and then passing said blank flatwise through at least one reducing pass to reduce its thickness, elongate said blank and to force said longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave.

3. A method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which includes as steps, edging a blank to form both longitudinal edges concave, one of said concave edges having a lesser depth than the other, and then passing said blank flatwise through at least one reducing pass to reduce its thickness, elongate said blank and to force said longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave, again edging said blank to true up and shape said edges, and finally passing said blank flatwise through at least one more reducing pass to elongate and reduce the thickness of said blank.

4. A method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which consists in reducing a billet to form a flat blank, forming the longitudinal edges of said blank concave, one of said concave edges having a lesser depth than the other, and then passing said blank through at least one reducing pass to reduce its thickness, elongate said blank and to force said longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave.

5. The method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which consists in passing a billet through a plurality of reducing passes to form a flat blank, then passing said blank through at least one edging pass to form both longitudinal edges concave, one of said concave edges having a lesser depth than the other, and then passing said blank flatwise through a plurality of reducing passes to reduce its thickness, elongate the blank, and to force said longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave, then passing said blank through an edging pass to true up and shape said edges, and then passing said blank flatwise through at least one reducing pass to reduce it to final size.

6. The method of rolling skelp having one longitudinal edge concave and its other longitudinal edge convex, which consists in passing a billet through a plurality of reducing passes to form a flat blank, then passing said blank through at least one edging pass to form both longitudinal edges concave, one of said concave edges having a lesser depth than the other, and then passing said blank flatwise through a plurality of reducing passes to reduce its thickness, elongate the blank, and to force said longitudinal edge having the lesser depth to change to a convex contour while the deeper concave edge remains concave, then passing said blank through an edging pass to true up and shape said edges, and then passing said blank flatwise through a plurality of reducing passes to reduce it to final size.

7. Apparatus for rolling pipe skelp comprising, in combination, reducing rolls adapted to slab the metal and form a flat blank, edging rolls adapted to form concave edges on the partly rolled blank, reducing rolls adapted to further reduce the thickness of said blank, and edging rolls adapted to shape one concave and one convex edge on the blank.

8. Apparatus for rolling pipe skelp comprising, in combination, reducing rolls adapted to slab the metal and form a flat blank, edging rolls adapted to form concave edges on the partly rolled blank, reducing rolls adapted to further reduce the thickness of said blank, edging rolls adapted to shape one concave and one convex edge on the blank, and reducing rolls adapted to further reduce the thickness of the edged blank.

In testimony whereof, I have hereunto signed my name.

HOWARD D. COOK.