July 19, 1932.

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ROLLS FOR CORRUGATING SHEET MATERIAL

Filed Oct. 24, 1931

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Application filed October 24, 1931. Serial No. 570,758.

My invention relates to rolls for corrugating sheet material. While not limited in regard to the kind of material, I regard the invention particularly applicable for use in connection with sheet metal. An object of the invention is to provide a device which will corrugate the sheet material in such manner that a plurality of diagonally extending ribs will be formed in the material thereby greatly strengthening it both lengthwise and crosswise.

The full objects and advantages of my invention will appear in connection with the detailed description thereof, and the novel features of my inventive idea will be particularly pointed out in the claims.

In the accompanying drawing which illustrates a practical embodiment of my invention, Fig. 1 is an elevational view of one of the rolls, Fig. 2 is an elevational view of one of the elements or ribs of the roll, Fig. 3 is an end elevational view as seen from the line 3—3 of Fig. 2, Fig. 4 is a view in vertical section showing the two rolls as employed in shaping sheet material, Fig. 5 is a plan view of the material which has been shaped by the rolls, and Fig. 6 is an end view of the material as seen from the line 6—6 of Fig. 5.

Referring to the construction shown in the drawing, it will be understood that I provide two mating rolls 10 and 12 which are duplicates of each other, the roll 10 as shown in Fig. 4 being an upper roll and the roll 12 being a lower roll. These two rolls are geared together for rotation in unison by intermeshing gears 14 and 16 secured to the respective shafts of the rolls, these shafts being mounted in well known or suitable manner. Each roll is provided with a plurality of raised elements or ribs 18, which are shown as seven in number, these ribs being equally spaced around the circumference of the roll.

As will be understood from Fig. 1, the two ends of a rib are located at corresponding points with relation to the circumference of the roll. Each rib may be considered as consisting of two similar parts which start at the ends of the rib and extend in inclined relation toward each other so as to meet at the middle of the rib, the apex 19 where the two parts meet being rounded. The ribs are preferably so constructed that the middle of each rib is located half way around the roll from the ends of the rib. In other words, the middle of a rib has a 180° relation to the ends thereof. It will therefore be understood that each rib consists of two half turns of a helix which are oppositely disposed with relation to each other and merge into each other midway of the length of the roll so that one-half of the rib is right-handed and the other half is left-handed. From Fig. 4, it will be seen that the ribs of the rolls 10 and 12 interfit with each other, with the ribs of each roll extending into corresponding depressions of the other roll so that the surfaces of the two rolls at all corresponding points are equidistant from each other. In order to feed sheet material indicated at S between the rolls for the purpose of corrugating the material, supports 20 and 22 are provided at opposite sides of the rolls adjacent the plates where the rolls are spaced from each other by a distance substantially equal to the thickness of the material which is to be corrugated.

The operation and advantages of my invention will be obvious in connection with the foregoing description. By comparing Fig. 1 with Fig. 5, it will be understood that when a plate of the sheet material S is passed between the rolls 10 and 12, the sheet material will be corrugated so that it is provided with ribs R alternating with depressions D. The ribs are inclined at an angle to the two opposite sides of the plate so that corresponding rib portions converge toward a median line. When the angle of inclination is 45° as shown, the plate will be strengthened the same amount for both the longitudinal and trans-
verse axes thereof. By changing the angle of inclination, the plate may be strengthened more in one direction than in the other. If the two rib portions were caused to meet each other in the form of sharp apices, there would be a line of weakness coincident with the median line. It is for the purpose of preventing this weakness that I provide the rounded apices 19 on the roll.

1. A device for corrugating sheet material comprising two similar rolls each of which has a plurality of spaced ribs thereon, each rib consisting of two portions in the form of right and left helical turns whose outer ends are located at corresponding points with relation to the circumference of the roll and whose inner ends meet with rounded apices having a substantially 180° relation to said outer ends, and means for causing said rolls to operate with the ribs of each roll mating in spaced relation with the depressions of the other roll.

2. A device for corrugating sheet material comprising two similar rolls each of which has a plurality of spaced ribs thereon, each rib consisting of two portions in the form of right and left helical turns whose outer ends are located adjacent the outer ends respectively of the roll and whose inner ends meet with rounded apices substantially midway of the length of the roll, and means for causing said rolls to operate with the ribs of each roll mating in spaced relation with the depressions of the other roll.

3. A device for corrugating sheet material comprising two similar rolls each of which has a plurality of spaced ribs thereon, each rib consisting of two portions in the form of right and left helical turns whose outer ends are located adjacent the outer ends respectively of the roll and whose inner ends meet with rounded apices between the ends of the roll, and means for causing said rolls to operate with the ribs of each roll mating in spaced relation with the depressions of the other roll.

4. A device for corrugating sheet material comprising two similar rolls each of which has a plurality of spaced ribs thereon, each rib consisting of two portions in the form of right and left helical turns whose outer ends are located adjacent the outer ends respectively of the roll and whose inner ends meet with rounded apices between the ends of the roll, and means for causing said rolls to operate with the ribs of each roll mating in spaced relation with the depressions of the other roll.

5. A device for corrugating sheet material comprising two similar rolls each of which has a plurality of spaced ribs thereon, each rib consisting of two portions in the form of right and left helical turns whose outer ends are located adjacent the outer ends respectively of the roll, and whose inner ends meet in apices between the ends of the roll, and means for causing said rolls to operate with the ribs of each roll mating in spaced relation with the depressions of the other roll.

In testimony whereof I hereunto affix my signature.

JOSEPH T. AUGER.