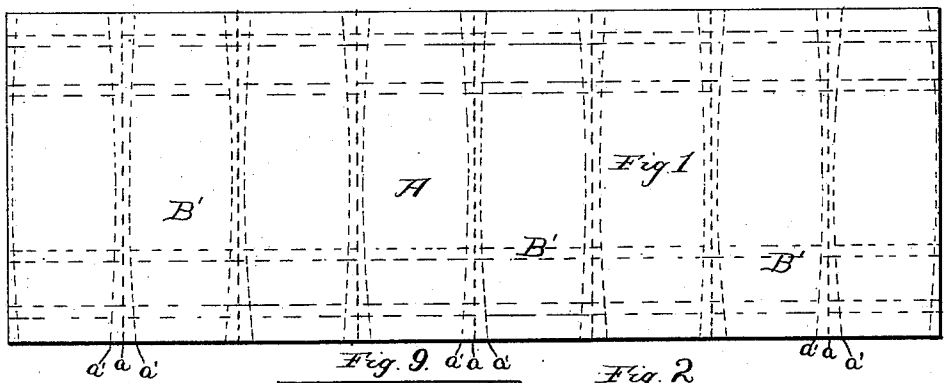
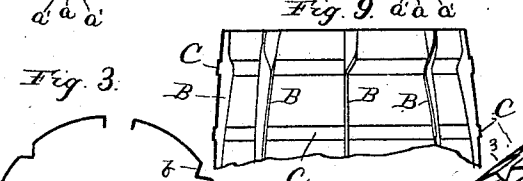
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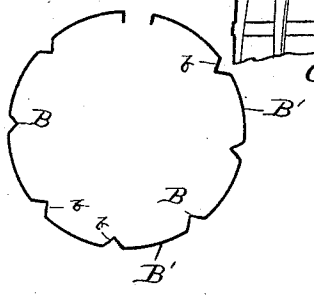
E. NORTON.

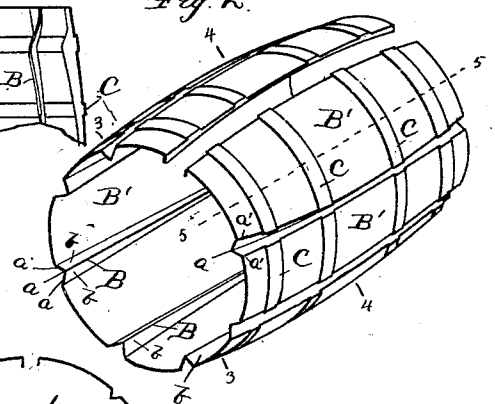
MANUFACTURING SHEET METAL BARREL BODIES.

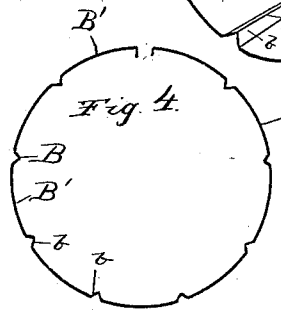
No. 354,573. Patented Dec. 21, 1886.

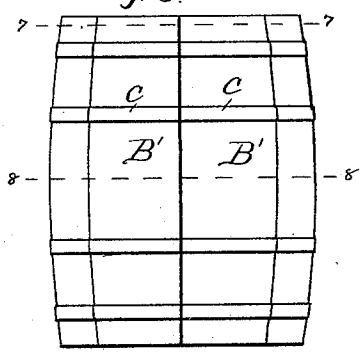


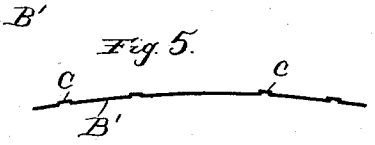


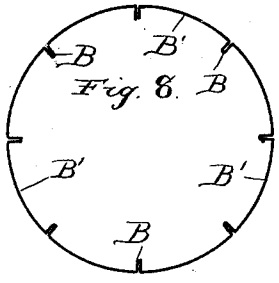


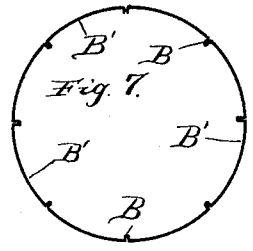


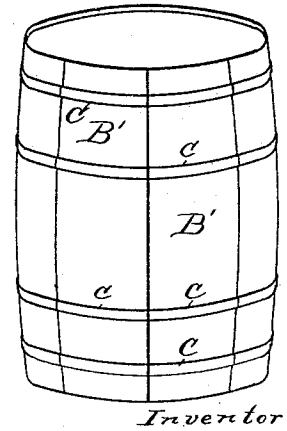












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By Munday, Evarts & Adcock
his Attorneys:

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDWIN NORTON, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND OLIVER W. NORTON, OF SAME PLACE.

MANUFACTURING SHEET-METAL BARREL-BODIES.

SPECIFICATION forming part of Letters Patent No. 354,573, dated December 21, 1886.

Application filed September 3, 1886. Serial No. 212,573. (No model.)

To all whom it may concern:

Be it known that I, EDWIN NORTON, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art of Manufacturing Sheet-Metal Barrel-Bodies, of which the following is a specification.

The object of this invention is to provide an improved process or method of making sheet-metal bodies of a barrel-form from a single rectangular sheet of metal without cutting the same; and to this end it consists, essentially, in giving the bilge or tapering curved shape from the middle toward each end of the barrel-body by forming a series of longitudinal tapering or gore shape folds or ribs in the sheet, the folds or ribs tapering from each end toward the middle, or in the opposite direction to the taper or curve of the barrel itself. In this way the surplus stock at the ends of the barrel, due to the diminished diameter of the barrel at its ends, is taken up without materially stretching or straining the stock, and the body at the same time given a true barrel form and greatly strengthened by the longitudinally inwardly and radially projecting ribs or folds.

It also consists in the series of steps or method in which the longitudinal ribs or folds are formed and the body given its barrel form—that is to say, in, first, spacing or partially forming the folds on the lines on which the rectangular sheet is to be folded to produce the tapering ribs or folds; second, pressing or squeezing the walls of such partially-formed folds together, and thus completing the folds or ribs; and, finally, turning down the completed ribs flat against the rim of the barrel-body at each end, so that the heads may be applied.

In order to give a full and clear explanation and description of the process, a sheet of metal is shown in the accompanying drawings during the several stages or steps of its manipulation according to my process.

In said drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 is a plan view of a rectangular sheet of metal to be formed into a barrel-form body, showing in dotted lines the lines upon which the folds are to be made to form the longitudinal tapering ribs or folds, and also the margins of the cross-beads, which form or represent the hoops of the barrel. Fig. 2 is a perspective view of the sheet after the longitudinal tapering folds are partially formed and the sheet curved into a circular form. Figs. 3, 4, and 5 are sections of Fig. 2 on lines 3 3, 4 4, and 5 5. Fig. 6 shows the body after the folds or ribs are completed by pressing or squeezing the sides or walls of such ribs flat together. Figs. 7 and 8 are cross sections on lines 7 7 and 8 8 of Fig. 6. Fig. 9 shows the barrel-form body after the ribs or folds are turned down flat at their ends for reception of the heads; and Fig. 10 is a view of the complete barrel.

The sheet A is first spaced or partially folded, as indicated in Fig. 2, along the central and converging marginal lines, *a a' a'*, of the folds or ribs B, so that the sides or walls *b b* of said folds or ribs form triangular grooves or channels tapering from each end toward the middle, and at the same time the sheet is curved into circular form and also given a slight longitudinal curvature or bilge, as the increased size and depth of the triangular grooves *b b* toward each end somewhat contracts the diameter of the body at its ends as compared with its middle. The partial folds or triangular grooves *b b* are preferably formed consecutively or one after another, and any suitable tool or machine may be used for this purpose—as, for example, a stamp and die. The transverse hoop-beads C may be either formed simultaneously with or before the partially-formed folds or grooves *b b*. After the sheet is partially folded and formed, as indicated in Fig. 2, the sides or walls *b b* of the grooves are squeezed or pressed flat together, as indicated in Figs. 6, 7, and 8, thus finishing the ribs B, and still more contracting the diameter of the body at its ends and giving it a true barrel shape or longitudinal curvature, with inwardly and radially projecting ribs or folds tapering from each end toward the middle or bilge of the barrel. One of the ribs B is half formed on each of the meeting edges of the sheet, so that the two parts or radial flanges abutting together will also form a strong and secure seam when soldered. After the walls of the

ribs B B are thus squeezed together and the side seam, *b'*, soldered the ribs are folded or turned down flat against the rim of the barrel at each end, as indicated in Fig. 9, to afford a smooth seat for the heads or ends D of the barrel, which are then secured in place.

The sides or walls *b b* of the triangular tapering grooves, as shown in Fig. 2, may be squeezed together by any suitable tools or clamps, and any suitable tools or machines may be used for turning down the ribs B at the ends of the barrel-body—as, for example, an ordinary hammer.

It is preferable to squeeze together simultaneously the sides or walls *b b* of all the folds or ribs in the barrel-body, as thereby the stock more readily assumes the double curvature due to the circular form of the barrel in cross-section and its bilge or longitudinal curvature.

The degree of bilge or longitudinal curvature given to the barrel-body may be varied by increasing or diminishing the taper of the ribs or folds B B from each end toward the middle, or by increasing or diminishing the number of such ribs or folds in a barrel of a given diameter. By giving the ribs or folds no taper whatever a cylindrical body will be formed having the strengthening longitudinal ribs.

In the three joint applications of John G. Hodgson and myself, filed of even date herewith, there are shown and described special machines which we have devised for partially forming and spacing the longitudinal folds for squeezing the sides or walls of all of the folds or ribs together simultaneously, and for turning down the ribs at the ends of the body. I make no claim to any of said machines as my sole invention, nor do I herein claim the sheet-metal barrel-body shown and described, as that constitutes the subject of another application filed by me of even date herewith.

The staves B', between the ribs B, have the shape and appearance of staves in an ordinary barrel, the ribs marking the divisions between the staves.

It should also be observed that the folds or ribs B taper on a slightly-curved line, instead of on a straight line, in order to give the proper curvature or bilge to the barrel without stretching the stock, and that the lines *a' a'*, on which the folds are made, are slightly curved.

I claim—

1. The process or method of making sheet-metal barrel-form bodies from a rectangular sheet, consisting in forming a series of gore-shape inwardly-projecting flat folds or ribs therein, tapering from each end toward the middle and extending longitudinally from end to end of the sheet, whereby the surplus stock is taken up and the diameter contracted at each end and the barrel given a smooth exterior with stave-line divisions, substantially as specified.

2. The process of making sheet-metal barrel-form bodies from a sheet, consisting in first forming a series of longitudinal grooves or channels therein tapering from each end toward the middle, and then squeezing the walls of such grooves or channels together, substantially as specified.

3. The process of making sheet-metal barrel-form bodies from a sheet, consisting in first forming a series of longitudinal grooves or channels therein tapering from each end toward the middle, and then squeezing the walls of such grooves or channels together, forming tapering ribs, and finally turning or folding down said ribs at the end of the barrel to form seats for the barrel-heads, substantially as specified.

4. A process or method of making sheet-metal barrel-form bodies from a sheet, consisting in forming a series of gore-shape inwardly-projecting flat folds or ribs therein, tapering on curved lines from each end toward the middle, substantially as specified.

EDWIN NORTON.

Witnesses:
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