Dec. 17, 1968 F. M. WALKER 3,416,217

METHOD FOR MAKING LAMINATED SHEET METAL FROM RECLAIMED TINNED METAL WASTE PIECES

Filed April 1, 1966 2 Sheets-Sheet 1

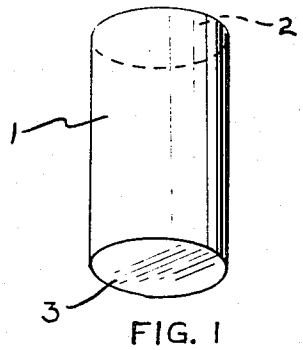


FIG. 1

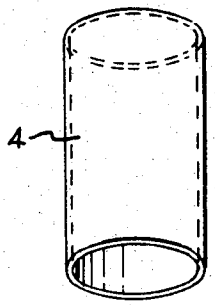


FIG. 2

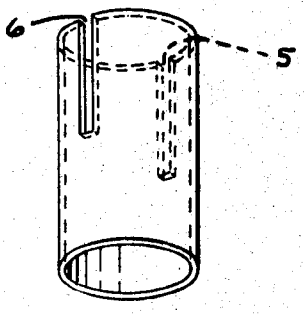


FIG. 3

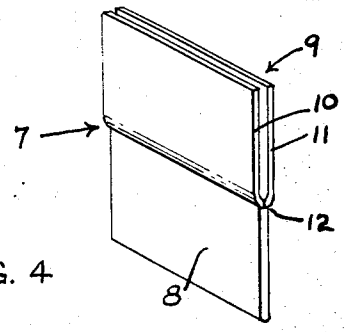


FIG. 4

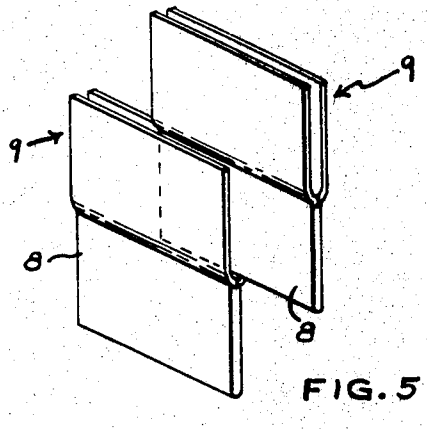
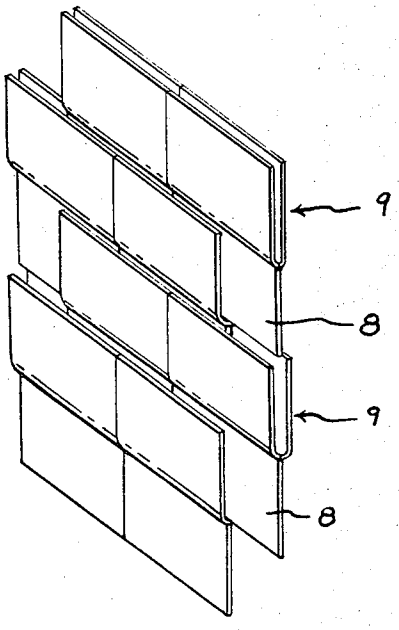


FIG. 5

FIG. 6



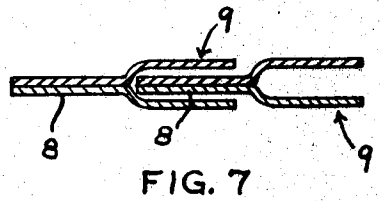


FIG. 7

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Filed April 1, 1966 2 Sheets-Sheet 2

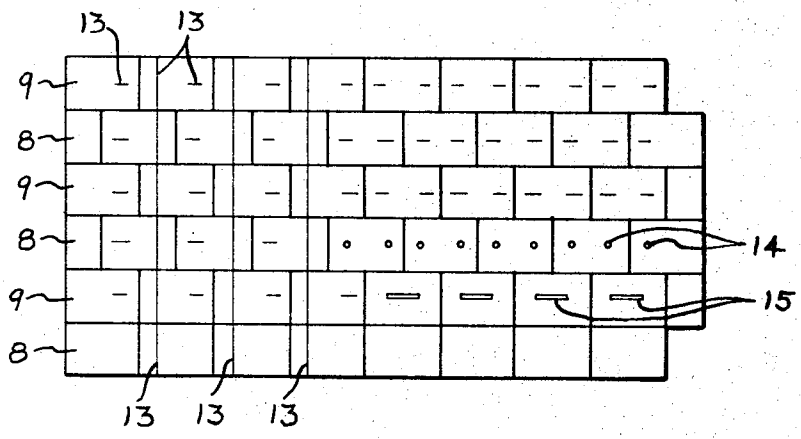


FIG. 8

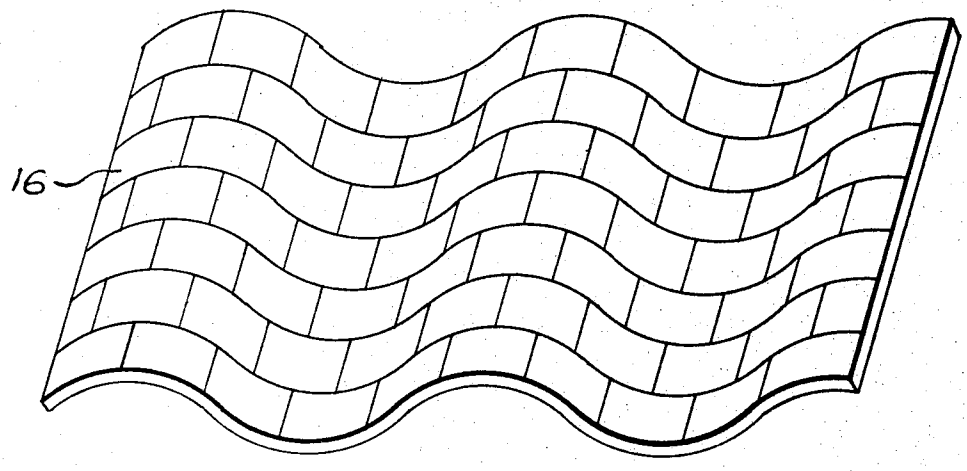


FIG. 9

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METHOD FOR MAKING LAMINATED SHEET METAL FROM RECLAIMED TINNED METAL WASTE PIECES

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4 Claims. (Cl. 29—403)

ABSTRACT OF THE DISCLOSURE

A method of making multi-layer metal sheet from tin cans by slitting and flattening the cans and arranging the flat pieces in an interlocking overlapping configuration.

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention is concerned with the reclaiming of tinned metal waste pieces, such as discarded tin cans, and the transforming of such pieces whereby both the tin and the metal are recovered as an article in the form of a laminated metal sheet. Such a sheet has significant utility—military and civilian—as a construction article for use in such things as bulkheads, roofing, prefabricated Quonset huts, bridge decking, and the like. The method for making and obtaining such an article is the principal object of the invention.

In the past various methods and means have been employed for treating tinned metal waste, but these differ significantly in process and result from what is herein disclosed and claimed. Most of the processes heretofore employed have called for crushing and flattening the waste material, or otherwise treating it, so that it could be subjected to a melting process in furnaces; primarily to recover the valuable tin which comprises a small percentage of the whole. By so recovering the tin, the sheet metal or steel in the alloy is consumed because of the intense heat required. It may also be lost in the form of slag. In either case, such means and methods have proven to be inefficient and uneconomical. Other processes, requiring expensive and complicated means, recover the waste products in the form of an alloy of tin and steel in articles in the form of billets. It is a distinct improvement when such waste products are recovered substantially in their entirety and utilized without costly and sophisticated changes of physical state. This is accomplished by the present invention.

Generally, therefore, it is an object of the present invention to provide a method of using waste pieces in an economical and efficient manner. Specifically, it is an object of the invention to provide a novel method of making sheet metal from normally discarded waste pieces by cutting them, aligning them in an overlapping configuration, and securing them to one another.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the several steps and the relation of one or more of such steps with respect to each of the others, and the article which possesses the characteristics, properties and relation of elements, all as exemplified in the detailed disclosure hereinafter set forth and in the scope of the application which will be indicated in the claims.

For greater understanding of the nature and objects of the invention, reference is had to the following description in connection with the drawings, in which:

FIG. 1 is a perspective view of a tinned can;

FIG. 2 is a perspective view of a tinned can with the ends removed;

FIG. 3 is a perspective view of a tinned can with the ends removed and the sides partly slit;

FIG. 4 is a perspective view of the flattened can;

FIG. 5 is a perspective view of two sections fitted together;

FIG. 6 is a perspective view of an extending sheet comprised of eight sections;

FIG. 7 is an edge view of the compressed sheet;

FIG. 8 is a plan view of the assembled sheet with each of the three possible means of securing the sections to one another; and

FIG. 9 is a perspective view of the cut, crimped and corrugated sheet metal.

Referring now more particularly to the drawings, the method will be described and will become more obvious as the description proceeds.

FIGURE 1 depicts a standard tinned can **1** with the opposite ends in place.

FIGURE 2 illustrates a tinned metal can **1** from which the top **3** and bottom **4**, i.e., the ends of the closed cylinder, have been removed. With the circular ends removed, a regular, open-ended cylindrical section **4** remains. Said cylinder **4** is then slit at **5**, **6** along its length from two diametrically-opposed points on the rim to points half-way along its length. The cylinder **4** is then compressed and flattened, leaving a rectangular section **7**. Preparatory to compression the cylinder is oriented so that the resulting rectangular section **7** will have the slits **5**, **6** at its edges. Thus, the rectangular section will have a male end **8** consisting of the flattened unslit portion and a female end **9** consisting of two flexible metal leaves **10** and **11** meeting at a point half-way along the length of the rectangle (the point where the male portion **12** begins).

Additional sections are prepared in a like manner. The sections are aligned in the same plane and the male end **8** of one section is inserted in the female end **9** of another. The sections are off-set so that half their widths (twenty-five percent of their total areas) are overlapping. See FIG. 5. The sheet formed by the interlocking of the sections is extended by fitting additional sections onto the protruding edges of the sheet. See FIG. 6.

After a sheet of desired dimension is formed in the above manner, it is compressed and smoothed by hot or cold rolling or by stamping. Individual sections are secured within the sheet by crimping the sheet across its length **13** and/or width with a continuous or intermittent crimp. Riveting **14** or stapling **15** may also be used as a means to secure the sections in the sheet or as a means in addition to the crimping. The sheet is next cut to the desired dimension and crimped along its edges **16**. Horizontal or vertical corrugation may be further imposed upon the finished sheet. See FIG. 9.

It will thus be seen that the objects hereinbefore set forth are readily and efficiently obtained. Since certain changes may be made in carrying out the above method and in the article, without departing from the scope or the spirit of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings be interpreted as illustrative and not in a limiting sense.

While only preferred forms of the invention are shown and described, other forms of the invention are contemplated and numerous changes and modifications may be made therein without departing from the spirit of the invention as set forth in the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The method of forming multi-layer metal sheet from reclaimed tinned metal waste pieces, such as tin cans, comprising the steps of removing the tops and bottoms of said cans leaving open-ended cylindrical sections, slitting

said cylindrical sections longitudinally one-half their length on two diametrically opposed sides, compressing said sections to relatively flat rectangular pieces with said slits at the edges of the rectangle, thereby rendering one end a rigid edge and the other end two opposite flexible leaves, aligning said flat sections in the same plane with said flexible leaves of one in juxtaposition with the rigid edge of another, and forcing said rigid edges between said flexible leaves to form a sheet.

2. The method as set forth in claim 1, including the step of off-setting said sections by one-half their widths so that each overlaps twenty-five percent of the area of the other.

3. The method as set forth in claim 1, including the steps of compressing said sheet, further securing each of the sections to its overlapping-interlocking counterpart by crimping, riveting or stapling; cutting and crimping the edges of said sheet to a predetermined length and width, and corrugating said sheet.

4. The method of forming multi-layer metal sheet from reclaimed tinned metal waste pieces, such as tin cans, comprising the steps of removing the tops and bottoms

of said cans leaving open-ended cylindrical sections, slitting said cylindrical sections longitudinally one-half their length on two diametrically opposed sides, orienting said slit cylindrical sections so that compression will result in flat rectangular sections with said slits at the edges of the rectangle thereby rendering one end a rigid edge and the other end two opposite flexible leaves, compressing said pieces to relatively flat pieces, arranging said flat pieces in an overlapping relation to form a sheet, securing said flat pieces to one another, cutting said sheet to a predetermined size, and crimping the edges of said sheet.

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U.S. Cl. X.R.

113—116; 29—509