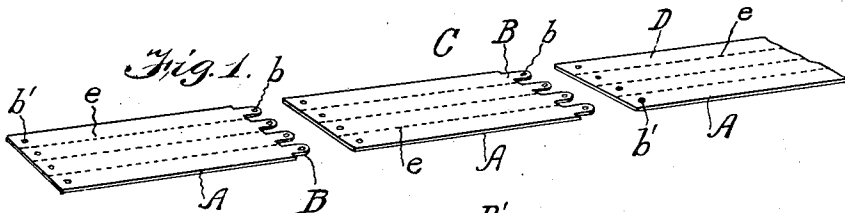
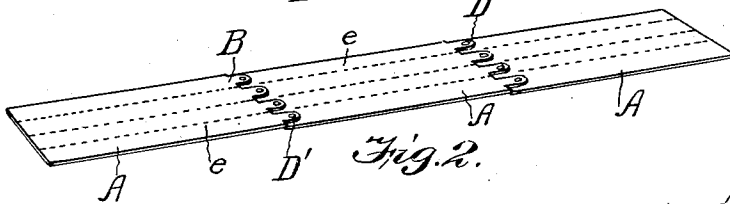
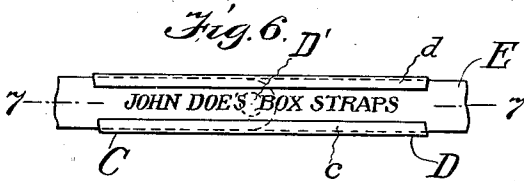
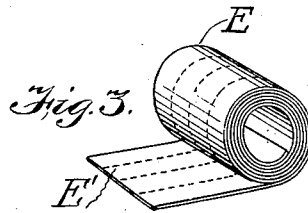
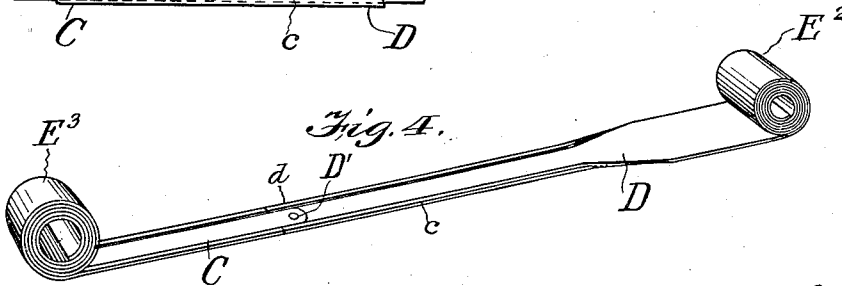
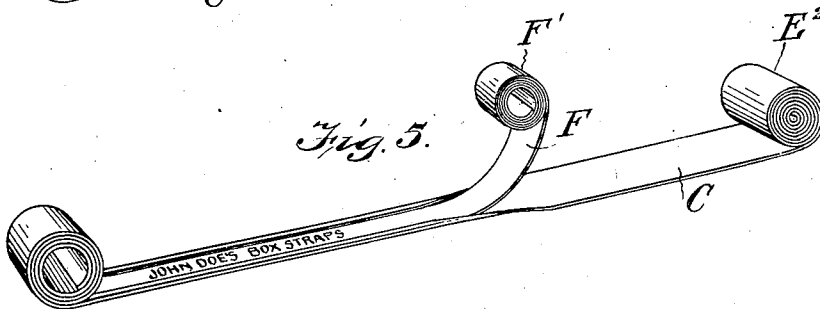


S. C. CARY.
METHOD OF MAKING BOX STRAPPING.
APPLICATION FILED NOV. 11, 1910.

1,175,236.

Patented Mar. 14, 1916.



WITNESSES
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UNITED STATES PATENT OFFICE.

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METHOD OF MAKING BOX-STRAPPING.

1,175,236.

Specification of Letters Patent.

Patented Mar. 14, 1916.

Original application filed December 3, 1908, Serial No. 465,788. Divided and this application filed November 11, 1910. Serial No. 591,827.

To all whom it may concern:

Be it known that I, SPENCER C. CARY, a citizen of the United States, residing in the city of New York, borough of Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Method of Making Box-Strapping, of which the following is a specification.

This invention is a method of making metallic strapping intended for use, more particularly, in nailing up wooden boxes, packing cases, and other containers.

The invention forming the subject matter of this application is a division of a prior application filed by me on Dec. 3, 1908, Serial No. 465,788.

Metallic straps are now used extensively in the work of nailing up wooden boxes, packing cases, and other containers. One form of strap favored by the trade is a continuous strap coiled upon itself to produce a compact package, which strap is sometimes contained or held in a frame or hanger, from which the strap may be uncoiled, as it is required to be used. From an economical standpoint, it is desirable to manufacture the strap from sheets of metal.

In carrying out the invention according to one mode of procedure, a sheet of ductile or annealed metal of the required gage, is cut or punched along an edge at one end of the sheet, or along an end edge of a wide strip cut from the sheet, said cutting or punching of the sheet or strip operating to produce tongues integral with the sheet, each tongue having a rivet hole. When a sheet is cut or punched to produce the tongues at an end edge of said sheet, it is subsequently cut into narrow lengths, the lines of the cuts being intermediate the tongues. The lengths thus produced are a trifle wider than the resulting strap, each separate length having an integral tongue, said tongue being preferably narrower than the width of the metallic length, and said lengths are then joined end to end, so as to produce a box strapping of any desired lineal dimensions, varying from 300 feet to 1000 feet, or more, in length.

The product of my new process forms the subject matter of the prior application hereinbefore mentioned, but it may be stated that said product is characterized, mainly, by two important structural features, first, a strong flush joint between the united lengths

of the strap, and, second, rounded and folded or overlapping edges which, at the joint, add strength to the united lengths, said folded edges imparting a finished appearance to the product, increasing the strength thereof, and precluding the strap from cutting the hands of the workmen in nailing the strap to, or removing it from the boxes or packages. The tongues at one end of the metal lap over the straight end of the next metallic piece, and the two pieces are secured together by suitable means, such as by rivets which pass through the tongues, or by the electric welding process of that type known to the trade as "spot" welding. If the metal pieces are narrow lengths or strips, I now run the united pieces through a metal flanging machine which doubles or folds the side edges of the metal upon said pieces. This produces the folds which run lengthwise of the strap so as to give the rounded finished edges thereto, and which increase the strength of the strap. In this connection it is important to note that the flanged side edges of the strap are folded at the joint between two adjacent pieces so as to overlap the tongue, whereby the joint at the united ends of the pieces is reinforced by the flanged or doubled metal. I thus avoid the production of four overlapping thicknesses of metal at the joint between the pieces, which otherwise would have a tendency to make the united ends too bulky and unsightly. As stated, the flanged metal overlaps the tongue so as to reinforce the latter, and by passing the lengths through appropriate bending rolls, the metal is turned and pressed upon itself rapidly and economically.

According to a preferred mode of procedure, the metal sheet is cut into wide strips sufficient to produce, when subsequently slitted, a number of narrow pieces, each a trifle wider than the resulting strap. These multiple strip widths are each cut or punched along an end edge, to produce tongues, and the strips are united in end to end order by suitable means, such as by the spot welding process, or by rivets, a series of such rivets being inserted and headed simultaneously. The united wide strips are coiled into roll form, and cut or slitted by appropriate machinery, it being preferred to simultaneously cut or slit the

rolled metal on parallel lines between the tongues of said united strips. This results in the production of rolls of pieces, and to finish each roll, it is run through a flanging machine to fold the edges as described, the strip being uncoiled and recoiled during the operation of folding the side edges thereof. The whole procedure involves operations which are rapidly performed in order to secure economy in manufacture, and at the same time produce a superior form of metallic strapping. In some cases, I may employ a strip of paper, or other material, held on one face of the strap by the flanged edges thereof, the separate strip covering the joints between the united pieces and said strip being adapted to carry advertising or other matter.

In the accompanying drawings, I have illustrated different practical embodiments of the invention, but the constructions shown are to be understood as illustrative, only, and not as defining the limits of the invention.

Figures 1, 2, 3, and 4 are perspective views illustrating the steps employed in the preferred mode of procedure employed by me for economically producing metallic strapping in accordance with this invention. Figs. 5, 6 and 7 represent a perspective view, a plan view, and a longitudinal section of another form of the metallic strapping wherein a length of paper, or other material, covers the joints between pieces or lengths of the strapping.

According to one embodiment of the invention, a metal sheet, A, (Fig. 1), of the required gage and ductility, is prepared by cutting tongues, B, along one (or more) of its edges. If the resulting strips are to be riveted together, or if two sheets are to be united by rivets, holes, *b*, are punched in the tongues, B, of the strip or sheets. The sheet or wide strip is now cut or slit lengthwise, as at *c*, the lines of the cuts or slits being intermediate the tongues, whereby a number of pieces or strips, C, D, are produced, each strip or piece having at one end a tongue which is integral with the strip. If desired, the holes for the reception of the rivets may be punched in the metal sheet at the time the sheet is cut to produce the tongues, B, thereon, or said rivet holes may be punched in the sheet subsequently to cutting the sheet to form the tongues on one edge thereof, or the rivet holes may be punched in the strips, C, D, after cutting them from sheet A. The next step is to assemble pieces C, D, in end to end order for the tongue B of one piece to overlap the straight end of the next piece, and rivets D' are then inserted through the rivet holes, said rivets being headed, whereby the strips are united to produce a length of metal of the desired length. The resulting strap is now fed into a flanging and bending ma-

chine of any suitable construction. This machine operates to fold the side edges of the strap upon the body thereof, whereby flanges or beads *c*, *d*, are formed, said flanges or beads overlapping the side edges of tongues, B. The folded edges are pressed firmly upon the body portions of pieces C, D, and the edge portions of tongues, B, and at the same time rivets, D', are headed and pressed firmly into position by the pressure of the rolls in said flanging and bending machine; also, the lapped parts of tongues, B, and folded edges of pieces, C, D, are pressed flat so that the resulting strap presents a neat appearance, and it is strong and durable in construction.

The preferred mode of procedure for economically manufacturing the strapping in quantities is to manipulate sheets of metal instead of the individual cut lengths or strips. Comparatively wide strips or pieces are cut from a sheet of metal of the required character, each strip being wide enough to produce a number of individual strips, C, D. Each wide piece is cut along one edge thereof to produce tongues, B, and if the wide strips are to be riveted, said strip is punched to produce rivet holes in tongues B and similar rivet holes in the other end of the strip, said rivet holes being indicated at *b*, *b'*, respectively. A number of the prepared wide strips are now assembled in substantially end to end order, see Fig. 2, so that the tongues, B, of one piece overlap the end of the next piece or pieces, holes *b* of the tongues being in register with the holes *b'*. The rivets are now inserted in the registering holes, and they are headed simultaneously, by suitable machinery. Any desired number of prepared pieces are united to produce metal of the required length, say from 300 to 1000 feet, more or less. It is preferred to wind or coil the united pieces into a substantially compact bundle, as indicated at E in Fig. 3. Subsequently, the wound bundle or coil is cut or slitted while the material is in said coiled condition, the slits or cuts, E', being on parallel lines and in the intervals between tongues, B, of the united pieces. This operation is quickly and cheaply performed by appropriate machinery, and it results in a plurality of coiled lengths of metal, the width of the metal in the individual coils being slightly in excess of the product resulting from the treatment of the metal according to this invention. The next operation is to produce the flanges on the edges of the individual coiled metal, and to this end the metal is run through the bending or flanging machine, whereby side flanges, *c*, *d*, are folded upon the metal and upon the edges of tongues, B, as heretofore described.

As shown in Fig. 3, the metal is unwound

from each coil, E², said coils resulting from slitting bundle E which are flanged as described, and then wound into another coil, E³, subsequent to flanging the side edges of the metal strip or length. Bundle or coil, E³, when completed is the finished product, and it is adapted to be held in an intact condition by suitable retaining means.

The coiled strapping is produced rapidly and economically by the procedure last described, for the reason that the metal is not required to be manipulated by hand to any substantial extent, and the operations are performed in many instances by machinery.

The product of the invention is so strong and durable that very thin metal can be used in its manufacture, it being found practicable to use 30 gage sheet metal, although it is not intended to restrict the invention to metal of any thickness. The use of thin sheet metal is an advantage, furthermore, for the reason that strapping of unusual length up to 1000 feet, or more, can be wound into a compact bundle or coil.

The box strapping may be constructed with a length of material, such as F, held in position on one face or side of the strap by the folded edges, c, d, thereof. Said strip, F, may be composed of paper, or other appropriate material, and it may be used for different purposes, such as for advertising purposes, the strip being shown as having advertising matter on its exposed face, whereby the strapping serves as a means for identifying the particular boxes, etc., of the owner or shipper. Strip, F, is preferably, continuous, and it extends over, and conceals, the joints between the pieces of metal. The strip may be applied to, and united with, the strapping during the operation of flanging it, and in Fig. 5, said strip is represented as being drawn from a roll, F', and laid upon the metal prior to folding the edges of the metal, whereby flanges, c, d, retain strip F permanently in position upon the strap.

From the foregoing description it is apparent that the invention is susceptible of various modifications. It may be here stated that it is not intended to limit the invention to the use of rivets for fastening the pieces of metal together, for the reason that other forms of fastening devices may be used. In fact, the sheets of metal, or wide strips of metal, may be united by the electric welding process, particularly that form of such process known as spot welding wherein the sheets or wide strips are fused to each other at intervals. In such case, the spot welding should, and preferably does, take place between the tongues of one sheet or strip and the smooth edge portion of the next sheet or strip, so that in the subsequent operation of flanging the length of cut metal the beads will cover the edges of the tongues.

Furthermore, it is not essential that the turned over edges of the pieces shall overlap the side edges of the tongues. Thus in Fig. 7 there is shown a construction of the strap wherein the two pieces of metal are provided with tongues overlapping each other and riveted together, the side edges of each piece being folded into overlapping engagement with the piece. Said construction is desirable for the reason that it obviates the operation of folding two lapping thicknesses of metal, and reduces the folded metal to two thicknesses at the joints between the pieces.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. The improvement in the art of making box strapping which consists in producing spaced tongues upon end edges of metal sheets, the width of each tongue being less than the width of the strapping ultimately produced, uniting the tongues of one sheet to an end edge of the next sheet, cutting the sheets lengthwise, the lines of the cuts being intermediate the tongues so as to result in strapping wider than the tongues, and folding the edges of the metal upon the straps and the tongues thereof.

2. The process of making box strapping which consists in producing upon one edge of a metal sheet a series of tongues separated by intervening spaces, assembling a number of similar sheets in series so that the tongues on one edge of each sheet are in lapping relation to an edge of the sheet adjacent thereto, uniting the tongues of each sheet to the edge of the next sheet, and slitting the sheets lengthwise on lines between the tongues, the lines of the slits being parallel and separated for a distance exceeding the width of the tongues, whereby strips composed of connected pieces are produced, the width of each strip exceeding the width of the tongues, and folding the respective side edges of each strip into lapping relation to the strip and to the tongues thereof.

3. The process of making box strapping which consists in cutting sheet metal into strips, the width of which is equal to a number of individual straps, producing tongues on one end of each strip, uniting the tongues of each strip to an adjoining strip, winding the united strips into a bundle, cutting said bundle transversely on parallel lines, and folding the side edges of the metal into overlapping relation to the resulting strapping and to the tongues between the pieces of metal.

4. The process of making box strapping which consists in cutting sheet metal into strips, producing tongues on one end of each strip, uniting the tongues of each strip to an adjoining strip, winding the united strips into a bundle, cutting said bundle trans-

versely and in the intervals between the tongues of said strips, and folding the side edges of the metal in each cut length into overlapping relation to the metal and the
5 tongues between the pieces of metal.

5. The process of making box strapping which consists in cutting metal sheets into strips, uniting the separate strips into a continuous length, winding said continuous
10 length into a bundle, cutting said bundle transversely, folding the side edges of the individual coiled lengths into overlapping relation to the metal and to the joints between the united pieces, and then winding
15 each flanged length of metal into a compact bundle.

6. The process of making box strapping which consists in punching one edge of a thin metal sheet to produce thereon a series
20 of tongues separated by intervening spaces, assembling similar sheets in series so that the tongues of one sheet overlap the edge of the next sheet adjacent thereto, electrically welding the tongues of each sheet to the lap-
25 ping edge of the next adjacent sheet, slitting the sheets lengthwise and on lines between the attachment of the tongues to the sheets, thereby producing a series of metal strips each composed of attached pieces the width
30 of which is greater than the width of the tongues, and finally doubling or folding the respective side edges of each strip upon the metal and over the edges of the tongues between the united metal pieces.

35 7. The process of making box strapping which consists in cutting upon one edge of a metal sheet a series of tongues separated by intervening spaces, assembling similar sheets in series for the tongues thereof to overlap
40 an edge of the next adjacent sheet, fastening the tongues of each sheet to a lapping edge of the next sheet, cutting the attached sheets on lines intersecting with said spaces and between the tongues, thereby resulting in
45 strips the width of which is greater than the width of the tongues, and finally folding the respective side edges of each strip upon the metal and upon the side edges of the tongues.

8. The improvement in the art of making
50 box strapping which consists in assembling metal sheets for the end edges of one sheet to lap the corresponding edges of the adjacent sheets, uniting the lapped edges of said sheets by welding the same at intervals in
55 the width of the sheets, the extent of such individual welds being less than the width of the strapping ultimately produced, cutting the sheets lengthwise, the lines of the

cuts being intermediate the welds uniting the sheets, and folding each cut length for
60 the folded edges to lap said cut length and to lap the joints at the welded parts between the pieces composing the length of strapping.

9. In the art of making box strapping, the process which consists in assembling thin
65 metal sheets in series for the end edges of each sheet to lap the corresponding edges of sheets adjacent thereto, uniting the lapping edges at intervals, cutting the sheets lengthwise and in the intervals between the
70 points of union of the lapped edges, thereby producing a series of strips each composed of cut pieces united in series, feeding a length of material into contact with each strip and across the joints between the at-
75 tached pieces thereof, and folding one or both edges of the metal strip into contact with said length of material, whereby said length of material is adapted to extend sub-
80 stantially continuously of the metal strip and to conceal the joints between the pieces composing it.

10. In the art of making box strapping the process which consists in assembling a series of thin metal sheets in end-to-end lap-
85 ping order, uniting the lapping edges of the sheets at intervals, slitting the sheets lengthwise, thus resulting in the production of a series of strips each composed of cut pieces attached at their ends, imposing upon one
90 face of each metal strip a length composed of fibrous material so as to cover the joints between the pieces composing the metal strip, and uniting the metal strip and the
95 fibrous material rigidly together.

11. The process of making box strapping which consists in cutting sheet metal into strips, uniting the separate strips into a continuous length, winding said continuous
100 length into a bundle, cutting the bundle transversely, unwinding and rewinding the individual coiled lengths, feeding a strip of material other than metal into contact with the individual coiled lengths at points be-
105 tween the unwinding and rewinding operations, and folding the side edge or edges of the individual coiled lengths into overlapping relation to the strip of material.

In testimony whereof, I have hereunto signed my name in the presence of two sub-
110 scribing witnesses.

SPENCER C. CARY.

Witnesses:

H. T. BERNHARD,
J. F. MOTHERSHEAD.