

(No Model.)

S. C. CARY.

METHOD OF AND MACHINE FOR MAKING METAL BOX STRAPS.

No. 441,354.

Patented Nov. 25, 1890.

Fig. 4.

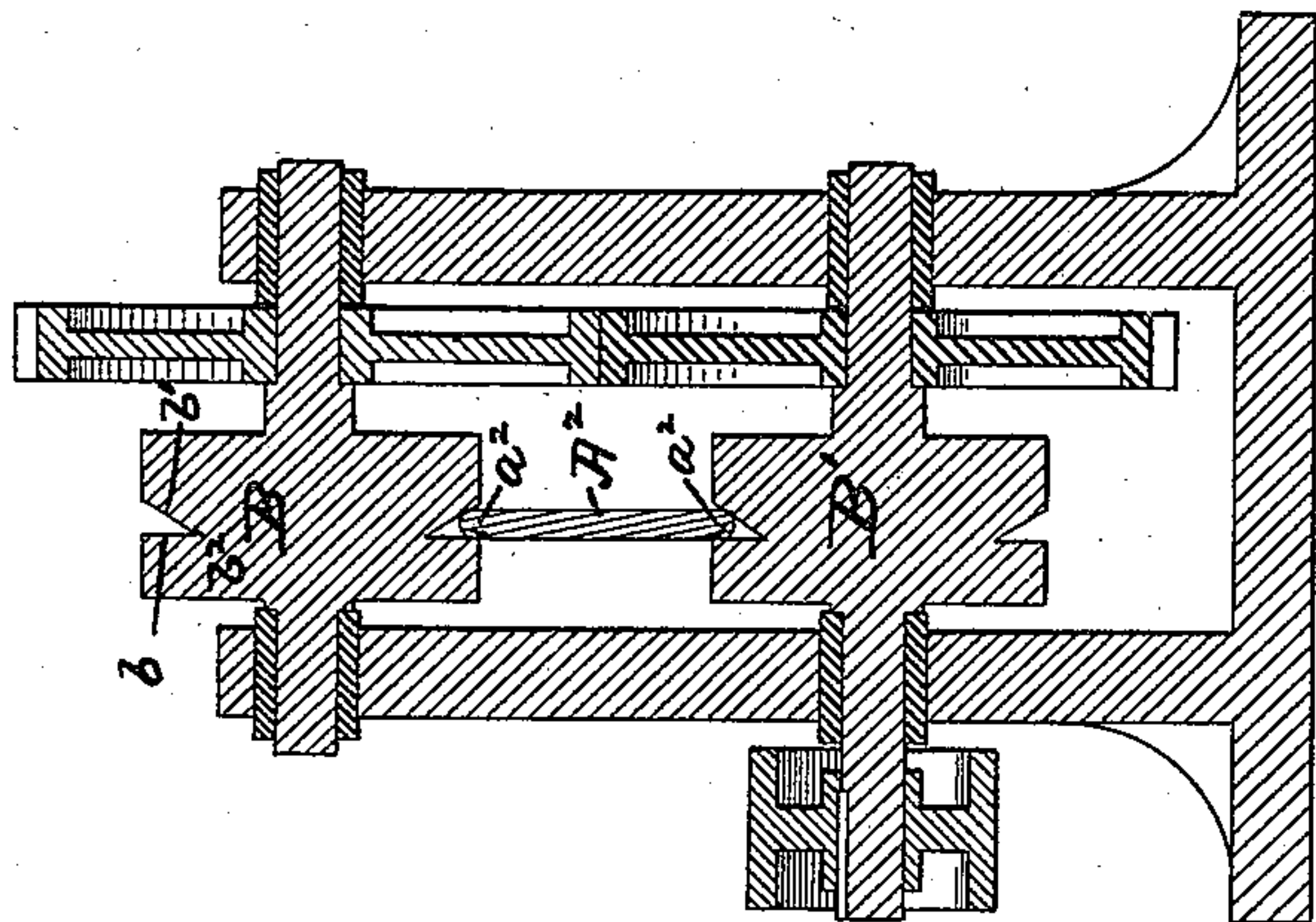


Fig. 3.

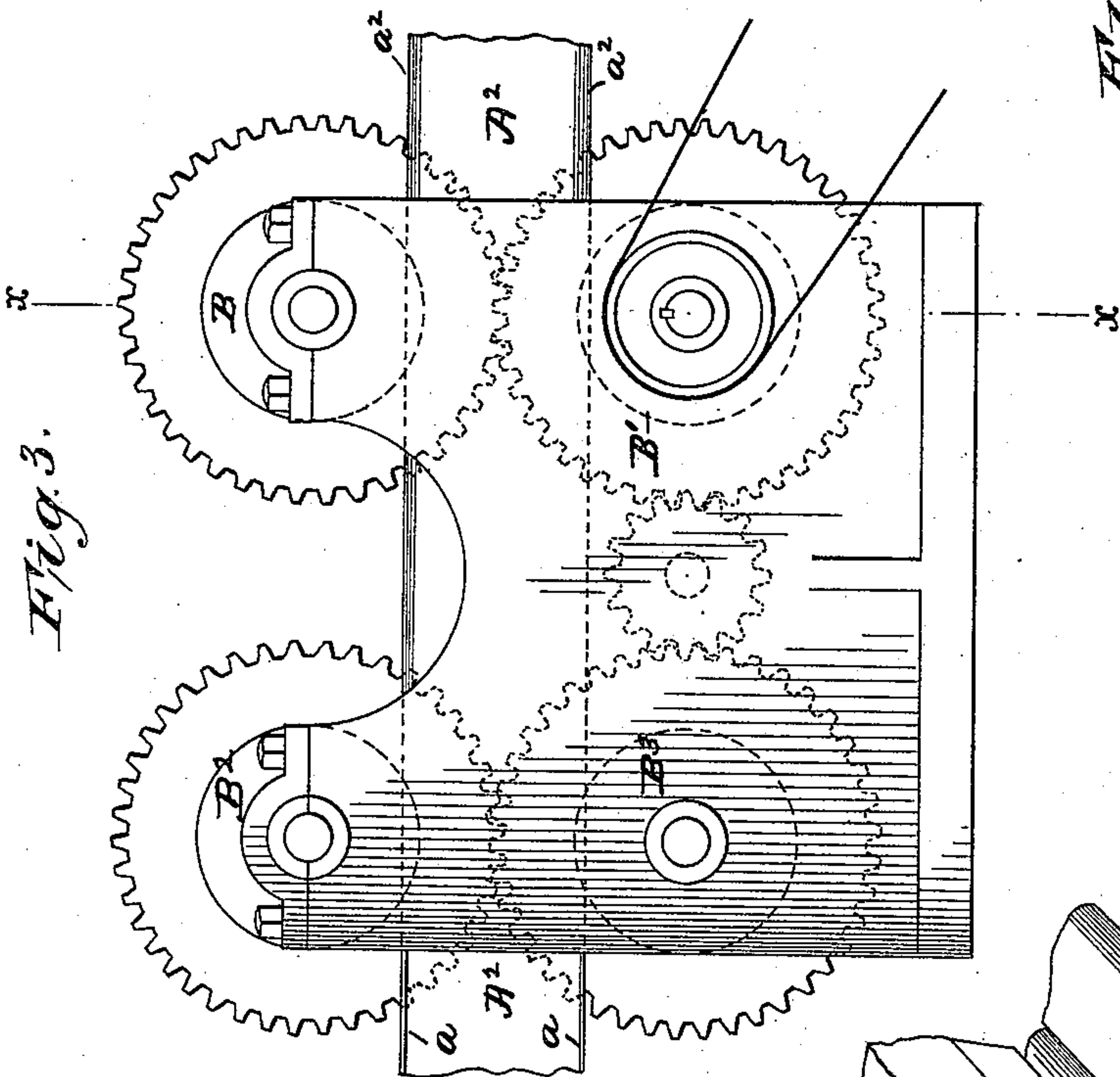


Fig. 2.

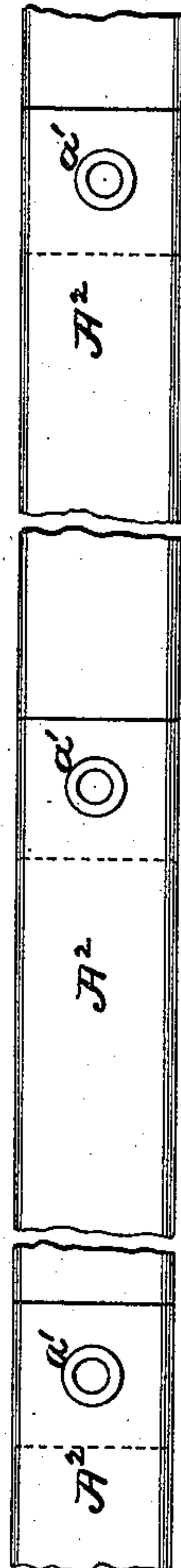
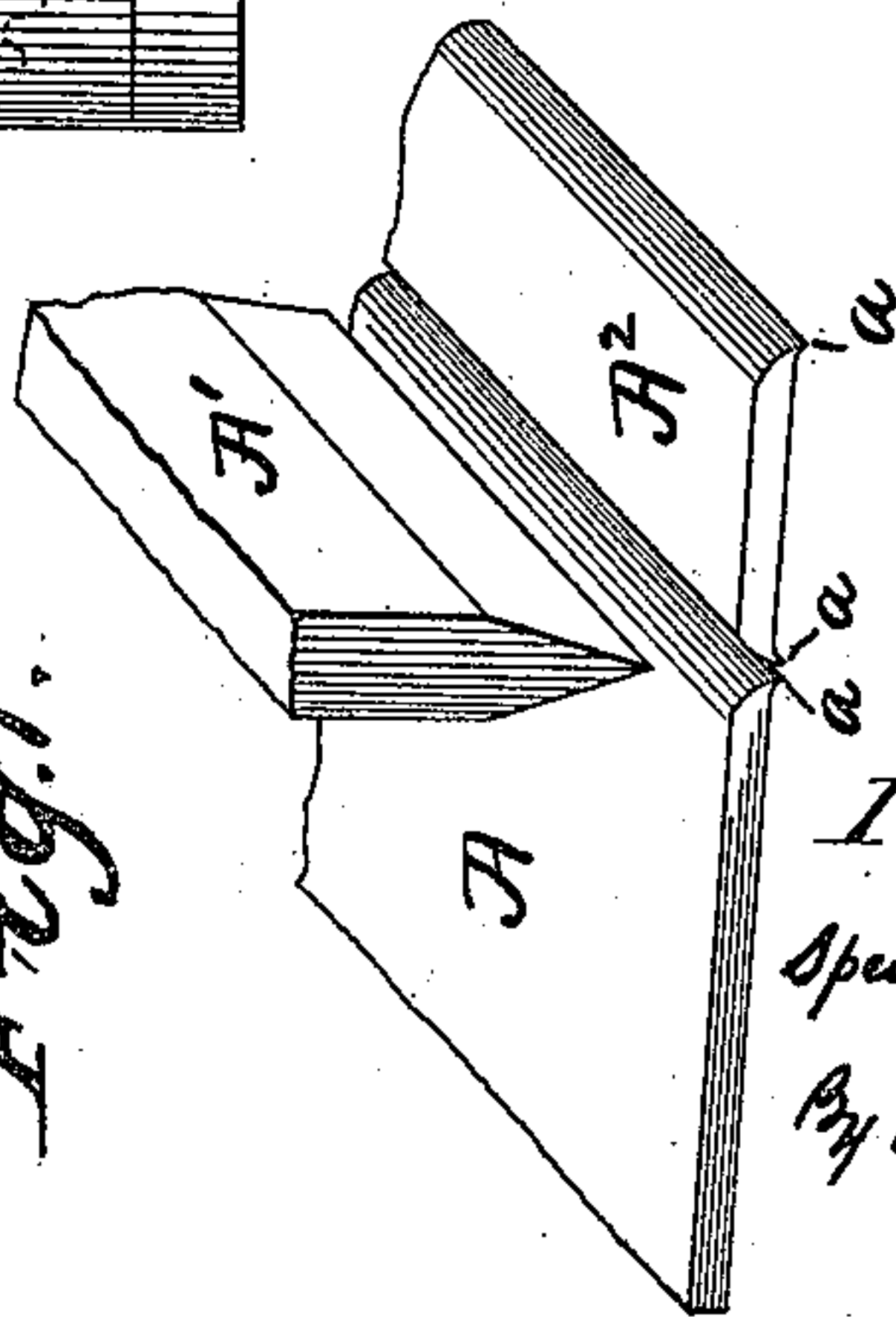


Fig. 1.



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# UNITED STATES PATENT OFFICE.

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## METHOD OF AND MACHINE FOR MAKING METAL BOX-STRAPS.

SPECIFICATION forming part of Letters Patent No. 441,354, dated November 25, 1890.

Application filed June 11, 1890. Serial No. 355,027. (No model.)

*To all whom it may concern:*

Be it known that I, SPENCER C. CARY, of Baldwin, county of Queens, State of New York, a citizen of the United States, have invented certain new and useful Improvements in the Method of and Machinery for Making Metal Box-Straps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to metal box-straps; and it consists, primarily, in the method of making metal box-straps, which comprises, first, cutting bands or strips of suitable width from an edge of a metal sheet, uniting said bands or strips endwise to constitute a metal strap of indefinite length, and either before or after they are thus united curling the side edges of the bands or straps over upon themselves, respectively, and pressing them closely to the body of the bands or straps at and along said edges, substantially as and for the purpose hereinafter set forth; and my invention also consists in the mechanism hereinafter shown and described, by which the said bands or straps have their side edges rolled or curled over upon themselves, respectively, and pressed to the body of the bands or straps at and along said side edges, as hereinafter described.

Figure 1 illustrates in perspective elevation the cutting of a band or bands from an edge of a metal sheet as the first step in the method of making box-straps in accordance with my invention. Fig. 2 illustrates in plan a series of bands or strips united endwise to constitute a metal box-strap. Fig. 3 is a side elevation of pairs of peripherally-grooved rollers adapted to have the metal bands or straps pass edgewise between the rollers of each pair, with the band edges seated in the peripheral grooves in the rollers; and Fig. 4 is a vertical section through a pair of the rollers on the line  $xx$  of Fig. 3 and showing the completed strap in cross-section.

Heretofore in fabricating a metal box-strap from bands or strips of metal cut from an edge of a metal sheet the action of the cutting or slitting knife in separating the bands or strips from the sheet edge has produced a sharp and somewhat inclined edge on each

side along the bands or strips. This is fully illustrated in Fig. 1, wherein  $A$  is the metal sheet,  $A'$  is the knife, and  $A^2$  is a band or strip cut from the edge of the sheet. The knife as it passes through the sheet metal deflects or bends it more or less along the line of the cut to somewhat below or beyond the plane under face of the sheet, and as it makes the cut forces or carries the metal to a sharp edge on each side of the cut, as plainly shown at  $a$ . These sharp edges  $a$  in bands thus cut from a metal sheet prevail on the bands from end to end, and are very objectionable when the bands are employed to constitute a box-strap, as they are exceedingly liable to cut and wound the hands of the users of the strap. The object of my invention is to wholly remove this objectionable feature from metal box-straps of the class described.

In carrying out my invention the bands or strips  $A^2$  are first cut or slit from an edge of a metal sheet and of the desired width, as shown in Fig. 1. This may be accomplished by means of a slitting-knife  $A'$  in any of the well-known machines adapted to this purpose. The bands or strips are united endwise, as by eyelets or rivets  $a'$ , as shown in Fig. 2, to constitute a metal box-strap of indefinite length, as illustrated in said figure. It is preferable to thus unite the bands or strips before performing the further and hereinafter-described step in my improved method; but it is obvious the bands or strips may be subjected individually to such further step in the method before they are thus jointed together without departure from the essential features of the invention.

At  $B B'$  and  $B^2 B^3$  are shown pairs of rollers which are grooved peripherally and the members of each pair of which are mounted and geared so as to be driven or rotated in the same direction and so as to adapt them to receive the band or strap between them edgewise, with the strap edges inserted in the peripheral grooves on the rollers. Only a single pair of these rollers need be employed; but I find it preferable to use more than a single pair, as shown. When more than a single pair are employed, the pairs constituting the train of rollers may be geared to



gether, as shown, so that a uniform feed of the band passing between the successive pairs will be attained.

I find it preferable to form the peripheral  
5 grooves in the rollers with one wall  $b$  of the groove perpendicular to the axis of the roller, as shown, and with the opposite wall of said groove inclined to the wall  $b$ , as shown at  $b'$ , and meeting it at the bottom of the groove in  
10 an acute angle  $b^2$ , as shown. I find that a groove in this form produces the best results on the strap edges, as hereinafter set forth. The rollers of each pair are arranged, as shown, with their circumferential peripheral  
15 grooves in line with and opposed to each other, and the rollers are such a distance apart as to permit the strap or band  $A^2$  to be passed between them edgewise, with the band edges inserted in the peripheral grooves thereof, as  
20 set forth.

In completing the operation of my improved method the bands  $A^2$ , either before or after they are united endwise to constitute the metal box-strap, are passed edgewise be-  
25 tween the described rollers with their sharp side edges inserted in the roller-grooves, and by this means the said sharp edges are curled inwardly upon themselves and pressed to the band-body, as shown, whereby the edges are  
30 rounded and made smooth. This is plainly illustrated in Fig. 4, wherein the band shown in cross-section has the side edges  $a^2$ , which are curled inwardly upon themselves and pressed to the band-body at and along said  
35 edges.

The metal box-strap fabricated by my improved method possesses not only the advantages of such a strap when formed of strips cut from an edge of a metal sheet and jointed  
40 together endwise, but it has smooth rounded side edges, which may come in contact with the hands of the user without liability of cutting or injuring them.

I am aware that metal box-straps have been  
45 heretofore made of strips of metal cut from an edge of a metal sheet and united endwise

to constitute a strap of indefinite length, and hence I make no claim to the same herein. Furthermore, I make no claim herein to a box-strap composed of strips of metal cut from  
50 an edge of a metal sheet and jointed together endwise with its side edges curled inward upon themselves and pressed to the body of the band or strap so as to produce smooth rounded side edges continuously on the band  
55 or strap; but I hereby reserve the same herefrom and make such box-strap the subject-matter of a claim in a separate application for Letters Patent filed simultaneously herewith, Serial No. 355,028. 60

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method of making metal box-straps, which consists in cutting metal bands or strips of the desired width from a sheet of  
65 metal, jointing said bands or strips together endwise to constitute a metal strap of indefinite length, and either before or after said bands or strips are thus jointed endwise rolling or curling the side edges thereof over and  
70 upon themselves, respectively, and pressing them to the body of the band, substantially as and for the purpose set forth.

2. In a machine for making metal box-strap, a pair or pairs of rollers having circum-  
75 ferential peripheral grooves, one wall of which is at right angles to the roller axis and the other wall of which is inclined to said rectangular wall and meets the same at an acute angle at the bottom of the groove, said  
80 rollers being adapted to receive between them edgewise a metal band or strap with the edges thereof seated in the oppositely-located grooves in each pair of said rollers and to press upon said strap edges as the band or  
85 strap travels between said rollers, substantially as and for the purpose set forth.

SPENCER C. CARY.

Witnesses:

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A. T. FALES.