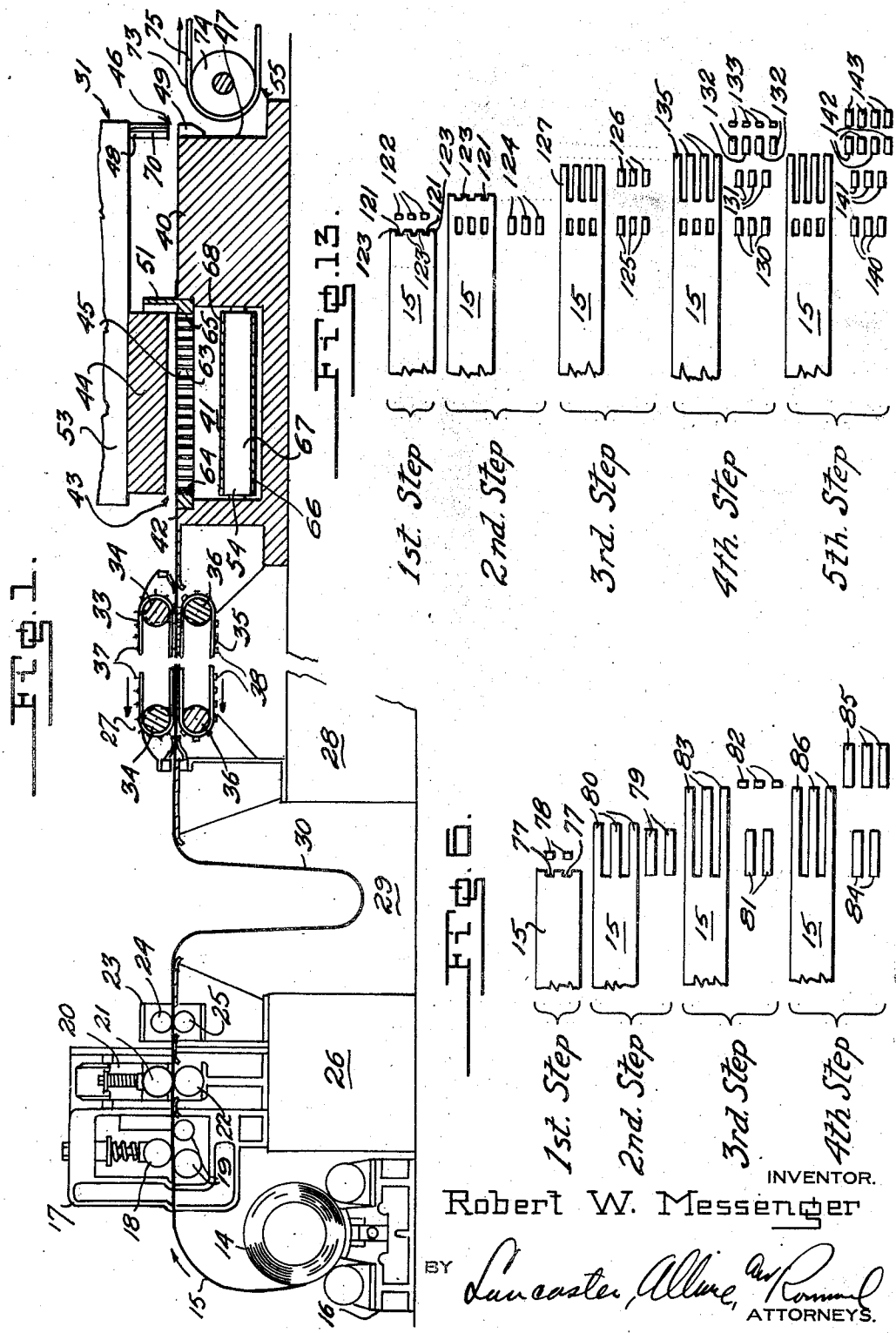
Aug. 20, 1946. R. W. MESSENGER 2,406,155

MEANS AND METHOD FOR MAKING STRIP BLANKS FOR CANS FROM LONG AND WIDE METAL STOCK

Filed Nov. 8, 1944 6 Sheets-Sheet 1



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Filed Nov. 8, 1944 6 Sheets-Sheet 2

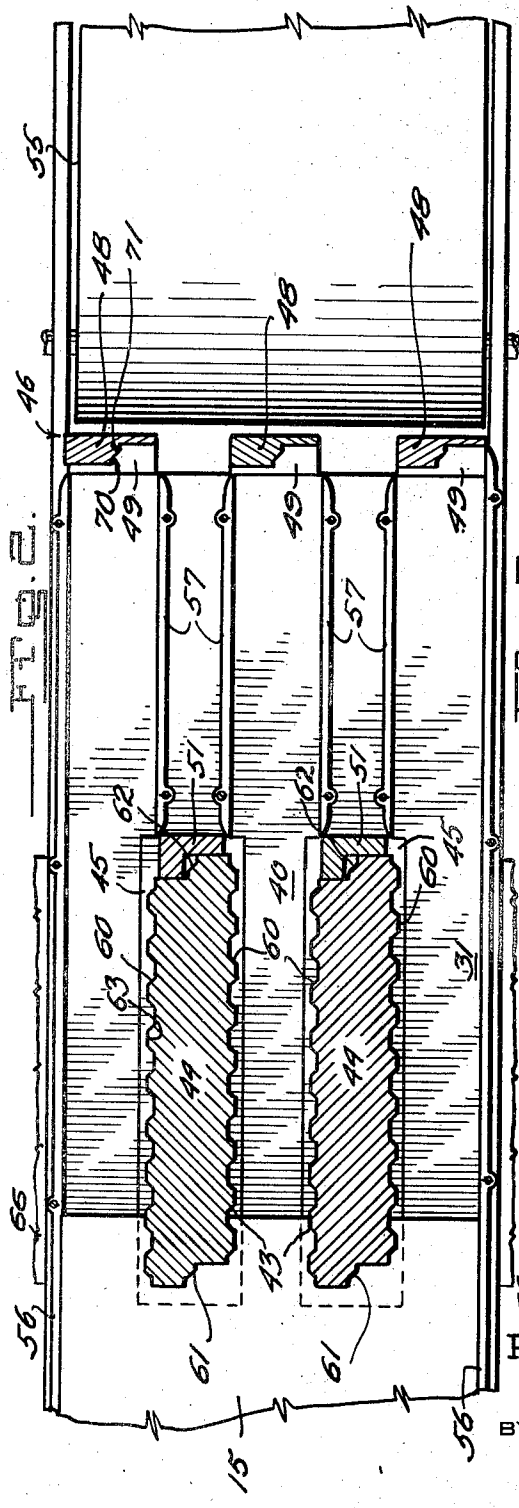


Fig. 2.

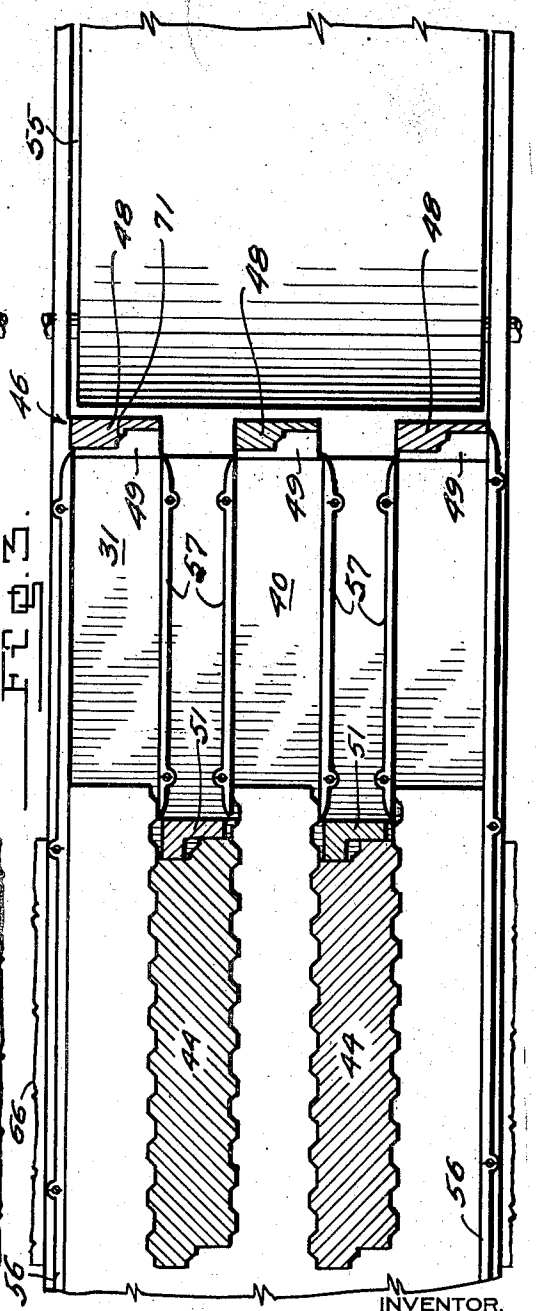


Fig. 3.

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Filed Nov. 8, 1944 6 Sheets-Sheet 3

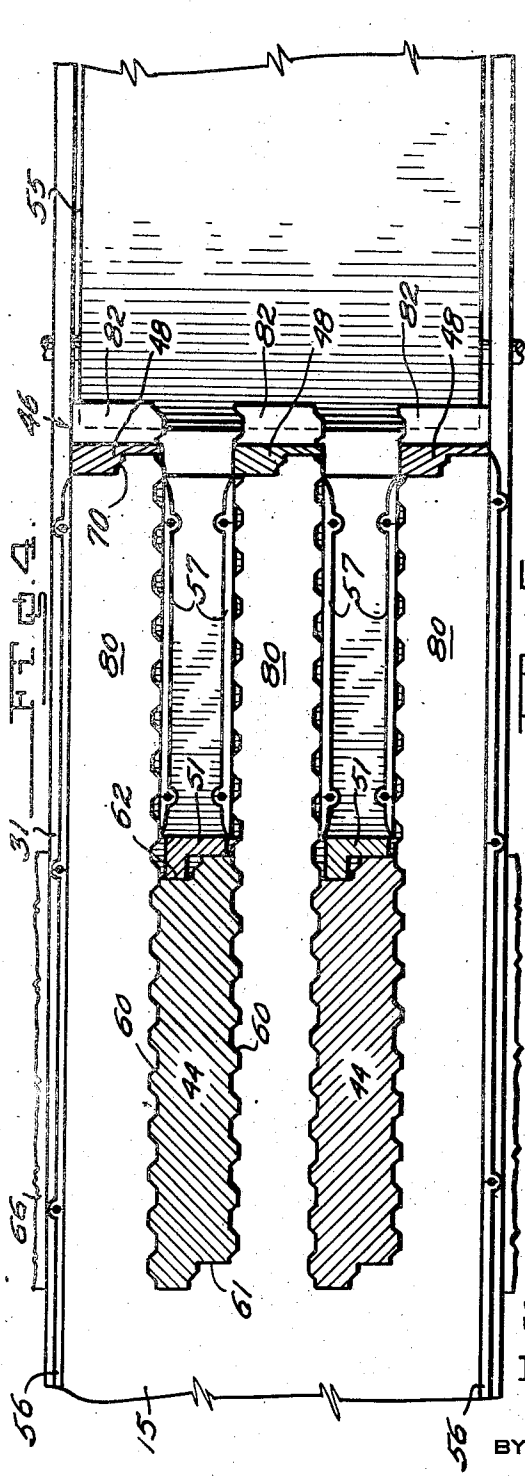


Fig. 4.

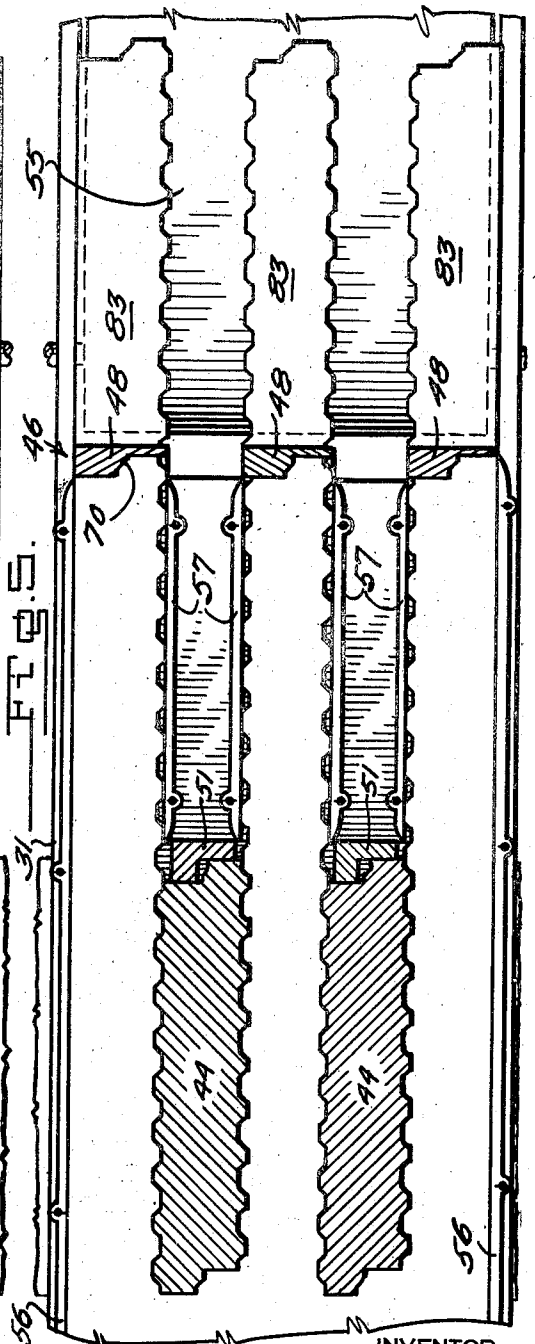


Fig. 5.

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Filed Nov. 8, 1944 6 Sheets-Sheet 4

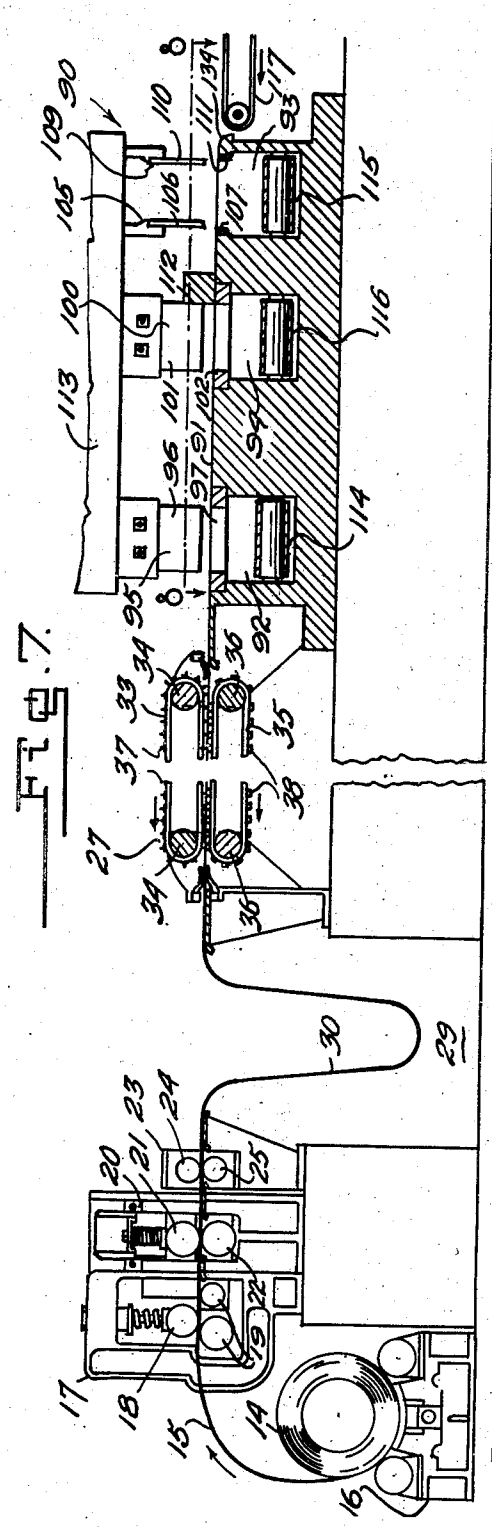


Fig. 7.

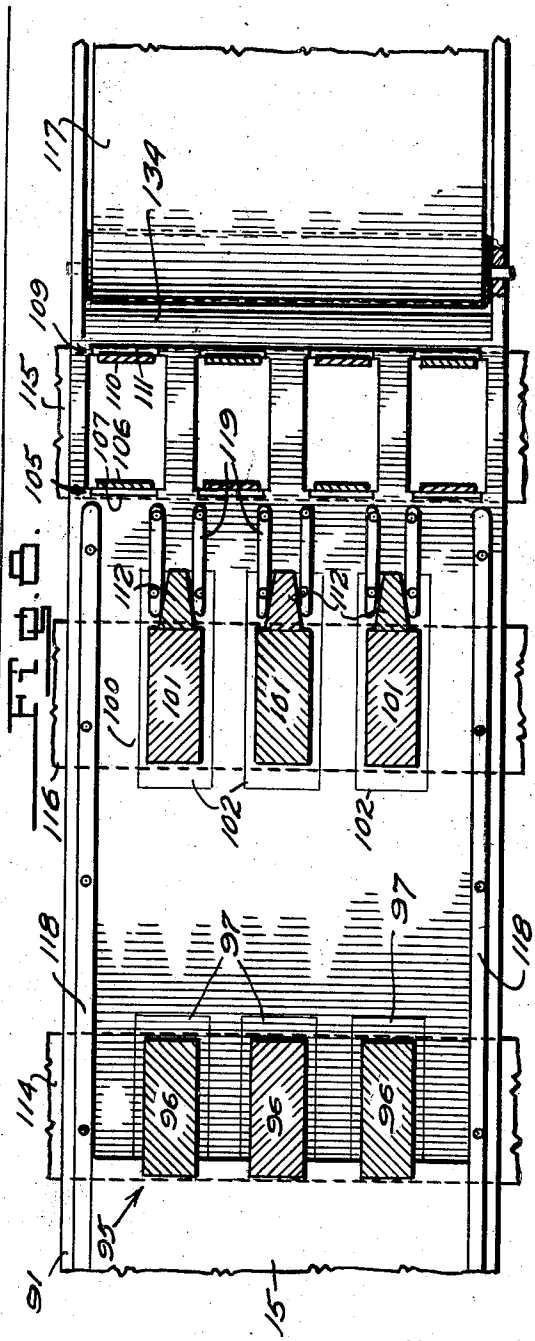


Fig. 8.

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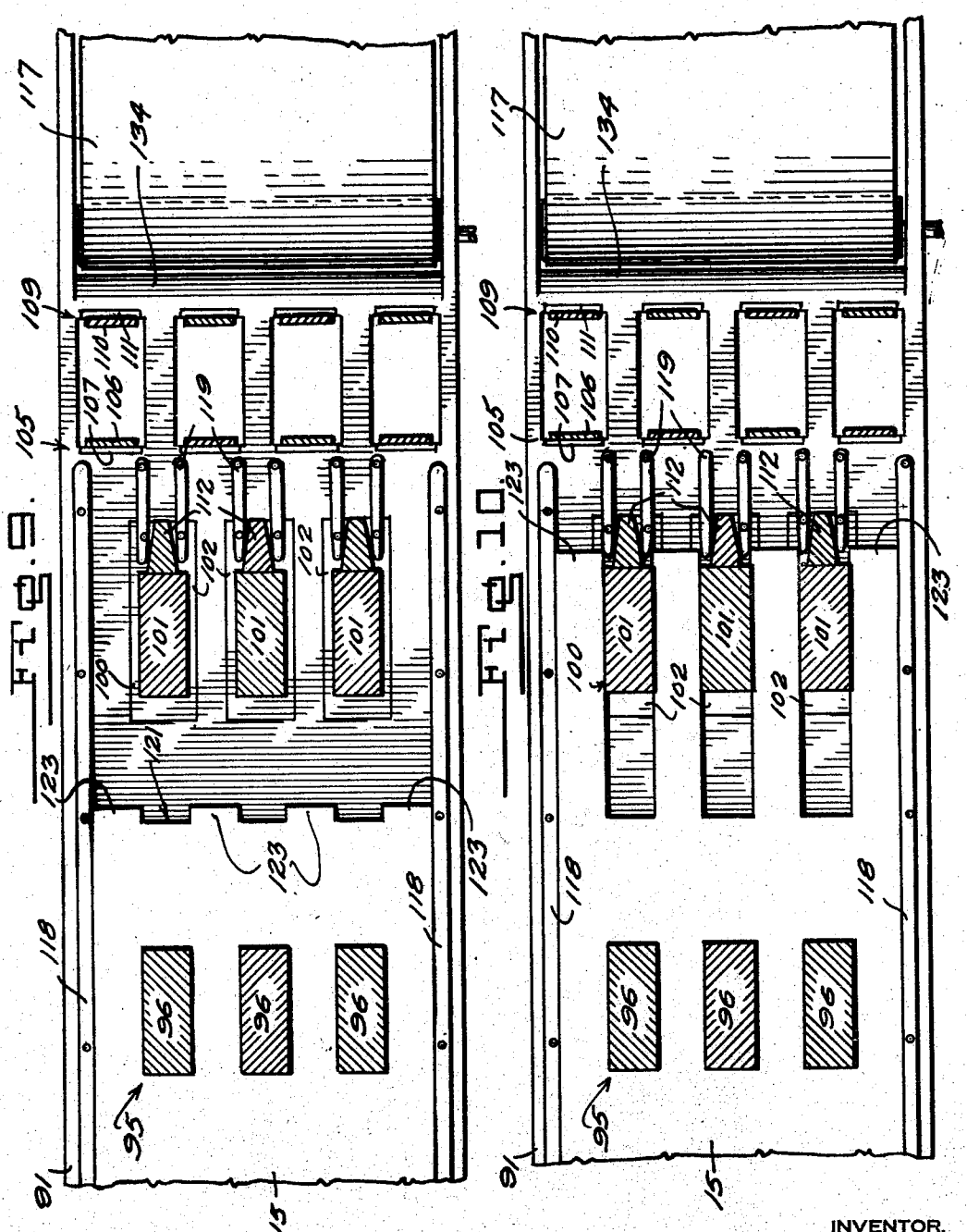
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MEANS AND METHOD FOR MAKING STRIP BLANKS FOR CANS FROM LONG AND WIDE METAL STOCK

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MEANS AND METHOD FOR MAKING STRIP BLANKS FOR CANS FROM LONG AND WIDE METAL STOCK

Filed Nov. 8, 1944 6 Sheets-Sheet 6

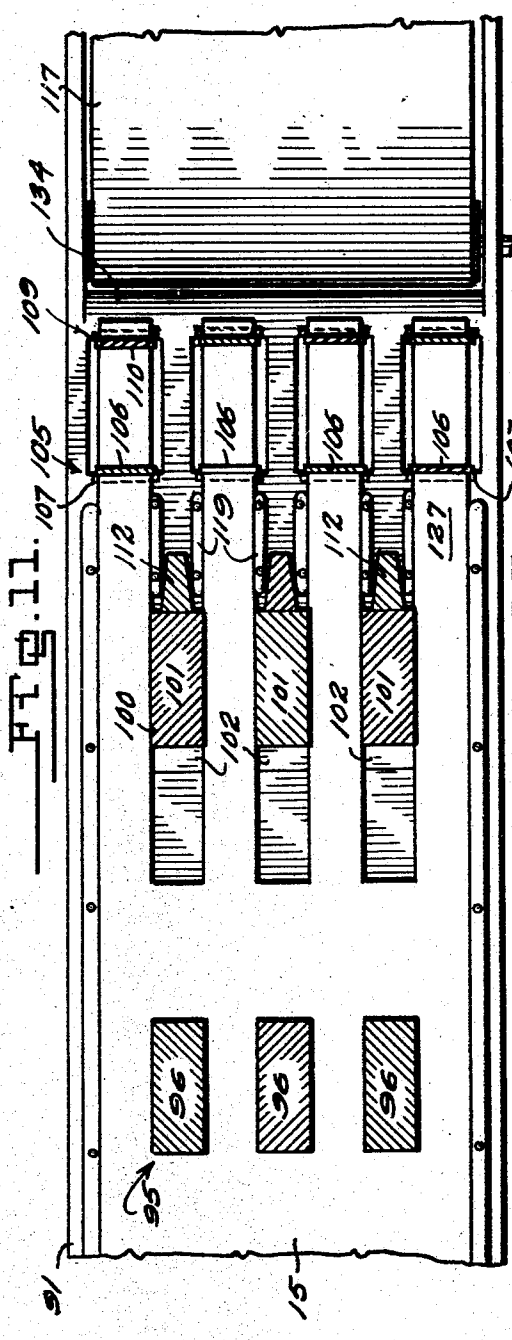


Fig. 11.

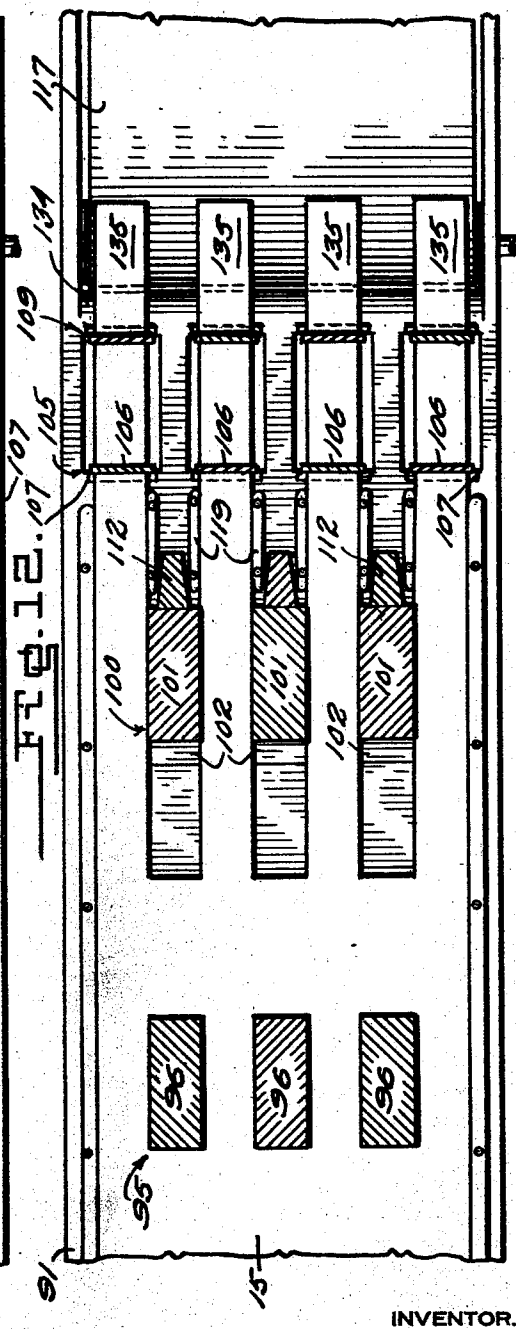


Fig. 12.

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UNITED STATES PATENT OFFICE

2,406,155

MEANS AND METHOD FOR MAKING STRIP BLANKS FOR CANS FROM LONG AND WIDE METAL STOCK

Robert W. Messenger, Salisbury, Md.

Application November 8, 1944, Serial No. 562,546

15 Claims. (Cl. 164—17)

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This invention relates to means and methods for making strip blanks for can end and can body manufacture, from long and wide continuous metal strip stock, such as is produced in large coils by manufacturers of sheet and tin plate.

Heretofore it has been common practice among can manufacturers to obtain from producers of tin plate, rectangular sheets of such material, in bales or boxes, from which scroll edge strip blanks are first cut, and then these blanks fed to machines for stamping can ends therefrom. This has resulted in considerable waste of material, as brought out in my Patent 2,335,292 granted November 30, 1943. It has also been common practice to sever can body strip blanks from such rectangular sheets of material. Both of these procedures entailed some preliminary work, such as inspection for defects, and trimming an expensive amount of waste from some of the edges of the sheets before producing the scroll edge strip blanks, and the can body strip blanks. The packaging of the rectangular sheets has been expensive, not only because of the materials used in packaging, but also because of the care required in protecting the edges of the sheets from damage. There are also other factors that have contributed to the ultimate cost of producing cans from such rectangular sheets, among which may be mentioned expensive handling of the packages in unloading, storing, opening them, and stacking their contents at the machines which manufacture the sheets into scroll edged strip blanks or straight edged strip body blanks under present methods.

The principal objects of the present invention are to avoid as much as is practically possible, the waste incident to use of the rectangular sheets, by providing means and methods whereby there are no recovery blanks in the production of the scroll edge strip blanks, and considerable trimming of edges is avoided, both in the production of scroll edge and body strip blanks; to reduce the losses incident to throwing out that which is generally called "waster sheets," (those having, for instance, defective plating of the surface, or holes) by only throwing out relatively small strip blanks which may contain defects, in contradistinction to throwing out large sheets; to permit of the use of large coils of long and wide continuous metal strip stock, such as coils containing many thousand lineal feet of strip stock, which may be easily protected for transportation and storage in contradistinction to the elaborate baling or boxing now employed for the shipment and protection of the rectangular sheets; and, to subsequently avoid the expense of handling of a great number of bales or boxes, in transportation, storage, unpacking and stacking. In other words, considering the amount of stock required for a given order, say 12 tons of stock, the cost of protecting, handling etc., of such amount in coil form would be considerably less than the cost of protecting, handling, etc., of the same amount of stock in rectangular sheet form.

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Another object of the invention is to provide machines and methods for making strip blanks which conserve space in factories, in that the material travels in a straight path from the station where the coil stock is located, to the station where the strip blanks find exit from the machine, thus permitting the machines and the zones where the methods are carried out, to be located closely adjacent one another in side by side relation.

A further object of the invention is to provide means and methods whereby fewer employees will be required than under present methods, to produce the same output in scroll edge strip blanks for can ends, and body strip blanks, and whereby the latter will be more accurate in dimensions than those formerly produced.

Other objects and advantages of the invention will appear in the following detailed description of my preferred means and methods, taken in connection with the accompanying drawings, forming a part of this specification, and in which drawings:

Fig. 1 is a somewhat diagrammatic view partly in elevation and partly in vertical section thru means whereby scroll edge strip blanks may be produced.

Fig. 2 is a fragmentary view, partly in plan and partly in horizontal section, showing the first preferred step in the method of producing the scroll edge strip blanks.

Figs. 3 and 4, are similar views showing the preferred second and third steps respectively in the method.

Fig. 5 is a similar view showing the preferred fourth step in the method and which is repeated successively many times until the coil of long and wide strip stock is used up, or until the desired number of scroll edge strip blanks have been produced.

Fig. 6 is a diagrammatic view showing the stock and the products of the four steps above referred to.

Fig. 7 is a view similar to Fig. 1, but showing means for producing can body strip blanks.

Fig. 8 is a fragmentary view, partly in plan

and partly in horizontal section on the line 8—8 of Fig. 7, showing the first preferred step in the method of producing the can body strip blanks.

Figs. 9, 10 and 11 are views similar to Fig. 8, but showing the preferred second, third and fourth steps, respectively, in this method.

Fig. 12 is a view similar to Fig. 8, showing the preferred fifth step in the method which is repeated successively many times until the coil of long and wide strip stock is used up, or until the desired number of can body strip blanks has been produced.

Fig. 13 is a diagrammatic view showing the stock and the products of the five steps above referred to.

Referring first to the preferred means and methods of producing scroll edge strip blanks, in Fig. 1, is disclosed the preferred equipment and arrangement of parts; in Figs. 2 to 5, inclusive, is disclosed the condition of the stock as it is fed progressively with respect to parts of the machine; and, in Fig. 6 is disclosed a diagrammatic representation of the stock and products from the start to and including the step which is repeated successively many times until the coil strip stock is all used, or the desired number of scroll edge strip blanks have been produced.

In Fig. 1 is shown a coil 14 of strip stock 15, carried by an uncoiler 16; flattening mechanism 17 of any suitable character, such as that including an upper flattening roll 18 and lower rolls 19; drag mechanism 20, including upper and lower rolls 21 and 22 respectively, for drawing the stock 15 thru the flattening mechanism, and edge trimming mechanism 23 including upper and lower rotary knives 24 and 25, respectively, all mounted on a suitable pedestal 26; step-by-step feed mechanism 27, for stock 15, on a suitable base 28 spaced from pedestal 26 to provide a cavity 29 into which a loop 30 of the stock 15 may be payed; and a machine 31 for simultaneously producing a great number of scroll edge strip blanks from the stock 15 at each cycle of movement of the movable machine parts.

The strip uncoiler 16, flattening mechanism 17, drag mechanism 20 and trimming mechanism 23 may be of any suitable or approved type, the purpose of which is to condition the stock strip 15 for fabrication in the machine 31.

Likewise the step-by-step mechanism 27 may also be of any suitable character and in the example I have diagrammatically represented a magnetic feed, such as is disclosed in my copending application for U. S. patent filed September 21, 1943, Serial Number 503,270. Broadly it comprises an upper endless belt 33 trained about space pulleys 34 and a lower belt 35 trained about pulleys 36, the belts 33 and 35 carrying cooperating magnetic members 37 and 38, respectively, which engage the strip stock 15 at the upper and lower faces thereof, the strip stock running between the lower run of belt 33 and the upper run of belt 35.

The machine 31 comprises an elongate pedestal or table 40 disposed with its major axis parallel to the path of travel of the strip stock 15 and preferably having a recess 41 open to its upper surface near the entry end 42 of the table; a plurality of box dies 43, for cutting scroll edge strip blanks from the stock, and each including an upper punch member 44 and a die proper 45, the box dies being arranged in side-by-side relation, transversally of the table, with their longitudinal axes parallel and with the punch members 44 spaced apart from each other a distance equal to the width of the strip blank produced by the box die, as shown in Fig. 2; shearing mechanism 46 arranged at the delivery end 47 of the table and comprising upper blades or punch members 48 and lower blades or die plates 49, the shearing mechanism acting crosswise of the delivery end of the table and having the cutting edges spaced from the nearest ends of the box die punch members 44, a distance equal to the length of a strip blank, as shown in Fig. 2; a stop 51 preferably fixed to the table at the end of each box die nearest the shearing mechanism 46, the function of which will be subsequently described; a sliding head 53 movable toward and from the table 40 and carrying the punch members 44 and the upper blades or punch members 48; a transverse conveyor 54 partly accommodated in recess 41; a longitudinal conveyor 55 at the delivery end of the table; major adjustable, longitudinal guide 56 along the longitudinal margins of the table to engage the side edges of the strip stock; and, minor adjustable longitudinal guides 57 on the table between the box dies 43 and the shearing mechanism 46.

The upper punch member 44 has longitudinal scroll edges 60, and transverse scroll edges 61 and 62, as shown in Fig. 2, while the die proper 45 has longitudinal scroll edges 63 for cooperation with the scroll edges 60, and transverse scroll edges 64 and 65, for cooperation with the scroll 61 and 62, respectively.

As shown in Fig. 1, the die proper 45 may be accommodated in the upper portion of recess 41, so that products of the box die may drop from the die proper upon the transverse conveyor 54 and find its way laterally of the machine.

The conveyor 54 may be in the form of an endless belt 66 trained about pulleys 67, in the usual manner, the products of the box dies dropping upon the upper run 68 of the belt.

Each upper blade or punch member 48 has a scroll edge 70 as shown in Figs. 1 and 2, and each lower blade or die plate 49 has a cooperating scroll edge 71, the purpose of these scroll edges being to shape the ends of the strip blanks for economical production of can ends therefrom, and to avoid that which is generally termed "recovery pieces" when the scroll edge strip blanks are cut from rectangular sheets according to the common practice. This applies also to the transverse scroll edges 61, 62, 64 and 65 of the box dies 43.

The conveyor 55 may be similar to conveyor 54 in that it comprises an endless belt 73, trained about pulleys in the usual way, one of which is shown in Fig. 1 at 74. It is upon the upper run 75 of belt 73 that products of the machine, at the delivery end 47 of the table 40 engage and are drawn from the shearing mechanism 46, when severed from the stock.

Refer now to operation of the machine 31 and steps in the methods of producing scroll edge strip blanks of like lengths from the coil strip stock, with the view of having only immaterial waste when the strip stock is first acted upon, at its leading end and at its terminal end, it will be noted from Fig. 2 that the strip stock 15 is first placed upon the dies proper 45, while the punch members 44 are raised, and to extend only partially over the dies. Upon lowering the punch members 44, the leading edge of the stock has produced therein a plurality of stop notches 77, shown diagrammatically in Fig. 6, the small pieces of waste material 78 dropping into the re-

cess 41 and carried away by the conveybr 54. The stop notches 77 each define one end of a first series of parallel potential blanks, the notches being spaced apart a distance substantially equal to the width of a second series of potential blanks. Upon raising the punch members 44, the strip stock may be advanced by the mechanism 27 until the stop notches engage the stops 51. The stock is then in the position shown in Fig. 3 and upon causing the punch members 44 to descend, scroll edge strips are cut from the stock and drop upon the conveyor 54. The products of this second step are the strip blanks 79, shown in Fig. 6. In other words they constitute the first series of blanks cut from the stock inwardly of the notches 77. This leaves a plurality of spaced parallel tongues 80, connected to the stock which are of greater length than the blank 79 as may be observed from Fig. 6. Upon raising the punch members 44, the strip stock may be again advanced until the main body portion of the strip stock at the roots of the tongues 80 engage the stop 51, thus placing the excess portions of the tongues 80 beneath the shearing mechanism 46, as shown in Fig. 4. Upon causing the sliding head 53 to descend, the punch members 44 cooperating with the dies proper 45, will produce the second series of strip blanks 81 shown in Fig. 6, which drop upon the conveyor 54, and simultaneously cut the excess waste material 82 from the ends of tongues 80. This operation then leaves tongues 83 extending from the main body portion of the stock, each tongue being of a length equal to two potential strip blanks as shown in Fig. 6.

Upon raising the punch members 44, the strip stock may again be advanced until the main body portion thereof at the roots of tongues 43 engage the stops 51. This places uncut strip stock beneath the punch members 44, and one-half the length of the tongues 83 to each side of the shearing mechanism 46, as shown in Fig. 5. Upon causing the punch members 44 to descend, a third series of strip blanks 84 will be cut from the strip stock, and at the same time a fourth series of strip blanks 85 will be cut from the tongues 83, thus leaving the strip stock with tongues 86 extending from the main body portion of the strip stock, as shown in Fig. 6. The series of strip blanks 85 drop upon the conveyor 55 and are carried away at the delivery end of the table 40. It will be noted from Fig. 5 that prior to cutting strip blanks from the tongues, the end portions of the tongues rest upon the conveyor 55 which assist in the severing operation, and in quickly carrying the strip blanks from the shearing mechanism 46. The belt 73 may travel at a uniform speed so as to tend to draw the free end portions of the tongues of the strip stock in a direction away from the delivery end of the table. It is preferred to have the upper run 75 of belt 73 in a plane slightly lower than the plane of the table 40, so that the tongue material bends down slightly from the die plates 49. This facilitates severing of strip blanks from the tongues.

From this point on the fourth step is repeated a sufficient number of times to produce the number of strip blanks desired, or until the end of the coil of strip stock is reached. After the third step in the method, a great number of strip blanks may be produced at each stroke of the sliding head 53. Accuracy as to dimensions of the strip blanks is accomplished by use of the fixed stops 51 and the accurate positioning of the shearing mechanism 46 with respect to the box dies 43.

It will be observed after severing the waste material 78 and 82 from the leading end of the strip stock, the scroll cut strip lengths are of a shape to permit cutting can ends therefrom with a minimum of waste, since the ends of the blank will also be scroll cut.

In the matter of producing scroll edge strip blanks for subsequent cutting of can ends therefrom, it may be said the strips may be of any practical length taking into consideration, first, the size of the can ends to be cut from the blanks and, second, the factor of convenient handling of the strips by the workmen and the feeding of them to the punching machine. In the example shown I have illustrated the scroll edge strip of a size having an area for eighteen potential can ends, but it is to be understood that this is merely by way of example, and that the strips may be of a size for the production of a smaller, or a greater number of can ends. In fact the machine and methods contemplates the production of scroll edge strip blanks of a length much greater than would be practical if produced from sheets instead of coiled stock.

Referring now to the preferred means and methods of producing can body strip lengths, in Fig. 7 is disclosed the preferred equipment and arrangement of parts; in Figs. 8 to 12, inclusive, is disclosed the condition of the stock as it is fed progressively with respect to parts of the machine; and in Fig. 13 is disclosed a diagrammatic representation of the stock and the products from the start and including the step which is repeated successively until the coil strip stock is all used, or the desired number of can body strip lengths have been produced.

In Fig. 7 the mechanism in advance of the machine for actually fabricating the strip stock may be the same as that disclosed in Fig. 1, and hence requires no detailed description, the same characters having been applied to designate similar units and characteristics thereof, however, the machine 90 differs from machine 31 in many respects.

In the matter of producing can body strip blanks, the dimensions of the blanks are fixed according to the size of the can ultimately to be made therefrom. They are seldom if ever of a size as large as scroll edge strip blanks for producing can ends. Therefore it is practical to produce more of the former at each stroke of the punching and cutting head, considering available area that the machine may occupy and the power available in most can making factories, than it is to produce scroll edge strip blanks.

The machine 90 comprises an elongate pedestal or table 91 disposed with its major axis parallel to the path of travel of the strip stock 15 and preferably has a recess 92 near the entry end of the machine, a recess 93 at the terminal end of the machine, and an intermediate recess 94, these recesses being open to the upper surface of the table as shown in Fig. 7; a first set of box dies 95 for cutting strip blanks from the stock, located near the entry end of the machine, each box die comprising an upper punch member 96 and a die proper 97, the box dies being arranged in side-by-side relation, transversally of the table, with their longitudinal axes parallel and with the punch members 96 spaced apart from each other a distance equal to the width of the strip blanks produced by the box die, as shown in Fig. 8; a second set of box dies 100, for

also cutting strip blanks from the stocks, the second set being located at an intermediate portion of the table and spaced from the first set 95, a distance equal to the combined lengths of two strip blanks as shown in Fig. 8, the box dies of set 100 each comprising an upper punch member 101 and a die proper 102, the box dies of the second set being axially aligned with the first set transversally of the table; a first shearing mechanism 105 located forwardly of said second set of box dies 100, and spaced therefrom a distance equal to the length of a strip blank, the shearing mechanism including an upper blade 106 and a lower blade 107; a second shearing mechanism 109 located forwardly of said first shearing mechanism and spaced therefrom a distance equal to the length of a strip blank, the second shearing mechanism including an upper blade 110 and a lower blade 111; a stop 112, preferably fixed to the table at the end of the box dies of the second set 100, nearest the first shearing mechanism 105, the function of which stop or stops to be subsequently described; a sliding head 113 novable toward and from the table 91 and carrying the punch members 96 and 101, and the blades 106 and 110; transverse conveyors 114, 115 and 116, in the recesses 92, 93 and 94, respectively, a longitudinal conveyor 117 at the terminal end of the table; major adjustable guides 118 along the longitudinal margins of the table to engage the side edges of the strip stock; and minor adjustable guides 119 on the table between the second set of box dies 100 and the first shearing mechanism 105.

In Figures 8 to 12, both inclusive, is shown the progress of the strip stock during the preferred five steps shown diagrammatically in Fig. 13.

In Fig. 8 it is assumed that the sliding head 113 has been raised and the strip stock moved to extend partially over the dies proper 97 of the first set of box dies 95 in readiness for the punch members 96 to descend. At the first stroke of the sliding head stop notches 121, shown in Fig. 13 are produced and the waste pieces 122 drop upon conveyor 114 and are carried away. The stop notches 121 define the leading ends of spaced longitudinal zones of the strip stock from which potential strip blanks may be cut and the tabs 123 at each side of the stop notches are at the terminals of other spaced zones longitudinally of the strip stock from which strip blanks may be cut. Upon raising the sliding head 113, the strip stock may be advanced to the position shown in Fig. 9, a distance equal to the length of one potential strip blank. Upon causing the sliding head 113 to descend the punch members 96 will cut from the stock a plurality of first strip blanks 124, shown in Fig. 13, which drop upon the conveyor 114 and are carried laterally of the machine. Upon raising the sliding head 113, the strip stock may be advanced a distance equal to the combined lengths of two strip blanks, and assume the position shown in Fig. 10, where the stop notches 121 engage the stops 112. Upon causing the sliding head 113 to descend, the punch members 96 punch a second set of strip blanks 125 from the strip stock which fall upon conveyor 114, and the punch members 101 of the second set of box dies 100 punch a third set of strip blanks 126, shown in Fig. 13 from the strip stock just inwardly from the stop notches 121, leaving tongues 127 extending from the strip stock and of a length slightly greater than the combined lengths of two strip blanks.

Again, upon raising the sliding head 113, the strip stock may be advanced a distance equal to the combined lengths of two strip blanks and assume the position shown in Fig. 11 with the material of the strip stock 15, between the roots of tongues 127 against the stops 112, and with the free ends of the tongues beneath the upper blades of the first and second shearing mechanisms 105 and 109. Upon causing the sliding head 113 to descend a fourth set of strip blanks 130 are cut by the punch members 96, a fifth set of strip blanks 131, by the punch members 101, and a sixth set of strip blanks 132, by the first and second shearing mechanism, the second shearing mechanism 109 also cutting from the free ends of the tongues small waste pieces 133, which slide off the rounded end portion 134 at the terminal end of the table. This then leaves the strip stock with tongues 135 extending therefrom, each of a length equal to the combined lengths of three strip blanks.

Finally upon again raising the sliding head 113, the stock may be advanced a distance equal to the combined lengths of two strip blanks, and assume the position shown in Fig. 12, with the terminal ends of the tongues 135 resting upon the conveyor 117.

When the sliding head 113 is caused to descend a seventh set of strip blanks 140 is produced by the punch members 96, and eighth set of such blanks 141 is produced by the punch members 101, a ninth set of such blanks 142 is produced by the first shearing mechanism 105 and the second shearing mechanism 109, and a tenth set of such blanks 143 being severed from the tongues, by the second shearing mechanism 109, are carried away by the conveyor 117. It is of course understood that the seventh, eighth and ninth sets of strip blanks are carried away by the conveyors 114, 116, and 115, respectively.

From this point on the fifth step is repeated a number of times, sufficient to produce the desired number of strip blanks, or until all of the coil of strip stock is used.

It is obvious from the foregoing description that coil strip stock may be used in making a great number of strip blanks at each stroke of the sliding head of the machine and that the strip stock travels in the same vertical zone from coil 14 to the place where it is fabricated, thus permitting the machines for producing scroll edge strip blanks and/or can body strip blanks to be arranged in side-by-side relation, and conserving much space in can making factories.

The manner in which the fixed stops 51 and 112 accurately limit movement of the strip stock after each fabricating stroke of the sliding heads 53 and 113, respectively, is of much importance since after the preliminary steps of fabricating the leading end of the coil stock these stops are brought into use to restrain forward movement of the strip stock while the fabricating operations take place. This avoids the necessity of extreme accuracy in the step-by-step feed mechanism, and where such is of the magnetic type, slight continued operation of the feed mechanism after the stops 51 and 112 function to arrest forward movement of the strip stock, will not be detrimental.

While not so important in connection with the production of scroll edge strip blanks, it will be noted that, in connection with can body strip blanks production the blanks are produced with the grain of the strip stock running longitudinally thereof, something considered very desirable as characteristic of can body blanks.

It is of course understood that the major and minor guides 56 and 57, and 118 and 119 function to hold the strip stock and the tongues produced thereon to the proper paths for accuracy. Any suitable "hold-down" devices, not shown in the drawings, may be employed to keep the strip stock from buckling.

The means and methods herein disclosed make possible a very high production rate, in that a large number of strip blanks may be cut from the coil strip stock per minute, and at the same time makes for great economy of stock over methods now in common use.

I claim:

1. The steps in the method of producing strip blanks of like length from coil strip stock with the longitudinal axes of the blanks extending longitudinally of the stock, consisting in producing a notch in the leading edge of the stock to define one end of a first potential blank; cutting said first blank from the stock, inwardly of and terminating at said notch, leaving a tongue connected to the stock of a length greater than the length of a second potential blank; simultaneously cutting a third blank from the stock at the longitudinal zone thereof from which said first blank was cut, and trimming off the leading end of said tongue so that the length of the tongue is equal to the length of said second potential blank and the length of a fourth potential blank; simultaneously cutting said second blank from the tongue and a fifth blank from the stock at the longitudinal zone thereof from which said first and third blanks were cut, leaving a tongue connected to the stock of a length equal to the length of said fourth potential blank and the length of a sixth potential blank; and repeating steps similar to said last mentioned step whereby a blank is simultaneously cut from the stock at the longitudinal zone thereof from which said first, third and fifth blanks were cut, at the same time cutting a blank from the tongue, until the desired number of blanks have been produced from the coil stock.

2. Those steps in the method of producing strip blanks of like length from coil strip stock with the longitudinal axes of the blanks extending longitudinally of the stock, consisting in producing a plurality of notches open to the leading edge of the stock, each to define one end of a first series of parallel potential blanks, said notches being spaced apart a distance substantially equal to the width of a second series of potential blanks; cutting said first series of blanks from the stock inwardly of and terminating at said notches, leaving a plurality of spaced parallel tongues connected to the stock, of a length greater than the length of the second series of potential blanks; simultaneously cutting a third series of blanks from the stock at the longitudinal zones thereof from which said first series of blanks were cut, and trimming off the leading ends of said tongues so that the length of each tongue is equal to the combined length of two potential blanks; simultaneously cutting said second series of blanks from the tongues and a fourth parallel series of blanks from the stock at the longitudinal zones thereof from which said first and third series of blanks were cut, leaving parallel tongues connected to the stock each of a length equal to the combined length of two potential blanks; and repeating steps similar to said last mentioned step whereby a series of parallel blanks is cut from the stock at the longitudinal zones from which said first series was cut, at the same time cutting a series of blanks from the tongues, until the desired number of blanks have been produced from the coil stock

3. Those steps in the method of producing strip blanks of like length from coil strip stock with the longitudinal axes of the blanks extending longitudinally of the stock, which consists in first, producing a plurality of spaced apart notches open to the leading edge of the stock, each to define one end of each of a series of first zones for potential blanks running longitudinally of the stock, said notches being spaced apart by tabs each to define one end of a second series of zones for potential blanks, running longitudinally of the stock; second, punching a first transverse series of blanks from the stock body in said first zones, a distance from the ends thereof equal to the length of a potential blank; third, simultaneously punching a second transverse series of blanks from said first zones inwardly of and next adjacent to said notches whereby a plurality of spaced tongues are provided in said second zones extending from the stock and each of a length equal to the combined length of two potential blanks plus its respective tab, and also punching a third transverse series of blanks from said first zones a distance from the spaces between said tongues at the roots thereof equal to the length of a potential blank; fourth, simultaneously cutting said tabs from said second zones at the tongues, and a fourth transverse series of blanks from the free end portions of said tongues, a fifth transverse series of blanks from said first zones inwardly of and next adjacent to the space between the roots of said tongues whereby a plurality of spaced tongues are provided in said second zones extending from the stock and each of a length equal to three potential blanks, and punching a sixth transverse series of blanks from said first zones a distance from the holes produced in the stock by the punching of said third transverse series of blanks; fifth simultaneously cutting a seventh and an eighth transverse series of blanks from the free end portions of the tongues in said second zones, a ninth transverse series of blanks from said first zones inwardly of and next adjacent to the space between the roots of said tongues whereby a plurality of spaced tongues are provided in said second zones extending from the stock and each of a length equal to three potential blanks, and punching a tenth transverse series of blanks from said first zones a distance from the holes produced in the stock by the punching of said sixth transverse series of blanks; and repeating said fifth step in succeeding relation until the desired number of blanks have been produced.

4. Those steps in the method of producing strip blanks of like length from coil strip stock with the longitudinal axes of the blanks extending longitudinally of the stock, which consists in fabricating the stock to provide a plurality of parallel tongues extending from the stock, each of a width equal to a potential blank and of a length equal to the combined length of two potential blanks, and said tongues spaced apart a distance equal to the width of a potential blank, and elongate, side by side, holes in the stock each of a length and width equal to the length and width of a potential blank, said holes being located with their major axes parallel and intersecting the spaces between the roots of said tongues and located a distance inwardly of the stock equal to the length of a potential blank whereby the holes extend longitudinally in a first series of spaced zones,

longitudinally of the stock, for potential blanks, and said tongues extend in a second series of alternate spaced zones, longitudinally of the stock, for potential blanks; and then simultaneously cutting two blanks from each of said tongues, punching blanks from said stock in said first zones, between the leading ends of said holes and the space between the tongues and punching blanks from said stock in said first zones, a distance from the trailing ends of said first mentioned holes, equal to the length of a potential blank.

5. In a machine for simultaneously producing a great number of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a plurality of elongate box dies for cutting strip blanks, each including a punch member and a die proper, said box dies arranged in side by side relation transversely of the table with their longitudinal axes parallel and with their punch members spaced apart from each other a distance equal to the width of a strip blank, whereby the stock may be acted upon, when at rest on the table, to produce a plurality of blanks at each stroke of the box die punch members, and leave tongues attached to the stock for other potential strip blanks; and shearing mechanism arranged at the delivery end of the table and acting crosswise thereof upon the tongues left on the stock by the operation of said box dies, said shearing mechanism having its cutting edges spaced from the nearest ends of the box die punch members, a distance equal to the length of a strip blank.

6. In a machine for simultaneously producing a great number of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a plurality of elongate box dies for cutting strip blanks, each including a punch member and a die proper, said box dies arranged in side by side relation transversally of the table with their longitudinal axes parallel and with their punch members spaced apart from each other a distance equal to the width of a strip blank, whereby the stock may be acted upon, when at rest on the table, to produce a plurality of blanks at each stroke of the box die punch members, and leave tongues attached to the stock for other potential strip blanks; shearing mechanism arranged at the delivery end of the table and acting crosswise thereof upon the tongues left on the stock by the operation of said box dies, said shearing mechanism having its cutting edges spaced from the nearest ends of the box die punch members, a distance equal to the length of a strip blank; and means for operating said box dies and shearing mechanism simultaneously, whereby a plurality of said strip blanks may be cut from the body portion of the stock, and a plurality of said strip blanks may be cut from the end portions of the tongues of the stock, at the same time.

7. In a machine for simultaneously producing a great number of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a plurality of elongate box dies for cutting strip blanks, each including a punch member and a die proper, said box dies arranged in side by side relation transversely of the table with their longitudinal axes parallel and with their punch members spaced apart from each other a distance equal to the width of a strip blank, whereby the stock may be acted upon, when at rest on the table, to produce a plurality of blanks at each stroke of the box die punch members, and leave tongues attached to the stock for other potential strip blanks; a stop at one or more of the box dies against which the body portion of the stock at the root of adjacent tongues will engage after strip blanks have been cut from the stock and the stock has been advanced to present uncut stock between the punch members and dies proper of the box dies; and shearing mechanism arranged at the delivery end of the table and acting crosswise thereof upon the tongues left on the stock by said box dies, said shearing mechanism having its cutting edges spaced from the nearest ends of the box die punch members, a distance equal to the length of a strip blank.

8. In a machine for simultaneously producing a plurality of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; an elongate box die, including a punch member and a die proper, disposed with its longitudinal axis parallel to the longitudinal axis of the table, said box die of a size to cut a strip blank from the stock at each stroke of the punch member and located with respect to the path of travel of the stock over the table, so that after punching each strip blank therefrom, there is left a tongue extending from the stock laterally of the hole from which said blank is punched, sufficient for another potential strip blank; and shearing mechanism at the delivery end of the table in the path of travel of said tongue and located a distance from said box die equal to the length of a strip blank for cutting strip blanks from the tongue of the stock.

9. In a machine for simultaneously producing a plurality of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; an elongate box die, including a punch member and a die proper, disposed with its longitudinal axis parallel to the longitudinal axis of the table, said box die of a size to cut a strip blank from the stock at each stroke of the punch member and located with respect to the path of travel of the stock over the table, so that after punching each strip blank therefrom, there is left a tongue extending from the stock laterally of the hole from which said blank is punched, sufficient for another potential strip blank; shearing mechanism at the delivery end of the table in the path of travel of said tongue and located a distance from said box die equal to the length of a strip blank for cutting strip blanks from the tongue of the stock; and means for operating said box die and shearing mechanism simultaneously.

10. In a machine for simultaneously producing a plurality of strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; an elongate box die, including a punch member and a die proper, disposed with its longitudinal axis parallel to the longitudinal axis of the table, said box die of a size to cut a strip blank from the stock at each stroke of the punch member and located with respect to the path of travel of the stock over the table, so that after punching each strip blank therefrom, there is left a tongue extending from the stock laterally of the hole from which said blank is punched, sufficient for another poten-

tial strip blank; a stop at the box die against which the body portion of the stock at the root of the tongue will engage after the strip blank has been cut therefrom and the stock has been advanced to present uncut stock between the punch member and die proper of the box die; and shearing mechanism at the delivery end of the table in the path of travel of said tongue and located a distance from said box die equal to the length of a strip blank for cutting strip blanks from the tongue of the stock.

11. In a machine for simultaneously producing a great number of strip blanks of like length from coil strip stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a first series of elongate box dies, each including a punch member and a die proper, disposed in side by side relation transversally of the table, with their axes parallel to the longitudinal axis of the table, said box dies each of a size to cut a strip blank from the stock at each stroke of its punch member and said box dies located at the entry end of the table and spaced apart a distance equal to the width of the strip blank; a second series of box dies, like those of the first series, arranged in axial alignment therewith transversally of the table and spaced from said first series forwardly in the path of travel of the stock over the table, a distance equal to the length of two strip blanks; a first shearing mechanism, located forwardly of said second series of box dies and spaced therefrom a distance equal to the length of a strip blank; and a second shearing mechanism located forwardly of said first shearing mechanism and spaced therefrom a distance equal to the length of a strip blank, said first and second shearing mechanisms being located in the path of travel of the tongues of the stock left extending from the body of the stock, as a result of punching strip blanks from the stock by said second series of box dies.

12. In a machine for simultaneously producing a great number of strip blanks of like length from coil strip stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a first series of elongate box dies, each including a punch member and a die proper, disposed in side by side relation transversally of the table, with their axes parallel to the longitudinal axis of the table, said box dies each of a size to cut a strip blank from the stock at each stroke of its punch member and said box dies located at the entry end of the table and spaced apart a distance equal to the width of the strip blank; a second series of box dies, like those of the first series, arranged in axial alignment therewith transversally of the table and spaced from said first series forwardly in the path of travel of the stock over the table, a distance equal to the length of two strip blanks; a first shearing mechanism, located forwardly of said second series of box dies and spaced therefrom a distance equal to the length of a strip blank; a second shearing mechanism located forwardly of said first shearing mechanism and spaced therefrom a distance equal to the length of a strip blank, said first and second shearing mechanisms being located in the path of travel of the tongues of the stock left extending from the body of the stock, as a result of punching strip blanks from the stock by said second series of box dies; and means for operating said first and second series of box dies and said first and second shearing mechanisms simultaneously.

13. In a machine for simultaneously producing a great number of strip blanks of like length from coil strip stock, the combination of an elongate table; means for feeding the strip stock from the coil longitudinally over the table; a first series of elongate box dies, each including a punch member and a die proper, disposed in side by side relation transversally of the table, with their axes parallel to the longitudinal axis of the table, said box dies each of a size to cut a strip blank from the stock at each stroke of its punch member and said box dies located at the entry end of the table and spaced apart a distance equal to the width of the strip blank; a second series of box dies, like those of the first series, arranged in axial alignment therewith transversally of the table and spaced from said first series forwardly in the path of travel of the stock over the table, a distance equal to the length of two strip blanks; a stop at one or more of the box dies of said second series of box dies against which the body portion of the stock will engage after the strip blank has been cut therefrom by its respective box die and the stock has been advanced to present uncut between the punch member and die proper of its respective box die; a first shearing mechanism, located forwardly of said second series of box dies and spaced therefrom a distance equal to the length of a strip blank and a second shearing mechanism located forwardly of said first shearing mechanism and spaced therefrom a distance equal to the length of a strip blank, said first and second shearing mechanisms being located in the path of travel of the tongues of the stock left extending from the body of the stock, as a result of punching strip blanks from the stock by said second series of box dies.

14. In a machine for producing a plurality of scroll edged strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the stock from the coil longitudinally over the table; an elongate box die, including a punch member having scroll edged sides and ends and a die proper having scroll edged sides and ends for cooperation therewith to produce a blank scroll edged at sides and ends, said elongate box die disposed with its longitudinal axis parallel to the longitudinal axis of the table and constructed and arranged to cut scroll edged strip blank from the stock at each stroke of the punch member and located with respect to the path of travel of the stock over the table so that after punching each strip blank therefrom, there is left a scroll edged tongue extending from the stock laterally of the hole from which said blank is punched, sufficient for another potential scroll edged strip blank; a stop at the box die against which the scroll edge of the body portion of the stock at the root of the tongue will engage after the strip blank has been cut therefrom and the stock has been advanced to present uncut stock between the punch member and die proper of the box die; parallel guides on said table for engaging the scroll edged sides of the tongue; and shearing mechanism at the delivery end of the table in the path of travel of said tongue, located a distance from said box die equal to the length of a strip blank and constructed and arranged for cutting a scroll ended strip blank from the tongue of the stock.

15. In a machine for producing a plurality of scroll edged strip blanks of like length from coil stock, the combination of an elongate table; means for feeding the stock from the coil longitudinally over the table; an elongate box die,

including a punch member having scroll edged sides and ends and a die proper having scroll edged sides and ends for cooperation therewith to produce a blank scroll edged at sides and ends, said elongate box die disposed with its longitudinal axis parallel to the longitudinal axis of the table and constructed and arranged to cut scroll edged strip blank from the stock at each stroke of the punch member and located with respect to the path of travel of the stock over the table so that after punching each strip blank therefrom, there is left a scroll edged tongue extending from the stock laterally of the hole from which said blank is punched, sufficient for another potential scroll edged strip blank; parallel guides on said table for engaging the scroll edged sides of the tongue; and shearing mechanism at the delivery end of the table in the path of travel of said tongue, located a distance from said box die equal to the length of a strip blank and constructed and arranged for cutting a scroll ended strip blank from the tongue of the stock.

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