

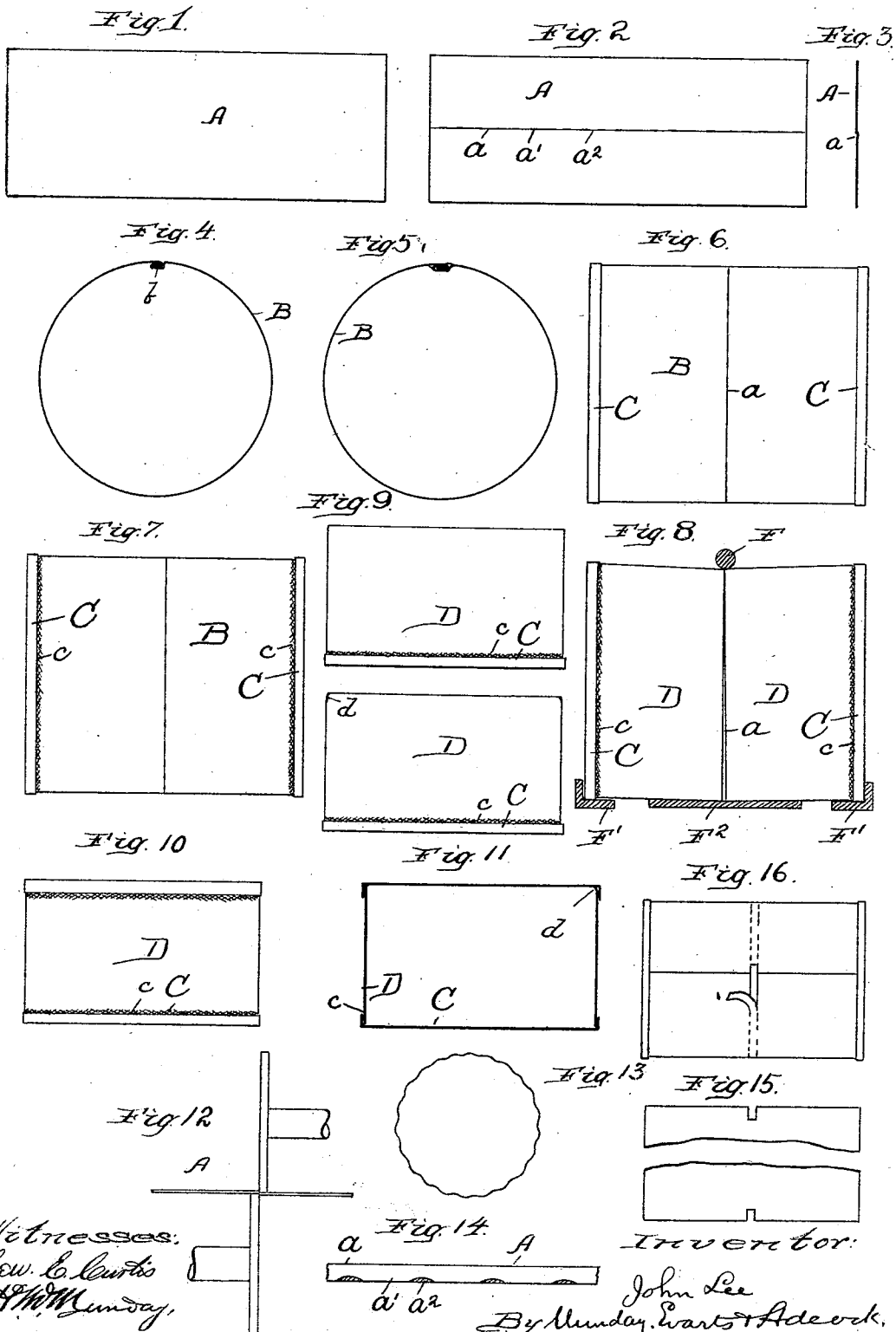
(No Model.)

J. LEE.

ART OF MANUFACTURING SHEET METAL CANS.

No. 517,223.

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UNITED STATES PATENT OFFICE.

JOHN LEE, OF SAN MATEO, CALIFORNIA.

ART OF MANUFACTURING SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 517,223, dated March 27, 1894.

Application filed July 14, 1893. Serial No. 480,494. (No specimens.)

To all whom it may concern:

Be it known that I, JOHN LEE, a citizen of the United States, residing at San Mateo, in the county of San Mateo and State of California, have invented a new and useful Improvement in the Art of Manufacturing Sheet-Metal Cans, of which the following is a specification.

My invention relates to the art of manufacturing sheet-metal cans.

10 In the method or process heretofore commonly in use for manufacturing sheet-metal cans, the body or cylindrical portion of the can is first formed up from a flat blank of tin plate, the meeting edges of which are either
15 folded together to form what is commonly called the interlocked side seam, which is subsequently soldered, or else the meeting edges are simply lapped together and then soldered to form what is commonly called the lapped
20 side seam. After this one of the can heads or flanged disks constituting the top or bottom of the can is applied to the body and soldered in place. And then, after the can is filled with fish, meat or other material, the
25 remaining head or flanged disk is applied and soldered on the body.

Machines are commonly used in forming up the can bodies, other machines for soldering up the side seams of the can bodies, still
30 other machines for applying one or both heads to the body, and still other machines for soldering the end seams uniting the head to the body. The side seams are often or commonly soldered by pushing or drawing the can bodies
35 over a bath of molten solder so that the side seam comes in contact with the surface of the molten solder, and the end seams of the can are often or commonly soldered by rolling the cans in an inclined position along a track
40 over a bath of molten solder. Various machines for performing these different steps or operations are in common use, and familiar to those skilled in the art, and the same are shown and described in the various patents
45 of the United States heretofore granted, such for example as Patent No. 250,266, granted November 29, 1881, to Frank M. Leavitt on machines for making the seams of sheet metal cans; No. 250,096, granted to Edwin Norton
50 November 29, 1881, on machines for soldering side seams of cans; No. 267,014, granted November 7, 1882, to Edwin Norton on machines

for putting on the ends of fruit and other cans; No. 274,363, granted March 20, 1883, to Edwin Norton and John G. Hodgson on can
55 ending machine, and No. 274,362, granted March 20, 1883, to Edwin Norton for soldering cans.

In the manufacture of that class of cans commonly called "flats"—cans whose length
60 or height is less than their diameter—and which are largely used for putting up salmon, considerable difficulty is experienced in the use of the ordinary machinery, because of the short length of the can as compared with
65 its diameter, the extreme narrowness of the blank rendering it more difficult for it to be fed squarely and properly into and through the body former machine; and the short
70 length of the can body rendering it very weak and flexible and more difficult to handle in the various subsequent operations, especially in dragging it through the side seam soldering machine or in rolling it through the end
75 soldering machine and the connecting run ways.

The object of my invention is to provide a method whereby the above and other difficulties in the manufacture of short or flat cans may be entirely overcome or obviated, and
80 whereby the cans may be manufactured very rapidly and cheaply, the capacity of the present machinery being by my improvement practicably doubled.

According to my invention I first form two
85 can bodies at once from a single blank and solder the side seam, the blank being preferably first partially cut in two along the line where the double length body is to be separated or divided to form the two cans. The
90 partially cutting of the blank in two before the can body is formed not only serves to facilitate the subsequent severing of the two can bodies, but also serves to give a vent opening for the escape of air from the double
95 length can body in the subsequent steps or operations of applying the two opposite heads upon such double length body, and of soldering such heads upon the body.

In the operation of soldering the heads, especially the final head upon the double length
100 body, the heat applied to the can necessarily expands the air therein, and unless a suitable vent were provided the expanded air

would tend to force itself through the seam or solder in the act of forming the soldered joint and thus produce pin holes. After the double length can body has thus been formed and its side seam soldered, I next apply by hand or by suitable machinery the two heads to the can body, one upon each end thereof. I then either by hand or by suitable machinery solder the two heads upon the double length body. I then separate or sever the two cans thus formed. And to give a smooth finish to the open or mouth ends of the two cans thus formed I preferably smooth or burr the severed edges thereof, or turn the same slightly inward.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts throughout all the figures, Figure 1 represents a double width blank from which I form my double length can body. Fig. 2 illustrates the second step of the process, showing the blank partially severed or cut in two along the line where the double length body is to be divided or separated to form two twin cans. Fig. 3 is a cross section of the blank shown in Fig. 2, the same being taken at a point where the blank is simply scored or not quite severed or cut in two. Fig. 4 represents the next step showing the double width blank formed into a double length can body. Fig. 5 illustrates the next step showing the same as Fig. 4 after the side seam has been soldered. Fig. 6 illustrates the next step wherein the two heads or flanged disks constituting the two twin cans have been applied to or forced upon the double length body. Fig. 7 illustrates the next step showing the double length can body with the two heads soldered in place thereon. Fig. 8 illustrates the next step wherein the two twin cans are separated or divided. Fig. 9 represents the next step showing the twin cans one before and one after its severed circumferential edge has been smoothed or turned inward. Fig. 10 represents a side elevation of one of the completed cans with the final head applied. Fig. 11 is a sectional view of the same. Fig. 12 is an elevation or edge view of cutting wheels or rollers that may be employed for partially severing the flat blank. Fig. 13 is a face view of the upper cutting wheel or roller showing in a somewhat exaggerated form the waved or corrugated cutting edge employed to entirely sever the blank at certain portions or intervals and score or partially sever the blank at other portions or intervals. Fig. 14 is a sectional view taken on the line that the blank is partially severed, and showing for sake of clearness the thickness of the blank much exaggerated or enlarged, so as to indicate the complete and partial severing of the blank at intervals. Figs. 15 and 16 represent a slight modification in the manner of partially severing the blank and afterward completing the severing or cutting apart of the twin cans. In this modification a narrow strip is cut out at the mid-

dle with pipe shears or tongs, such as are commonly used for cutting stove pipe or other sheet metal cylinders.

In said drawings A represents a blank of tin plate or other sheet metal, the same being in width double the length or height of the can bodies to be formed therefrom. This blank A, while it is still in the flat, is preferably partially severed on its middle longitudinal line a , as is clearly indicated in Figs. 2, 3 and 14. The intervals where the sheet of tin is entirely cut through are indicated at a' a' , and the intervals where it is only scored or partially cut through are indicated at a^2 a^2 . The cut through intervals a' a' are preferably about three-eighths of an inch in length, while the scored or partially cut through intervals are preferably about one-eighth of an inch in length, although this of course may be indefinitely varied; as the object of the partially severed line a is simply to form the necessary vent or openings to permit the escape of the air from the cans while the heads are being soldered on, and to facilitate the subsequent step of breaking or cutting apart or separating the two twin cans. After the double blank A has been thus partially severed along its middle line a , the double blank is formed up into a double can body B and its side seam b soldered. These steps or operations may be performed in precisely the same manner as if the blank A were a single can body blank and not partially severed along its middle line. The forming of the double can body from this double and partially severed can body blank A may be done in any suitable way, by hand or by machinery, but preferably by use of an automatic can body forming machine, such for example as that shown and described in Letters Patent No. 250,266. And the soldering of the side seam b of the double can body B may likewise be done in any suitable way or by any suitable tools or machine, but preferably by an automatic side seam soldering machine, such as that shown and described in Letters Patent No. 250,096. After the side seam b of the double and partially severed can body B has thus been soldered, I next apply two heads C C thereto, one at each end; and this may be done either by hand or any suitable automatic can heading machine, but preferably by means of an automatic can heading machine such for example as that shown and described in Letters Patent No. 267,014, or No. 274,363. After the heads C C have thus been applied, I next solder the end seams c uniting the heads to the double body B; this may be done in any suitable way and by means of any suitable tools or machine known to those skilled in the art, but preferably by use of an automatic can end soldering machine, such for example as that shown and described in the Letters Patent No. 274,362. In this operation of soldering the heads C C on the double can body B, the openings a' along the line a serve as vents to permit the

escape of air from the inside of the can, and prevent pin holes or leaks being formed in the soldered seams. After the heads C C have thus been soldered on the double body B, the double body is separated or broken apart along the partially severed line *a* and the two twin cans D D thus formed, each having a bottom head C. This step or operation of severing or breaking apart the two twin cans may be performed in any suitable manner, or by any suitable tools or machinery, but preferably by rolling the double can B along a run way under an inclined bar F, arranged to press down against the middle of the double body B, and thus cause the same to sever or break apart along the line *a*.

F' indicates the trough, chute or run way and F² a belt for rolling the cans along the run way under the breaking bar F.

In the modification illustrated in Figs. 14 and 15, the can body is notched or cut in two for a portion of its length while in the flat, and then formed up, soldered and headed, as before described, and then the severing or cutting apart of the tin cans is completed by cutting out a narrow strip or band at the middle of the double can body the width of the notch or partial severance of the blank. This being done preferably by means of a pair of pipe shears or other similar tool or machine. After the twin cans have thus been formed, preferably in the manner first above described, as a further or finishing step I sometimes smooth, burr or turn in slightly the cut edges of the two twin cans, as indicated at *d d* in Figs. 9 and 11. By my invention it will thus be seen that I am practically enabled to make two cans in the same time and with the same labor heretofore required to make one, and I also avoid the difficulties heretofore incident to the manufacture of flat or short cans.

While my invention is peculiarly useful in manufacturing flat or short cans which cannot easily be manufactured by automatic machinery under the old method, my invention however is not confined to the manufacture of flat or short cans, but may be used to advantage in manufacturing cans of ordinary length commonly used for putting up fruit and other food products.

The dotted lines in Fig. 16 indicate the margins of the narrow strip or band which is cut out in the step or operation of severing the twin cans.

While I prefer to form the double can body B with an interlocked side seam, as indicated in the drawings, it will be understood by those skilled in the art that the double body may be formed with an ordinary lapped side seam, instead of an interlocked side seam.

I claim—

1. The improvement in the art of manufacturing sheet metal cans, consisting in the following successive steps first making a double can body and second severing it into two

separate or twin cans, substantially as specified.

2. The improvement in the art of manufacturing sheet metal cans, consisting in first partially severing a double can body blank along its median line, then forming the same into a double can body and soldering the side seam thereof, then applying a head upon each end of said double body and soldering the same thereon, and then separating the two twin cans thus formed, substantially as specified.

3. The improvement in the art of manufacturing sheet metal cans, consisting in first partially severing a double can body blank along its median line, then forming the same into a double can body and soldering the side seam thereof, then applying a head upon each end of said double body and soldering the same thereon, then separating the two twin cans thus formed, and then smoothing or burring the cut or severed edges of the twin cans at the open or mouth end thereof, substantially as specified.

4. The improvement in the art of manufacturing sheet metal cans, having soldered side seams consisting in the following successive steps first making a double can body from one blank, second soldering its side seam, third applying and soldering heads on said double can body, and finally separating the double can body into two twin or separated cans, substantially as specified.

5. The improvement in the art of manufacturing cans, consisting in first partially severing a double can body blank along a longitudinal line, the blank being entirely cut through at parts or intervals and partially cut through or severed at intervals, then forming said double blank into a double can body and soldering its side seam, and as a succeeding step severing or dividing such double body into two separate can bodies, substantially as specified.

6. The improvement in the art of manufacturing cans, consisting in first partially severing the double can body blank along a longitudinal line, then forming said double blank into a double can body and subsequently severing or dividing such double body into two separate can bodies, substantially as specified.

7. The process or improvement in the art of manufacturing sheet metal cans having soldered side seams, consisting in the following successive steps; first, forming from a single sheet metal blank a double can body; second soldering its side seam; and third severing the double length body so formed into two separate or twin cans, substantially as specified.

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