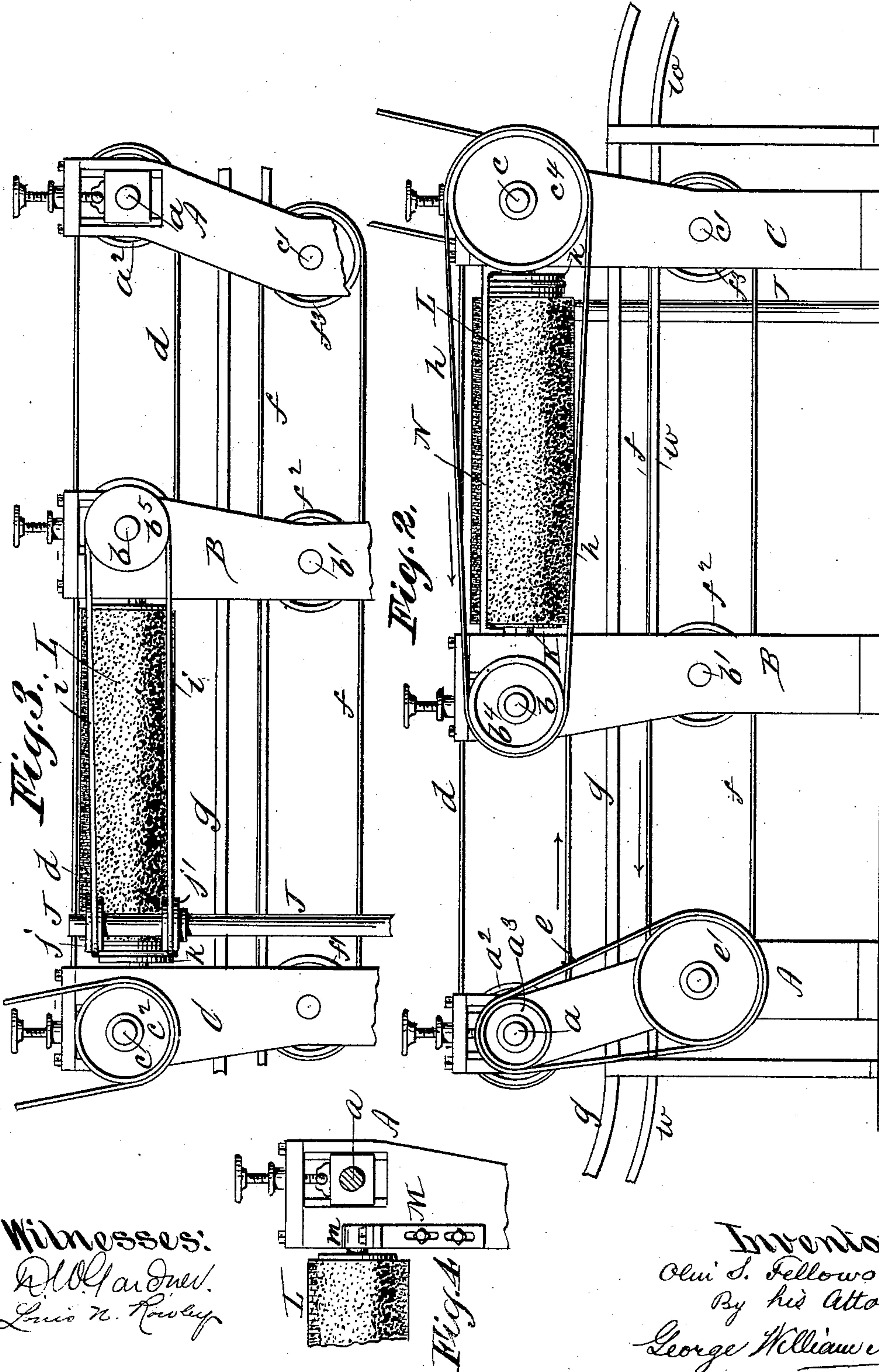




(No Model.)

3 Sheets—Sheet 2.

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MEANS FOR REMOVING SUPERFLUOUS SOLDER FROM SHEET METAL CANS.  
No. 586,967.  
Patented July 27, 1897.



Witnesses:  
H. W. Gardner.  
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Inventor:  
Oliver S. Fellows  
By his Attorney  
George William Math



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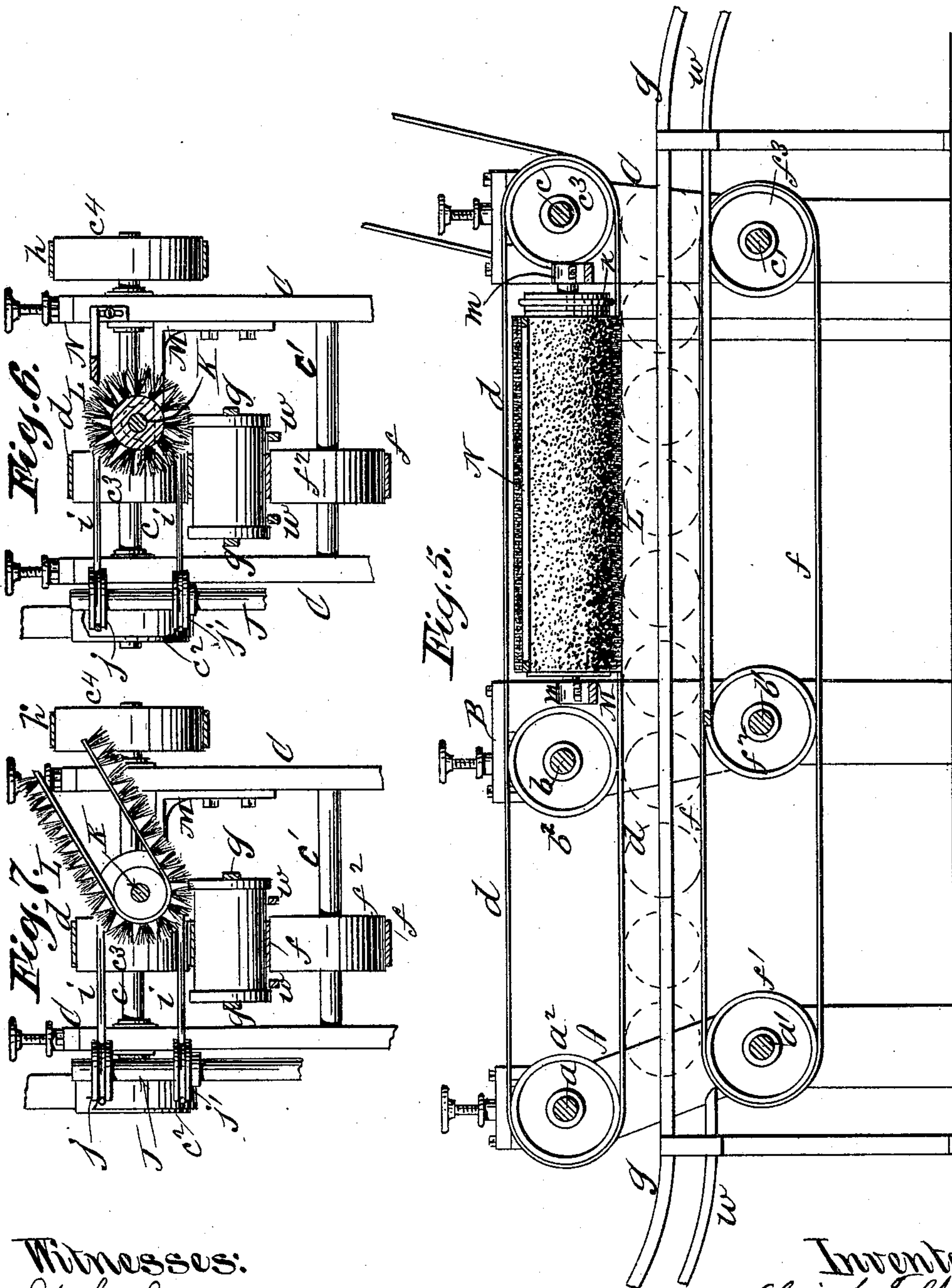
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Witnesses:  
D. W. Gardner  
Louis W. Hawley

Inventors:  
Oliver S. Fellows  
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# UNITED STATES PATENT OFFICE.

OLIN S. FELLOWS, OF MIDDLETOWN, NEW YORK.

MEANS FOR REMOVING SUPERFLUOUS SOLDER FROM SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 586,967, dated July 27, 1897.

Application filed October 12, 1896. Serial No. 608,597. (No model.)

*To all whom it may concern:*

Be it known that I, OLIN S. FELLOWS, a citizen of the United States, residing at Middletown, in Orange county, and State of New York, have invented certain new and useful Improvements in Means for Removing Superfluous Solder from Sheet-Metal Cans, of which the following is a specification sufficient to enable others skilled in the art to which the invention appertains to make and use the same.

My invention relates to apparatus for the removal of superfluous solder from sheet-metal cans, substantially as set forth in my three prior and concurrent applications for patent, Serial No. 605,598, filed September 12, 1896; Serial No. 605,967, filed September 16, 1896, and Serial No. 606,326, filed September 19, 1896, in which the cans from the soldering-bath are treated continuously and severally, by means of an endless belt or belts, to centrifugal force, or to the action of an endless brush traveling in a direction opposite to that of the cans, or to both centrifugal force and the action of an endless brush.

The present invention relates more particularly to the apparatus described in my last-named application, being an improvement thereon.

The invention consists in the combination and arrangement, with the means for rolling and forwarding a plurality of cans continuously and simultaneously, of a brush acting on the edges of the cans at right angles to their line of motion, substantially as hereinafter described and claimed.

By my improvement I attain more uniform results, the solder being positively forced under the flanges of the end plates where required and the percentage of leakage being reduced, since all parts of the annular joints are subjected to the same treatment and pressure. The cans obtained by this treatment are stronger and cleaner than any heretofore produced, the soldered joints being continuous and perfect and all superfluous solder being swept off the ends of the cans in line with their longitudinal axes in such manner that the brush cannot spatter the cans and removes therefrom any spatterings received during the centrifugal action. This treat-

ment of the ends of the cans, as they flow continuously through the apparatus to the action of a brush rotating at right angles to their line of procession and rotation, may be combined with and follow the treatment of the cans to centrifugal force for the purpose of throwing off most of the superfluous solder, especially from the end plates, and of presenting the remainder to the brush in the most favorable position for removal thereby, as set forth in my concurrent application last mentioned, although I do not limit myself to this combination, since I believe myself to be the first to treat a plurality of cans rotated and forwarded by any endless belt or belts to the action of a brush acting at right angles to their line of motion.

I am aware that it has been proposed to use circular buffers or brushes to remove superfluous solder from cans held and treated individually. I am also aware that it has been proposed to treat cans held and rotated individually to the action of an endless wiper-belt, but neither of these anticipate my invention, which consists, essentially, in rotating the cans as they leave the soldering-bath in a continuous procession by means of an endless belt or belts in such manner as to present their freshly-soldered annular joints to a brush acting at right angles to their line of motion, thereby insuring a perfect and continuous joint of solder between the flanges of the end plates and the ends of the can-bodies, at the same time removing all superfluous solder and finishing off or polishing the edges of the cans without interfering with or retarding their continuous flow from the soldering-bath and through the apparatus.

As will be seen by reference to my prior applications hereinbefore referred to, this feature of treating the cans successively and severally in a continuous procession without intermission I believe to be original with myself, it being a distinguishing feature of importance in the manufacture of cans in large quantities, as contradistinguished to the treatment of the cans specially and individually, as heretofore.

In the accompanying drawings, Figure 1 is a plan of my improved apparatus; Fig. 2, a side elevation; Fig. 3, an elevation of the



opposite side of the apparatus, the standards being partly broken away. Fig. 4 is a detail view showing means for adjusting the brush. Fig. 5 is a vertical longitudinal section on plane of line 5 5, Fig. 1. Fig. 6 is a transverse section on plane of line 6 6, Fig. 1; Fig. 7, a similar view showing a modification in the form of brush.

The standards A B C support the several shafts  $a b c$  above and  $a' b' c'$  below, the upper ones  $a b c$  being adjustable with relation to the lower ones and occupying slightly-different planes vertically to avoid the pinching of the cans between them.

The power-pulley  $c^2$  is on the end of the shaft  $c$ . On said shaft  $c$  between the standards is affixed the pulley  $c^3$ , over which the upper endless belt  $d$  passes. This belt also passes over the pulley  $a^2$ , rigidly secured to the shaft  $a$ , the pulley  $b^2$  on the shaft  $b$  being an idler. A pulley  $a^3$ , situated on one end of the shaft  $a$ , transmits power and motion through the belt  $e$  to a larger pulley  $e'$  on the corresponding end of shaft  $a'$ . The lower belt  $f$  passes over the pulleys  $f' f^2 f^3$  on the lower shafts  $a' b' c'$ , the two pulleys  $f'$  and  $f^3$  being rigidly attached to their shafts, while the pulley  $f^2$  is an idler. The difference in diameter of the pulleys  $a^3 e'$  causes the belt  $f$  to travel slower than the upper belt  $d$ , so that the latter gradually advances the cans through the apparatus, as in my prior applications hereinbefore referred to.

$w w$  are the can-supporting ways, and  $g g$  the guard-rails for controlling the cans as they come from the soldering-machine and roll through the apparatus.

On the end of shaft  $c$ , opposite that on which the power-pulley  $c^2$  is mounted, is secured a larger pulley  $c^4$ , which transmits power through the belt  $h$  to the pulley  $b^4$ , affixed to a corresponding end of the shaft  $b$ . On the opposite end of the shaft  $b$  is affixed the pulley  $b^5$ , which transmits power and speed through the medium of the endless belt  $i$ , passing around the horizontal pulleys  $j j'$ , upon the vertical standard J, to the brush-pulley  $k$ , secured to the shaft K. This shaft K extends longitudinally between the shafts  $b$  and  $c$  and carries the brush L. The shaft K is supported upon brackets M, its bearings  $m$  being made adjustable thereon horizontally by any suitable means, as by set-screws passing through slots formed in the bases of the bearings, as shown in the drawings, or by equivalent means. Provision is also made for adjusting the shaft K vertically, as by making the brackets M adjustable upon the standards B C, as will be understood by reference to Fig. 4, or by other suitable means. The pulleys  $j$  and  $j'$  are loose upon the standard J to allow the belt  $i$  to adapt itself to the adjustment of the shaft K.

It will be observed that the pulleys  $j j'$  and the pulleys  $k$  and  $b^5$  have peripheral grooves in which the belt  $i$  runs, and the pulleys  $j j'$ , which are loose upon the standard J, will

adapt themselves to the belt and will be sustained by the belt in their proper position upon the standard.

It will thus be seen that I provide for the accurate adjustment of the brush with relation to the ends of the cans to be treated as they pass on the ways underneath, and am also enabled to compensate for wear. A cleaner N, also adjustable, is mounted between the standards B C and the ends to dislodge particles adhering to the brush.

In lieu of the long cylindrical brush L shown in the first six figures of the drawings the arrangement may be modified, as indicated in Fig. 7, by the use of a brush-belt of the required width arranged to travel at right angles to the path of the can without materially affecting the result or departing from the spirit and intent of my invention.

If it is desired to use centrifugal force to dislodge the main portion of the excess of solder from the cans prior to their being subjected to the action of the brush L, sufficient speed is imparted to the belt to accomplish this result as the cans pass between the pulleys  $a^2$ ,  $b^2$ ,  $f$ , and  $f^2$ , the apparatus shown being arranged for this method of treating the cans. Otherwise the distance between the standards A B may be decreased so as to bring the cans almost immediately under the action of the brush.

While the use of an endless belt, described and claimed in my last application hereinbefore referred to, is effective in practice, still, owing to its inevitable sagging, it does not bear evenly and uniformly upon the cans throughout its length, so that all parts of the seam of a can may not receive the same treatment. Furthermore, the endless-belt brush has a tendency to throw solder on the cans, whereas by my present construction and arrangement of parts all cans are subjected to the same degree of pressure, the joints are positively filled and closed, and the superfluous solder is brushed off at right angles to and away from the cans.

The arrangement shown in the drawings is preferable in that it affords the greater economy of space in proportion to the length of treatment of the cans. Similar results may be attained in connection with the brush L by the use of belts  $d f$ , traveling in the same direction but at different speeds, provided the run is made of sufficient length to insure the requisite number of revolutions.

It is to be understood that in using the word "brush" herein I do not confine myself to any special form thereof, since any equivalent arrangement of elastic and resilient bristles, wires, or scrapers may be substituted to effect the removal of the surplus solder with like results.

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

1. In a solder-saving device the combination with endless belts arranged to receive and advance the cans between them substan-



tially as described, of a brush arranged to act upon the edges of a plurality of the cans substantially at right angles to their line of motion, substantially in the manner and for the purpose set forth.

2. In a solder-saving device the combination with endless belts traveling in opposite directions and arranged to receive and advance the cans between them substantially as described, of a brush arranged to act upon the edges of a plurality of the cans substantially at right angles to their line of motion, substantially in the manner and for the purpose set forth.

3. In a solder-saving device the combination with endless belts traveling at different speeds in opposite directions, arranged to receive and advance the cans between them substantially as described, of a brush arranged to act upon the edges of a plurality of the cans substantially at right angles to their line of motion, substantially in the manner and for the purpose set forth.

4. In a solder-saving device the combination with an endless traveling belt and an opposed can-support arranged to receive and advance the cans between them and to impart to the said cans a speed of rotation sufficient to throw off by centrifugal force the main portion of the excess of melted solder carried from the soldering-bath, of a brush arranged to act upon the edges of a plurality of the cans in a direction substantially at right angles to that of their line of motion, for the purpose and substantially in the manner described.

5. In a solder-saving device the combination with endless traveling belts, arranged to receive and advance the cans between them and to impart to the said cans a speed of rotation sufficient to throw off by centrifugal force the main portion of the excess of melted solder carried from the soldering-bath, of a brush arranged to act upon the edges of a

plurality of the cans in a direction substantially at right angles to that of their line of motion, for the purpose and substantially in the manner described.

6. In a solder-saving device the combination with endless belts traveling in opposite directions arranged to receive and advance the cans between them and to impart to the said cans a speed of rotation sufficient to throw off by centrifugal force the main portion of the excess of melted solder carried from the soldering-bath, of a brush arranged to act upon the edges of a plurality of the cans in a direction substantially at right angles to that of their line of motion, for the purpose and substantially in the manner described.

7. In a solder-saving device the combination with endless belts traveling at different speeds in opposite directions, arranged to receive and advance the cans between them and to impart to the said cans a speed of rotation sufficient to throw off by centrifugal force the main portion of the excess of melted solder carried from the soldering-bath, of a brush arranged to act upon the edges of a plurality of the cans in a direction substantially at right angles to that of their line of motion, for the purpose and substantially in the manner described.

8. In a solder-saving device the combination with an endless traveling belt and an opposed can-support arranged to receive and advance the cans between them substantially as described, of a brush arranged to act upon the edges of a plurality of cans substantially at right angles to their line of motion, and means for adjusting said brush both horizontally and vertically substantially in the manner and for the purpose described.

OLIN S. FELLOWS.

Witnesses:

GEO. WM. MIATT,  
D. W. GARDNER.