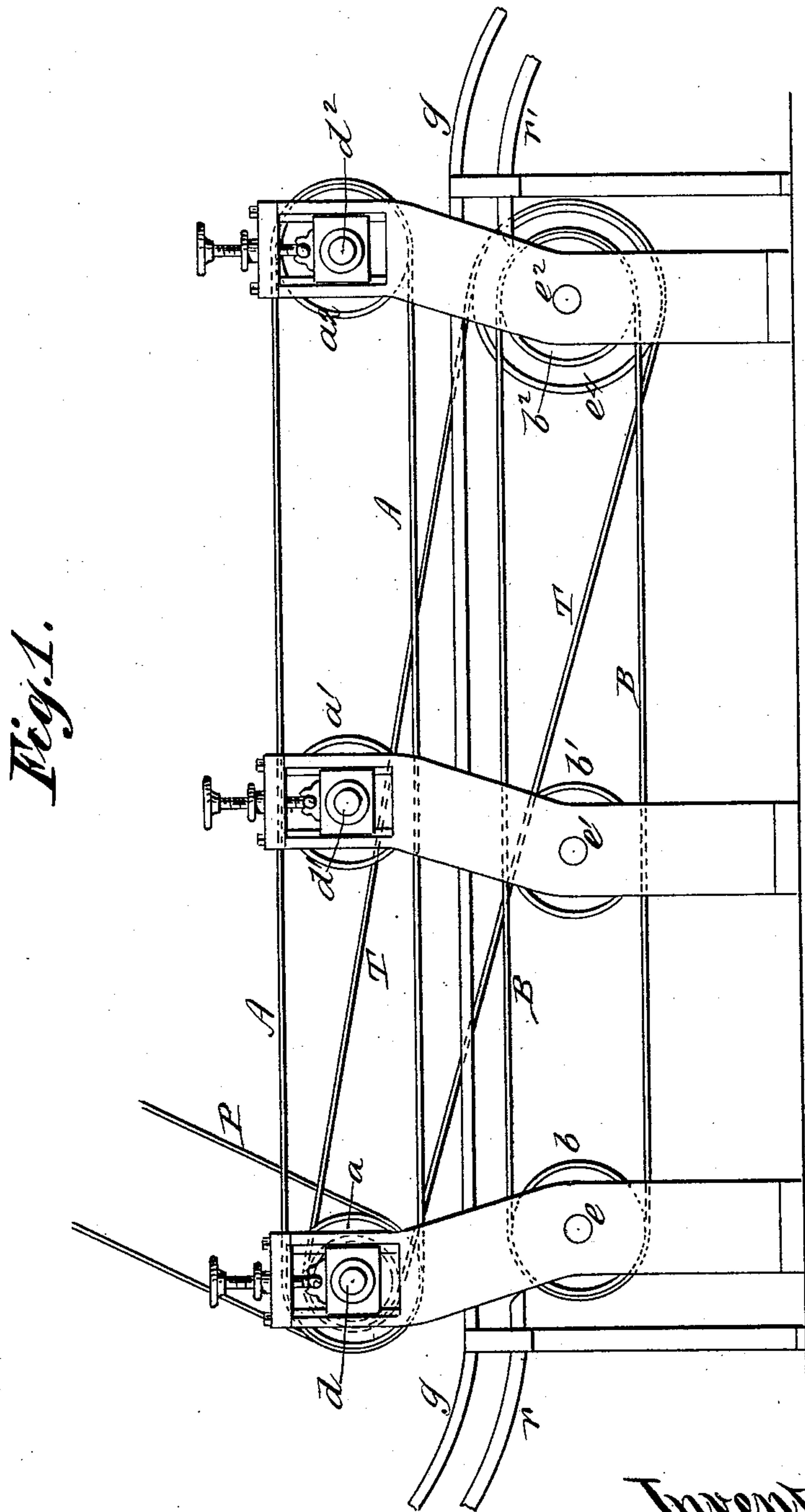


3 Sheets—Sheet 1.

MEANS FOR REMOVING SUPERFLUOUS SOLDER FROM SHEET METAL CANS.

Patented July 27, 1897.



Witnesses:
A. W. Gardner.
Louis St. Bowley

Inventor:
Alvin S. Fellows
By his Attorney
George Williams Mott

(No Model.)

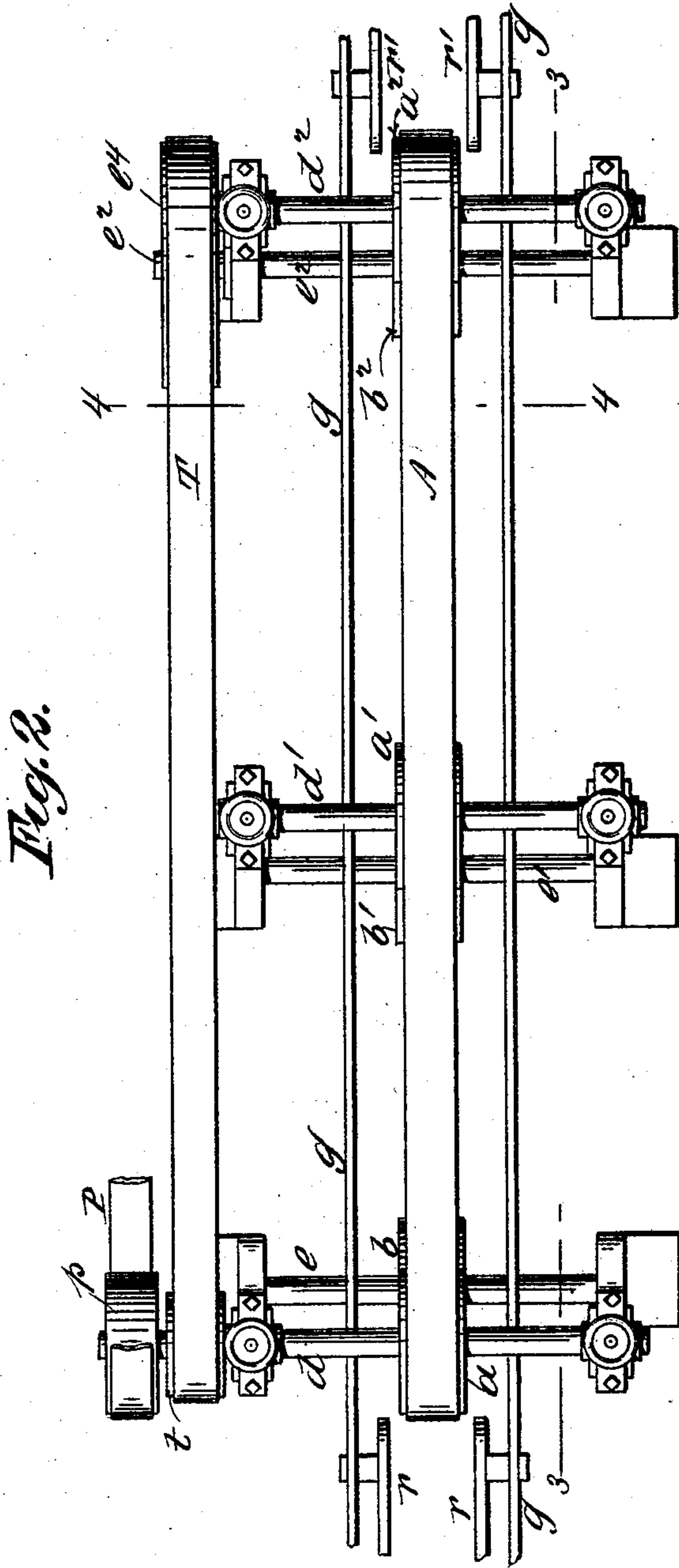
3 Sheets—Sheet 2.

O. S. FELLOWS.

MEANS FOR REMOVING SUPERFLUOUS SOLDER FROM SHEET METAL CANS.

No. 586,964.

Patented July 27, 1897.



Witnesses:
D. W. Gardner
Louis A. Howley

Inventor:
Olavi S. Fellows
By his Attorney
George William Smith

(No Model.)

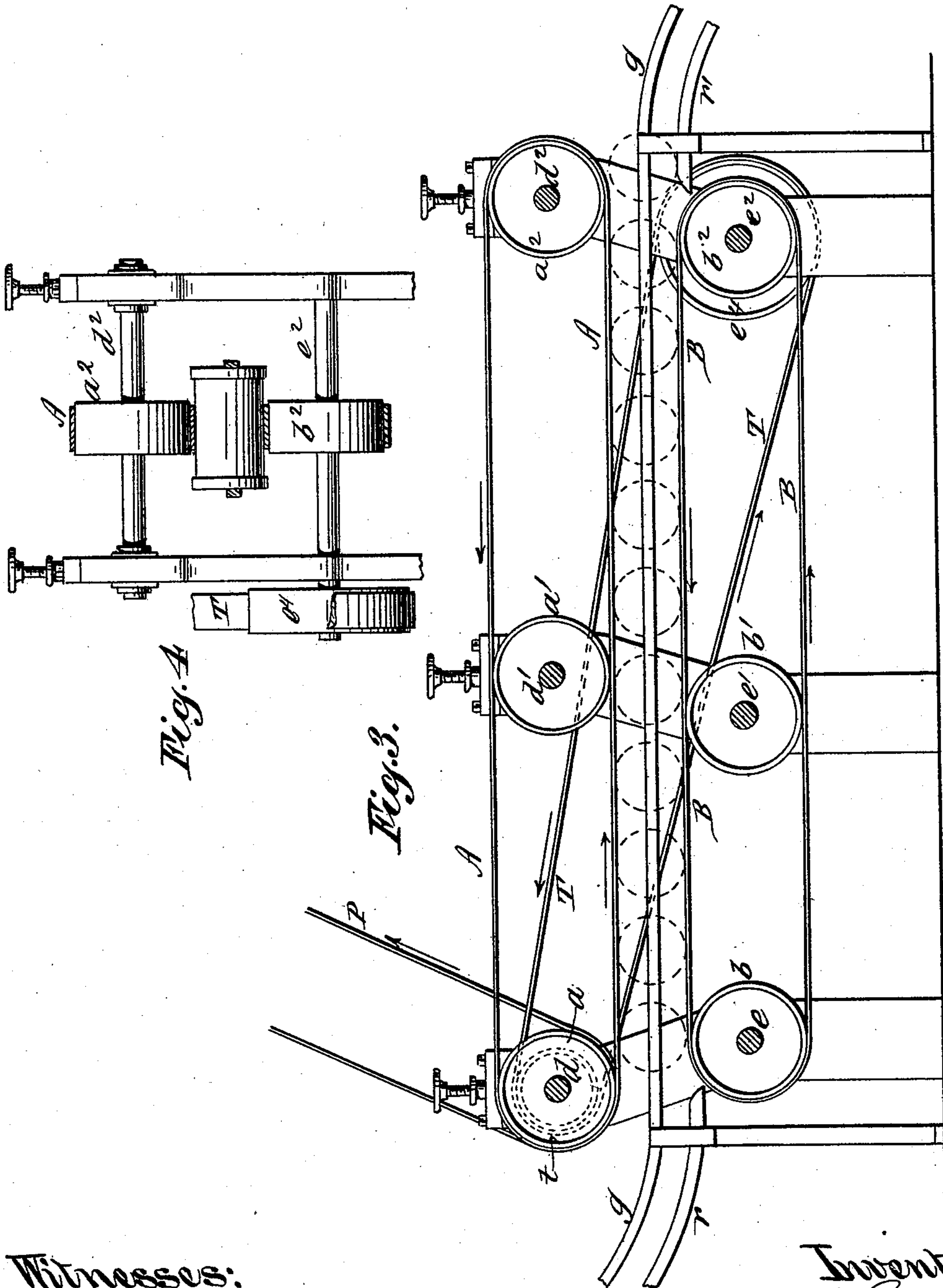
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UNITED STATES PATENT OFFICE.

OLIN S. FELLOWS, OF MIDDLETOWN, NEW YORK.

MEANS FOR REMOVING SUPERFLUOUS SOLDER FROM SHEET-METAL CANS.

SPECIFICATION forming part of Letters Patent No. 586,964, dated July 27, 1897.

Application filed September 12, 1896. Serial No. 605,593. (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 the county of Orange 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 the manufacture of sheet-metal cans in which the end plates are soldered to cylindrical can-bodies. In the ordinary process of manufacture the end plates are applied to the can-bodies, and the exterior edges of the can thus assembled are successively rolled over and in contact with baths of molten solder, thereby introducing the solder between the flanges of the end plates and the opposed edges of the can-body. This method is simple and desirable, because the soldering operation is continuous and rapid, but it is wasteful of solder, since an excess thereof is taken up and carried away by the exterior surfaces of the can, not only adding to the weight and cost of the can, but also impairing its symmetry.

The object of my invention is to save practically all the superfluous solder taken up by the cans and at the same time to render them more perfect and symmetrical in external appearance; and the invention consists, essentially, in the use of means for imparting to the cans after they leave the soldering-bath and while the solder is in a fluid state a sufficient degree of centrifugal force to throw off the excess of solder from the exterior surfaces of the cans, substantially as herein set forth.

In the accompanying drawings, Figure 1 is an elevation of a solder-saving device embodying the essential features for carrying out my invention. Fig. 2 is a plan of the same. Fig. 3 is a sectional elevation upon plane of line 3 3, Fig. 2. Fig. 4 is a transverse section upon plane of line 4 4, Fig. 2.

It is obvious that the necessary degree of centrifugal force may be imparted to the cans after they leave the soldering-bath by various mechanical expedients and that they may be thus treated individually and intermittently. I prefer, however, to treat them continuously

and simultaneously as they roll from the soldering-bath, and this I accomplish by passing them between a traveling surface and a support, shown in the present instance as consisting of two endless belts A and B, speeded to rotate the cans on their axes with sufficient centrifugal force to throw off the excess of solder, one of the belts traveling faster than the other, so that the cans received at one end will be finally discharged at the other.

In ordinary practice the cans are transferred directly from one soldering-bath, in which one end of the cans is soldered, to another soldering-bath, in which the other end is soldered, the incline of the cans being changed between the baths by a gradual change in incline of the ways. I interpose one of my solder-saving devices between the soldering-baths and place another to receive the cans from the second bath, but they are practically the same in construction and operation, and one description will answer for both.

$r r$ are the supporting-rails which convey the cans from the soldering-bath, and $r' r'$ the supporting-rails which convey the cans from my solder-saving device. $g g$ are guard-rails which preserve the alinement of the cans. The rails $r r$ feed the cans in between the belts A B. These belts are supported by the pulleys $a a'$ a^2 and $b b'$ b^2 , mounted upon the shafts $d d'$ d^2 and $e e'$ e^2 , respectively. The upper series of shafts $d d'$ d^2 are adjustable vertically in their bearings, so that the space between the belts A B may be regulated accurately to meet the requirements of the cans under treatment. The pulleys a' and b' are idlers.

Power and speed are imparted by the power-belt P to the pulley p on the shaft d , upon which is also mounted the pulley t , by which the power is transmitted through the belt T to the pulley e^4 upon the shaft e^2 . The pulley e^4 being of greater diameter than the pulley t , it is obvious that the belt B will travel at a slower speed than that of the belt A. The belts travel in the direction indicated by the arrows. The dotted circles indicate the sheet-metal cans.

The cans fed to the device by the rails r are seized by and between the belts A B, which rotate them on their longitudinal axes with sufficient speed to throw off by centrifugal

force the superfluous solder in drops and particles, which are subsequently collected and returned to the soldering-bath. Owing to the difference in speed of the belts A B the
 5 cans are finally discharged into the rails $r' r'$, their time of passage through the device being regulated by the relative speeds imparted to said belts.

In order to economize space, the belts A B
 10 are preferably arranged to travel in opposite directions as well as at different speeds, as shown in the drawings, although it is obvious that a similar result may be attained by the use of belts traveling in the same direc-
 15 tion but at different speeds, provided the run is made of sufficient length, or a single belt may be used in connection with a stationary way or support.

I have found by practical test and experi-
 20 ence that by my method of utilizing centrifugal force for the recovery of superfluous solder, as set forth, I can effect a material saving in the cost of soldering end caps to can-
 25 bodies and at the same time produce cans of superior and more uniform appearance.

Where one belt moves at a greater speed than the other, as the upper belt in the accompanying drawings, such faster-moving belt not only forwards the cans through the
 30 apparatus, but also spaces them so that they pass through without contact with each other.

In other words, the faster belt naturally grasps and forwards each can as fed to it in such manner that it will be in advance and
 35 out of contact with the next succeeding can, and this relation of the cans is maintained until they are discharged at the opposite end of the apparatus.

I am aware that it has been proposed to pass
 40 cans through a cooling-machine by means of fingers or separators on an endless belt acting in conjunction with the opposed surface of a belt traveling in the opposite direction, as in the patent to Kendall, No. 469,389, dated
 45 February 23, 1892, but that patent does not anticipate the essential principle of my invention, neither does it show my special construction and arrangement of parts for giving practical effect thereto. The object of
 50 the Kendall device is to effect the cooling of the cans in less time and space than formerly,

even resorting to a cold-air blast for this purpose, and he utilizes centrifugal force only for the purpose of retaining the excess of solder on the cans by preventing the running
 55 and dripping of the melted solder, whereas I drive off the superfluous solder by means of centrifugal force, thereby effecting greater perfection and economy in the manufacture of the can, results entirely new to the state of
 60 the art.

Furthermore, the separating-fingers for spacing and forwarding the cans are indispensable in the Kendall device, since the apparatus would be inoperative without them,
 65 whereas I space and forward the cans by a difference in the relative speed of the opposed surfaces of the belts, the cans not being dragged forcibly along, but rolling independently and naturally through the apparatus.
 70

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

1. In a solder-saving device, the combination of an endless traveling surface and an opposed can-support arranged to receive the
 75 cans between them, and means for producing a relative motion between said traveling surface and can-support, whereby a speed of rotation is imparted to the cans sufficient to throw off from said cans, by centrifugal force,
 80 any excess of melted solder, substantially in the manner described.

2. In a solder-saving device, the combination of two endless belts with opposed surfaces arranged to receive the cans between
 85 them, said opposed surfaces traveling in opposite directions and at different speeds so that the cans are spaced and forwarded by the faster-moving belt while the slower-moving belt increases the axial rotation of the
 90 cans, and means for producing a relative motion between said opposed belt-surfaces whereby a speed of rotation is imparted to the cans sufficient to throw off from said cans, by centrifugal force, any excess of
 95 melted solder, substantially in the manner described.

OLIN S. FELLOWS.

Witnesses:

GEORGE WILLIAM MIATT,
 D. W. GARDNER.