Sept. 21, 1926. 1,600,675

J. A. KAYE

ELECTRIC CAN OPENING DEVICE

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Fig. 1.

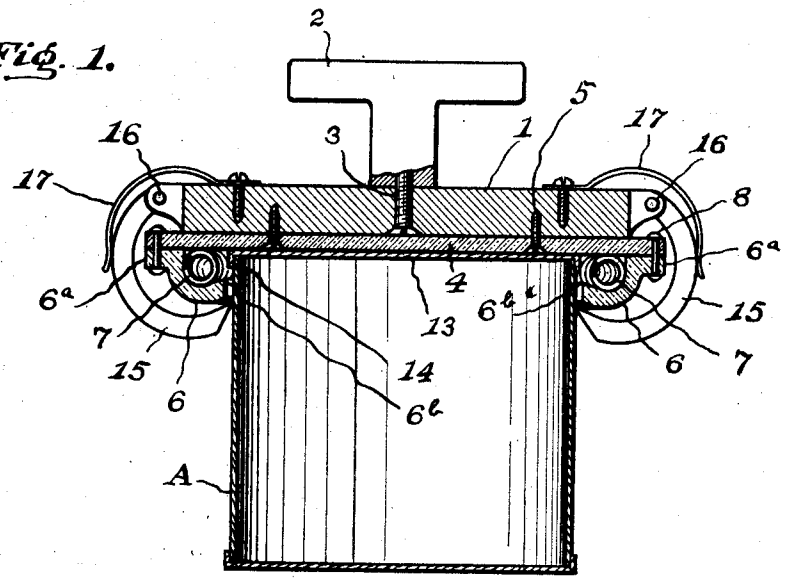

Fig. 3.

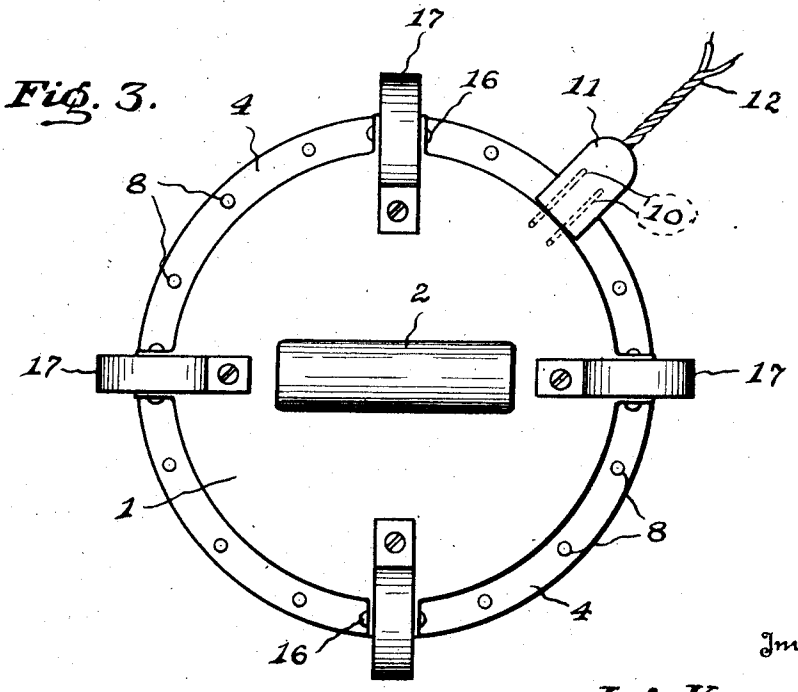

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Fig. 2.

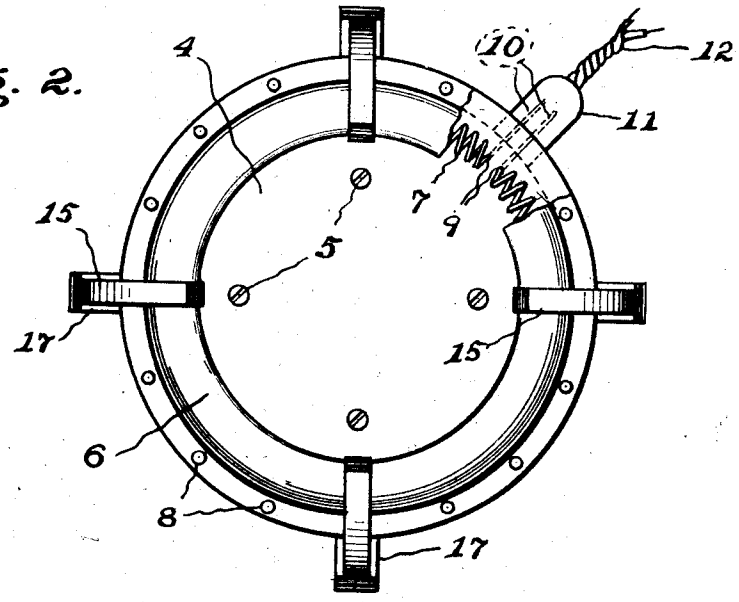

Fig. 6.

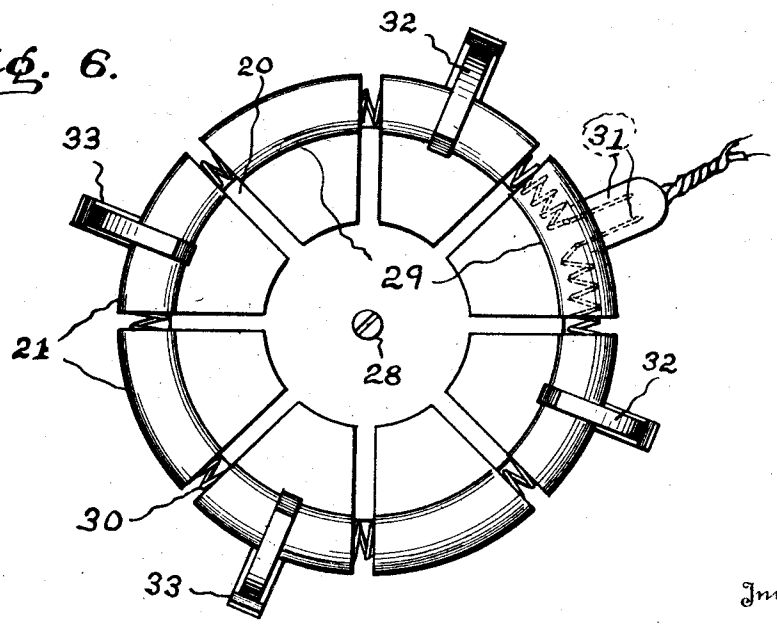

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Fig. 5.

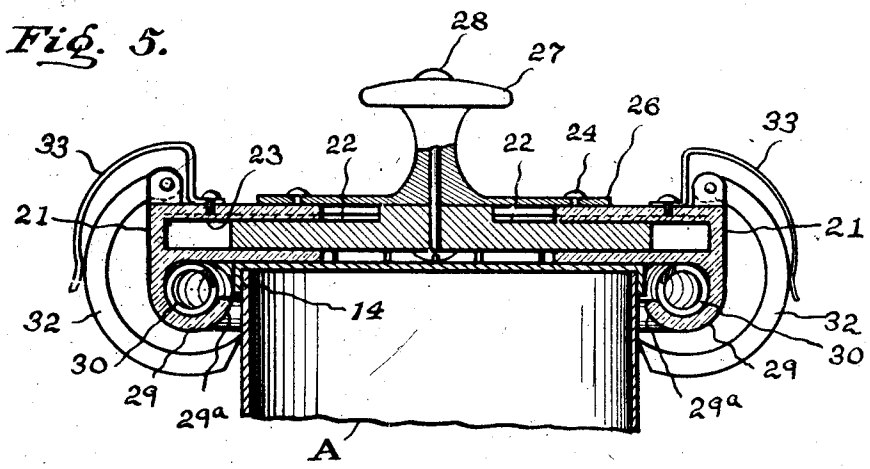
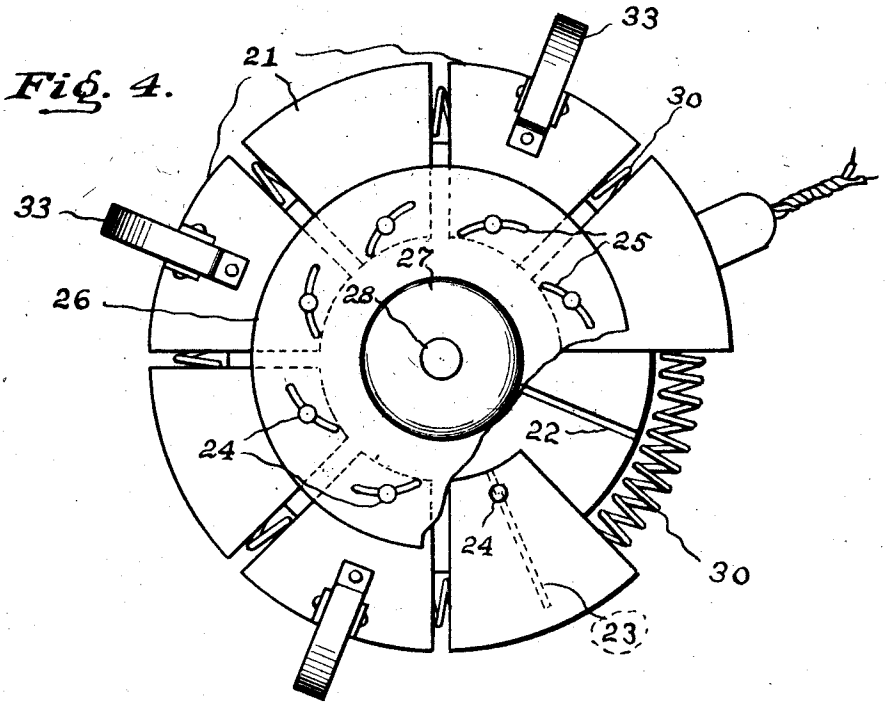


Fig. 4.



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Patented Sept. 21, 1926.

1,600,675

UNITED STATES PATENT OFFICE.

JOHN A. KAYE, OF SAULT STE. MARIE, ONTARIO, CANADA.

ELECTRIC CAN-OPENING DEVICE.

Application filed January 8, 1926. Serial No. 80,021.

The present invention relates to appliances for opening cans, and has for its object to provide a device of this character which embodies novel features of construction, whereby the head of the can is removed as a unit by melting the solder at the joint, thereby providing a clean cut opening and avoiding the necessity of using a cutter to multilate the cover of the can and leave an opening with jagged edges.

Further objects of the invention are to provide a can opening device which can be readily applied to the top of a can, and embodies electrically heated means for quickly melting the solder at the joint to admit of the cover being removed before the contents of the can are heated.

Further objects of the invention are to provide an electrically heated can opening device of this character which is comparatively simple and inexpensive in its construction, and which will operate in a quick and effective manner to melt the joint at the head of a can and remove the head, thereby leaving the top of the can open and free from jagged edges so that the contents of the can can be easily removed without mutilation.

While one particular embodiment of the invention is shown and described for illustrative purposes, it will be understood that many modifications and changes can be made in the details of construction without departing from the spirit of the invention.

For a full understanding of the invention reference is to be had to the following description and accompanying drawings in which,

Figure 1 is a sectional view through an electrically heated can opening device which is constructed in accordance with the invention, showing the same as fitted in operative position upon the head of a can.

Figure 2 is a bottom plan view of the device.

Figure 3 is a top plan view of the device.

Figure 4 is a top plan view showing the modification in which provision is made for expanding and contracting the effective size of the head to fit different sizes of cans, portions being broken away.

Figure 5 is a transverse sectional view on the line 5—5 of Figure 4.

Figure 6 is a bottom plan view of the modified form of the construction.

Corresponding and like parts are referred to in the following description, and indicated on all of the views of the drawings by like reference characters.

Two different embodiments of the invention are shown by the drawings. The form shown by Figures 1, 2 and 3 is constructed to fit one particular size of can only, although the device can be made adjustable, as shown by Figures 4, 5 and 6, so that it can be adjusted to fit different sizes of cans. In the form of the invention illustrated by Figures 1, 2 and 3, the numeral 1 designates a head which may be formed of metal or other suitable material, and is of a proper size to fit over the top of the can to be opened. A handle 2, which may be of T-shaped formation, as shown, projects upwardly from the head 1 and may be secured thereto in any suitable manner, as by means of a screw 3. A plate 4 of porcelain, fire clay or other suitable insulating material is applied to the lower face of the head 1 and secured thereto by suitable fastening members, such as the screws 5. Applied to the lower face of the porcelain plate 4 is a resistance receiving ring 6, said ring being transversely curved so that it will receive a coiled resistance element 7, and being shown as formed with a flange 6^a which is secured to the plate by suitable fastening members such as the rivets 8. The inner edge of the ring 6 is extended upwardly to provide a lip 6^b, and the coiled resistance wire 7 is of such a diameter that it can be forced resiliently over the lip 6^b and into the enlarged chamber beyond the lip. The resistance wire is thus held securely in proper position without the need of using any special fastening members. The ends of the resistance wire, as shown by Figure 2, extend upwardly through openings 9 formed in the insulating plate and head 1, and are connected to conventional terminal arms 10. The usual socket 11 can be applied to the terminal arms, said socket having the conventional supply wires 12 con-

nected thereto. When the socket is applied to the terminal arms the circuit through the resistance wire is closed and the resistance wire will be heated in the usual and well known manner.

On Figure 1 the device is shown as applied to the top 13 of a can A, said top having a flanged edge portion which is secured to the top of the can by a soldered joint. The upper end of the can is received within the chamber formed by the resistance receiving ring 6 and the soldered joint between the upper edge of the can body, and the annular flange 14 of the top is then located adjacent to the resistance wire 7 but out of contact therewith. With the device in position on the can, electric current is applied to the resistance wire 7, whereby a high temperature is quickly produced and maintained in the annular recess surrounding the top of the can. This high temperature results in quickly melting the solder at the joint before there is time for the contents of the can to be heated to any appreciable extent.

As soon as the solder is melted the top 13 of the can is forcibly lifted from position by means of suitable hooks or claws 15 which are pivotally connected at 16 to the periphery of the head 1. Springs 17 are utilized for holding the claws yieldably in operative position. With the construction illustrated four of the claws 15 are used, although it will be obvious that either a greater or lesser number of claws may be employed, as may be found to give the best results. An upward pull upon the handle 2 causes the ends of the claws 15 to engage the flange 14 of the top 13 and after the solder has been melted the top can be readily lifted from position by means of these claws. If desired a suitable clamp may be provided for engaging the bottom of the can when the top is pulled therefrom by means of the claws, and when the can is opened in this manner there are no jagged edges and the contents of the can can be easily removed without difficulty or mutilation.

In the construction shown by Figures 4, 5 and 6, the numeral 20 designates a circular head which is adapted to be fitted over the top of the can. A series of segmental sections 21 are applied to the edge of the head, said sections being recessed to receive the same and having portions which slidably engage the top and bottom of the head so that the sections can move in and out radially thereon. In order to direct the sections in their in and out movements, the top of the head 20 is formed with a series of radial guide grooves 22, and the top flange of each of the sections is formed with a radial rib 23 which is slidably received within the corresponding groove.

A pin 24 projects upwardly from the top flange of each of the segmental ring sections 21, and these pins are received within cam slots 25 formed in a flange 26 which is rigid with the base of the handle 27, and overlaps the segmental sections. The handle 27 is mounted upon the head by means of a bolt 28 so that it is rotatable about the bolt as a center. With this construction it will be obvious that by rotating the handle the flange 26 is turned relative to the segmental ring sections 21, and in this manner the said sections may be moved in and out upon the head.

The sections 21 are formed at the bottom thereof with inwardly curved flanges 29 which cooperate with each other to provide a resistance engaging member similar to the ring 6 of the construction shown by Figure 1. The inner edge of the flange 29 terminates in an upwardly extending lip 29^a, and the coiled resistance wire 30 is of such a size that it can be forcibly sprung over the lip 29^a into the chamber provided by the curved flanges 29. The resistance wire is thus held in position by these lips 29^a without the need of using any fastening members and owing to the coiled formation thereof it will readily expand and contract as the segmental sections are moved in and out. The ends of the resistance wire extend through one of the flanges 29 and terminate in the terminal pins 31 which may be engaged by a conventional socket 11 when it is desired to connect the resistance wire to a source of electrical supply.

Certain of the sliding sections 21 carry claws 32 and springs 33 may be provided for holding the claws in a yielding engagement with the can. The device is adapted to be applied to the head of a can, just as in the former instance, and by turning the handle 27 the segmental sections 21 can be moved in and out until they are brought into proper position to fit the head of the particular can being opened. The resistance wire will then be held close to the soldered seam and spaced from the can so that there will be no possibility of a short circuit through the can. The sliding sections 21 are, of course, formed of some insulating material so that the resistance wire is properly supported by non conducting elements. When the current is supplied to the coiled wire it is heated and a high temperature produced adjacent to the soldered joint, which results in melting the solder, whereupon the top of the can may be readily lifted from position by means of the claws 32.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is,

1. A device for opening soldered seams, including a head adapted to be applied to the article over the seam to be opened, a

resistance wire, and means for mounting the resistance wire on the head whereby it will be supported close to the seam and in a spaced relation thereto when the head is in position.

2. A can lid removing device including a head adapted to be applied to a can, an electric resistance wire, and means for mounting the electric resistance wire on the head whereby it will be held in position adjacent to the joint between the lid and the can when the head is in position.

3. A can lid removing device including a head adapted to be applied to the end of a can, a resistance wire, means for mounting the resistance wire on the head, whereby it will be supported adjacent the joint between the lid and the can when the head is in position, and means upon the head for engaging the lid to pull it from the can after the solder has been melted.

4. A can lid removing device including a head adapted to be applied to the end of a can, and an annular electric resistance element carried by the head and adapted to extend around the end of the can for heating the joint between the lid and the can to melt the solder.

5. A can lid removing device including a head adapted to be applied to the end of a can, an annular electric resistance element carried by the head and arranged to extend around the end of the can to heat the joint between the lid and the can to melt the solder, and means on the head for engaging the lid to remove it from the can after the solder has been melted.

6. A can lid removing device including a head formed with a recess adapted to receive the end of a can, an electric resistance element arranged within the recess and extending around the head of the can for heating the joint between the lid and the can to melt the solder.

7. A can lid removing device including a head having a recess adapted to receive the end of a can, an electric resistance element arranged within the recess and extending around the end of the can for heating the joint between the lid and the can to melt the solder, and claw members carried by the head for engaging the lid to remove it from the can.

8. A can lid removing device including a head, a ring applied to the head and cooperating therewith to form a chamber adapted to receive the end of a can, and an electric resistance element fitted in the chamber and arranged to extend around the can to heat the joint between the lid and the can and melt the solder at the joint.

9. A can lid removing device including a head, an insulating plate applied to the head, an insulating ring applied to the plate and cooperating therewith to form a chamber adapted to receive the end of a can, and an electric resistance element arranged within the chamber to extend around the can and heat the joint between the lid and the can to melt the solder at the joint.

10. A can lid removing device including a head, a plate of insulating material applied to the head, a ring of insulating material applied to the plate and having a curved cross section in cooperation with the plate to form an annular recess, a coiled resistance wire arranged within the recess, the edge of the ring having a lip for holding the resistance wire in place, and means on the head for engaging the can lid for pulling it from the can after the solder at the joint has been melted by the heat of the resistance wire.

11. A can lid removing device including a head adapted to be applied to the end of a can, a handle projecting from the head, claws mounted upon the head for engagement with the edge of the lid of the can, insulating members applied to the head and forming a recess for receiving the end of the can, and an electric resistance wire seated in this recess and arranged to extend around the end of the can for heating the joint between the lid and the can to melt the solder.

12. A can lid removing device including a head, an annular resistance element carried by the head and adapted to surround the end of a can to be opened, and means for expanding and contracting the resistance element to adjust it to different sizes of cans.

13. A can lid removing device including a head, an annular resistance element adapted to surround the end of a can to be opened, movably mounted supports for the resistance element, and means for shifting the position of the supports to expand and contract the resistance element to fit different sizes of cans.

14. A can lid removing device including a circular head, an annular resistance element, a series of members supporting the resistance element and slidably mounted upon the head for radial movement thereon, and means for adjusting the said members to expand or contract the resistance element to fit different sizes of cans.

15. A can lid removing device including a circular head, a series of segmental elements slidably mounted upon the head for radial movement, said elements being provided with corresponding flanges, an annular resistance element supported by the flanges and adapted to surround the end of the can to be opened, and means for adjusting the position of the segmental elements to expand or contract the resistance element to fit different sizes of cans.

16. A can lid removing device including a head, an annular resistance element sup-

ported by the head and adapted to surround the end of the can to be opened, a handle for the head, and means actuated by the handle for expanding and contracting the resistance element to fit different sizes of cans.

17. A can lid removing device including a circular head, an annular resistance element adapted to surround the end of the can to be opened, resistance wire supporting elements mounted upon the head for radial movement thereon, a handle for the head, and means actuated by the handle for moving the resistance supporting elements upon the head to expand or contract the resistance element to fit different sizes of cans.

In testimony whereof I affix my signature.

JOHN A. KAYE.