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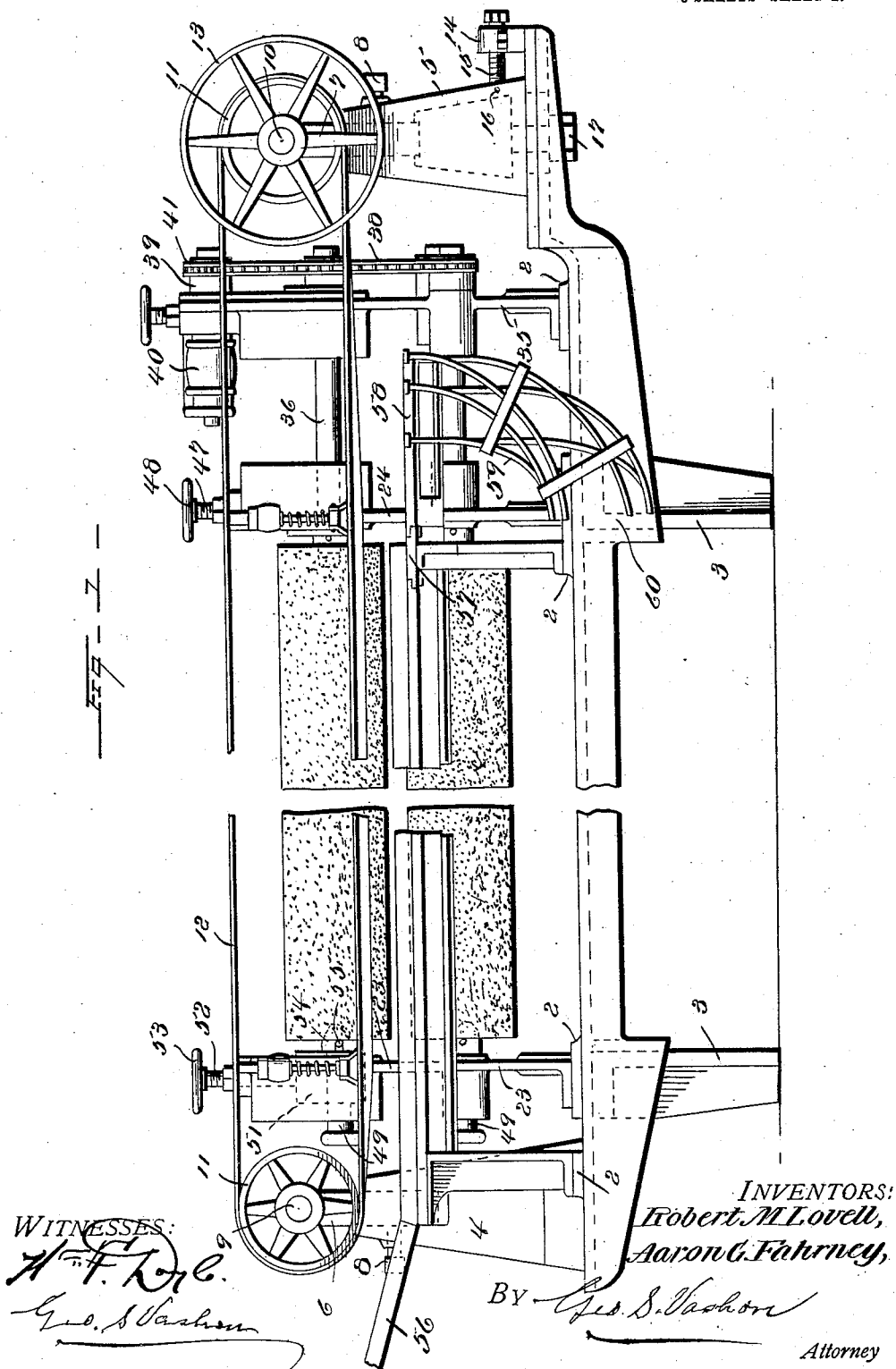
PATENTED JAN. 14, 1908.

R. M. LOVELL & A. G. FAHRNEY.

SOLDER WIPING MACHINE.

APPLICATION FILED AUG. 21, 1905.

3 SHEETS—SHEET 1.



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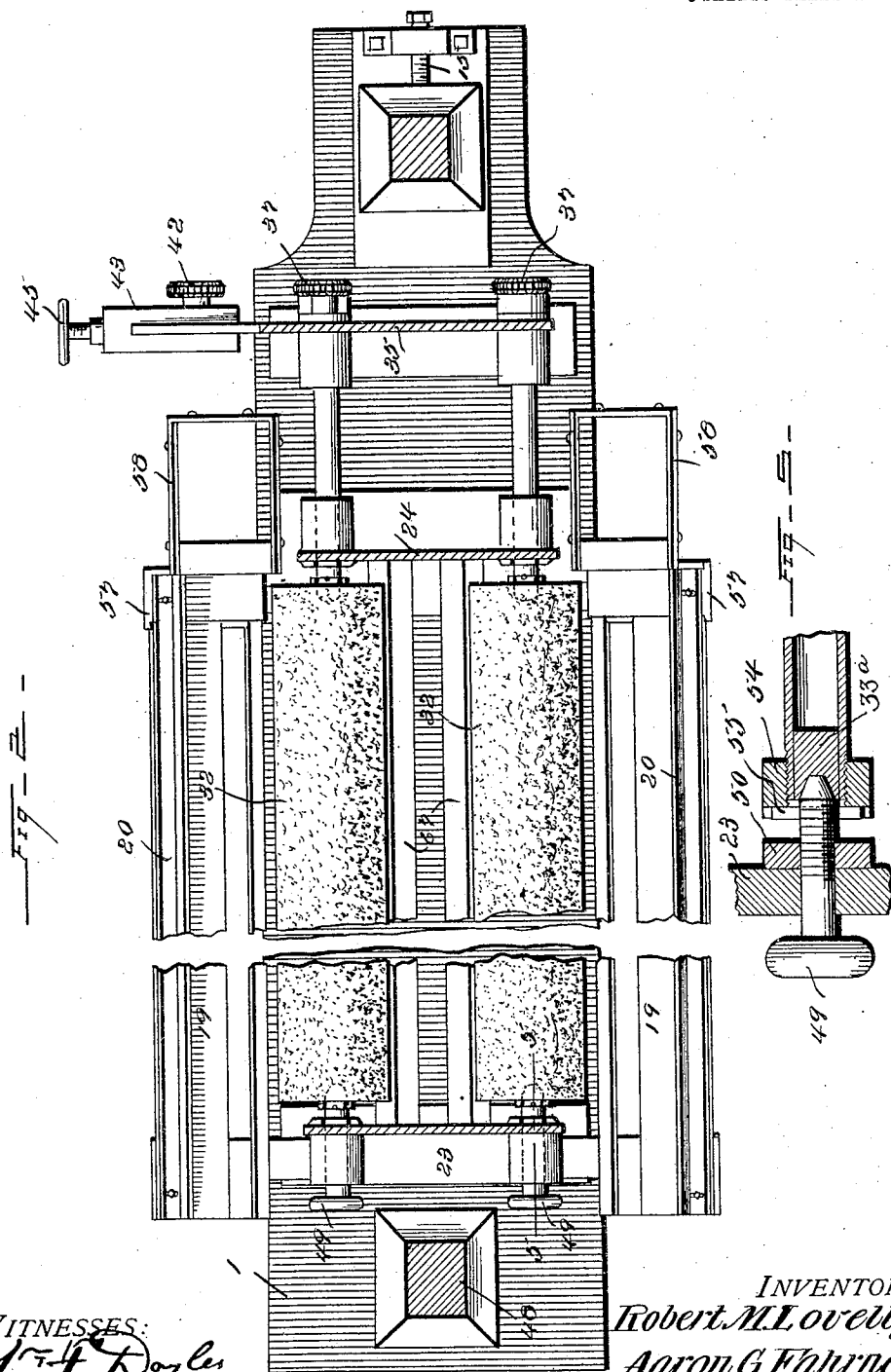
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WITNESSES:

M. F. Doyle
Geo. S. Vashon

INVENTORS:
Robert M. Lovell
Aaron G. Fahrney
By *Geo. S. Vashon*
Attorney

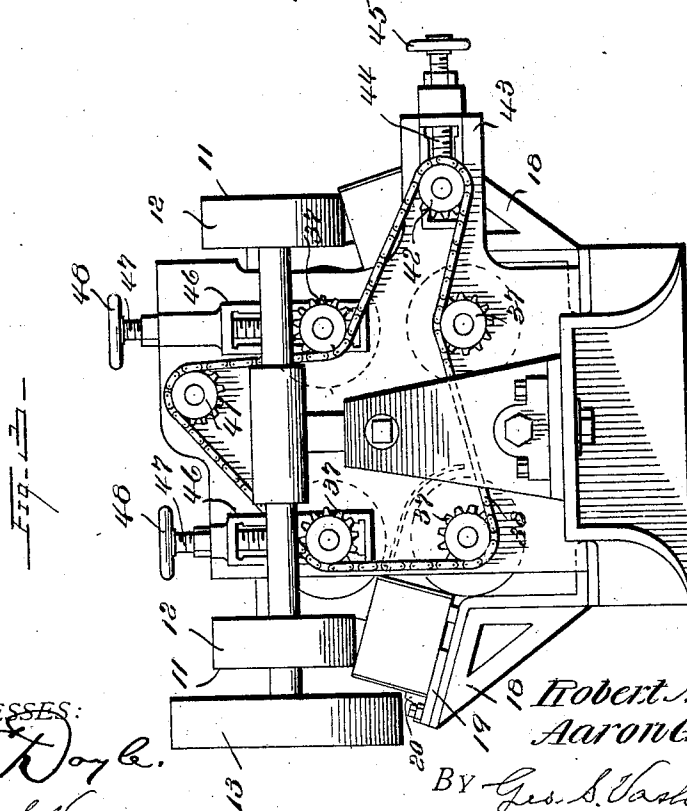
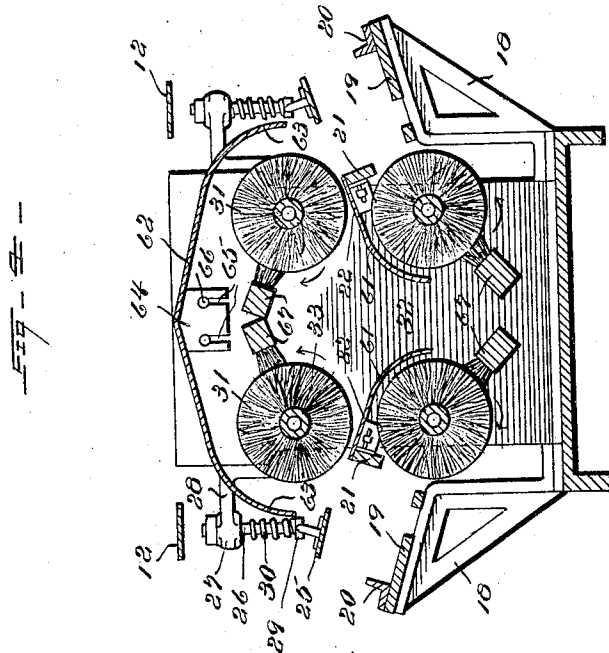
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3 SHEETS—SHEET 3.



WITNESSES:

H. F. K. Doyle
George S. Washburn

INVENTORS:
Robert M. Lovell, and
Aaron G. Fahrney,
By *Geo. S. Washburn*
Attorney

UNITED STATES PATENT OFFICE.

ROBERT M. LOVELL, OF BALTIMORE, AND AARON G. FAHRNEY, OF HIGHLANDTOWN,
MARYLAND.

SOLDER-WIPING MACHINE.

No. 876,650.

Specification of Letters Patent.

Patented Jan. 14, 1908.

Application filed August 21, 1905. Serial No. 275,034.

To all whom it may concern:

Be it known that we, ROBERT M. LOVELL and AARON G. FAHRNEY, citizens of the United States, residing at the city of Baltimore and Highlandtown, respectively, in the county of Baltimore and State of Maryland, have invented new and useful Improvements in Solder-Wiping Machines, of which the following is a specification.

This invention relates to can manufacture and particularly to a machine for wiping off or removing surplus solder from the joints of cans at the ends.

The machine is especially useful as an intermediary or adjunct with respect to an end soldering machine and floater or cooling belt, or other can feeding or finishing mechanisms, but is not in the least dependent for its operation and practice on any other machine and may be utilized to perform its function in an independent or distinct manner. The surplus solder is fully removed from the can ends while in soft condition by the machine and deposited in suitable receptacles for further use, thus materially reducing the cost of can manufacture, particularly in large plants or factories.

The invention consists in the preferred organization of elements which will be more fully hereinafter set forth.

In the drawings, Figure 1 is a side elevation of a machine embodying the features of the invention and shown broken at an intermediate point. Fig. 2 is a horizontal section taken on a plane above the tracks or tables along which the cans roll. Fig. 3 is an end elevation of the machine shown partially broken away. Fig. 4 is a transverse section taken through the wipers. Fig. 5 is a longitudinal vertical section on the line 5—5 of Fig. 2 illustrating on an enlarged scale means for separating the cylindrical wipers from the machine.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The bed-plate or bench 1 of the machine is of such shape and dimensions as to effectively support the mechanisms disposed thereon and is provided at intervals with bosses 2 or other equivalent projections to receive the feet or lower extremities of the several up-rights, which will be more fully hereinafter set forth. Suitable legs 3 are also secured to the bed-plate 1 and may be of any length.

The preferred form of the machine has a dual capacity or operation at opposite sides to adapt it to operate upon a greater number of can ends fed thereto, but it will be understood that the same principle might be embodied in a single feed or conveying mechanism. In other words, instead of having two feeding mechanisms at opposite sides, a simplified form of the machine may be constructed with a single feeding mechanism without departing from the spirit of the invention to render it convenient for use in small plants or factories.

At opposite extremities of the bed-plate 1 are pillars 4 and 5 from which rise vertically adjustable supports 6 and 7 held in positive position by set-screws 8. The supports 6 and 7 have suitable bearings or journals for shafts 9 and 10 to which belt pulleys 11 are keyed or otherwise fastened. The pulleys 11 have fabric belts 12 trained thereover; fabric being preferred in the construction of said belts by reason of superior durability. The belts 12 constitute the feeding elements or means for conveying the cans lengthwise of the machine and are unitedly driven through the medium of a power wheel or pulley 13 secured on the shaft 10. The necessary degree of tautness is given to the belts 12 through the medium of adjustment means connected to the pillar 5 and consisting of a lug or projection 14 rising from the adjacent end of the bed-plate 1 and carrying an adjusting screw 15 having its inner end secured by a pin 16 to the said pillar. The pillar 5 is prevented from having movement after adjustment by a set bolt 17 extending upwardly through the bed-plate 1 into the base of the pillar, as many of these bolts being used as found necessary.

Directly beneath the belts 12 opposite brackets 18 are secured, as clearly shown by Figs. 3 and 4, and each bracket has an upper downwardly inclined table or base-rest 19 secured thereon, the upper extremities of the said brackets being correspondingly inclined. The brackets are situated at opposite extremities of the machine on both sides of the latter and the table or support in each instance engages a pair of the brackets. On the outer edge portion of each table or support an angular guard 20 is mounted and is adjustable inwardly and outwardly with respect to the center of the machine over the table or support. At an

elevation above the tables or supports 19 stops 21 are adjustably held through the medium of slotted knees or angle plates 22 secured to wiper holding uprights 23 and 24 rising from the bed-plate 1. The stops 21 consist of elongated strips disposed at outward angles of inclination, or in planes at right angles to the planes of the tables or supports 19 and are adapted to contact with the inner ends of the cans fed over the tables or supports at a distance inwardly from the peripheries of the cans.

The belts 12 have their lower portions normally above the planes of the stops 21 and are intended to contact with the can bodies. Owing to the inclination of the cans as they are fed longitudinally of the machine, it is necessary to give the portions of the belts engaging the can bodies an inclination corresponding to the latter, and for this purpose belt-controllers or incliners are used and consist of lower heads or tension bars 25 which, are swiveled or movably attached to the lower ends of pendants 26 slidably held in sockets 27 at the outer extremities of brackets 28 secured to the uprights 23 and 24. The lower ends of the pendants 26 are formed with shoulders 29 and between the said shoulders and the sockets springs 30 surround the pendants and hold the latter depressed under yielding pressure. The heads 25 swing inwardly and outwardly and while they have a sufficiently strong bearing on the lower portions of the belts 12 to hold the latter in contact with the can bodies, they readily yield to permit the several cans to unobstructedly pass thereunder. The belts 12 have their lower portions depressed by the heads 25 below the lower planes of rotation of the pulleys 11, sufficient slack being permitted to exist in the belts to obtain this necessary depression thereof between the pulleys controlling the operation of the same. The brackets 28 supporting the belt-controllers or depressers project outwardly between the upper and lower portions of the belts as clearly shown by Fig. 4 and do not interfere with the operation of said belts or have any tendency to disengage them from the pulleys 11.

Between the uprights 23 and 24 upper and lower pairs of wipers 31 and 32 are held in both transverse and vertical alinement, said wipers consisting preferably of tubular spindles or cores 33 having a suitable soft brushing material 34 secured thereon and cut circularly to give each wiper a true cylindrical contour. The stops 21 are located between the opposite vertically-alined wipers, the latter projecting outwardly beyond said stops and the uprights carrying the wipers to effectively engage the ends and inner portions of the bodies of the cans to thoroughly remove the surplus solder at the seams or joints. The upper and lower wipers are, as best shown in Figs. 3 and 4, arranged one directly over the

other, and separated so that the upper wiper is in position to wipe against the cylindrical body of the can and the circumference of the can closure; and the lower wiper is arranged to operate against the flat surface of the can closure, at a point of the can diametrically opposite that against which the upper wiper is working. This arrangement enables sufficiently large wipers to be employed to effectually clean surplus solder from the can. The upper wiper is adjustable with relation to the lower one to accommodate cans of different diameter.

Adjacent to the upright 24 is a gear supporting upright 35 which also rises from the bed-plate 1 and bearing in suitable boxes in the said uprights 24 and 25 are driving spindles 36 which have their inner ends fitted in the adjacent ends of the tubular cores or spindles 33 of the wipers 31 and 32. The ends of the cores 33 engaged by the spindles 36 are so shaped as to rotatably lock with the said ends of the spindles 36, as will be hereinafter set forth.

The outer ends of the driving spindles 36 adjacent to the outer face of the upright 35 have sprocket wheels 37 secured thereon and trained thereover is a chain belt 38, the latter being applied to the sprocket wheels in such manner as to impart a proper direction of rotation thereto as indicated by the arrows in Fig. 4, or so that the wipers will all rotate outwardly. In the upper extremity of the upright 35 a stub shaft 39 is mounted and extends longitudinally of the machine, and on the inner extremity of said stub shaft is a power-receiving pulley 40. On the outer extremity of the stub shaft 39 a sprocket wheel 41 is secured and the chain belt 38 also engages this latter sprocket wheel. The belt 38 is tightened through the medium of a sprocket wheel 42 adjustably held in a lateral extension 43 of the upright 35 and controlled as to its adjustment by a screw 44 having a hand-wheel or analogous device 45 on its outer end. The belt 38 after passing over the sprocket wheel 37 of the wiper 32 nearest to the said belt tightening means surrounds the sprocket wheel 42, as shown by Fig. 3. The bearings for the sprocket wheels 37 of the upper wipers 31 are vertically adjustable in guides 46 and are movable through the medium of screws 47 provided with hand-wheels 48 on their upper ends. The wipers are all readily separable from the ends of the driving spindles 36 with which they engage so that they may be repaired or replaced by other like devices after they have become seriously worn and are unfit for further use. The devices for controlling the separation of the wipers and their after replacement projected through the upright 23 and consist of screw pins 49 normally held against movement by set collars 50 surrounding the same and interposed between the adjacent ends of

the wipers and the uprights (see Figs. 2 and 5). The pins 49 are held in suitable boxes, or bearings, and the upper boxes or bearings 51 as shown by dotted lines in Fig. 1, are vertically adjustable through the medium of screws 52 connected thereto and having hand wheels 53 on their upper ends, as clearly shown by Fig. 5, the inner ends of the pins 49 being fitted in plugs 33^a immovably held in the adjacent ends of the tubular cores 33. Nuts 54 are applied over the ends of the cores in which the plugs 33^a are fitted and in suitable slots therein, keys 55 are fitted to maintain a connection between the cores and the screws and provide for a combined rotation of the screws and cores, the screws providing the journals for the cores. This simple construction, by means of which the wipers are separably held in the machine, is but one of many forms of devices for this purpose, the essential feature being the slidable pins 49 which are released or held in positive engaging position with respect to the wipers by loosening or tightening the collars 50. This same construction is present in the connections between the spindles 36 and the opposite ends of the cores.

At one end of each of the tables or supports 19 is an inclined feeding chute 56 which has its inner terminal in alinement with said table, the cans being deposited in said chute, which may be of any suitable length and gravitate towards and over the table. At the opposite end of each table or support and separably connected thereto by a coupling 57 is what is known in the art as a "twister drop" consisting of an upper open head 58 in communication with the table or support and alined at its outer portion with the guard 20, and from which an open chute 59 of spiral form depends and composed of a plurality of side and end wires leading to a lower outlet 60 at the bottom of the machine or to one side of the outer edge of the bed-plate 1. The function of this "twister drop" is to dispose each can rolled or fed thereinto by the portion of the belt 12 in engagement therewith in an upright position when it reaches the outlet 60, and from the latter the can passes to a suitable conveyer or floater for further treatment, or if completed, it may be withdrawn or removed from the floater at a suitable distance from the machine.

It is obvious that the solder removed by the operation of the wipers will be thrown upwardly by centrifugal action and be forced above the machine and wasted. To obviate this disadvantage inwardly projecting guards 61 are disposed over each of the lower wipers 32 and held by the stops 21 and adjustable and removable with the latter. Above the wipers 31 is a continuous guard or shield 62 which forms an upper cap and has outer depending ends 63 projected outwardly beyond the wipers a sufficient distance to be effective

in performing their intended functions. The guard or shield 62 has a central hanger plate or member 64 secured thereto at each end and vertically slotted as at 65 to removably fit over pins 66 projecting from the inner opposing sides of the uprights 23 and 24. The guards or shield 61 and 62 extend full length over the wipers 31 and 32 between the uprights 23 and 24 and any of the surplus solder that may be drawn upwardly against the same is caused to gravitate and pass down with the remaining solder gathered by the wipers through the center of the machine and is deposited in suitable receptacles removably placed on the bed plate 1 under the wipers.

Without some means to relieve the wipers of the solder gathered thereby from the cans, it is also obvious that considerable trouble would ensue in keeping the said wipers in practical operating condition and also in conveniently accumulating the solder for further use. To overcome this disadvantage oppositely projecting cleaners 67 having stiff bristles continually engaging the wipers and disposed at an angle with relation to the latter are used, the said cleaners operating to scrape off or release the solder held by the wipers and cause such released solder to gravitate between the wipers and the lower cleaners. It will be seen in Fig. 4 that the bodies of the lower cleaners are inclined inwardly towards each other in a downward direction, and form a chute through which the gravitating solder may readily pass, the inner extremities of the bodies of the lower cleaners being spaced far enough apart to avoid obstructing the drop of the solder into the receptacle or receptacles below.

From the foregoing description it will be understood that as the cans are moved longitudinally over the tables or supports 19 and continuously rotated by the lower portions of the belts 12 held in contact with the bodies thereof during movement of the cans over the supports or tables 19, the wipers 31 and 32 are continuously engaging different portions thereof adjacent to the inner ends and thereby the surplus solder is effectively removed particularly in view of the fact that the inner end seams or joints of the cans are engaged at opposite points or above and below the seams or joints. The cans are firmly held against the stops 21 by the guards 20 and any tendency to displacement by jumping is prevented through the medium of the lower portions of the belts 12 pressed downwardly thereon.

The adjustment of the upper wipers 31, the stops 21 and the guards 20 will adapt the machine for operating on cans having various dimensions, and in changing the adjustment of this machine to compensate for different sizes of cans, the "twister drops" will also be removed and replaced by others hav-

ing the proper dimensions to receive the cans to be treated.

The machine may be disposed adjacent to one extremity of a soldering machine and the cans taken from the latter while the solder is in moist condition and immediately subjected to the operation of the wipers. The position of the machine with respect to other mechanism is not, however, essential and aside from its preferred use in removing solder from a can it may be employed for other purposes to which it may be found applicable.

Having thus described the invention what is claimed as new, is:

1. In a solder wiping machine, the combination of opposite tables, feeding belts arranged over the tables, inner pairs of wipers between the tables, and wipers being spaced apart from each other, and shields over the wipers.

2. In a solder wiping machine, the combination of opposite tables, feeding means arranged over the tables, and upper and lower rotary wipers between the tables, the upper wipers being adjustable relatively to the lower wipers to accommodate cans of different diameters.

3. In a solder wiping machine, the combination of opposite tables, rotary wipers between the tables, cleaners engaging the wipers, and feeding means arranged over the tables.

4. In a solder wiping machine, the combination of opposite tables, feeding devices over the tables, pairs of rotary wipers between the tables, adjustable bearings for a portion of the wipers, and means for vertically adjusting the feeding devices.

5. In a solder wiping machine, the combination of opposite tables, feeding means arranged over the said tables, and rotary wipers between the tables, each of the wipers at one end having a releasing device to permit them to be removed.

6. In a solder wiping machine, the combination of an inclined can-supporting table, a rotative wiper disposed substantially parallel with the table, an endless belt for rolling cans along the table, and means for inclining a portion of the belt relatively to the angular position of the cans.

7. In a solder wiping machine, oppositely disposed inwardly inclined tables, belts arranged over said tables and having depressing means operating therewith, upper and lower pairs of wipers rotatably positioned adjacent to the inner portions of the tables, and means for operating the several parts.

8. A solder wiping machine comprising means for feeding cans in an inclined position, said feeding means including a belt, means for wiping the cans as they are fed, and freely movable means for automatically inclining

a portion of said belt to conform to any angle of inclination said cans may assume while being fed.

9. A solder wiping machine comprising an inclined table, a wiper disposed adjacent said table, an endless belt for feeding cans along said table, and freely movable means for automatically inclining a portion of said belt to conform to any angle of inclination said cans may assume while being fed.

10. A solder wiping machine comprising an inclined table, a wiper disposed adjacent said table, an endless belt for feeding cans along said table, and a freely supported shoe for automatically inclining a portion of said belt to conform to any angle of inclination said cans may assume while being fed.

11. In a solder wiping machine, the combination of oppositely disposed inwardly inclined tables, depressible belts arranged over the tables, inner pairs of rotary wipers co-operating with the tables, and means for actuating the belts and wipers.

12. In a solder wiping machine, the combination of opposite inwardly inclined tables having other guards, depressible belts disposed over the tables, pairs of rotary wipers co-operating with the inner portions of the tables, stops above the inner portions of the tables and between the pairs of wipers, and mechanism for actuating the belts and wipers.

13. In a solder wiping machine, the combination of opposite inwardly inclined tables, belts over the tables, pairs of rotary wipers at the inner portions of the tables, shields over the wipers, and cleaners engaging the wipers.

14. In a solder wiping machine, the combination of oppositely inclined tables, depressible feeding means over the tables, pairs of rotary wipers between the tables, adjustable bearings for the wipers, and means for adjusting the tension of the feeding mechanism.

15. In a solder wiping machine the combination of oppositely inclined tables, depressible feeding devices over the tables, pairs of rotary wipers between the tables, adjustable bearings for the wipers, and means for vertically adjusting the feeding devices.

16. In a solder wiping machine, the combination of oppositely inclined tables having adjustable guards on their outer portions, adjustable feeding devices arranged over the tables, adjustable stops over the inner portions of the tables, rotary wipers disposed in pairs between the tables, a portion of the wipers being adjustable, and means for actuating the several parts.

17. In a solder wiping machine, the combination with inclined means for supporting and feeding cans, of rotary wipers located to operate on the can end at diametrically opposite points thereof, one of the wipers being

arranged to work against the cylindrical surface at the end of the can and the other to work against the face of the can closure.

18. In a solder wiping machine, the combination with inclined means for supporting and feeding cans, of rotary wipers located to operate on the can ends at diametrically opposite points thereof, one of the wipers being arranged to work against the cylindrical surface at the end of the can and the other to work against the face of the can closure, and means for adjusting one of the wipers relatively to the other to accommodate cans of various diameters.

19. In a solder wiping machine, the combination of inclined supporting and feeding means for cans, upper and lower pairs of wipers to engage the opposite portions of the periphery of a can end, and flexible automatic inclining means frictionally to engage a can and longitudinally move the same.

20. In a solder wiping machine, the combination with inclined means for supporting and feeding cans, of pairs of upper and lower rotary wipers cooperating with the said means and spaced horizontally to permit solder removed from the can ends to pass downward between the said pairs of wipers.

21. In a solder wiping machine, the combination of an inwardly inclined table for supporting cans, a conveying belt disposed over the table, rotary wipers adjacent to the inner edge of the table and above and below the same, means for removing solder from portions of the wipers, and shielding means disposed over the wipers.

22. In a solder wiping machine, the combination of an inclined can supporting table, a longitudinally arranged rotative wiper disposed substantially parallel with the table,

an endless belt for rolling cans along the table, and pivoted means for inclining a portion of the belt relatively to the angular position of the cans.

23. In a solder wiping machine, the combination with a downwardly and inwardly inclined can support, of means for rolling the cans over the support, a long cylindrical wiper substantially parallel with the inner lower edge of the support and engaging the outer surfaces of the cans as the latter move over the support, and yielding means engaging the upper portions of the cans for holding them downward in an inclined position.

24. In a solder wiping machine, the combination with a downwardly and inwardly inclined can support, of an endless conveyer for rolling the cans along the support and a pair of rapidly rotative cylindrical wipers located adjacent to the inner lower edge of the support and projecting above and below the same, and having yielding surfaces to engage the outside solder-coated cylindrical surface of a can head flange and the can body, and also the solder coated flat or disk surfaces of the can-heads as the cans are rolled along the support and to throw the solder inward to the center of the machine, the wipers having their axes parallel to the support, means for rotating the wipers at a high speed, and yielding means engaging the upper portions of the cans for holding them down in inclined position on the support.

In testimony whereof, we affix our signatures in presence of two witnesses.

ROBERT M. LOVELL.

AARON G. FAHRNEY.

Witnesses:

WILLIAM E. SCHUL,

H. C. MATHIEU.