(No Model.) 2 Sheets—Sheet 1.

C. B. McDONALD.

FLUXING DEVICE FOR SQUARE END CANS.

No. 506,183. Patented Oct. 3, 1893.

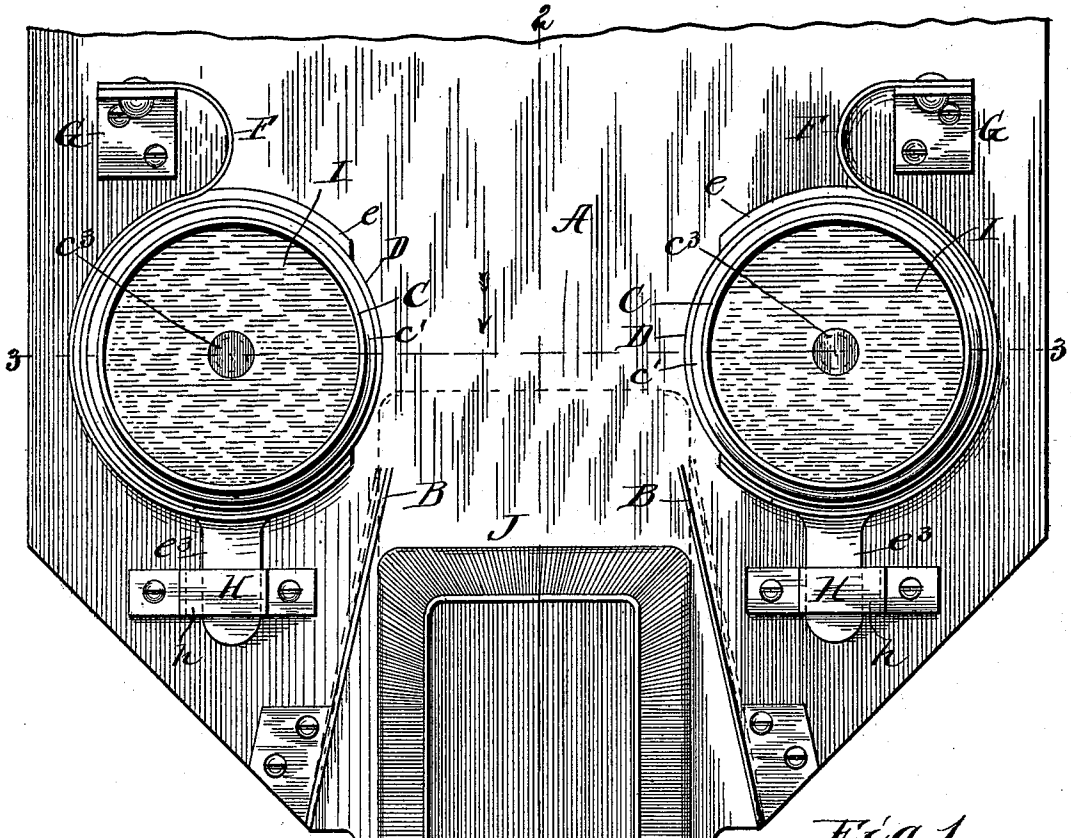

Fig 1

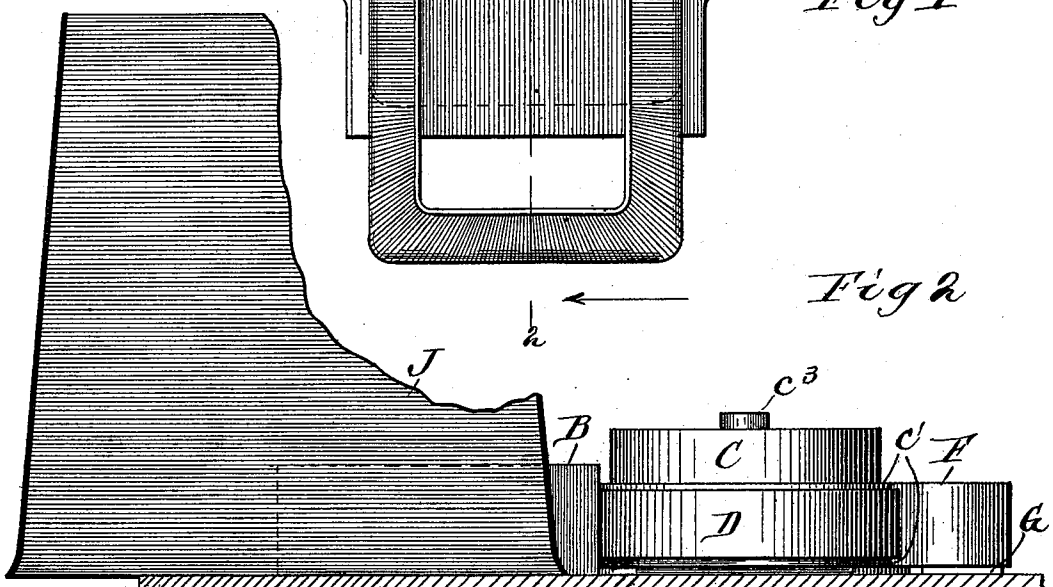

Fig 2

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(No Model.) 2 Sheets—Sheet 2.

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FLUXING DEVICE FOR SQUARE END CANS.

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Fig 3

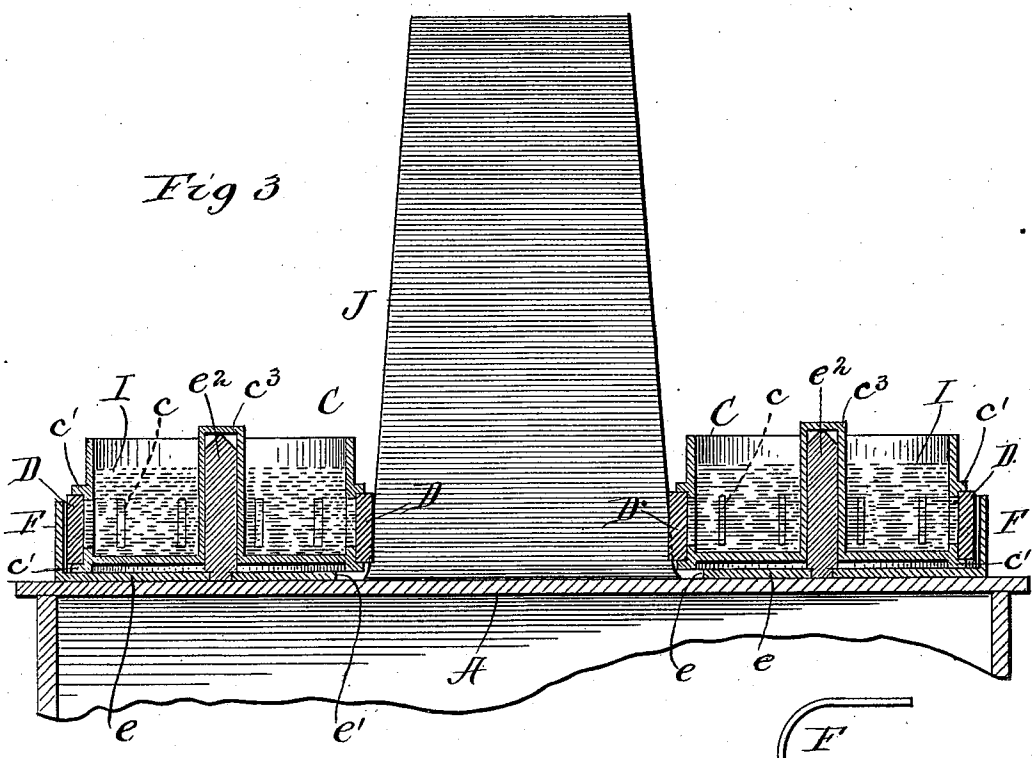


Fig 4

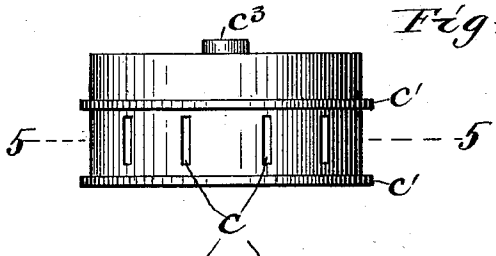
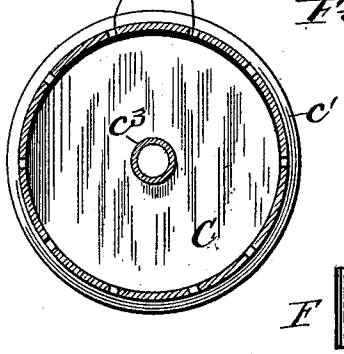


Fig 5



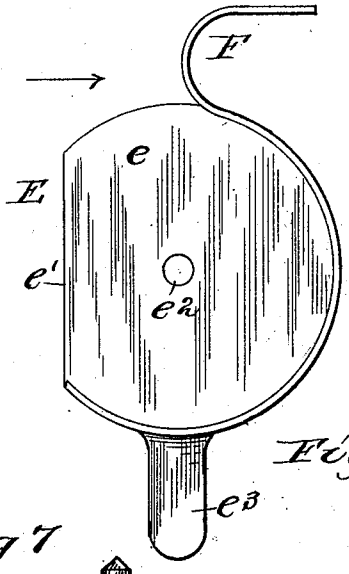
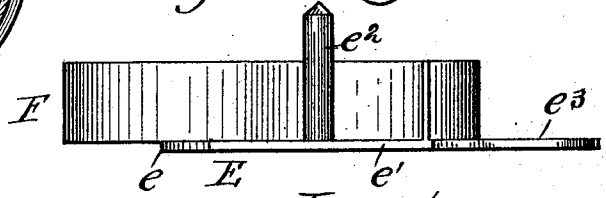


Fig 6

Fig 7



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UNITED STATES PATENT OFFICE.

CHARLES B. McDONALD, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JONATHAN O. ARMOUR, OF SAME PLACE.

FLUXING DEVICE FOR SQUARE-END CANS.

SPECIFICATION forming part of Letters Patent No. 506,183, dated October 3, 1893.

Application filed January 31, 1893. Serial No. 460,473. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. McDONALD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fluxing Devices for Square-End Cans, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a fluxing device embodying my invention; Fig. 2, a vertical section of the same taken on the line 2. 2. of Fig. 1; Fig. 3, a similar section taken on the line 3. 3. of Fig. 1, looking in the direction of the arrow thereon; Fig. 4, a side elevation of one of the flux cups detached; Fig. 5, a plan section of the same taken on the line 5. 5. of Fig. 4; Fig. 6, a plan view of one of the cup-holders detached; and Fig. 7, a side elevation of the same looking in the direction of the arrow in Fig. 6.

My present invention relates to devices for applying flux to square end cans or cans with rectangular ends, this fluxing operation being the usual one preparatory to soldering the ends of the can to the body.

There are serious difficulties in the way of fluxing cans of rectangular form by machinery; and so far as I know, cans of this shape have heretofore been fluxed by dipping. The object of my present invention is to obviate these difficulties and provide mechanism whereby square-end cans may be fluxed by mechanism and the operation effected automatically, either wholly or in part.

The invention consists of two flux receptacles carried by yielding holders and provided with means whereby the required flux is spread along the edge joints of the can as the end thereof is carried along between these holders, either by hand or a suitable automatic carrier.

The mechanism illustrated by the drawings, in which I have embodied my invention in one practical way, I will now describe in detail, and in claims following this description, I will designate more definitely the particular improvements which I believe to be new and desire to secure by Letters Patent.

In the drawings, A represents a platform or table of a convenient height for an attendant to place cans thereon and push them through the fluxing devices, which are mounted on the table. Only a portion of the table is shown in the drawings, this portion being the receiving end on which the fluxing devices are mounted, and on which the cans are placed before the fluxing operation; the remainder of the table is broken away, it being simply a plain bed for supporting the cans. At the extreme front end of this table, two elastic guides, B, are mounted, being fastened at their front ends to the table, from which point they extend inward and at the same time incline toward each other, being unattached to anything except at their front ends. These guides, as arranged on the table, are upright strips, as seen in Fig. 2; and in their normal position are intended to provide an opening at their inner ends somewhat less than the width of the can end to be passed between them. At the inner end of these elastic guides, and on each side thereof, receptacles, C, for holding flux, are arranged. As shown in the drawings, these receptacles are in the shape of round cups which are mounted on suitable yielding holders or supports, as will be described presently. In the walls of these cups, just a little above the bottom, there are cut a series of narrow upright slots, *c*. On the outside of the cups there are two circumferential ribs, *c'*, arranged above and below the series of slots; and a band, D, of felt, or any other fabric adapted to absorb and retain the liquid flux, is fitted around the outside of the cups between these two ribs. The cups are also provided with a tubular stem, c^3, rising centrally from the bottom and open at its lower end, but closed at the upper end, as seen in Fig. 3. These cups are mounted on supports or holders, E, which are arranged on each side of the table just at the ends of the elastic guides. The holders consist of a simple disk, *e*, with a small section cut away on one side so as to leave a straight edge, *e'*. From the center of the disk rises a short post or pin, e^2, which is adapted to enter the tubular stem of the cups, so that the latter are supported thereby and at the same time are free to turn thereon, even with a slight force applied for this purpose. The upper ends of the posts, e^2, are

preferably conical so as to provide a conical bearing for the cups, as seen in Fig. 3, which construction renders the revolution of the cups easy on their supports. These cup supports or holders are secured to the table by means of springs, F, which, as shown in the drawings, are of the ordinary flat spring form fastened at one end to small brackets, G, bolted to the table. From the point of fastening, these springs are curved inward and then outward toward the front end of the table a short distance, and then fastened to the disks, *e*, of the supports. As shown in the drawings, the flat strip of the spring is not terminated at its junction with the disk, but is carried around on the outer edge of the latter to the front thereof and a little beyond, as seen in Figs. 1 and 7, being secured in any suitable way to the edge of the disk so as to make a rigid upright flange thereon, as seen in Fig. 7, which serves for the protection and security of the cup that it surrounds. This flange, if desired, may be made a separate piece from the spring. The disks, *e*, of the holder are provided at their front edges with projecting tongues, e^3, which are passed under keeper loops, H, secured to the table. The raised or loop portion, *h*, of these keepers is somewhat longer than the width of the tongues, so as to provide for a certain free lateral movement of the latter, as seen in Fig. 1. The cup holders, as already explained, are secured to the table only by the springs, and obviously the latter will permit a lateral movement of the holders within the limits of the said loops. The cups themselves are not secured on their upright journal supports, but are left entirely free to turn thereon. The relative construction and arrangement of the parts is such that in normal position of the cup holders there will be provided a space between the inner portions of the cups a little less than the width of the can end, upon which they are intended to operate, as seen in Fig. 1. The arrangement is also such that the clipped edges of the holder disks will be on the inside of each and facing each other, as seen in Fig. 1. This clipping of the disks is to prevent their contact with a can in passing through between them, so that it will strike only the fluxing bands on the outside of the cup, which project slightly beyond the straight edges at the clipped sides of the disk, as seen in Fig. 1.

The operation is as follows: The cups on their upright journals are nearly filled with liquid flux, I, as seen in Fig. 3. The can, J, is then placed by an attendant on the table within the elastic guides, B, and is then forced forward by said attendant between the said guides into the space between the two fluxing cups. The liquid flux passes through the slots in the sides of the cans in contact with the fabric of the bands on the outside thereof, and is absorbed by the latter until they are more or less saturated therewith. The can is pushed along by the attendant through the space between the cups, and as this space is a little less than the width of the can, the bands on the cups will be brought in contact with the edges of the cans at the joints between the body and end, and will be held up against the same with an elastic pressure, the cup holders yielding laterally on their springs sufficiently to permit the can to be passed through between the cups. The frictional contact of the cup bands with the can causes the cups to turn upon their upright journals as the can is pushed along between them; and the pressure of the bands upon the edges of the can, caused by the tension of the holder springs, squeezes the liquid flux therefrom and spreads it along the can as it is pushed through between the cups, so that the can, as it is delivered from contact with the cups at the rear thereof, is suitably fluxed on two opposite edges. It will be understood that there must be a pair of cups for the different sides of a can, where the latter are made oblong, as illustrated in the drawings; and the fluxing is completed by passing the can first through one set and then through the other. But where the difference in dimensions is not great, one set of devices may answer for all sides of the can, the elasticity of the guides and cup holders being sufficient for this purpose.

If desired, it is obvious that a mechanical feeding device may be employed in connection with the table, whereby the cans may be carried automatically in through the space between the fluxing cups. This is hardly desirable, however, because there must be several pairs of cups for the reason already stated, and this would necessitate a multiplication of feeding devices attended by an increase of expense and some complication in arranging driving mechanism therefor.

Changes may be made in some of the parts, herein described and shown, and the construction and arrangement of the parts here specified; provided the principle of operation and the final result remain the same. I wish it to be understood that I contemplate such changes as come within the field of my invention.

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

1. In a mechanism for fluxing square-end cans, a pair of freely revolving flux receptacles provided with a series of side slots, in combination with a band of suitable absorbent material arranged around the outside of the receptacles over the said slots and adapted to press against the straight edges of a can passing along through the space between said receptacles, substantially as described.

2. In a mechanism for fluxing square end-cans, a pair of fluxing receptacles provided with a series of side slots, in combination with a band of suitable absorbent material arranged around the outside of said receptacle over the said slots, a pair of holders mounted

on their support by an elastic connection which permits lateral yielding of said holders, and having upright journals on which the fluxing receptacles are mounted and are free to revolve, whereby the said holders are adapted to yield laterally and permit the cans to pass between them, and the fluxing bands are pressed firmly against the cans, substantially as described.

3. In a mechanism for fluxing square end cans, a pair of freely revolving flux cups provided with exterior bands of flux absorbing material, in combination with laterally yielding supports on which said cups are mounted, and elastic guides within which the cans are received and directed between the fluxing cups, substantially as described

4. In a mechanism for fluxing square end cans, the revolving flux cups, C, provided with a series of side slots, c, and exterior ribs, c', in combination with bands, D, of suitable absorbent material arranged on the outside of the cups between the said ribs and covering the said slots, and journal supports on which said cups are mounted and free to turn by the friction of a can passing between them and in contact with the fluxing bands, substantially as described.

5. In a mechanism for fluxing square end cans, the holders, E, provided with upright journal posts, e^2, in combination with springs, F, connecting said holders to their supports; the flux cups, C, having an upright tubular stem, c^3, for the journal post, e^2, and provided with side openings for the escape of flux, an absorbent band, D, surrounding said cups over the openings, and a retaining device arranged to limit the yielding lateral movement of the holders, E, substantially as described.

6. In a mechanism for fluxing square-end cans, the flux cups, C, in combination with the cup holders, E, on which said cups are mounted and free to revolve, and provided with projecting tongues, e^3, springs, F, connecting said holders with their support, and keeper loops, H, arranged to embrace said tongues, substantially as described.

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Witnesses:
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W. C. CORLIES.