March 29, 1927. D. C. HANSEN 1,622,781

SOLDERING FLUX AND CEMENT APPLYING DEVICE FOR CAN MAKING MACHINES

Filed June 9, 1926 2 Sheets-Sheet 1

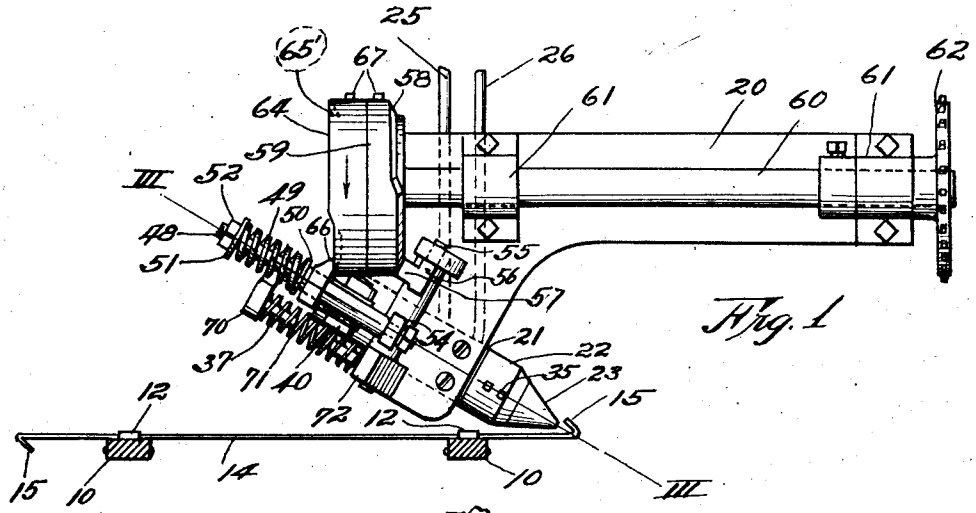


Fig. 1

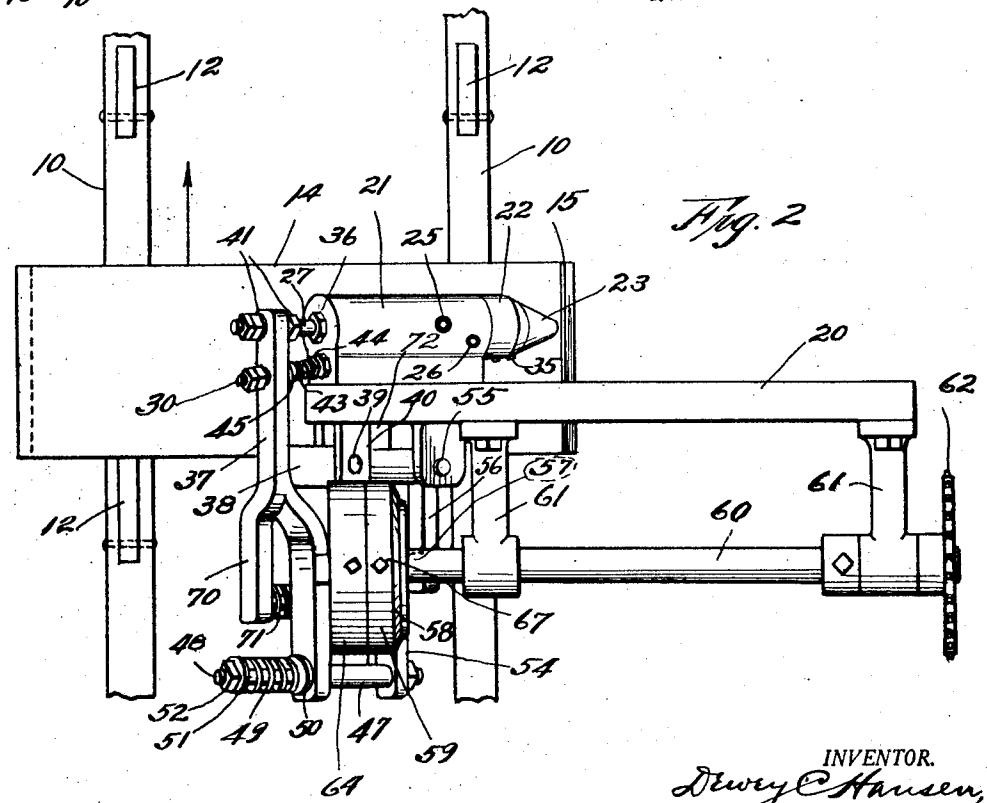


Fig. 2

Witness:

R. C. Hamilton

INVENTOR.

Dewey C. Hansen,

BY Thompson & Grant.

ATTORNEYS.

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D. C. HANSEN

SOLDERING FLUX AND CEMENT APPLYING DEVICE FOR CAN MAKING MACHINES

Filed June 9, 1926 2 Sheets-Sheet 2

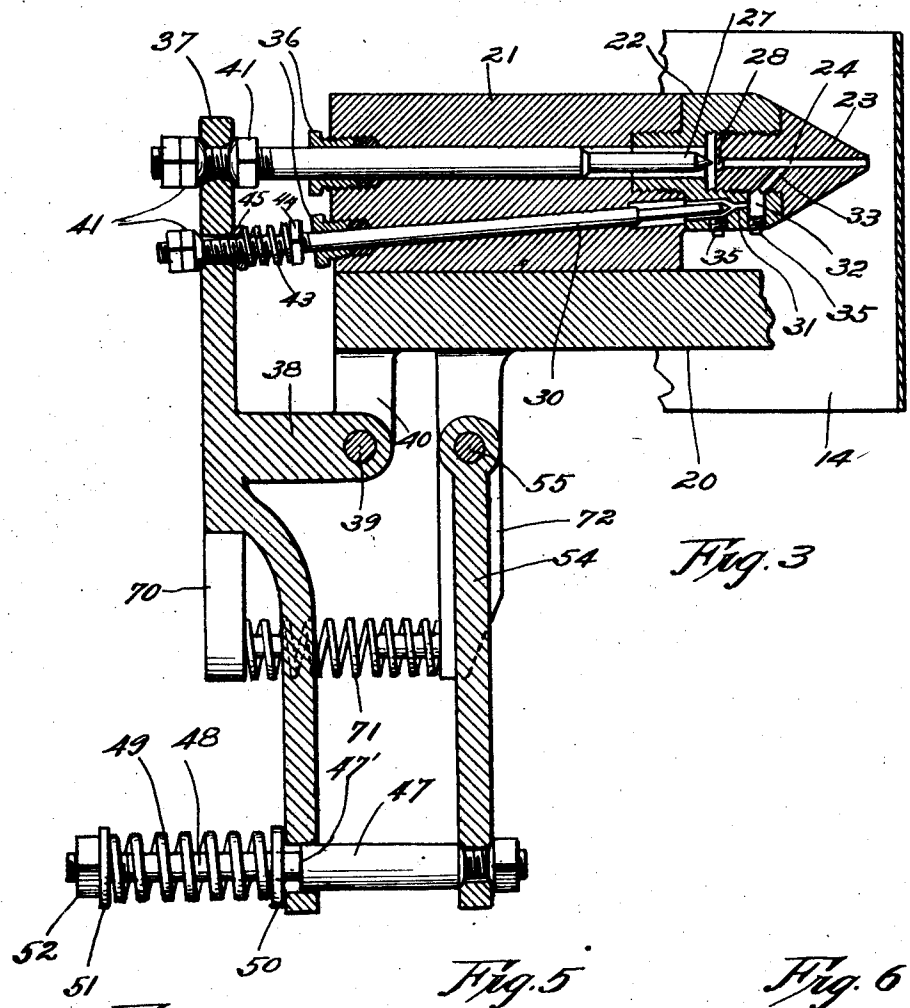


Fig. 3

Fig. 4

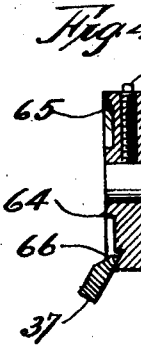


Fig. 5

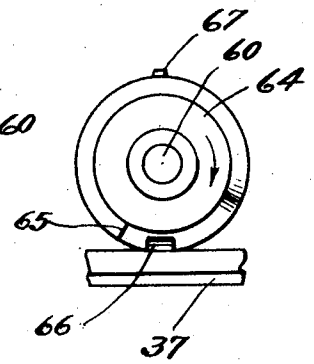
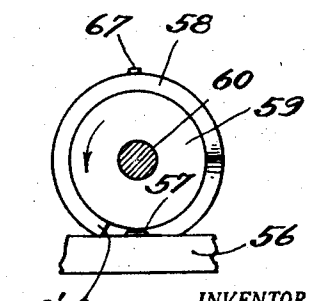


Fig. 6



Witness:

R. C. Hamilton

INVENTOR.

Dewey C. Hansen,

BY Thorpe & Conard

ATTORNEYS.

Patented Mar. 29, 1927. 1,622,781

UNITED STATES PATENT OFFICE.

DEWEY C. HANSEN, OF KANSAS CITY, MISSOURI.

SOLDERING FLUX AND CEMENT APPLYING DEVICE FOR CAN-MAKING MACHINES.

Application filed June 9, 1926. Serial No. 114,860.

The present invention relates to can making machines, and aims to provide an improved form of attachment for such machines, by the operation of which either a soldering flux or cement compound may be applied to one of the side seam edges of the can body blank as the latter is being conveyed by the blank feeding means from the edging station to the forming and clinching or seam closing mechanism.

Accordingly, I have devised a mechanism for carrying out this primary object of the invention, which comprises a nozzle through which the desired flux or cement compound may be discharged onto one of the edges of the can blank, preferably in conjunction with an air spray, together with valve means for controlling the flow of air and liquid through the nozzle, and means for timing the operation of the valves in accordance with the feeding movement of the blank.

In its preferred form, the improved device or attachment is so constructed as to produce a quick snap movement of the valves in both the opening and closing of the same, this character of snap movement being produced, in the form of embodiment of the invention herein described, by a combination of springs and cam elements, the latter being adjustable for varying the time of operation of the valves in accordance with the sizes of the can blanks being operated upon.

With the foregoing general objects in view, the invention will now be described by reference to the accompanying drawings illustrating one form of construction which I have devised for embodying the proposed improvements, after which those features and combinations deemed to be novel will be particularly set forth and claimed.

In the drawings—

Figure 1 is a rear elevation, showing a portion of the blank feeding device of a can making machine, and associated therewith a cement or flux applying device, constructed in accordance with my invention;

Figure 2 is a plan view of the same;

Figure 3 is an enlarged sectional view, representing a section taken on the line III—III of Figure 1;

Figure 4 is a sectional detail view, representing the cam elements employed as a part of the mechanism, for timing the operation of the valves;

Figure 5 is a side elevation, showing the face of that cam element appearing at the left in Figure 4; and

Figure 6 is a similar view showing a face view of the other cam element, appearing at the right in Figure 4.

Referring now to the drawings in detail, Figures 1 and 2 illustrate portions 10 of the blank feeding device, of a can making machine, provided with flights 12 for engaging the can body blanks 14 and conveying the same from the magazine (not shown) and past the edging station where the lips 15 are formed on the ends of the blanks preparatory to the formation of the side seam. Before reaching the forming and clinching, or seam-closing mechanism, one of the edged ends 15 of the blank 14 must be treated either with a soldering flux or with a cement compound, which it is the purpose of the present invention to perform automatically and in appropriate timed relation to the feeding movement of the blanks 14.

Accordingly, I fix in position a suitable frame member 20 carrying a nozzle member 21 one end of which is provided with the holder elements 22 fitted with the nozzle tip 23 having its discharge orifice 24 (Figure 3) presented in position to discharge along the path of feeding movement of one of the edged ends 15 of the blanks. The nozzle is provided with a connection 25 with any suitable source of air, and also with a connection 26 with a source of cement or soldering flux material, preferably maintained under pressure. The flow of compressed air through the nozzle member is controlled by means of a needle type of valve 27 arranged longitudinally within the nozzle member 21 and co-operating with a valve seat 28 at the inner end of the discharge passage 24 (Figure 3). The flow of liquid cement or flux material is controlled by means of a similar type of needle valve 30 co-operating with a valve seat 31 which communicates by way of a clean-out passage 32 and by-pass passage 33 with the discharge passage 24, suitable clean-out plugs 35 being mounted in the holder element 22 at opposite sides of the valve seat 31 for convenience in keeping the seat and passages 32 and 33 free of any obstructing particles.

The stems of the valves 27 and 30 project out through packing glands 36 in the end of the nozzle body 21 and are adapted to be actuated longitudinally and simultaneously

by means of a valve operating lever 37 the intermediate portion of which is provided with an arm 38 pivotally mounted at 39 in a bracket 40 projecting from one face of the frame 20. The connection between the valve stems and the operating lever 37 is by means of nuts 41 having convex surfaces engaging in similarly curved recessess in opposite faces of one end of the lever 37, as clearly shown in Figure 3, thus permitting suitable adjustment of the lever 37 relative to the valves, as well as requisite pivotal movement between these parts. The connection between the lever 37 and the valve stem 30 further comprises a light coil spring 43 engaging between a nut 44 on the stem of the valve 30 and a collar 45 resting against one face of the lever 37 whereby the thrust of the lever in closing the valve 30 is imparted through the spring 43, and thereby compensates for any difference in travel necessary for simultaneously closing the valves 30 and 27.

The other or rear end of the valve operating lever 37 is connected with a tie bolt 47 which is formed with a reduced portion 48 fitted with a coil spring 49 retained in place between two washers 50 and 51, the latter being retained on the bolt by means of a nut 52; the other end of the tie bolt 47 is pivotally connected, as represented in Figure 3, with the free end of a cam actuated arm 54, the other or forward end of which is pivoted, as indicated at 55, where the arm 54 is connected integrally with a cam engaging arm 56 (see Figures 1 and 6). This arm 56 is provided with a cam lug 57 which is maintained in engagement with the cam surface 58 of a cam element 59 mounted on a shaft 60 supported in bearings 61 carried by the frame 20, said shaft being also equipped with a sprocket element 62 or other drive member designed to be continuously actuated from the drive mechanism of the machine Mounted at one side of the cam element 59 is a second cam member 64 also having a cam surface 65 engaged by a cam lug 66 rigid with the rear end of the valve operating lever 37. Each of the cam members 59 and 65 is adjustably secured, as by means of the screws 67, to the shaft 60, thus permitting of suitable adjustment of such cam members to vary the time of operation of the lever 37 and arm 54, as required by different sizes of blanks 14. Between the rear end of the fixed bracket projection 72 and a finger 70 formed on and projecting rearwardly from the intermediate portion of the valve operating lever 37 is another coil spring 71, slightly weaker than the coil spring 49, and adapted to actuate the lever 37 in a direction necessary for closing the valves 27 and 30, as hereinafter explained.

In operation, the timing mechanism for the actuation of the valves, and comprising the cams and connections therefrom, is so designed that the opening of the valves takes place as one side of the blank 14 comes opposite the discharge passage 24 of the nozzle, and the closing of the valves takes place as the opposite side of the blank comes opposite said discharge passage 24. The opening of the valves is simultaneously effected by the dropping of the cam lug 66 of the lever 37 off the high point 65′ of the cam member 64 (see Figure 5), whereby the lever 37 is released to the expansive action of the spring 49, and thereby quickly snapped in a direction (that is, counter clockwise direction in Figure 3) necessary for simultaneous opening of both valves. This action is represented as having taken place in Figures 3 and 5; as the operation proceeds, with the cam elements 59 and 64 continuing to rotate in the direction of the arrows shown in Figures 5 and 6, the cam lug 57 drops off the high point 59′ of the cam surface 58 (Figure 6), which allows the spring 49 to expand slightly further until the washer 50 engages the shoulder 47′, thereby relieving the lever 37 from the pressure of said spring. The spring 71 is now free to act, and immediately imparts a quick rocking movement to the lever 37 in the opposite direction, necessary for effecting a quick closing movement to both valves 27 and 30, this involving a simultaneous movement of the arm 54 and lever 37 in the same direction, or to the left in Figure 3.

The remaining contour of each of the cam surfaces 58 and 65 is simply that necessary for restoring the parts to their initial position, and with the spring 49 under tension between the washer 51 and the end of the lever 37, and the washer 50 out of engagement with the shoulder 47′ of the bolt 47. Following this, the further operation is simply a repetition of the foregoing, for each blank 14 fed by the conveyor 10—12.

It will thus be seen that I have provided a practical and efficient device for carrying out the desired objects of the invention, and while I have illustrated what I now regard as the preferred form of construction, I desire to reserve the right to make all such changes which may fairly fall within the scope of the appended claims.

What I claim is:

1. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, air supply means and a liquid supply means connected with said nozzle, separate valves controlling the flow of said air and liquid through said nozzle, and means for automatically actuating said valves in timed relation with said blank feeding means for starting and stopping the flow through the nozzle at the opposite sides, respectively, of the blank

as the latter passes beneath the discharge point of the nozzle.

2. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, valve means for controlling the flow through said nozzle, and automatic means for actuating said valve means with a snap action to start and stop the flow through the nozzle at the opposite sides, respectively, of the blank as the latter passes beneath the discharge point of the nozzle.

3. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, valve means for controlling the flow through said nozzle, and automatic means for actuating said valve means with a snap action and in timed relation to said feeding means, and including means permitting adjustment of said automatic means to time the operation thereof to accommodate different widths of blanks.

4. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, valve means for controlling the flow through said nozzle, and automatic means including spring elements for imparting quick valve opening and closing movements to said valve means, and cam elements for timing the operation of said spring elements.

5. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, valve means for controlling the flow through said nozzle, and combined spring and cam elements operative to impart quick valve opening and closing movements to said valve means, said cam elements being adjustable for varying the time of operation of said valve means.

6. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, valve means for controlling the flow through said nozzle, and combination spring and cam means for controlling said valve means and including separate spring elements for imparting quick valve opening and closing movements, respectively, to said valve means.

7. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, a valve controlling the flow through said nozzle, a valve operating member having a pair of springs adapted to impart quick movements to said member in opposite directions to open and close the valve, respectively, and continuously operating cam means controlling said valve operating member and operative to release the latter alternately to the action of said springs.

8. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, a valve controlling the flow through said nozzle, a valve operating member having a pair of springs adapted to impart quick movements to said member in opposite directions to open and close the valve, respectively, and independent adjustable cam elements operating continuously to control said valve operating member and time the movements thereof alternately in response to the action of said springs.

9. In a can making machine, the combination of blank feeding means, a nozzle having its discharge point in the path of one edge of the blank, air supply means and a liquid supply means connected with said nozzle, separate valves controlling the flow of said air and liquid through said nozzle, a valve operating member for simultaneously actuating said valves, and continuously operating spring and cam means for timing the operation of said member and imparting quick valve opening and closing movements thereto.

In witness whereof I hereunto affix my signature.

DEWEY C. HANSEN.