

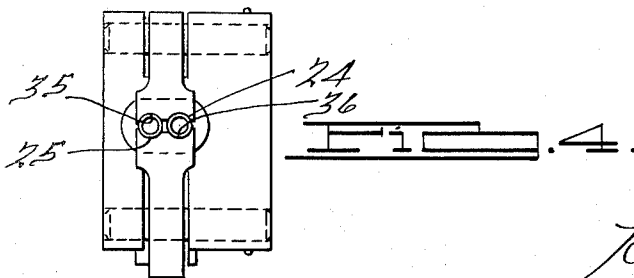
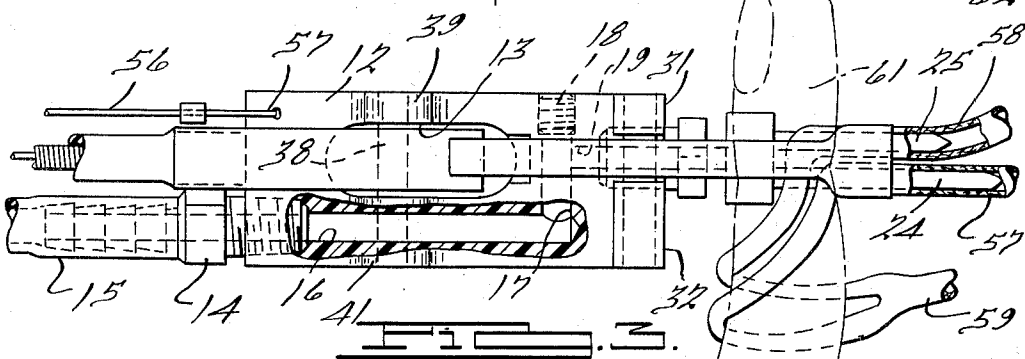
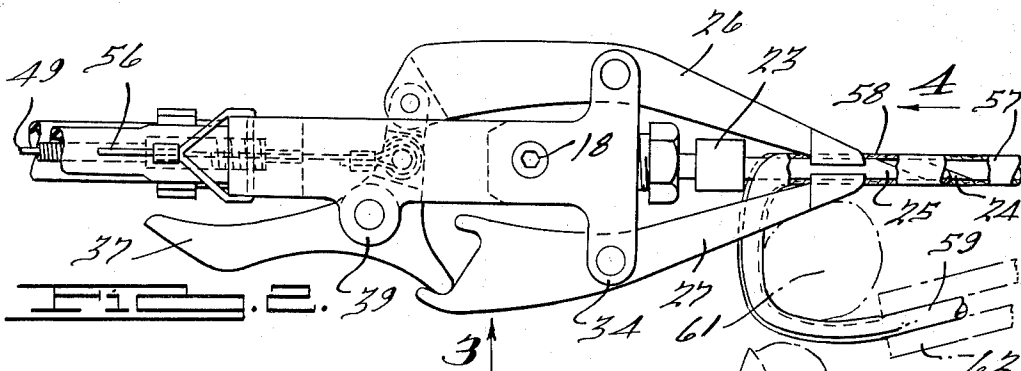
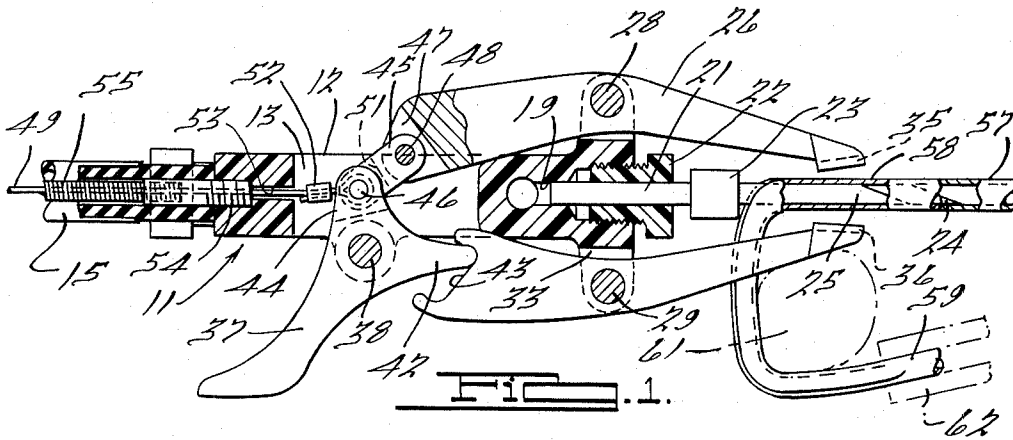
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BRINE INJECTING NEEDLE ASSEMBLY

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BRINE INJECTING NEEDLE ASSEMBLY

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1 Claim. (Cl. 99—256)

This invention relates to brine injector needle assemblies, and more particularly to needle assemblies for use in pumping a pickling or brine solution into ham arteries.

It is an object of the invention to provide a novel and improved needle assembly which will permit the simultaneous injection of two artery branches leading to the two sections of a ham. This is of particular advantage with automatic pickle injection apparatus such as that shown and described in copending application Serial No. 111,325, filed May 19, 1961 by Wharton et al. and assigned to the assignee of the present application.

There is a Y-shaped main artery which, if left intact on the dressed carcass with sufficient length of the trunk, will permit insertion of a single injector needle tip into this trunk ahead of the branches. However, it often happens that the trunk is cut too short, or is cut off altogether during dressing. With ordinary needle assemblies, this results in a two-fold disadvantage in that the pumper must insert his needle successively into each of the two branches, and must also closely control the pickle percentage to get the desired distribution into the two ham sections. This in turn makes it difficult to achieve one of the principal advantages of the automatic pickle injection, namely, a more uniform percentage and a better distribution of pickle solution in all portions of the ham.

It is therefore a more specific object of the invention to provide an improved needle assembly which can be readily inserted simultaneously into both artery branches, thus enabling the operator to disregard the absence or short length of the main artery trunk, speeding up the injection process and insuring uniform distribution of pickle solution in all portions of the ham.

Other objects, features, and advantages of the present invention will become apparent from the subsequent description and the appended claims, taken in conjunction with the accompanying drawings, in which:

FIGURE 1 is a side elevational view, partly sectioned, showing the novel needle assembly with the clamps in open position;

FIG. 2 is a view similar to FIGURE 1 but with the clamps in closed position;

FIG. 3 is a bottom plan view of the needle assembly taken in the direction of the arrow 3 of FIGURE 2, and

FIG. 4 is an end elevational view of the needle assembly taken in the direction of the arrow 4 of FIGURE 2.

Briefly, the illustrated embodiment of the invention comprises an elongated body having a hose connection at one end and a pair of brine injecting needles at the other end, the needles being adapted for simultaneous insertion in the two ham artery branches, the body having a conduit extending between the hose connection and the two needles. A pair of clamping jaws are pivoted to the body, and a clamp actuator is mounted on the body and connected to the jaws. One needle is slightly longer than the other, and an operator may grasp the two artery branches with forceps and turn them over one finger so that one needle and then the other may be inserted into

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the branches. The clamping jaws are adapted to simultaneously secure and seal both branches to their respective needles so that brine injection of both branches may take place at the same time and under the same fluid pressure.

Referring more particularly to the drawings, the needle assembly is generally indicated at 11 and comprises a body 12 of generally elongated shape, which may be fabricated of a suitable plastic or other material. Body 12 has a generally rectangular cross section but has a central aperture 13, likewise of elongated shape and with parallel walls, aperture 13 extending between the upper and lower surfaces of the body and being slightly offset from the longitudinal centerline of the body, as seen in FIGURE 3.

One end of body 12 is provided with a hose adapter 14 which is threadably mounted therein and is adapted to retain a flexible hose 15 which constitutes the brine supply line. A conduit 16 extends through body 12 past aperture 13 from adapter 14 toward the forward end of the body, and is connected with a transverse passage 17, the outer end of which is closed by a plug 18. Another longitudinal passage 19 extends from passage 17 toward the forward end of body 12.

A tube 21 is secured within passage 19 by a member 22 threadably mounted in the forward end of body 12, tube 21 extending to a header 23 secured at the forward end thereof. A pair of brine injecting needles 24 and 25 are secured to header 23 and extend forwardly therefrom. Each needle is of hollow construction and has an inclined forward end to facilitate insertion in an artery branch. Needle 24 is somewhat longer than needle 25, and the needles are in closely spaced parallel relation.

A pair of clamping jaws 26 and 27 are provided, these jaws being of elongated construction and being pivoted on pins 28 and 29 respectively. Pin 28 extends between a pair of lugs 31 and 32 formed on and extending upwardly from the forward end of body 12. Pin 29 extends between a pair of lugs 33 and 34 formed on and extending downwardly from the forward end of the body. The forward ends of jaws 26 and 27 are provided with recessed portions 35 and 36, respectively, of semi-circular cross-sectional shape adapted to fit around the upper and lower surface portions respectively of needles 24 and 25 some distance forwardly of header 23.

Means are provided for moving jaws 26 and 27 between a retracted position shown in FIGURE 1 and a clamping position shown in FIGURE 2. This means includes a clamp actuator 37 mounted on a pin 38 which extends between a pair of lugs 39 and 41 extending downwardly from body 12 on opposite sides of aperture 13. Member 37 has a handle portion extending downwardly and rearwardly from pin 38, and a first arm 42 which fits within a recess 43 at the rear end of jaw 27. Recess 43 is substantially wider than the thickness of arm 42 so that a lost motion is present between the members 37 and 27, for purposes which will hereafter appear. However, when actuator 37 is swung clockwise from its FIGURE 1 position to its FIGURE 2 position, arm 42 will engage jaw 27 at the lower end of recess 43, swinging jaw 27 counterclockwise from its retracted position shown in FIGURE 1 to its clamping position shown in FIGURE 2.

Another arm 44 is provided on actuator 37, this arm extending upwardly into aperture 13 and having a pair of jaws between which is pivoted a link 45 by means of

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a pin 46. Link 45 is relatively short, and its other end is pivoted between a pair of jaws 47, formed at the rear end of jaw 26, by means of a pin 48. The relative positions of pins 28, 38, 46 and 48, with respect to the lengths of arm 44 and link 45, are such that when actuator 37 is in its counterclockwise or FIGURE 1 position, jaw 26 will be swung to its retracted position. However, when actuator 37 is swung to its clockwise or clamping position, pin 46 will move over center with respect to a line connecting the axes of pins 38 and 48, and at the same time, jaw 26 will swing to its clamping position. The spacing of the pins is further such that a toggle action will occur during this over-center movement, so that counterclockwise pressure on jaw 26 will only serve to urge actuator 37 further clockwise about pin 38. However, this movement cannot occur because arm 42 engages jaw 27 at the lower end of recess 43. This engagement in turn will urge jaw 27 into a firmer clamping position. The jaws will thus be effectively locked in their clamping position. The lost motion afforded by recess 43 will permit swinging of actuator 37 between its positions with jaw 27 traveling approximately the same angular distance as jaw 26.

Means are provided for releasing the jaws from their locked condition, this means including a release cable 49 having one end secured to pin 46 by wrapping it around the pin (link 45 being slotted at 51 for this purpose) and securing it by a clamp 52. Cable 49 extends through a passage 53 leading rearwardly from aperture 13, and through a fitting 54 threadably mounted in passage 53 and extending rearwardly therefrom. A rubber-covered metallic sheath 55, sometimes referred to as a Bowden cable, is secured to fitting 54 and surrounds cable 49, the latter being slidable within the sheath. The other end of cable 49 (not shown) is connected to means for pulling the cable so that the toggle between members 37 and 45 may be broken and the clamping jaws returned to their retracted or FIGURE 1 position. In order to prevent undue strain on conduit 15 or cables 49 and 55, a restraining wire 56 may be provided, one end 57 of this wire being secured to body 12, and the other end (not shown) to a fixed object.

In operation, needle assembly 11 will be used to inject a pickling or brine solution into a pair of artery branches 57 and 58 of a ham (not shown) which has been dressed in preparation for the brine injecting process. According to this process, as carried out by apparatus such as that shown and described in the aforementioned copending application, a predetermined quantity of brine is injected into each ham, the amount being controlled by any of various means and in some cases dependent upon the size or weight of the ham. Use of the arterial blood vessel system in the ham is conventionally used as a convenient and satisfactory way of distributing the brine solution throughout the ham sections. A ham is considered to have two sections, a cushion side and a shank, the arterial system carrying the brine to the muscle areas of these sections.

Arterial branches 57 and 58 lead to the two ham sections and are connected by a trunk or main section 59, as seen in FIGURES 2 and 3. It is desirable that the ham be so dressed or trimmed as to leave a relatively long trunk 59 so that this trunk may be conveniently clamped and a needle inserted therein, thereby supplying brine simultaneously to branches 57 and 58. It often happens, however, that trunk 59 is either removed entirely during dressing of the ham or is cut so short that grasping by a forceps to extract it from the muscle tissue, and insertion of a needle, are difficult. This is especially true during an automatic ham pumping operation in which the operator must keep up with a moving series of hams.

Needle assembly 11 eliminates these problems in that the operator may insert needles 24 and 25 into branches 57 and 58, respectively, thereby disregarding the absence or short length of trunk 59. The method is illustrated

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schematically in FIGURES 1 to 3 in which a finger of the operator's hand is indicated in dot-dash lines at 61, and a forceps is partially indicated in dot-dash lines at 62. Assuming that trunk 59 is not present, the operator will grasp branches 57 and 58 with forceps 62 and turn the branches over finger 61. He will then pierce the wall of branch 57 with needle 24, the assembly being slightly rotated at this time so that needle 25 will clear branch 58. When needle 24 has been partially inserted, slight rotation of assembly 11 will permit needle 25 to be inserted in branch 58, so that the position shown in FIGURE 1 will be obtained. Initially, jaws 26 and 27 will be in their retracted position as shown in FIGURE 1. When needles 24 and 25 have been inserted into their respective branches 57 and 58 a distance sufficient to bring them past the forward ends of jaws 26 and 27, actuator 37 may be rotated clockwise from its FIGURE 1 to its FIGURE 2 position, causing the jaws to securely clamp and seal the arterial branches to the outer needle surfaces. The brine solution may then be pumped through conduit 15, passages 16, 17 and 19, the header 23 to needles 24 and 25. The brine will thus pass with equal pressure into both arterial branches. Clamping jaws 26 and 27 will seal the branches against needles 24 and 25, preventing brine leakage therefrom.

Should a length of trunk 59 be present, the operator may still use forceps 62 to grasp this trunk, again pulling the trunk and branches out until the latter are wrapped around the operator's finger and are accessible to needles 24 and 25. It should be noted that the positions of finger 61 and forceps 62 in the figures relative to each other and to assembly 11 are not intended to necessarily reflect their actual positions during operation, since the forceps may be held in the same hand as that having finger 61 around which the branches are turned.

Upon completion of the brine injection, needle assembly 11 may be released by tension exerted on cable 49, which will cause clamping jaws 26 and 27 to swing to the retracted positions of FIGURE 1. The release of assembly 11 may of course be accomplished either manually or automatically, depending upon the equipment with which assembly 11 is associated.

While it will be apparent that the preferred embodiment of the invention disclosed is well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claim.

What is claimed is:

In a brine injection needle assembly, an elongated rigid body, a connection at one end of said body for a brine supply conduit, an outlet tube extending rigidly from the other end of said body, a passageway in said body leading from said supply connection to said outlet tube, a header rigidly secured to the outer end of said outlet tube, a pair of brine injection needles in closely spaced parallel relation rigidly secured to said header and extending outwardly therefrom, one of said needles being of greater length than the other, a pair of clamping jaws pivotally secured on opposite sides of said body, each of said jaws having a pair of recesses adapted to interfit with said needles, a clamp actuator pivotally mounted on said body, said actuator having a handle and a pair of arms, a lost motion connection between one arm and one of said clamping jaws, a toggle linkage between the other arm and the other clamping jaw, said actuator being swingable between a retracted position in which said arms cause retraction of the recessed portions of said clamping jaws from said needles and a clamping position in which said arms cause said recessed clamping jaw portions to closely approach said needles, whereby arterial branches into which said needles are inserted will be securely clamped thereto, and a cable connected to said toggle linkage so as to cause return movement of said

actuator to its retracted position in response to tension exerted on the cable.

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