ABSTRACT: A vacuum operated device for withdrawing air from a package, lifting the package and positioning the package for closing. The device includes only a few parts and has two main assemblies connected by a quick clamp. The parts may be disassembled and assembled by hand without the use of tools for cleaning. One of the assemblies has two subassemblies, an axial suction tube and an axial slide handle which are mounted in the first vacuum chamber and the other assembly includes a piston and a cylinder. A vacuum nozzle is provided having a sump. A new vacuum operated apparatus construction is also provided wherein a permanently open relief vent is present.
This invention relates to an improved device for removing air from a package. Another aspect, the invention relates to a vacuum operated device. In another aspect, the invention relates to the packaging of poultry or the like in flexible film bags. In yet another aspect, the invention relates to a combined vacuum packaging, lifting and positioning device with the package being vacuumized and then automatically lifted off the supporting surface so as to permit twisting of the neck on the package prior to clipping or otherwise sealing with the device pivoting to position the package’s neck for sealing.

It is known practice for processors of turkeys, chickens, and poultry products to individually vacuum pack each bird in a collapsible airtight bag which may be made of any suitable thermoplastic such as biaxially oriented irradiated polyethylene. For simplicity, the invention will be described with reference to the packaging of poultry or the like; however, the invention is broadly applicable to the removal of air from any collapsible material in which a product may be placed.

A process has heretofore been proposed wherein a nozzle (in communication with a means for creating a vacuum) is inserted into the package to be vacuumized. After a sufficient period of time to effectively remove the air from the package, the package is twisted so as to prevent entrance of air into the evacuated package and the twisted neck is then sealed by means such as clipping or heat sealing. In one packaging method the bird is first placed in each bag in a substantially vertical position and disposed immediately below a fixed vertical nozzle. While the operator holds the bag mouth over the nozzle, the air is exhausted within the interior of the bag.

In U.S. Pat. No. 3,312,256, issued to D. J. Reisinger and assigned to the same assignee as this application, an improved mechanism is provided so that it is unnecessary for the operator to lift the bird and the bag off the table during the packaging closing procedure. The patent illustrates a vacuum actuated lifting mechanism supported above a packing table and carrying an associated vacuum nozzle assembly. The arrangement is such that when a vacuum condition is established within the mechanism, the latter will operate to raise the nozzle, and consequently the bird and bag, upwardly a sufficient distance above the table to permit the operator to twist the bag after a vacuum has been obtained in the bag. The bag is then removed from the nozzle and sealed. After the package has been vacuumized and sealed, it is subjected to a heat shrinking operation so that the bag shrinks to form a skintight package around the bird.

It is an object of this invention to provide a new and improved vacuum operated apparatus.

Yet another object of the invention is to provide a drip-proof nozzle for a vacuum packaging device.

Still another object of the invention is to provide such apparatus having a minimal number of parts that can be easily disassembled for cleaning and reassembled without the necessity of tools or skilled labor.

In carrying out one aspect of my invention in one form thereof, I have provided a vacuumizing apparatus having an improved vacuum nozzle assembly. The vacuum nozzle assembly has a first tubular vacuum chamber cylinder that is continuously connected to a vacuum source during operation. The inside of the vacuum chamber has a spring retaining seat at its lower end and an enlarged flange is present at its top portion. An axial suction tube extends axially through the vacuum chamber and projects therebelow. The suction tube has a head at its upper end, a reduced snout at the lower end, a bore formed by the channel extending axially through it, a plug seat opening through its opposite sides intermediate its ends and bisecting the bore into an upper section and a lower section. A lower constricted radial region is formed on the outer surface of the suction tube overlying and intermediate the ends of the tube’s lower section. A pair of opposed slot ports open through opposite sides of this lower constricted area into the lower section of the bore. An upper constricted radial region on the outer surface of the suction tube overlies and is intermediate the ends of the upper section and below the tube’s head, a pair of opposed ports open through opposite sides of the upper constricted area into the upper section of the bore. A threaded region is provided on the surface of the suction tube above and adjacent to the reduced snout and a plurality of separate O-ring seats are provided, one on each side of each of the pairs of ports directly adjacent thereto and extending radially around the suction tube. A plurality of O-rings are positioned one in each of the O-ring seats and project beyond the adjacent outer surface of the suction tube. A plug is positioned in the plug seat and separates the upper bore section from the lower bore section. An axial slide tube, sized to receive the axial suction tube axially therein for leak free engagement of the O-rings, is slidably positioned on the suction tube and extends from inside the vacuum chamber cylinder to below the vacuum chamber cylinder. A hand grip is formed around the lower end of the slide tube and positioned below the first vacuum chamber cylinder and an under cut slot is formed on the outer face of the slide tube and opens to its upper edge. A plurality of ports open through the sides of the slide tube to the suction tube and an end port is formed at the upper end of the slide tube by an enlarged area opening out at the upper end of the slide tube. A tubular locking sleeve in the upper part of the first vacuum chamber has a spring retaining seat on its outside surface and a lug extending into its inside. The locking sleeve is engaged over the tubular slide with the lug engaged in the undercut slot. A helical spring is compressively engaged between the seat on the inside of the tubular vacuum chamber and the seat on the outside of the locking sleeve.

The improved nozzle assembly has a new dripless vacuum nozzle which itself forms an important aspect of my invention.

This nozzle has a formed tip with at least one port above the sump. The nozzle has the outer configuration of a cylinder with a rounded point at its outer closed tip, the inside of the nozzle is a cylindrical bore penetrating axially below the ports to form the sump. A threaded area is formed on the inside of the nozzle at its upper end above the ports and these threads are meshed with the threads on the suction tube securing the nozzle to the suction tube.

The vacuumizing apparatus also has an improved vacuum lifting mechanism. This vacuum lift mechanism has a tubular vacuum chamber cylinder with a reduced flange area at the bottom of the tubular chamber and a plurality of locking lugs at the upper end of the tubular cylinder. A piston shaft with a piston mounted therein is positioned in the tube inside the cylinder reciprocates on the piston. The upper section of the bore in the axial suction tube opens into the tubular vacuum chamber cylinder of the lift mechanism below the piston. A cap is secured to the cylinder through a plurality of undercut slots that mate with locking lugs at the upper end of the tubular cylinder. A throat extending through the top of the cap journals the piston shaft in the cap. A universal joint is mounted on the outer end of the piston shaft opposite the piston for pivoting the apparatus.

A quick clamp engages the enlarged flange at the top of the first tubular vacuum chamber and the reduced flange area at the bottom of the second tubular vacuum chamber clamping the vacuum nozzle assembly and vacuum lifting mechanism together.

In understanding the operation of my device it is helpful to understand the principles of its operation that prevent drip-back, as I have determined them to be. Of course, I do not wish to be bound by any failure of these findings to be full and accurate in all respects, they are however my beliefs. Drip-back is most pronounced when the vacuum in the bag and in the vacuum nozzle assembly substantially equalize. At this time any fluid material sucked up into the device begins to run down the vacuum suction tube and collect in the sump. When the bag is clipped and severed adjacent to the clip, as is the usual practice, there is a tremendous inrush of air that has a venturi tube type of effect that cooperates with the sweep of...
the air itself to remove any material present in the sump therefrom. Any material removed from the sump is deposited in a collection tank (not shown) positioned in the line between the nozzle 18 and the vacuum pump (not shown). This assures that no fluid materials will drip from the nozzle ports contaminating succeeding birds or other articles being packaged.

The nozzle tip can, of course, be removed if some object were to become wedged in one of the nozzle ports.

By an aspect of my invention, in one form thereof, I have provided a vacuum operated apparatus operable to recoup a piston means by supplying a vacuum thereto while a continuously open vent admits venting air to said piston means.

In the drawings, FIG. 1 is an elevational view showing the lifting mechanism and vacuum nozzle assembly with the package off the table and twisted and in phantom lines the device pivoted to position the twisted neck of the bag in the throat of a clipper.

FIG. 2 is an enlarged partial vertical section of the nozzle assembly and lifting mechanism.

FIG. 3 is an exploded view of the vacuum nozzle assembly of FIG. 2 with phantom lines depicting the order of assembly.

FIG. 4 is a variation of my device similar in view of FIG. 2 but broken away above the vacuum nozzle assembly.

Referring now to FIG. 1, an embodiment is shown comprising a packing table surface 2, a support assembly 4, a conduit 6 in communication with the vacuum nozzle assembly 7 and a means for withdrawing air therefrom (not shown), and a vacuum actuated lifting mechanism 8. The assembly 7 and mechanism 8 together form the vacuumizing apparatus or device 10.

In operation, the operator places a bird 12 (such as a turkey or chicken, whole and dressed) on the table 2, inserts the bird into a heat shrinkable plastic bag 13 in such a manner that the nozzle and part of its mounting tube 14 can be inserted into the cavity of the bird. With the end of the bag 13 and the enclosed bird 12 resting on the table 2, the operator inserts the nozzle into the cavity of the bird 14 and gathers the opened end of the bag 13 around the lower portion of the nozzle assembly 17. The operator then grips the film of the bag 13 tightly about handle 15 and pulls down on handle 15 to actuate the vacuum valve. A vacuum is drawn through conduit 6 and the nozzle assembly 12 as hereinafter described with the lifting mechanism 8 being subsequently actuating to lift the bird from the table and simultaneously withdrawing the nozzle from the cavity of the bird into the upper portion of the bag while continuing to draw a vacuum. The operator permits the bag to drop slightly as desired to increase clearance between the bird and the nozzle while simultaneously rotating the bag to twist the bag's neck and close the vacuumized bag. The device 10 is then pivoted to position the twisted neck portion of the bag in a clipper (not shown) and a clip is applied to the twisted neck to retain the vacuum. A suitable clipper is shown in U.S. Pat. No. 3,383,746 issued to Narduzzi, Wing and Forte and assigned to the same assignee as this application. The clipper would simply be mounted to one side of the table 2 at a height disposing its throat within the pivot arc of the bag's neck. The clipper's throat should, of course, be oriented for easy entrance of the neck of the bird in a manner such as is shown in phantom lines in FIG. 1. Of course, other securing means could be employed to secure the bag's neck.

Referring now to FIG. 3 which is an exploded view representing the assembly arrangement of my device 10, it may be seen that there are two basic subassemblies, the vacuum nozzle assembly 7 and the vacuum actuated lifting mechanism 8 (FIG. 1) which are joined together by quick clamp 16. There are a total of 14 parts in the vacuum nozzle assembly 7, including the quick clamp, and six O-rings, and 13 parts in the vacuum actuated lifting mechanism 8 not counting the three small dowel pins 20, 21 and 22 or the lugs 23, 24 and 25 which in each they respectively secure to the vacuum lift cylinder 26, or the universal joint 27 which is permanently secured to the support 4 once the device 10 has been installed for operation.

Thus for the complete cleaning of the device only 27 pieces would need to be disassembled, as will become apparent hereinafter. It is also important to note that no tools are necessary for the general assembling or disassembling of the device with a fraud by a single hand.

Looking now at FIGS. 2 and 3 it will be seen that the bottom of cylinder 26 has a reduced flange portion 29 thereon. The axial slide tube 30 has a plurality of ports 31 entering into a central channel or bore 32. There are four parts 31, two pairs with each port in a pair opening through an opposite side of the slide. The slide 30 has an undercut locking lug slot 33 formed on its outer surface. The lower portion of the slide 30 is formed into a handle or gripping portion 34; the upper portion of the inside or channel 32 of the slide 30 is enlarged to form an end port region 35. The slide 30 is inserted through the lower or first vacuum chamber cylinder 36 which has the O-ring 37 mounted in a seat portion 38 (FIG. 2) to prevent vacuum leakage between the slide 30 and the cylinder 36. The conduit 6 opens into the open barrel of the first vacuum chamber 36. The upper end of cylinder 36 has an enlarged flange area or portion 39. As may be seen in FIG. 2, the lower portion of the cylinder 36 has a spring seat 40 on which main helical spring 41 is seated. The tubular, cylindrical locking sleeve 42 is then inserted in the position shown in FIG. 2 into the spring until seat 43, which is on the outside of the locking sleeve, engages against the upper end of the spring. Then the spring and locking sleeve are inserted into the cylinder 36 and the locking sleeve's lug 44 is engaged in the undercut lug retaining slot 33 and seated in locking engagement to operationally hold the only moving parts of the vacuum nozzle assembly 7 together. It may be seen that lug 44 extends into the inside of the locking sleeve. The moving parts of the nozzle assembly 7 are the locking sleeve 42 which is connected to and moves with the slide 30 and of course the actuation springs of the spring 41. Cut outs 45 are provided on locking sleeve 42 so that the locking sleeve will not cut off the flow of air through ports 31.

Into the subassembly described in the previous paragraph is inserted a second subassembly which is made up of the nozzle mounting tube or vacuum suction tube 41 on which have been assembled in the order shown O-rings 46, 47, 48, 49 and 50. The O-rings are seated in appropriately sized seats 51, 52, 53, 54 and 55 respectively for reasons which will become apparent hereinafter. The upper end of tube 14 has a head 56 which seats on the inside of flange 39. The nozzle tip 60 is assembled onto threads 61 of the vacuum suction tube 14. The suction tube 14 has a bore 62 extending therethrough for its entire length. A bore separating plug seat 63 passes through opposite sides of the suction tube intermediate its ends becasting the bore 62 and dividing the bore into an upper section 64 and a lower section 65. A plug 66 is positioned in the bore seat 63 and separates the bores sections 64 and 65 from one another for reasons which will become apparent hereinafter. The lower bore section 65 has a pair of identical lower ports or slots 67 which open through opposite sides of the suction tube 14 into the bore 62. The slots 67 open out of the suction tube in a lower constricted radial region or area 68 on the outer surface of the suction tube and overlying and intermediate the ends of the lower section 65. The upper section of the suction tube has a pair of opposed circular ports or upper ports 70 which open through opposite sides of the suction tube into the bore 62 in a manner similar to the ports 67. An upper constricted radial region or area 71 is also formed in the outer surface of the tube 14 to provide for the flow of fluid (the evacuated air) between the ports 70.

Nozzles may be seen in FIGS. 2, 3 and 4 to have an outer configuration that is cylindrical with a rounded point at its closed outer tip. The inside chamber of the nozzle 60 is a countersunk cylindrical bore 72 with a sump portion 73 extending below the ports 74. Two double pairs of ports 74 open through the vacuum nozzle to provide a total of eight nozzle ports. The upper end of the inside of the nozzle has a threaded area 75 above the ports 74. The nozzle 60 is a dripless nozzle,
any flowback collecting in the sump where it is subsequently evacuated during the next vacuumizing operation.

The lifting section 8 of the device 10 has a lift cylinder 26 the upper end of which is closed by a cap 76. Shaft 77 is inserted through mouth or throat 78 of the cap and into one cylinder 16 and journalled in ball bushing 80 which is held in the throat 78 by snaprings 81 and 82 which are held in extended position by respective seats 83 and 84 in the throat 78 of cap 76. Side slits 79 secure the cap 76 in position on cylinder 26 by a tight frictional fit with respective one of lugs 23, 24, and 25. Thumb screw 88 is screwed down in thumb screw hole 89 until it projects into slot 79 after the lugs have been seated to secure the lugs in between seat. The lower end 87 of the piston shaft 77 supports the piston 90 which when acted on by the vacuum causes the cylinder 26 to rise, lifting the nozzle assembly and the vacuumized package. The piston 90 includes a piston cup 91 mounted over a washer 92 and clamped between washer 92 and washer 93 by a nut 94 which secures the assembly against shaft seat 95 in operating position. Rubber bumper 96 having been assembled on the shaft cylinder 97 and resting on washer 92. The end 87 of the piston shaft may be seen to be threaded for receipt of nut 94. The shaft cylinder 97 reciprocates in the ball bushing 80. The upper threaded end 98 of the shaft 77 is secured in the universal joint 27 which is in turn secured to the stand 4. Rubber bumper 100 is assembled on the shaft cylinder 97 and rests against washer 98 which is held in the universal joint 27. The bumper 100 remains in position due to its frictional engagement with shaft 77. Looking in particular at FIG. 2 the relief port 103 may be seen opening through the bottom wall 104 of the cylinder 26. The relief port is continuously open being only about three thirty-seconds of an inch in diameter while the inside diameter of the cylinder 26 is five inches. This ratio enables a vacuum of about 30 inches of Hg to lift the nozzle assembly and the cylinder, with up to a 30 pound product, on the shaft 77 even though the port remains open to the ambient and is totally unobstructed.

The assembly of the parts will now be briefly explained with particular relation to their assembly and disassembly in the plant for cleaning, sanitation and maintenance. To assemble the nozzle assembly 12 into a unit it is usually preferable to first assemble the parts on the suction tube 14 by moving the O-rings 46, 47, 48, 49 and 50 over reduced end or slot 105 of the suction tube and sliding them successively into their respective seats 51, 52, 53, 54 and 55. The O-ring 57 is then positioned in its seat 58 of the lower cylinder 36. Next slide member 30 is inserted upwardly through the lower cylinder 36, seated into the cylinder 36 and locked in position. Sleeve 42 is inserted downwardly into the cylinder 36 with the lug 44 aligned with slot 33 of the slide 30. The locking sleeve 42 is pushed downwardly against the spring and twisted into the locating position. The assembled suction tube is then dropped down through the assembled locking sleeve and slide member.

To assemble the lift portion 8 of the device 10, the snapping 82 is positioned in seat 84 and ball bushing 80 is slipped into throat 78 and down against the snapping 82. Snapping 81 is inserted through the throat 78 and positioned in seat 83 locking in the ball bushing 80. The piston is then assembled on the piston shaft with the bumper 96 being positioned about the shaft cylinder 97 first just above the shaft seat 95. The piston cup 91 is positioned over washer 92 and the assembled washer 92 and piston cup 91 are positioned on seat 95 and the securing washer 93 is positioned on the shaft below the cup 91 and the nut 94 is secured on threads 87 to secure the parts in position. The shaft may then be inserted upwardly through throat 86 or it could alternatively have been inserted downwardly through throat before assembly of the piston parts. The upper bumper 100 and the washer 101 are then positioned over the threaded portion 98 of the shaft 77 and seated on the seat 102. The universal joint 27 is screwed onto the threaded portion 98. The piston 90 is then inserted into cylinder 26 and the cap 76 is engaged on the upper end of cylinder 26 and secured in position by engaging lugs 23, 24 and 25 with respective ones of the slots 79. Thumb screw 88 is tightened to prevent the slots from being moved out of secure engagement on the lugs. The two larger subassemblies 7 and 8 now being complete, are aligned and the quick clamp 16 secures them together by engaging over reduced flange area 29 at the bottom of cylinder 26 and the enlarged flange 38 at the top of the cylinder 36 and being closed to clamp the members securely together.

For cleaning, several different phases of cleaning may be carried out depending upon the extent of cleaning required at various times depending upon the operating conditions. It is contemplated that the nozzle tip is easily a band operation, handtight and therefore it can be removed by gripping securely with the fingers and rotating it to unscrew the tip for cleaning and the tip can be reinstalled in the same manner by gripping it with the fingers and screwing it back into position. In the usual packing house procedure, when poultry is being packaged, it is the practice to disassemble the entire nozzle vacuum portion of the apparatus at the end of each day's packaging and frequently more often as required by governing regulations. To do this, ordinarily, it is only necessary to remove the quick clamp 16 and disconnect the locking sleeve 42 by depressing and twisting it manually to remove the lug 44 from the slot 33. All of the parts may then be separated in substantially the reverse order of that described for their assembly. It may be offset 108 or 109 is then inserted, there being no tools necessary. The nozzle tip 60 would, of course, also be removed for cleaning. Ordinarily it would not be necessary to remove the O-ring 37 from its seat or the O-rings 46, 47, 48, 49 and 50 from their seats, but only to scrub past them with a cleaning solution and brush, twisting the brush as it passes. However, the O-rings can easily be removed when desired.

Ordinarily contaminates would not rise up into the lift portion 8 of the device 10 since they are drawn off through conduit 6 by the vacuum. If it is desired to clean lift cylinder 26 this may easily be done by removing lift cylinder 26 from cap 76. First thumb screw 88 is loosened and then the cap 76 is removed by twisting it to separate lugs 23, 24 and 25 from the locking slots 79. Then sliding lift cylinder 26 down off of piston 91. It can be appreciated that unless the piston cup 91 has worn, it would be very unlikely that any contaminates would be above the piston cup and thus the piston 90 and the cylinder 26 could be scrubbed and then the assembly reassembled in clean condition. It should be noted that no tools have been necessary for any of this operation.

When it is necessary to replace a piston cup, at the most only a simple wrench is required to unscrew nut 94. Of course, the various rings and parts can be easily replaced when required in the same manner as the cleaning is carried out.

While my invention is not limited to the use of specific materials in its construction I have found the following materials to be optimum, particularly when the device is to be used in its preferred application, to package poultry. My bumber washers are made of rubber, preferably neoprene. All of the O-rings and the piston cup are of food approved nitrile rubber. The plug 66 is made of food approved plastic (DELDRIN TM DuPont). All other parts are made of stainless steel type 303 or 304 except for the lift cylinder 6 and cap 76 which are made of 6061 T 6 aluminum and aluminum alloy 356 respectively.

Turning now to a more detailed description of the operation of my device 10 after the device has been mounted on stand 4 and starting from the rest position, the slide 30 is held in the raised position by the spring 41 and the weight of the device 10 will have placed the piston 90 at the upper end of cylinder 26 pulling the cylinder down over the piston. The operator takes a bag containing a product, such as is shown in FIG. 1, places the bag on the table 2 and pulls the bag's open mouth up around and over the handle 34 after inserting the nozzle tip 60 into the bird's cavity by manipulating the bird (such as a turkey) to a position standing on end. All of this is done in one
character of the device 10 was desired. All of the seals in the device of FIG. 4 may be seen to be above the ports in the nozzle. There is sufficient clearance in the parts so that when the slide is pulled below the level of the ports the air can flow up between the nozzle tip and the slide into the ports to accomplish the evacuation of a bag.

The modified device is used when a small item is being packaged and it is not desired to insert the nozzle into the item but only to apply the vacuum to the bag. Such small items are generally lightweight and do not require a lifting characteristic in the device. Usually such items are manually lifted off of the table to secure the bag neck about the handle 34 to eliminate having to raise the table.

The operating relationship between the vent 103 and the vacuum chamber cylinder 26 has been found to be within the variables of about 15 to 25 inches of Hg with a vent hole area of 0.0069—0.0094 square inches to an effective piston face area or a cylinder cross section area of 9.6211 square inches. Of course, the area of the piston face could be changed or any other parameter could be changed so long as the operable ratios are maintained. It may be seen that in the apparatus shown it is not the piston itself that moves but the piston means, cylinder 26, that actually moves. The surprising discovery that no closing device was required for operation of second vacuum chamber 26 was very important in simplifying the device 10 and its maintenance.

1. In a vacuumizing apparatus:
   a. a first tubular vacuum chamber continuously connected to a vacuum source during operation,
      1. a spring retaining seat on the inside of said first tubular vacuum chamber at its lower end,
      2. an enlarged flange at the top of said first tubular vacuum chamber,
   b. an axial suction tube, said suction tube extending axially through said first vacuum chamber cylinder and projecting therebelow,
      1. a head at the upper end of said suction tube,
      2. a reduced suction at the lower end of said suction tube,
      3. a bore extending axially through said suction tube, said bore forming a channel through said axial suction tube,
      4. a plug seat opening through opposite sides of said suction tube intermediate the ends thereof bisecting said bore and dividing said bore into an upper section and a lower section,
      5. a lower constricted radial region on the outer surface of said suction tube overlying and intermediate the ends of said lower section,
      6. a pair of opposed slot ports opening through opposite sides of said lower constricted area into the lower section of said bore,
      7. an upper constricted radial region on the outer surface of said suction tube overlying and intermediate the ends of said upper section and below said head,
      8. a pair of opposed ports opening through opposite sides of said upper constricted area into the upper section of said bore,
      9. a threaded region on the outer surface of said suction tube above and adjacent to said reduced snout,
   c. a plurality of O-rings, one positioned on each of said O-ring seats and projecting beyond the adjacent outer surface of said suction tube,
   d. a plug, said plug positioned in said plug seat and separating the upper bore section from the lower bore section,
   e. an axial slide tube sized to receive said axial suction tube axially therein for leakfree engagement of said O-

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rings, said slide tube slidably positioned on said suction tube, extending into said first vacuum chamber cylinder and extending below said first vacuum chamber cylinder,
 1. a handgrip formed around the lower end of said slide tube and positioned below said first vacuum chamber cylinder,
 2. an undercut slot on the outer surface of said slide tube opening to the upper edge thereof,
 3. a plurality of ports opening through the sides of said slide tube to said suction tube,
 4. an end port formed at the upper end of said slide tube, said end port formed by an enlarged area opening out at the upper end of said slide tube,
 f. a tubular locking sleeve positioned in the upper part of said first vacuum chamber,
 1. a spring retaining seat on the outside of said locking sleeve, and
 2. a lug extending into the inside of said locking sleeve, said locking sleeve engaged over said tubular slide and said lug engaged in the undercut of said undercut slot,
 g. a helical spring, said spring compressively engaged between said spring retaining seat on the inside of the tubular vacuum chamber and said spring retaining seat on the outside of the locking sleeve,
 h. a nozzle tip,
 1. a sump in the lower end of said nozzle tip,
 2. a plurality of ports in said nozzle tip above said sump,
 3. a threaded area in the nozzle tip above said ports, said threads meshed with said threads on the suction tube securing them together,
 II. a vacuum lifting mechanism:
 a. a second tubular vacuum chamber cylinder,
 1. a reduced flange area at the bottom of said second tubular vacuum chamber cylinder,
 2. a plurality of locking lugs at the upper end of said second tubular vacuum chamber cylinder,
 b. a piston,
 c. a piston, said piston mounted on one end of said shaft and positioned in said second tubular vacuum chamber cylinder for reciprocation of said second tubular vacuum chamber cylinder thereon, the upper section of the bore of said axial suction tube opening into said second tubular vacuum chamber cylinder below said piston,
 d. a cap,
 1. a throat extending through the top of said cap, said piston shaft journaled in said throat,
 2. a plurality of undercut slots, said undercut slots mating with said locking lugs at the upper end of said second tubular vacuum chamber cylinder to secure said second tubular vacuum chamber cylinder and said cap together,
 e. a universal joint, said universal joint mounted on the other end of said piston shaft,
 III. a quick clamp, said quick clamp engaged on said enlarged flange at the top of said first tubular vacuum chamber cylinder and said reduced flange area at the bottom of said second tubular vacuum chamber cylinder and clamping said vacuum nozzle assembly and vacuum lifting mechanism together.
 2. In a vacuumizing apparatus:
 I. a vacuum nozzle assembly including,
 A. a first vacuum chamber connected to a vacuum source during operation,
 B. an elongated conduit extending through said first vacuum chamber,
 1. a divider in said conduit intermediate its ends bisecting said conduit into an upper section and a lower section,
 2. at least one lower port opening into the lower section of said conduit,
 3. at least one upper port opening into the upper section of said conduit,
 C. a slide mounted on said conduit,
 1. at least one port in said slide opening to said conduit and movable into and out of communication with said lower port (B) (2) to open and close said port,
 2. a means on said slide opening said upper port,
 II. a vacuum lifting mechanism, said vacuum lifting mechanism mechanically connected to said vacuum nozzle assembly for lifting said assembly and including:
 A. a second vacuum chamber, said second vacuum chamber operably connected to the vacuum source through said upper port of said conduit.
 3. The apparatus of claim 2 wherein:
The first vacuum chamber I (A) includes:
 1. a spring retaining seat on its inside at its lower end,
The slide I (C) is:
 a circumventing member extending around the elongated conduit I (B), and includes:
 3. an undercut slot on its outer surface opening to the upper edge thereof,
The vacuum nozzle assembly I includes:
 D. a flange at its upper end,
 E. a tubular locking sleeve positioned in the upper part of the first vacuum chamber I (A), said tubular locking sleeve including:
 1. a spring retaining seat on its outside,
 2. a lug extending into its inside, said locking sleeve engaged over said tubular slide and said lug engaged in the undercut slot I (C) (3),
 F. a helical spring, said spring compressively engaged between the spring retaining seat I (A)
 1. and the spring retaining seat I (E) (1),
The vacuum lifting mechanism II includes:
 B. a flange at its bottom
 The vacuumizing apparatus includes:
 III. a quick clamp, said quick clamp engaged on the flange I (D) at the upper end of said vacuum nozzle assembly I and the flange II (B) at the bottom of said vacuum lift mechanism II and clamping said vacuum nozzle assembly and vacuum lifting mechanism together.
 4. The apparatus of claim 3 wherein:
The divider I (B) (1) in said conduit I (B) is:
 a. a plug seat opening through opposite sides of said conduit intermediate its ends bisecting said conduit into said upper section and said lower section, and
 b. a plug, said plug positioned in said plug seat and separating the upper bore section from the lower bore section,
The elongated conduit I (B) includes:
 4. a lower constricted radial region on its outer surface overlying and intermediate the ends of said lower section of said conduit, and the lower port I (B) (2) opens through said lower constricted area into the lower section of said conduit,
 5. an upper constricted radial region on its outer surface overlying and intermediate the ends of said upper section and the upper port I (B) (3) opens through said upper constricted area into the upper section of said conduit, and
 6. a plurality of separate O-ring seats, one on each side of each of said constricted areas I (B) (4) and I (B) (5) and extending radially around said conduit, and
 The circumventing slide I (C) includes:
 4. a handgrip formed around its lower end and shaped to facilitate the gathering of a bag's neck in airtight grip under a human hand when the bag's neck is interposed between the hand and the grip,
The vacuum nozzle assembly I includes:
 G. a plurality of O-rings, one O-ring positioned in each of said O-ring seats and projecting beyond the adjacent outer surface of said suction tube, and
The circumenveloping slide I (C) is sized and positioned with respect to the elongated conduit I (B) and the O-rings I (G) to be in leak free engagement with the O-rings I (G).

5. The apparatus of claim 2 wherein:

The elongated conduit I (B) extending through the first vacuum chamber I (A) is:

a. a vacuum nozzle and includes:
4. a threaded region at its lower end,
5. a reduced snout below the threaded region (4)
6. a nozzle member comprising:

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a. a closed terminal end,
b. a sump in the lower end,
c. a plurality of ports above said sump,
d. a threaded area above said ports, said threads meshed with the threaded region I (B) (4).

6. The apparatus of claim 2 wherein:

The second vacuum chamber II (A) includes:

1. a piston means, and
2. a continuously open vent.