May 12, 1970 K. A. KRAFT ETAL 3,511,020

VACUUM BAG LIFTER

Filed Feb. 5, 1968 2 Sheets-Sheet 1

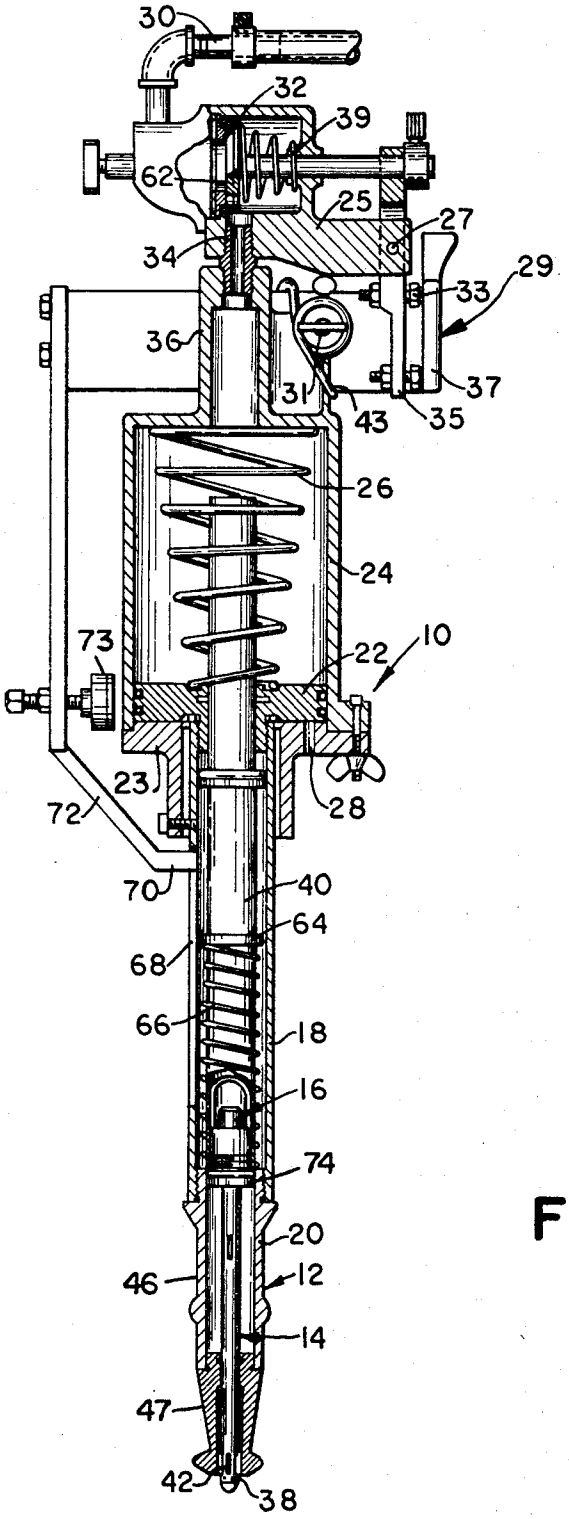

FIG_1

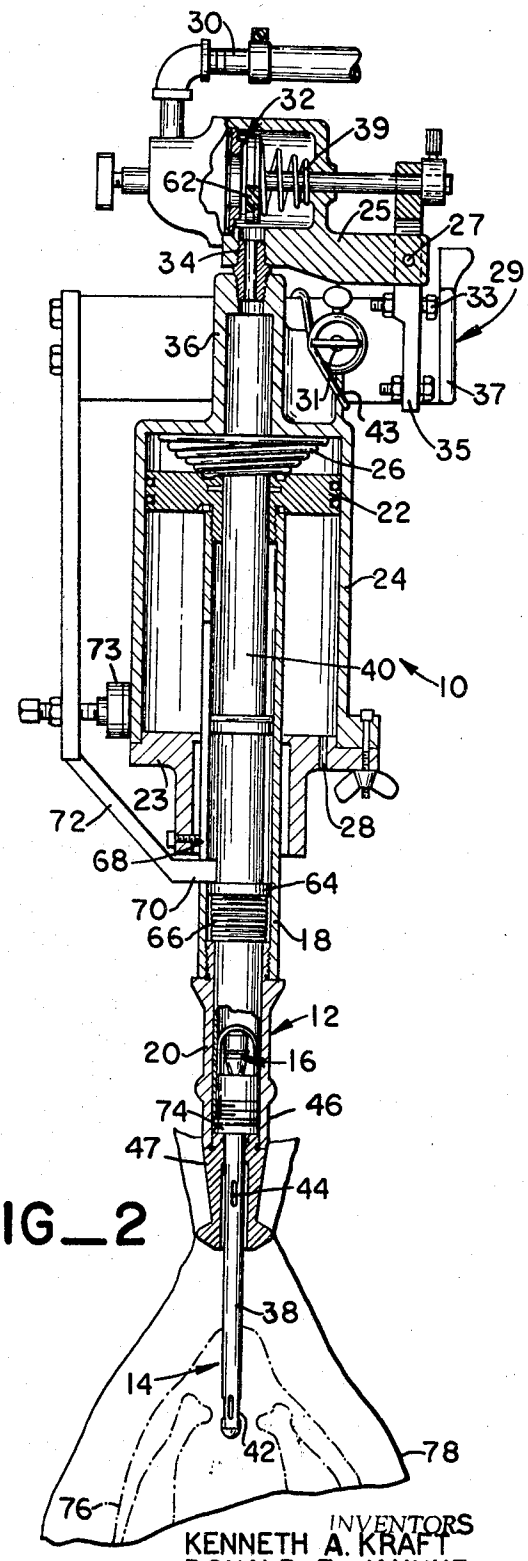

FIG_2

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May 12, 1970 K. A. KRAFT ETAL 3,511,020

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Filed Feb. 5, 1968 2 Sheets-Sheet 2

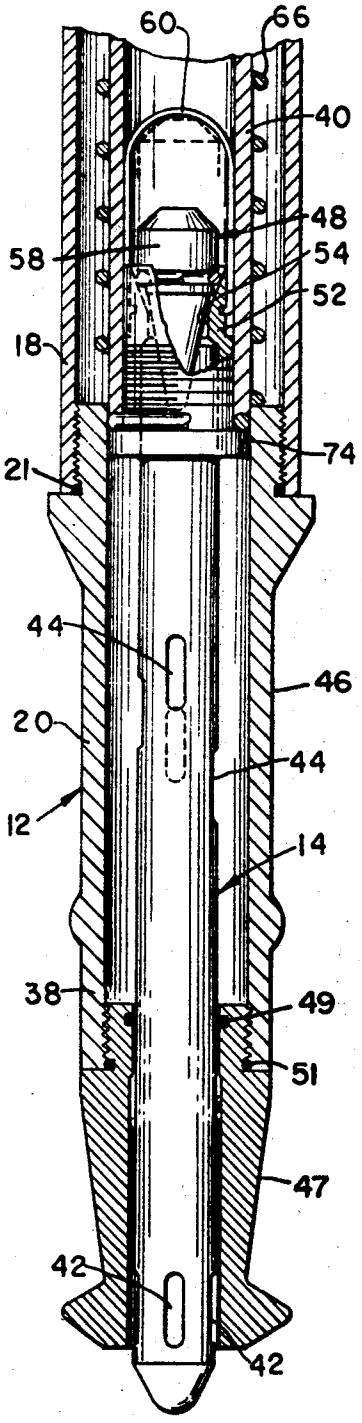

FIG_3

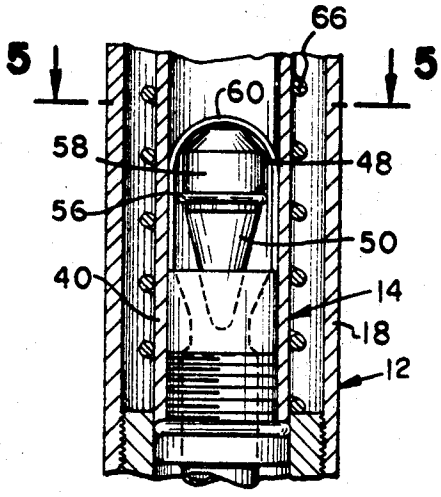

FIG_4

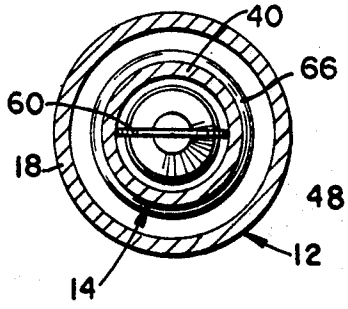

FIG_5

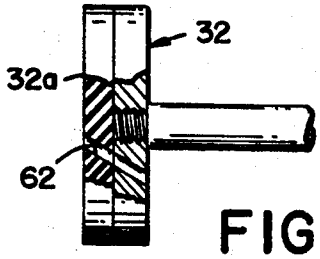

FIG_6

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United States Patent Office 3,511,020
Patented May 12, 1970

3,511,020

VACUUM BAG LIFTER

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Filed Feb. 5, 1968, Ser. No. 702,983
Int. Cl. B65b 31/06
U.S. Cl. 53—112 14 Claims

ABSTRACT OF THE DISCLOSURE

Bag evacuating apparatus of the type having a tubular handle or sleeve about which the neck of a bag to be evacuated is held so that, when the sleeve is evacuated, the bag and its contents will be evacuated. Valve means is provided in the sleeve to close the same and thereby prevent the dripping of moisture and the like along the sleeve after the vacuum has been removed therefrom. An inner evacuating tube shiftably mounted in the sleeve operates to extend outwardly therefrom and into a bag when the sleeve is shifted relative to the tube. Means is provided to maintain a relatively small amount of vacuum in the tube when the latter is disposed within the sleeve to prevent the accumulation of moisture at the outer end of the tube.

This invention relates to improvements in a bag evacuating technique and, more particularly, to a bag evacuating apparatus which substantially eliminates contamination of the contents of a bag to be evacuated.

The present invention is directed to apparatus for evacuating bags containing articles to be packaged and relates specifically to the evacuation of plastic bags whose contents may contain a certain amount of moisture. For instance, the invention is especially adapted for evacuating bags containing poultry, such as whole birds, when the birds are put into the bags immediately after evisceration, a processing step which generally results in causing some moisture to be present in a bird.

The apparatus of the invention includes a vacuum bag lifter of the type having an outer sleeve or handle about which the neck of a bag is to be forced and a vacuum source coupled to the sleeve for evacuating a bag whose neck is forced onto the sleeve. The contents of the bag as well as the bag itself can advantageously be evacuated by the use of an inner tube disposed within and movable relative to the sleeve to a position projecting outwardly therefrom in fluid communication with the interior of the bag. Thus, the tube will effectively evacuate the bag notwithstanding the tendency of the bag to be sucked across the end of the sleeve from which the tube projects.

Oftentimes, the tube will be inserted in the body cavity of a bird if the latter is the product being packaged. Since moisture and/or body fluids may well be present in such body cavity, the moisture or fluid will be sucked out of the bird by the vacuum in the tube. While this moisture may, to a certain degree, be drawn completely out of the tube by the vacuum source, some of the moisture may adhere to the inner surface of the tube and gravitate along the same to a location where it forms a drip at the end of the tube. Such a drip can give rise to contamination of the products of a bag when the tube is inserted in the bag. This transfer of moisture from one bag to another may result in rejection of the contents of a succeeding bag by health inspectors. Requirements to eliminate said contamination have become more stringent in the past several years. In fact, the United States Department of Agriculture, in advance of pertinent legislation, has recently established new rules for the elimination of such contaminants from bags containing poultry and other food products.

The present invention substantially eliminates the contamination problem mentioned above by providing valve means disposed within the sleeve of the lifting device of the type described to prevent moisture from gravitating to a location at which such moisture can enter a bag and contaminate its contents. Thus, there will be substantially no chance for moisture to be transferred from one bag to a succeeding bag when a number of bags are evacuated one after another. Moreover, the valve means cooperates with orifice means coupled to the vacuum source to apply a small amount of vacuum in the aforesaid inner tube when the latter is coupled to and retracted in the sleeve. This feature assures that there will be no buildup or accumulation of moisture within the portion of the tube which enters a bag to be evacuated.

While the teachings of the invention can be utilized with or without the aforesaid inner tube, it is preferably included as part of the evacuation unit because it assures greater efficiency in evacuating bags containing whole birds. The tube can enter the body cavity of the bird to evacuate it to thereby more assuredly provide a vacuum in the bag.

An important feature of the invention is the way in which the sleeve is formed in sections to facilitate assembly and disassembly of the apparatus. This feature allows for frequent periodic cleaning and inspection of the inner tube and the valve and even permits complete removal of such inner tube and valve unit for replacement by another such unit. Thus, one tube and valve unit can be ready for use on a standby basis while a second such unit is actually in use within the sleeve.

The primary object of this invention is therefore to provide an improved bag evacuating apparatus which eliminates the transfer of moisture from one bag to another when a number of bags are evacuated to thereby prevent the contamination of products of succeeding bags by moisture from preceding bags.

Another object of this invention is to provide bag evacuating apparatus of the type having a sleeve adapted to be coupled to a vacuum source and about which the neck of a bag is to be forced wherein the sleeve has a valve therewithin to close the same after the vacuum has been removed therefrom to thereby prevent the gravitation of moisture along the interior of the sleeve and to a position where the moisture can drip into the contents of a succeeding bag to be evacuated.

Another object of this invention is to provide a bag lifting and evacuating device wherein a retractable tube within an outer sleeve and capable of extending outwardly therefrom is provided with means for maintaining at least a small amount of vacuum within the tube when the latter is retracted to thereby prevent the accumulation of moisture within the tube which would otherwise be transferred to the contents of a succeeding bag when the tube is inserted thereinto.

A further object of this invention is to provide a bag lifting and evacuating device of the aforesaid character wherein the sleeve is formed in sections to permit the separation of said inner tube therefrom for cleaning and inspection of the tube and the valve associated therewith.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawings for an illustration of a preferred embodiment of the invention.

In the drawings:

FIG. 1 is a vertical section through the bag lifting device of the present invention showing the tube retracted within the outer sleeve;

FIG. 2 is a view similar to FIG. 1 but illustrating the tube in its operative position projecting outwardly from the sleeve and into the body cavity of bird contained in a plastic bag to be evacuated;

FIG. 3 is an enlarged, fragmentary vertical section of the tube and sleeve with the tube in its retracted position;

FIG. 4 is a view similar to FIG. 3 but illustrating the open position of the valve associated with the tube;

FIG. 5 is a cross-sectional view taken along line 5—5 of FIG. 4; and

FIG. 6 is an enlarged side elevational view of the valve for controlling the vacuum to the retractable tube.

The bag lifting and evacuating apparatus of the present invention is broadly denoted by the numeral **10** and includes an outer sleeve **12** which normally surrounds an inner, retractable tube **14** and is movable relative thereto. Sleeve **12** is adapted to be inserted into the neck of a bag in the manner shown in FIG. 2 with the bag neck being manually held or pressed against the outer surface of the sleeve to form a seal to thereby allow evacuation of the interior of the bag. Generally, device **10** will be used with flexible, plastic bags capable of being evacuated and of allowing the bag contents to be frozen and stored for relatively long periods of time.

Tube **14** is to be evacuated and to be inserted into a bag interior to evacuate the same and to prevent the bag, in the vicinity of its neck, to be sucked into a position closing the bottom, open end of sleeve **12**. For purposes of illustration only, the bag contents in FIG. 2 includes an eviscerated bird into the body cavity of which tube **14** may extend when the tube is in the operative position of FIG. 2 extending outwardly from the sleeve **12**. Evacuation of the tube by a vacuum source causes the bag and its contents to be evacuated, following which tube **14** is returned to its retracted position within sleeve **12**, thus permitting the bag neck to be closed by a clip or the like by suitable structure not shown.

One aspect of the present invention is the provision of a valve **16** within sleeve **12** and associated with tube **14** for closing the same after the vacuum has been removed therefrom. This is to prevent the gravitation of moisture into the tube and into a position where the moisture could drip into a succeeding bag and contaminate the contents thereof. Means hereinafter described is also provided to maintain a relatively small amount of vacuum in tube **14** when the latter is retracted in the manner shown in FIG. 1. This latter feature prevents moisture from accumulating in the form of a drip at the outer or lower end of the tube during the time when a first bag has been removed from sleeve **12** and a second bag is about to be placed thereon.

Sleeve **12** has an upper extension **18** threadably coupled to a lower extension **20** about which the neck of a bag is to be forced. An O-ring seal **21** is disposed at the junction of extensions **18** and **20**. The upper end of extension **18** is coupled to a piston **22** movable within a cylinder **24** rotatably supported by a pin **31** on a fixed support **29**, whereby cylinder **24**, as well as sleeve **12** and tube **14**, can rotate as a unit relative to support **29**. A spring **43** biases cylinder **24** in a counterclockwise sense when viewing FIG. 1.

A coil spring **26** within cylinder **24** normally biases piston **22** downwardly and an air passage **28** in one end wall **23** of cylinder **24** allows air to enter the latter when piston **22** is raised against the bias force of spring **26** by a reduced air pressure within cylinder **24** above piston **22**. The reduced air pressure is established by coupling the interior of cylinder **24** to a source of vacuum (not shown) coupled to a pipe **30**, the vacuum being controlled by a valve **32** coupled to a conduit **34** connected to the upper tubular end **36** of cylinder **24** (FIGS. 1 and 2). When valve **32** is opened, the interior of cylinder **24** is directly connected to the vacuum source so that piston **22** is elevated by suction to, in turn, raise sleeve **12** with respect to tube **14**, the latter including a lower section **38** which enters the bag to be evacuated and an upper section **40** threadably connected to section **38**, slidably extending through piston **22**, and disposed within the convolutions of spring **26**. The upper end of tube section **40** of tube **14** is open to the interior of cylinder **24** so that tube **14** is also evacuated when valve **32** is open. Lower tube section **38** has a lower set of circumferentially spaced holes **42** and an upper set of circumferentially spaced holes **44**, the latter being staggered along the length of tube section **38** as shown in FIG. 3.

Lower sleeve extension **20** is comprised of an upper section **46** and a lower section **47** which are threadably connected together and allow for quick assembly and disassembly of tube **14** and valve **16** in a manner to be described. A first O-ring seal **49** is carried in a groove on the inner surface of lower section **47** for sealing engagement with lower tube section **38**. A second O-ring seal **51** is disposed at the junction of sections **46** and **47**. Seal **49** engages lower tube section **38** between holes **42** and **44** when tube **14** is retracted to thereby isolate the interior of lower sleeve section **46** and thereby holes **44** from the atmosphere.

Valve **16** is disposed at the junction of tube sections **38** and **40** and includes a valve member **48** having a tip **50** adapted to be inserted within a valve seat **52** whose conical inner surface **54** is engageable with a resilient O-ring **56** carried on a cylindrical portion **58** of valve member **48**. Thus, when valve member **48** is in the position shown in FIG. 3, the fluid passage through tube **14** is closed and, when the valve member **48** is in the position of FIG. 4, the fluid passage is open. A U-shaped bail **60** is secured at its ends to valve seat **52** and serves to confine valve member **48** in the manner shown in FIG. 4. The valve member is constructed to allow the same to be unseated in response to the application of a vacuum in tube **14** so that when the vacuum above the valve member is present, the unseating of the valve member will cause vacuum to be applied to lower tube section **38**. When the vacuum is removed, the valve member immediately drops into position with O-ring **56** in sealing engagement with surface **54** of valve seat **52**, thus closing tube **14**.

Means is provided to maintain a relatively small amount of vacuum in tube **14** when the latter is retracted in the manner shown in FIG. 3 and when valve **32** is closed. To this end, valve **32** is provided with a fluid passage **62** (FIG. 1) of relatively small diameter which maintains fluid communication between cylinder **24** and pipe **30** connected to the vacuum source even though valve **32** is closed. This vacuum is not great enough to cause piston **22** to be drawn upwardly but it is sufficient to partially unseat valve member **48** and to allow air to be drawn into opening **42** of lower section **38**. This vacuum thus prevents moisture from dripping downwardly in section **38** when the latter is retracted as shown in FIG. 3 so that such moisture cannot be transferred to the contents of a succeeding bag to be evacuated. Since seal **49** isolates holes **44** from the atmosphere when tube **14** is retracted, holes **42** alone are open to the atmosphere so that there will be a maximum amount of vacuum at openings **42**. Thus, the valve seat for valve **32** forms one orifice means by which a relatively large amount of vacuum can be applied to tube **14**, and valve **32** with its fluid passage **62** forms a second orifice means by which a relatively small amount of vacuum can be applied to tube **14**.

Upper tube section **40** has an annular shoulder **64** rigid thereto above valve **16** as shown in FIGS. 1 and 2. Shoulder **64** serves as an abutment for one end of a coil spring **66** which surrounds section **40** and whose lower end abuts the upper end of sleeve extension **20**, as shown in FIG. 3. Sleeve extension **18** has a longitudinal slot **68** (FIGS. 1 and 2) into which the end segment **70** of an arm **72** normally projects, arm **72** being fixed in any suitable manner to support **29** and provided with a stop **73** thereon.

Valve **32** is opened by rotating cylinder **24** as a unit with sleeve **12** and tube **14** in a clockwise sense about the axis of pin **31** until cylinder **24** strikes stop **73**. When this occurs, a stop **33** on an arm **35** abuts a rigid member **37** on support **29** to cause arm **35** to rotate in a clockwise sense about pin **27** carried by an arm **25** rigid to and extending

laterally from conduit **34**, as shown in FIGS. 1 and 2. Thus, valve **32** is opened against the bias force of a coil spring **39** when cylinder **24** rotates in a clockwise sense to, in turn, place the interior of cylinder **24** in fluid communication with pipe **30**.

OPERATION

Apparatus **10** has its components disposed in the manner shown in FIG. 1 prior to placing the neck of a bag **78** to be evacuated over sleeve **12**. When the bag neck is first placed over lower sleeve extension **20**, the machine operator manually forces the bag neck tightly against the outer surface of extension **20** to seal the neck of the bag. Then the operator urges sleeve **12** to the left in a clockwise sense when viewing FIG. 1 to cause valve **32** to be opened in the manner described above. When valve **32** opens, cylinder **24** and tube **14** become coupled to the vacuum source and valve member **48** becomes unseated wih respect to valve seat **52**. Also, piston **22** begins to rise in cylinder **24** to cause both sleeve **12** and tube **14** to elevate until shoulder **64** abuts end segment **70** of arm **72**. However, sleeve **12** continues to elevate, compressing coil spring **66** until the annular shoulder **74** at the base of valve seat **52** (FIGS. 1, 2 and 3) is engaged by the upper end face **47***a* of lower sleeve section **47** in the manner shown in FIG. 2. When this occurs, lower tube section **38** projects outwardly from the lower end of sleeve **12** so that openings **42** of section **38** will be within the bag inwardly of the bag neck and within the body cavity of a bird **76** within the bag. Also, openings **44** will be in fluid communication with the interior of bag **78** even though the openings are disposed within the end of the sleeve. Thus, the openings will cause evacuation of the bag in the vicinity of the bag neck while openings **42** will cause evacuation of the body cavity of bird **76**.

When it is determined that the bag has been evacuated sufficiently, the operator swings sleeve **12** in a clockwise sense thus causing end segment **70** of arm **72** to move away from shoulder **64**. Coil spring **66** will then cause tube **14** to move upwardly and into sleeve **12**. To effect this, the upper end of section **40** will enter tubular end **36** of cylinder **24**. During this time, however, valve **32** will be closed to remove the vacuum at the upepr side of piston **22**. Then spring **26** will urge the piston downwardly and into its normal position shown in FIG. 1. Air in advance of the piston will be forced out of the cylinder through fluid passage **28**.

Immediately upon closing of valve **32**, valve member **48** will drop onto the valve seat to close the fluid passage through tube **14** and thereby trap any moisture that is in the tube above the valve and prevent such moisture from gravitating to lower tube section **48**. Immediately upon closing of valve **32**, a small amount of vacuum will be supplied to the upper end of tube **14** by means of fluid passage **62**. However, the response time for establishing this small vacuum at openings **42** may be of the order of several seconds. Nonetheless, during this short time interval, valve member **48** will be in its closed position to prevent any gravitation of moisture toward the lower end of tube section **38**. As soon as the relatively small vacuum is established within the tube **14**, it will prevent the further gravitation of moisture in the tube even though valve member **48** is slightly unseated. Since openings **44** of lower tube section **38** are isolated from the atmosphere when tube **14** is retracted, only openings **42** are opened to the atmosphere so that the vacuum at these openings approaches the value of the small vacuum provided by fluid passage **62**. Thus, moisture is prevented from accumulating at the lower end of the tube and essentially is maintained in the tube, if at all, above valve **16**. Thus, there will be substantially no chance of moisture transfer from one bag to another bag due to the insertion of tube **14** into the bags.

The above process is repeated for each succeeding bag and the contents of such bag will not be contaminated by the moisture removed from a preceding bag.

It will be clear to those skilled in the art how the valve means of this invention can be utilized with sleeve **12** when the sleeve has no lower tube section **38** to extend outwardly therefrom. Also, the small amount of vacuum provided by passage **62** can be utilized with sleeve **12** even though no lower tube section **38** is provided. These situations can arise where no lower tube section **38** is deemed necessary to properly evacuate a bag but where some moisture or other liquid is drawn into sleeve **12** by suction.

The construction of apparatus **10** allows the same to be partially or totally disassembled for cleaning purposes to conform to standards set by health authorities. For instance, it is presently contemplated that poultry processing equipment must be cleaned and inspected at the end of each two and one-half hour interval of operation wherein apparatus **10** is to be partially disassembled so that tube **14** and valve **16** can be cleaned and inspected. It is further contemplated that at the end of an eight-hour work shift or interval, the entire structure of apparatus **10** is to be disassembled. To facilitate the partial disassembling of the apparatus, such as for the two and one-half hour inspection, lower extension **20** of sleeve **12** is threadably mounted in upper extension **18** so that, when extension **20** is removed from extension **18**, tube **14**, valve **16** and spring **66** can be removed from extension **18**, these components merely dropping out of extension **18** since the latter has an inner diameter sufficient to enclose all of the components. If desired, two sets of the aforesaid components (tube **14**, valve **16** and spring **66**) can be provided so that when one set is removed from apparatus **10**, the other set can be immediately put into place and the operation resumed.

The remainder of apparatus **10** is constructed to allow for complete disassembly for the eight-hour inspection requirement. As shown in FIGS. 1 and 2, the structure of apparatus **10** permits such disassembly in a minimum of time and with a minimum expenditure of effort.

The two-piece construction of extension **20** allows O-ring **49** in lower section **47** to be periodically replaced because of wear. This requires only that section **47** be removed from section **46**, following which the old O-ring **49** can be replaced by a new one and section **47** again threaded to section **46**.

As shown in FIG. 6, passage **62** extends diagonally across the valve head of valve **32** at an angle adjacent to the center of the valve head. This is important to provide alignment at all times with an opening in the resilient face plate **32***a* of the valve which engages the valve seat.

While one embodiment of this invention has been shown and described, it will be apparent that other adaptations and modifications of this device can be made without departing from the true spirit and scope of the present invention.

We claim:

1. In bag evacuated apparatus: a sleeve member adapted to be inserted into the neck of a bag to be evacuated; a tube member having a fluid passage therethrough and provided with an open end, said members being movable as a unit along a predetermined path; means mounting said members for movement relative to each other from respective, initial positions with said tube member disposed within said sleeve member to respective, operative positions with said tube member projecting outwardly from said sleeve member and with said open end spaced outwardly from said sleeve member; actuatable means responsive to the movement of the members as a unit and coupled to said tube member for evacuating the latter; and valve means carried by said tube member and responsive to the evacuation thereof for opening said fluid passage of the tube member when said evacuating means is actuated and for closing said fluid passage when the evacuating means is deactuated.

2. In apparatus for evacuating a bag: an assembly including a tube and a sleeve, said tube having a fluid passage therethrough and provided with an open end; means mounting said assembly for movement along a predetermined path; actuatable means coupled with said assembly and responsive to the movement thereof along said path for evacuating the tube, said sleeve being shiftably mounted on the tube for movement longitudinally thereof, being normally disposed about said tube, and being movable to a position permitting the open end of the tube to be spaced outwardly from said sleeve; a valve member within said tube; means defining a valve seat within said tube, said valve member normally engaging the valve seat for normally closing said fluid passage, said valve being movable away from said valve seat sufficiently to open said fluid passage when said evacuating means is actuated; and means coupled with said sleeve for moving the same relative to said tube.

3. In bag evacuating apparatus as set forth in claim 2, wherein said assembly is mounted for swinging movement along an arcuate path of travel.

4. In bag evacuating apparatus as set forth in claim 2, wherein said valve is elongated and has a resilient O-ring seal surrounding the same for engagement with the tube.

5. In bag evacuating apparatus as set forth in claim 4, wherein said sleeve has an upper extension and a lower extension removably coupled to the upper extension, said lower extension being in surrounding relationship to said lower tube section and comprising a pair of interconnected, end-to-end, upper and lower sections, the lower section of said lower extension having a removable seal on its inner surface for engaging said lower tube section.

6. In bag evacuating appaartus: a sleeve adapted to be inserted into the neck of a bag to be evacuated; a tube having an open end and being normally disposed in a retracted position within said sleeve; means mounting said sleeve and said tube for movement relative to each other to permit the tube to be moved to an extended position with respect to said sleeve with said open end spaced outwardly therefrom; first orifice means coupled with said tube and adapted to be placed in fluid communication with a vacuum source for providing a relatively large amount of vacuum in the tube when said tube is in said extended position; and second orifice means coupled with said tube and adapted to be placed in fluid communication with a vacuum source for providing a relatively small amount of vacuum in the tube when the latter is in said retracted position.

7. In apparatus as set forth in claim 6, wherein said first orifice means includes a valve seat and a valve member movable toward and away from said valve seat, said valve member having a fluid passage therethrough and defining with said fluid passage said second orifice means, said fluid passage extending at an angle relative to the axis of the valve member and disposed adjacent to said axis.

8. In apparatus as set forth in claim 6, wherein said tube is provided with an opening therethrough in spaced relationship to said open end, said opening being within one portion of said sleeve when said tube is in said retracted position, and seal means between said open end and said opening when said tube is in said retracted position for sealing said sleeve portion from the atmosphere, said opening being in fluid communication with the atmosphere when said tube is in said extended position.

9. In bag evacuating apparatus: a sleeve adapted to be inserted into the neck of a bag to be evacuated; a tube having an opening adjacent to one end thereof; means mounting said sleeve and said tube for longitudinal movement relative to each other to permit the tube to be moved

from a retracted position within said sleeve to an extended position projecting outwardly from the sleeve with said opening spaced therefrom; first orifice means coupled with said tube and adapted to be coupled to a vacuum source for providing a relatively large amount of vacuum in the tube when the latter is in said extended position; second orifice means coupled with said tube and adapted to be coupled to a vacuum source for providing a relatively small amount of vacuum in the tube when the latter is in said retracted position; and valve means coupled with said tube for inhibiting fluid flow therethrough when said large amount of vacuum is removed therefrom and before said small amount of vacuum can be established therein.

10. In apparatus as set forth in claim 9, wherein said valve means is responsive to the vcuum in said tube.

11. In apparatus for evacuating a bag: a sleeve adapted to be inserted into the neck of a bag to be evacuated and having a fluid passage therethrough; means mounting the sleeve for swinging movement along a predetermined arcuate path; means carried by said sleeve and adapted to be coupled to a source of vacuum for evacuating said sleeve and thereby a bag into which the sleeve is inserted as a function of the movement of the sleeve along said path; and elongated valve means within said sleeve and normally closing said fluid passage, said valve means being operable to open said fluid passage when the sleeve is evcuated.

12. In bag evacuating apparatus: a sleeve member adapted to be inserted into the neck of a bag to be evacuated; a tube member having a fluid passage therethrough and provided with an open end; means mounting said members for movement relative to each other from respective, initial positions with the tube member disposed within said sleeve member to respective, operative positions with said tube member projecting outwardly from said sleeve member and with said open end spaced outwardly from said sleeve member; actuatable means coupled to said tube member for evacuating the same; means coupled with said evacuating means for effecting relative movement of said members to cause the same to shift into said operative positions when said evacuating means is actuated; and valve means carried by said tube member and responsive to the evacuation thereof for opening said fluid passage of the tube member when said evacuating means is actuated and for closing said fluid passage when the evacuating means is deactuated.

13. In bag evacuating apparatus as set forth in claim 12, wherein is provided means coupled with said members for moving the same relative to each other in a direction sufficient to return the members to their initial positions when said evacuating means is deactuated.

14. In apparatus for evacuating a bag: a sleeve adapted to be inserted into a bag to be evacuated and having a fluid passage therethrough; means adapted to be coupled to a source of vacuum for evacuating said sleeve, said means including first orifice structure for providing a relatively large amount of vacuum within the sleeve when the latter is inserted in a bag and second orifice structure for providing a relatively small amount of vacuum in the sleeve when the latter is removed from a bag; and valve means within said sleeve and normally closing said fluid passage, said valve means being operable to open said fluid passage when the sleeve is evacuated.

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U.S. Cl. X.R.

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