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(54) **Cigarettes filling machine**

(57) The present invention relates to electrical cigarettes filling machine with supporting additional accessories such as:

- Inlet storage container, for storing bulk tobacco and providing continual and smooth feeding of tobacco to the electrical cigarettes filling machine. -Internal device located in the container such as rotating mixer avoid the stack of tobacco inside the container to control the fluent continual supply of tobacco to the electrical cigarettes filling machine.
- The electrical cigarettes filling machine which may contain one or more feeding systems for a simultaneously easy and quick filling of few empty cigarettes tubes in parallel, with tobacco.
- The machine has also an option for tip cleaner system for removing excess tobacco from the cigarette tip.

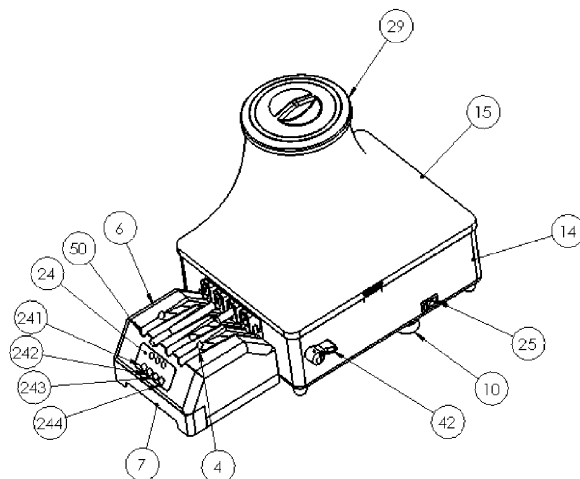


Fig 1

Description

BACKGROUND OF THE INVENTION

Field of the invention

[0001] This present invention generally relates to an electrical cigarettes filling machine used for filling empty cigarette tube, equipped with inlet storage container having internal mixer device that move the tobacco gently inside the container to provide continued and smooth supply of tobacco to the filling cigarette system.

[0002] The invention also relates to an apparatus for cleaning cigarette tip. The device removes overfilled tobacco from the cigarette tip and collects it to drawer to be fed back to storage.

Description of the Background Art

[0003] Cigarettes tube filling machines have been around for many years. Most of existing machines require feeding the tobacco for each single cigarette; the existing machines still have some major problems such as accumulation of excessive tobacco at the cigarette tip that is outstanding of the cigarette tip. The excess tobacco is either removed manually or falls around while being used. Another disadvantage of most existing machine is limitation in supply continues flow of tobacco to the filling machine.

[0004] It is there for the object of this invention to overcome the abovementioned disadvantages and to fill cigarette tubes continuously preventing overfilled cigarettes

BRIEF SUMMARY OF THE INVENTION

[0005] These objects are accomplished by adding storage for bulk tobacco equipped with internal device that move the tobacco gently and continuously into the filling system, and by further adding cleaning tip system that remove excess tobacco extended from the cigarette tip.

[0006] The filling machine has also an optional for multi filling system comprises of few filling channels arranged together in one housing allowing filling of one or more cigarettes at the same time.

[0007] Although the invention is described in relationship to specific embodiment it is nevertheless not intended to limit to the description shown. The storage device with the feeding system inside and the cigarette tip cleaning system may support any existing cigarette filling machine.

[0008] The object of the present invention is to provide a filling cigarette machine system comprising:

- Tobacco inlet storage container with internal mixing system to provide smooth and continual supply of tobacco.
- Feeding system comprising one or more filling sys-

tems that operate simultaneously filling one or more cigarette tubes.

- Density controller unit which provide the control of tobacco density in one or more feeding system at the same time.
- Cigarette tip cleaning system that remove overfilled tobacco standing out of the cigarette tip from one or more cigarettes in parallel.
- Collecting drawer that collect the removed excess tobacco for reuse.
- Feeding support grooves, one or few in parallel that provide easy and safe loading of the cigarette tubes onto the hollow bar unit.

[0009] The advantage of the present invention is to provide a cigarette filling machine which keeps a uniformed and continuance flow of tobacco into the cigarette empty tubes, allowing the filling process continue without the need of filling tobacco as long as inlet container contains tobacco.

[0010] Another advantage of the present invention is to provide a cigarette filling machine which automatically cleans the cigarette tip from any leftovers of tobacco.

[0011] A further advantage of the present invention is to provide a cigarette filling machine in which the user can control how tightly tobacco is packed into the cigarettes.

[0012] A still further advantage of the present invention is to provide a portable cigarette filling machine which is compact and can be easily transported by hand.

[0013] And yet another advantage of the present invention is to provide a cigarette filling machine with the option of filling few cigarette tubes in parallel.

[0014] And still another advantage of the present invention is to provide a cigarette filling machine with a safety mechanism that automatically stops machine operation when tobacco container cap is opened.

[0015] The present invention relates to electrical cigarettes filling machine with supporting additional accessories such as:

- Inlet storage container, for storing bulk tobacco and providing continual and smooth feeding of tobacco to the electrical cigarettes filling machine.
- Internal device located in the container such as rotating mixer avoid the stack of tobacco inside the container to control the fluent continual supply of tobacco to the electrical cigarettes filling machine.
- The electrical cigarettes filling machine which may contain one or more feeding systems for a simultaneously independently easy and quick filling of few empty cigarettes tubes in parallel, with tobacco.
- The machine has also an option for tip cleaner system for removing excess tobacco from the cigarette tip.

[0016] The tobacco is kept inside an inlet storage container covered with cap, isolated from surrounding hu-

midity. The container is equipped with internal mixing element such as (but not limited to) rotating spring or rod that ensures smooth and continuous feeding tobacco to the filling channels and from there into the empty cigarette tubes.

[0017] A designated operating control board and of indicative led panel enables activating and deactivating the feeding spring motor. When using the option for few filling channels it allows separately and independently activating and deactivating each of the filling channels independently.

[0018] A density control knob drive an eccentric shaft enables control over the tobacco density inside the filled cigarette tubes.

[0019] The machine has an option for being equipped with a cleaning tip system which clean excess tobacco (going out from the filled cigarette tube) when cigarette is over filled. The excess tobacco is removed of the cigarette tip and collected into collecting drawer. The collected tobacco is then empty to the inlet storage container from time to time.

[0020] Empty cigarette tubes are placed over the filling channel or channels. Pushing the suitable control button will activate the filling motor the motor will rotate the feeding spring. The tobacco will be then pushed through the hollow bar into the cigarette tube. Once a cigarette is filled with tobacco the filling channel is automatically stopped then the cigarette fed into the tip cleaner system and the overfilled tobacco is removed from the cigarette tip. When removing the excess material the process is ended, and the cigarette is ready for use.

[0021] The excess tobacco removed from cigarette tip is dropped in to the collecting drawer. The collecting drawer is empty from time to time back to the inlet storage container and the accumulated tobacco is reused.

[0022] A system including all above options is hereby described. Nevertheless it should be clear that changes and modifications to the embodiments described or excluding some of the machine elements will be apparent to those skilled in the art. It is, therefore, intended that such changes and modifications or excluded elements be covered by the appended claims. To complete the understanding of the abovementioned features and advantages of the invention a detailed description of the machine and drawings provided where additional features and advantages are described below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023]

FIG 1 is a perspective view of the portable cigarette filling machine comprising: The cap (29) located on top of the container (15). The container is fixed on top of the filling machine device (14) equipped with on/off knob (25) vibrating knob adjustment (10) and acentric shaft knob (42). The cleaning tip system (6)

attached to the filling system including the keyboard panel (24) with the push buttons (241, 242, 243, 244) which operate individually each filling system. A drawer (7) collecting excess tobacco removed from the cigarette is located below the unit while supporting grooves (50) located on top.

FIG 2 is a perspective explosion view of the portable cigarette filling machine, showing all machine parts that can be disassembled by user for the purpose of use or maintenance. Illustrating inner parts: rotating spring (5)

FIG 2-1 shows filling channels (2) and feeding springs (11)

FIG 3-A is a sectional view of the portable cigarette filling machine of the present invention, illustrating the empty cigarette tube (4) before it is loaded over the filling hollow bar tube (43).

FIG 3-B is a sectional view of the portable cigarette filling machine of the present invention, illustrating the empty cigarette tube fully loaded over the hollow bar tube (43).

FIG 3-C is a sectional view of the portable cigarette filling machine of the present invention, illustrating the cigarette tube after being filled with tobacco. The filled cigarette tube (4) fall into the tip cleaning system device (41) inside a slot. Vibrator or brushing element (104), removing any extra tobacco and drop it to the drawer (7) located below

FIG 3-D is a cross section of the portable machine showing the feeding motor (33) connected to the feeding spring (11) and the mixer motor (26) which rotate the rotating tobacco spring (5).

FIG 3-E shows the density control unit comprises of acentric shaft (45) and sprig density control (8) pushing the density knob (142) against the cigarette tube (4).

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] The present invention relates to a cigarette rolling machine equipped with optional features to be easily operated to have continual operation without the need to stop the cigarette rolling process for refilling tobacco to the machine, and to ensure supply of cigarettes without excess tobacco showing up from the cigarette end.

[0025] The bulk tobacco is placed into the inlet sealed storage container (15) comprising internal mixing ele-

ment that allows continual, smooth and steady supply of tobacco to the filling channels (2). The tobacco in the filling channel is moved by the feeding spring (11) into the cigarette through the hollow bare tube (43) unit. An empty cigarette tube (4) placed on the supporting groove (50), is pushed gently over the hollow bar tube (43). The tobacco is continually fed by the feeding spring (11) into the cigarette tube (4) pushing out the filled part away from the hollow bar (43). An eccentric shaft press the cigarette shell resisting it's sliding back and by that controlling the density of tobacco pushed to the cigarette shell.

[0026] The cigarette filling machine may have one or more filling channels (2) operating in parallel individually.

[0027] Additional device which may be used is the tip cleaning system (41). When cigarette filling up process ends up, the cigarette is moved to the cleaning tip unit. The cleaning unit remove the excess tobacco by one of the methods either vibrating the cigarette by element such as piezoelectric device Fig 3-C (104) or brushing the cigarette tip and removing the tobacco showing out of the cigarette end. The cigarette is now ready for use.

[0028] The excess tobacco is collected into drawer (7) located below. When the drawer (7) is filled the tobacco accumulated is returned back to the inlet container keeping clean surrounding and saving tobacco material from waste.

[0029] To use the machine user should fill up the inlet storage container (15) opening the cap (29). Opening the cap, or disassembling the inlet tobacco storage from the cigarette filling machine disable the operation of machine to avoid exposing operator to moving parts.

[0030] The user place the empty cigarette shell on the cigarette supporting groove (50) and push it gently onto the hollow bar (43), inserting the cigarette shell over the hollow bar (43).

[0031] The on/of knob (25) is pressed and operates mixer device (fig 2).

[0032] Pushing buttons (241, 242, 243, 244) located on control panel (24) will start the feeding spring (11) rotating. Tobacco is pushed through the hollow bar (43) to the empty cigarette tube and fills it up. Acentric shaft knob (42) adjusted to get required density of tobacco.

[0033] The filled cigarette tube (4) is pushed backward and fed into the cleaning tip system (6). A sensor detects the cigarette and stops the feeding spring (11) rotation.

[0034] The cleaning system vibrates the cigarette (or brush the cigarette tip) remove the excess tobacco from the cigarette tip. The vibration knob adjustment (10) control the intensity of cleaning device.

[0035] The access tobacco removed from the cigarette tip is collected into the drawer (7). From time to time the drawer is pulled out and the collected tobacco is returned to the inlet container (15).

Claims

1. A cigarette filling machine comprising: a housing

having an inlet sealed storage container wherein bulk tobacco is filled into the container (15) and kept ready for long and continual use, where tobacco stored is isolated from surrounding humidity conditions.

2. The cigarette filling machine of claim 1 comprising: inlet storage container (15) with internal tobacco feeder such as mixer element (5) consisting of spiral spring or rod located in the storage container; rotating the tobacco stored, gently to secure fluent and constant feeding of the tobacco to the cigarette filling machine.

3. The cigarette filling machine of 2 further comprising: a control apparatus for controlling the speed and direction of the rotation of the mixer element (5).

4. The cigarette filling machine of any preceding claim having an option for one or more filling systems, in which the tobacco from storage is inserted into one or more feeding spring (11) rotated by feeding motor, the feeding spring moves the tobacco in to the cigarette tube through a hollow bar (43).

5. The cigarette filling machine of any preceding claim having an eccentric shaft rotated controlling manually or by motor the density of tobacco filled via one or more filling tubes simultaneously the eccentric shaft press each of the the cigarette shells loaded, resisting it's sliding back and by that controlling the density of tobacco pushed to the cigarette shell.

6. The cigarette filling machine of any preceding claim further comprising a supporting groove guides (50) located in front of the hollow bar (43) to support the cigarette tube (4) while mounted over the hollow bar for easy and smooth mounting empty cigarette tubes.

7. The cigarette filling machine of any preceding claim, wherein the cigarette filling machine is portable.

8. The cigarette filling machine of any preceding claim, wherein the cigarette filling machine is electrical.

9. A tip cleaning system (6, 41) comprising cleaning mechanism and collecting drawer for collecting excess tobacco cleaned from tip cigarette, the tip cleaning system (6, 41) removes the excess tobacco from over filled cigarette by using mechanism that pull the excess tobacco from the cigarette and drop it into a drawer (7) located below, the cleaning process is done by either vibrating the cigarette, using rotating motor or piezoelectric element (104), or by brushing the tip of the cigarette and pull the excess tobacco from the cigarette tip.

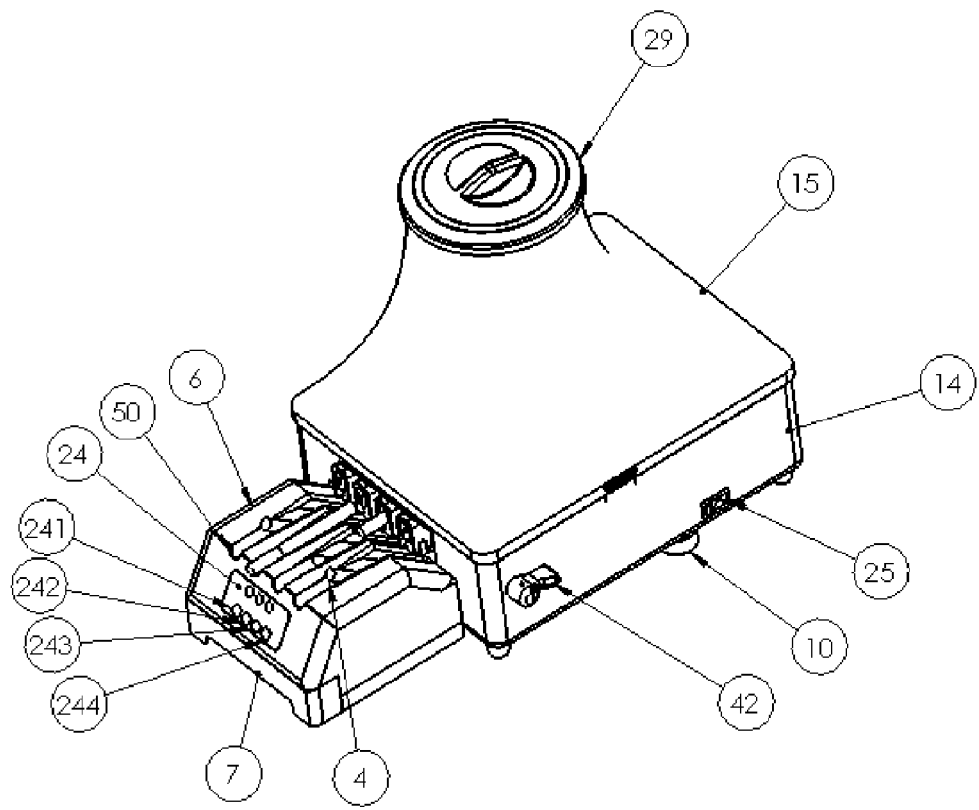


Fig 1

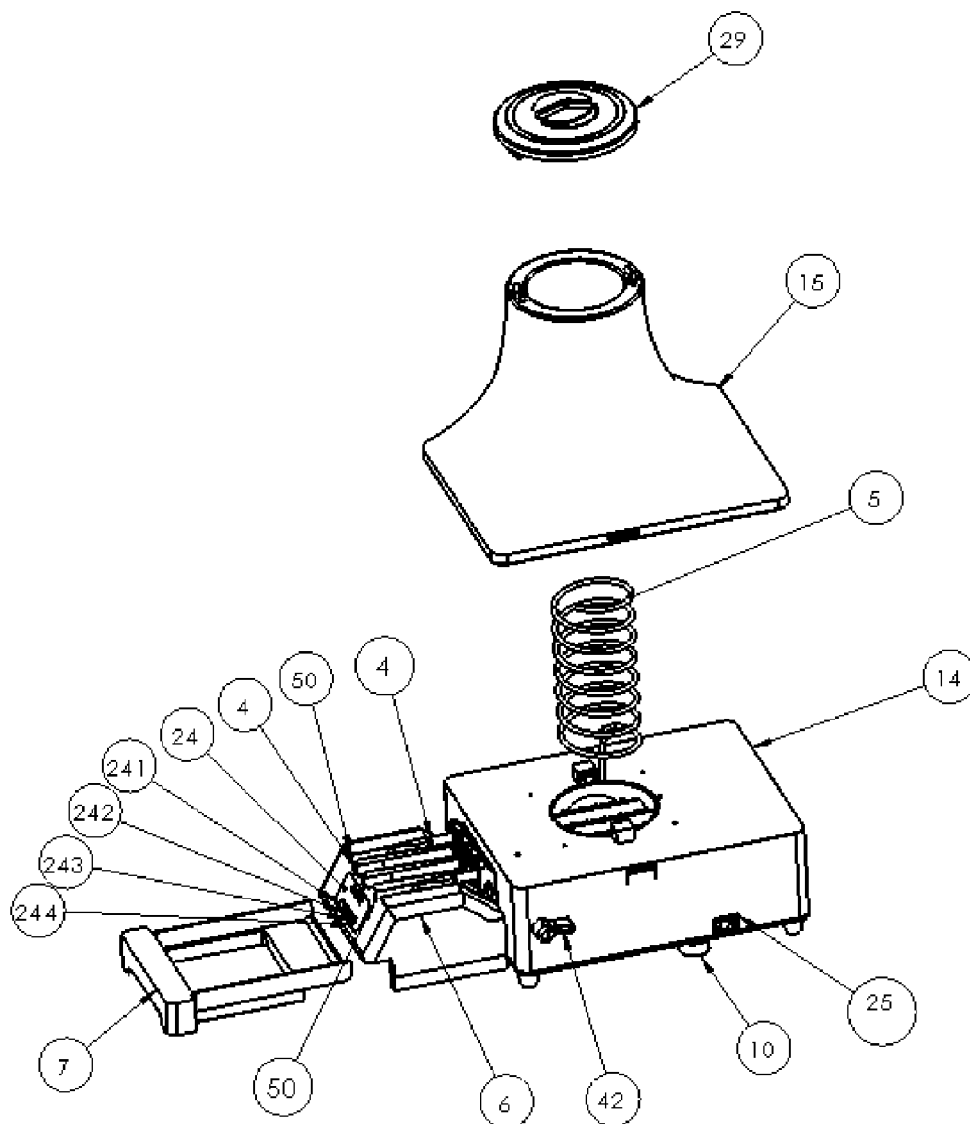


Fig 2

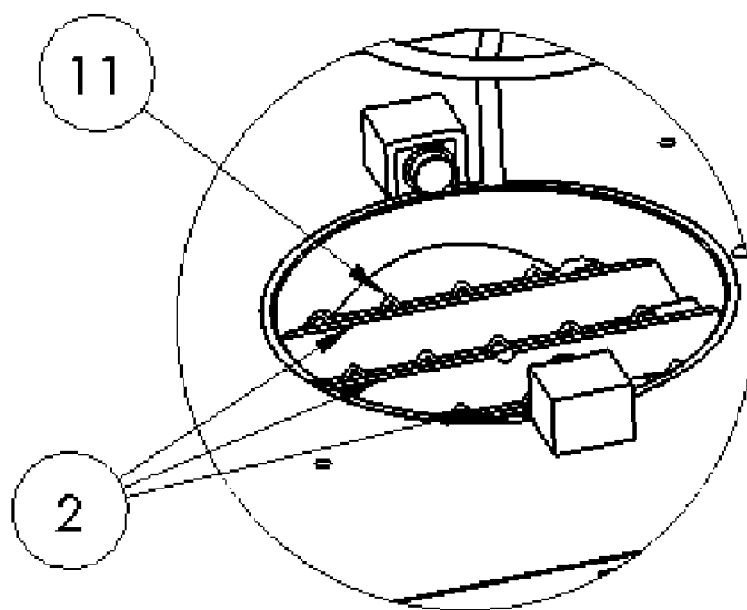


Fig 2-1

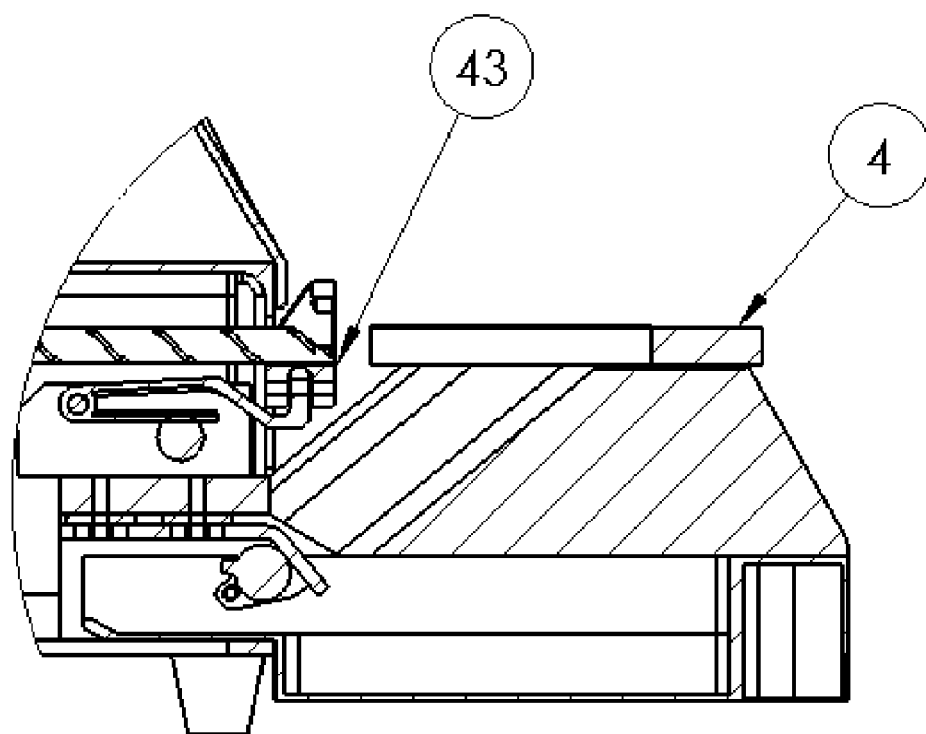


Fig 3-A

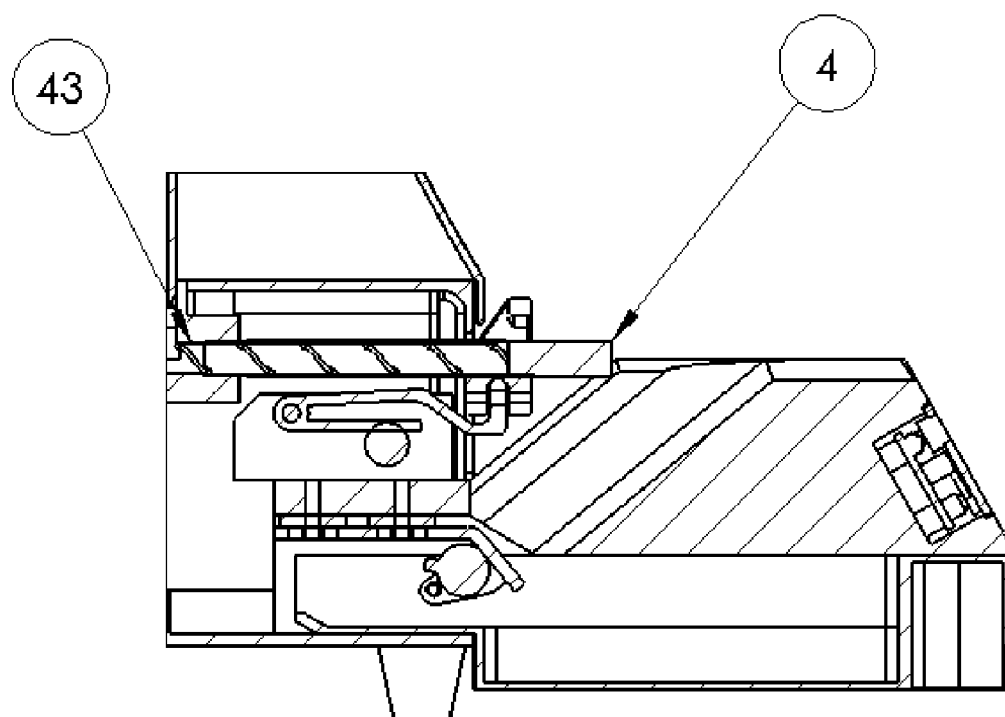


Fig 3-B

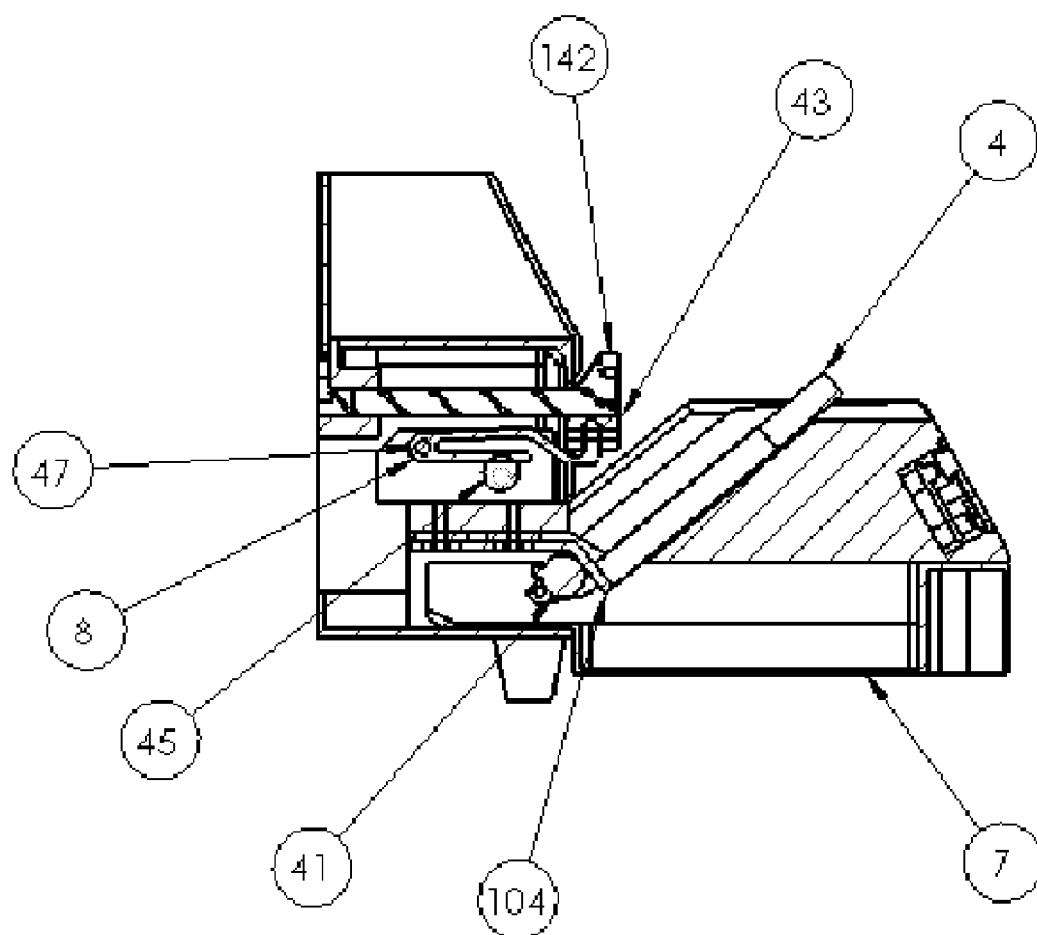


Fig 3-C

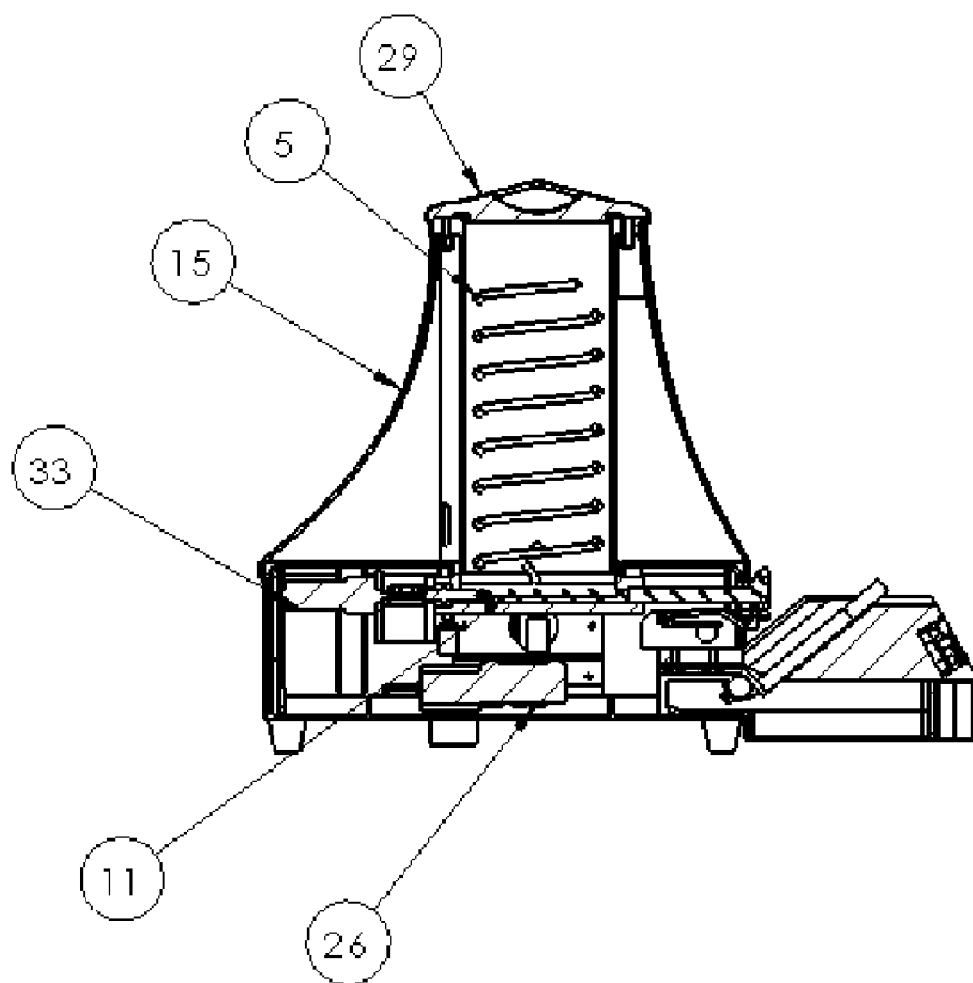


Fig 3-D

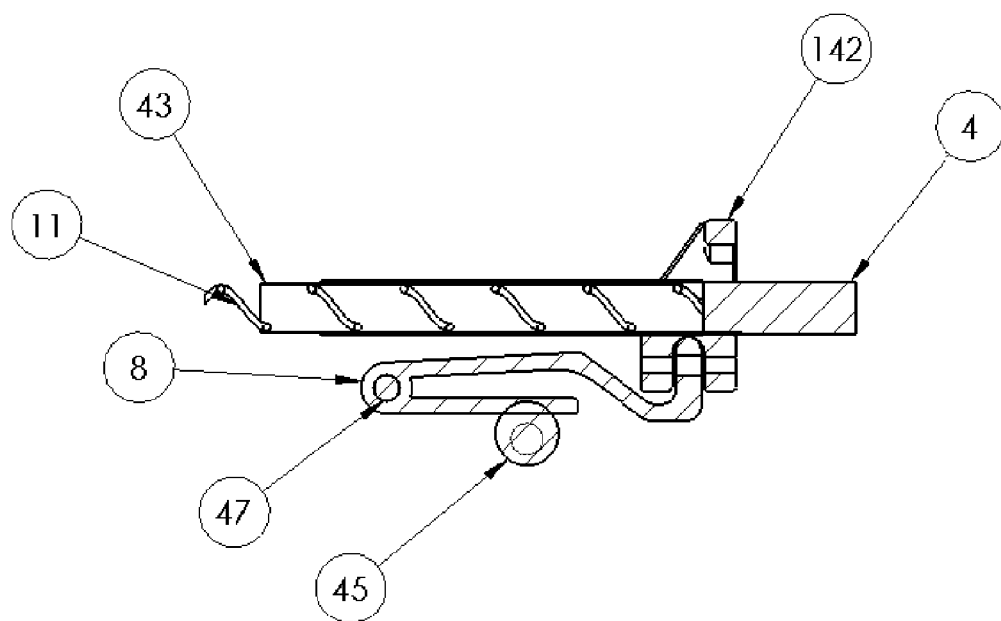


Fig 3-E