CIGARETTE ROLLING MACHINE

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The invention provides a cigarette rolling machine designed for both the use as a rolling template for creating cigarette paper tubes around the main body (FIG. 3) and then dispensing a load of tobacco into the awaiting paper tube after the tobacco has been inserted through slotted openings machined into one side of each of the two tubes which make up the main body (FIG. 3), an outer body tube (FIG. 1) which is the outside of the main body, then the tobacco is inserted into and shaped into a cylinder form by, a inner body tube (FIG. 2) which is then ejected out by a plunging push rod (FIG. 10) that runs the cigarette shaped tobacco out of the machine into the paper tube, the push rod which is attached on the main body by, a retaining end piece (FIG. 7) in which the plunging push rod (FIG. 10) can be extended out as many times as required to fill additional tobacco and again rammed into the awaiting cigarette tube to increase its size or to insert layers of different flavors or kinds of tobacco.
CIGARETTE ROLLING MACHINE

[0001] The invention is a portable machine for the self-rolling of cigarettes which allows the operator to control the volume of tobacco used depending upon the cigarettes desired length. The machine does so without the use of a pre-made paper cigarette tubes, but uses ordinary flat cigarette rolling papers of any size to form a suitable cigarette tube. The machine allows for the easy rolling of cigarettes for those who normally couldn’t roll tobacco rolling papers by hand. This is accomplished by the devices design which is the shape of the final product. Flat cigarette papers are easily rolled with the machine which acts as a template in the forming of a cigarette shaped paper tube.

[0002] The device works by first loading tobacco through a slotted opening into the inner body tubes empty cavity or chamber to form what will be referred to as a “tobacco cartridge” throughout this specification, within the two hollow round tubes making up the main body of the machine. Once the inner chamber has been filled with the desired amount of tobacco the opening is closed and a plunging push rod with a end tip rams and ejects out, transferring the tobacco cartridge out of the machine and into an awaiting paper cigarette tube which the user will install. The paper cigarette tube is formed by the user wrapping any ordinary flat cigarette rolling paper around the outside body of the machine. Once the paper is allowed to dry, the newly formed cigarette paper tube will release and slid forward off of the end of the machine and into position for receiving the tobacco cartridge being ejected out, thus forming the completed rolled cigarette and process.

[0003] As there are many variations of tobacco rolling machines, this particular cigarette rolling machine has been designed to be the smallest in size and with the fewest moving parts to reduce failure rates and increase durability. The main body and basis of the machines design is that of the two hollow round tubes of almost equal length and size, one slightly longer in its length and diameter allowing one to slid inside of the other. These two hollow round tubes can be made of material including but not limited to metal, plastic, composite materials, glass or any other suitable rigid material either not said or not expressed, which could be used to produce this machine. The main body of the machine is approximately the diameter of about half the length of a ordinary number two pencil, averaging five inches in length and five sixteenths of an inch in diameter. The outer body tube is slightly larger in diameter than inner body tube which have both been engineered to slide inside of one another forming what appears to be a single tube of the same length but with double thick walls. Within this double walled tube is where the forming of the tobacco cartridge takes place prior to being rammed and ejected out of the machine and thus injected into an awaiting formed cigarette tube install earlier by the user. These two almost identical hollow round tubes are both slotted on a single side forming a channel that spans almost the entire length of one side of each hollow tube. Then the two tubes are slide together forming the main body of the machine. A retaining end piece bonded into one end of the inner body tube traps and locks a small ridge on one end of the outer body tube effectively retaining the two tube together. Once retained together the two separate body parts, the inner and outer can independently rotate a full 360-degrees in either direction. When the main body tubes are rotated as to align the slotted channels of the inner and outer body tubes, it creates an opening which will be the tobacco receiving area. By further rotating the inner and outer tubes again the chamber opening will close again once the two slotted channels of the two tube become misaligned with each other. Once the inner and outer tubes of the main body of the machine are aligned forming the opening in which the inner chamber is exposed. It is in this position that tobacco is inserted into the open chamber that eventually will form the tobacco cartridge to be injected into a cigarette paper tube. Using prepared tobacco, the machine is hand filled by inserting small amounts directly into the slotted opening of the inner chamber formed by the two aligned slotted channels of the main body of the machine. Once the chamber or cavity has been filled with the desired amount of smoking materials, the inner and outer tubes are again rotated in order to misalign the two channel and effectively closing and sealing in the tobacco which is to become the tobacco cartridge and ultimately the final cigarette product. The tobacco at that time is ready to be rammed which forms the tobacco cartridge while ejecting it out from the inside of the machines main body by means of a plunging push rod. The tobacco cartridge is then forced out of the main body of the machine and injected into an awaiting cigarette paper tube applied around the main body of the machine by the user. The plunging push rod used is also a hollow tube similar to the tubes of the devices main body tubes, but only approximately one third of the main body’s tube diameter. The plunging push rod length is equal to the combined length of the main body and end cap when assembled together. This is required to allow room to attach a push rod knob and push rod end tip to their perspective ends. The function of the plunging push rod and its end tip is to force the tobacco cartridge forward out of the front end of the devices main body. The plunging push rod at first compresses the tobacco into a specific density caused by the friction created by the surrounding tube walls in such a manner to provide a suitable air draw through the finished cigarette product. Having this correct amount of friction is critical to the design of the device and is determined by several factors including but not limited to tube diameter and length, tube material makeup, inner tube surface polishing and plunging push rod tip diameter clearance. The push rod end tip or rams clearance in relationship to the diameter of the machines main body must be exact to prevent jamming or binding during the compression operation of the machine. When the push rod is fully depressed inside the machine the push rod end tip must come flush with the end of the main body to prevent tobacco from clinging to the end of the device.

[0004] A retaining end cap inserted and bonded to one end of the inside of the inner body tube. The end in which the cap is inserted and bonded to the inside of the inner body tube is attached to the end that is opposite that in which the tobacco cartridge is ejected from. The cap serves several purposes directly related to the design and assembly of the machine. First, the cap acts as a end piece sealing off one end of the machines main body’s inner smoking material cavity or chamber. Secondly, the cap which is center drilled completely through to a diameter slightly larger than the push rod acts both as a guiding sleeve and retainer for the plunging push rod and end tip piece. Thirdly, the cap with its knurling on its outer exposed edge allows user to better grip in order to rotate the inner body tube from the outer body tube to align both the slotted channels of each in order to expose the inner cavity or chamber for filling with tobacco. The final design purpose for the retaining end cap is its use as a retainer holding the two
separate tubes together in which the main body of the machine is formed. This is accomplished by incorporating a slight inward ridge or lip formed during a specific tube cutting process of one end of the outer tube of the machine's main body. The inner tube can then only be inserted from the factory cut end of the outer tube as the ridge or lip of the opposite end of the outer tube would prevent insertion. This same inward ridge or lip acts as a stopper to the inner tube when it is inserted into the outer tube forming a single piece. It is at this point that the retainer end cap is inserted and bonded into the inside end of the inner tube of the machine, on the end of the outer body tube that has the inward lip, then the outer body tube becomes permanently retained or trapped together between the retainer end cap and the inner body tube.  

[0005] A push rod press piece or knob is installed and bonded to one end of the plunging push rod, the end of the push rod opposite that of the end tip piece or ram. This knob acts both as a retainer holding the push rod in its perspective position and acts as imiter in the amount of travel the plunging push rod can slide for the correct ejection of the tobacco cartridge. A knob is required on the outside end of the plunging push rod, the end opposite the end tip piece or ram, allowing the user to apply enough pressure by hand during the parallel of the plunging push rod through the center of the machines main body forcing out the tobacco cartridge.  

[0006] The operation of the machine begins by holding on to the main body while grabbing the knob and pulling out the plunging push rod and end tip ram into its furthest position out from the main body of the machine. This must be done prior to filling of tobacco into the cavity or chamber of the main body. The filling with tobacco is accomplished by first opening the machines cavity or chamber by rotating and aligning the two separate slotted channels of the two main body tube which forms the cavity or chamber opening for inserting of tobacco. Once the chamber is opened by alignment of the two slotted main body tubes, tobacco is inserted by hand by pressing small pinches directly into the chambers opening with the users fingers and thumbs. When the amount of tobacco had been reached to produce the correct length of cigarette desired, the two main body tubes are again rotated in opposite directions misaligning the two slotted channels and closing the opening and sealing the tobacco within the chamber of the main body. Then the plunging push rod can be partially depressed inward to slightly compress the tobacco within the main body and form the tobacco cartridge that will eventually be ejected out of the machine's end. Once the tobacco cartridge has been formed in the main body of the machine as described above, it is ready to be ejected out and injected into an awaiting paper cigarette tube wrapped around the outside of the main body of the machine. The shape of the machine allows the user to easily apply and roll any ordinary flat cigarette rolling paper on to the outside of the main body. To install and create a paper rolling tube the user must first wet or lick the long edge of an ordinary flat cigarette paper, the edge opposite the edge with glue or seam sealer on the paper. When a flat rolling paper is wetted along its non-glue edge, the paper will want to cling or stick directly to the outside of the devices main body. Once contact is made between the wetted rolling papers edge and the machine, the paper will thoroughly adhere to the side of the machines main body. It is at this time the paper is rolled around the main body of the machine. This can be done rolling with the hands or simply setting the machine on a flat surface and rolling forward will wrap the flat paper around the machine and its glued seam licked to seal the rolling paper closed as normally done. The rolling paper will remain adhered to the main body of the machine and will thoroughly stick until it dries, at which time the adhesion will cease between the rolling paper and the machine. Once the now rolled paper tube is fully dried it will completely releases its adhesion from the main body and is then able to move and slide freely on the main body of the machine. The user then slides forward and positions the newly formed paper cigarette to hang off the ejection end of the machines main body and twisting that paper so to close the end of the rolling paper shut, using the finger to do so. Then continue pushing the rolling paper to where it is half way on and half way off the main body of the machine. It is at this point that the tobacco cartridge is ejected by the depressing of the plunging push rod and forced but of the main body and injected into the awaiting paper rolling tube in front of the ejecting tobacco cartridge. The cartridge completely fills the first half of the paper, it will continue its ejection out as it drags off the remaining half of the rolling paper from the main body of the machine and completing the process of producing a fully rolled cigarette. The end product cigarette has the approximate shape and diameter of a standard cigarette with the overall length depending upon the users choice of flat cigarette rolling papers used or by the amount of tobacco used. This machine is intended to produce a specific diameter as described, but also larger and smaller diameter tubes could be used on future production models to increase or decrease the diameter of the finished product.  

[0007] The machines design is so that any user can roll uniformed shaped cigarette with quality smoking attributes while controlling the volume of tobacco used to determine the exact length of cigarette, very short or very long tobacco cartridges is the users choice. The user also has control to introduce multiple small tobacco cartridges into a single paper rolling tube, effectively creating layers of different tobaccos and flavors in the same cigarette.

The invention claimed is:  
1. A machine for the forming and filling of cigarette papers, comprising of two separate hollow tube pieces, an outer body tube (FIG. 1) which serves several purposes including as a sleeve cover, rolling paper template and tobacco filling port opening, a inner body tube (FIG. 2) which also serves several purposes including as a tobacco-receiving zone, cigarette form shaper and tobacco filling port, is slid inside of the outer body tube (FIG. 1) forming a main body (FIG. 3) in which the two separate tubes can fully rotate within each other, both tubes are machined out and slotted (FIG. 5) along the majority of their lengths on one side, when these slots of both tubes are rotated and brought into alignment with each other, it creates a suitable opening and filling cavity for the forming of tobacco into a cylinder shape, then the outer body tubes (FIG. 1) slot is rotated and misaligned with the inner body tubes (FIG. 2) slot to close the cavity which is the tobacco-receiving zone (FIG. 6) of the machine, a retaining end piece (FIG. 7) is bonded on the inside of one end of the inner body tube (FIG. 8) coupling the two tubes together which makes up the main body (FIG. 3) this is accomplished by retaining the outer body tubes inward ridge (FIG. 9) between the retaining end piece (FIG. 7) and the inner body tube (FIG. 2) the machine further comprising a plunging push rod (FIG. 10) that is movably mounted through and guided by the retaining end piece (FIG. 7) as it slides through the inner body tube (FIG. 2) that during the introduction of tobacco into the machine, is pulled out-
wards extending the machine to its longest length to expose an open cavity during this filling stage, after rotating closed is manually depressed inwards to eject the contents within the inner body tube (FIG. 11) known from here on out as a tobacco cartridge (FIG. 12), a push rod tip piece (FIG. 13) bonded onto the inner end of the plunging push rod (FIG. 10) which makes direct contact with the tobacco cartridge within the machine and also guides the inner end of the plunging push rod (FIG. 10) as it slides through the inner body tube (FIG. 2) making contact with and then depressing the tobacco cartridge forward out of the opened end of the inner body tube (FIG. 2) of the machine, a push rod press piece (FIG. 14) bonded onto the outside end of the plunging push rod (FIG. 10) in which pressure can be applied to eject out the tobacco cartridge from within the inner body tube (FIG. 2) into an awaiting cigarette rolling paper (FIG. 15) which is wrapped around the outer body tube (FIG. 1) forming a paper cigarette tube (FIG. 16) in which the tobacco cartridge is received once ejected out of the machine (FIG. 17).

2. A machine according to claim 1, characterized in that the outer body tube (FIG. 1) also has the function as a template for the forming of cigarette papers (FIG. 16) around the main body (FIG. 3) effectively creating a cigarette paper tube roller.

3. A machine according to claim 3, characterized in that the outer body tube (FIG. 1) and the inner body tube (FIG. 2) slid together form the main body (FIG. 3) while simultaneously forming an inner cavity for the filling and forming of a tobacco cartridge.

4. A machine according to claim 3, characterized in that the outer body tube (FIG. 1) and the inner body tube (FIG. 2) once fitted together and when the slots of each tube are aligned forms a unique and suitable opening for the placement of tobacco into the main body (FIG. 3).

5. A machine according to claim 3, characterized in that the outer body tube (FIG. 1) and the inner body tube (FIG. 2) when fitted together with both slots aligned with each other causes a balanced shift in weight as the opening side becomes lighter and the opposite side weight doubles, causing the machines slotted and filling side to rotate upwards when placed on any flat surface.

6. A machine according to claim 4, characterized in that the mutual fastening means used to lock together the two tubes is accomplished with a retaining end piece (FIG. 7) inserted through the outer body tube (FIG. 1) end that is flanged inward and then inserted and bonded to the inside of the inner body tube (FIG. 2) which retains both as a single piece while providing the two tubes the capacity to fully rotate independently from each other.

7. A machine according to claim 5, characterized in that the plunging push rod (FIG. 10) is designed to have sliding mobility in and out and to apply the specific amount of force required to overcome the friction cause between the tobacco cartridge and its compression against the sidewalls of the inner body tube (FIG. 2).

8. A machine according to claim 5, characterized in that the plunging push rod (FIG. 10) slide position can be manipulated in and out several times, reopening the filling cavity each time while inserting additional tobacco and again closing, allowing dispensing of multiple shorter tobacco cartridges into the same receiving paper cigarette tube creating a layered effect along with a longer cigarette as more or different tobaccos are added.

9. A machine according to claim 7, characterized in that the push rod tip (FIG. 14) also performs the task as a retaining device for the push rod and plunging depth guide limiting the plunging push rods (FIG. 10) position to inside of the inner body tube (FIG. 2).

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