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2,022,461

MANUFACTURE OF CIGARETTES

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Fig. 1.

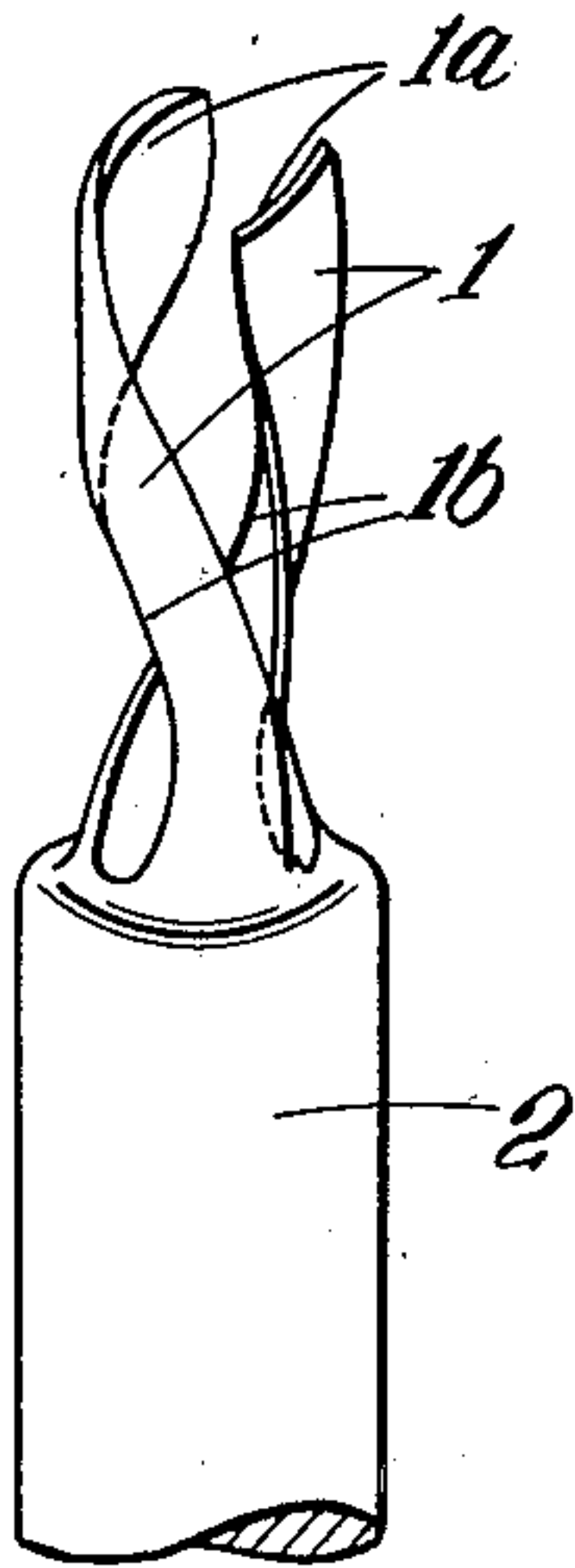


Fig. 2.

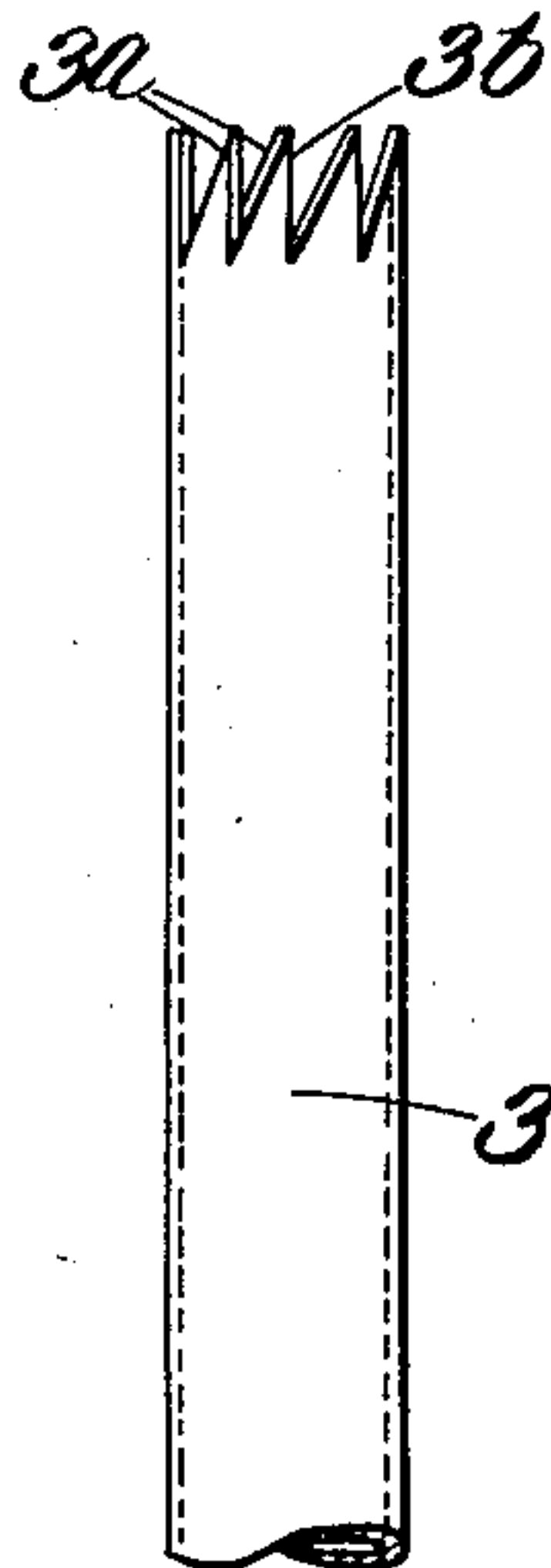


Fig. 3.

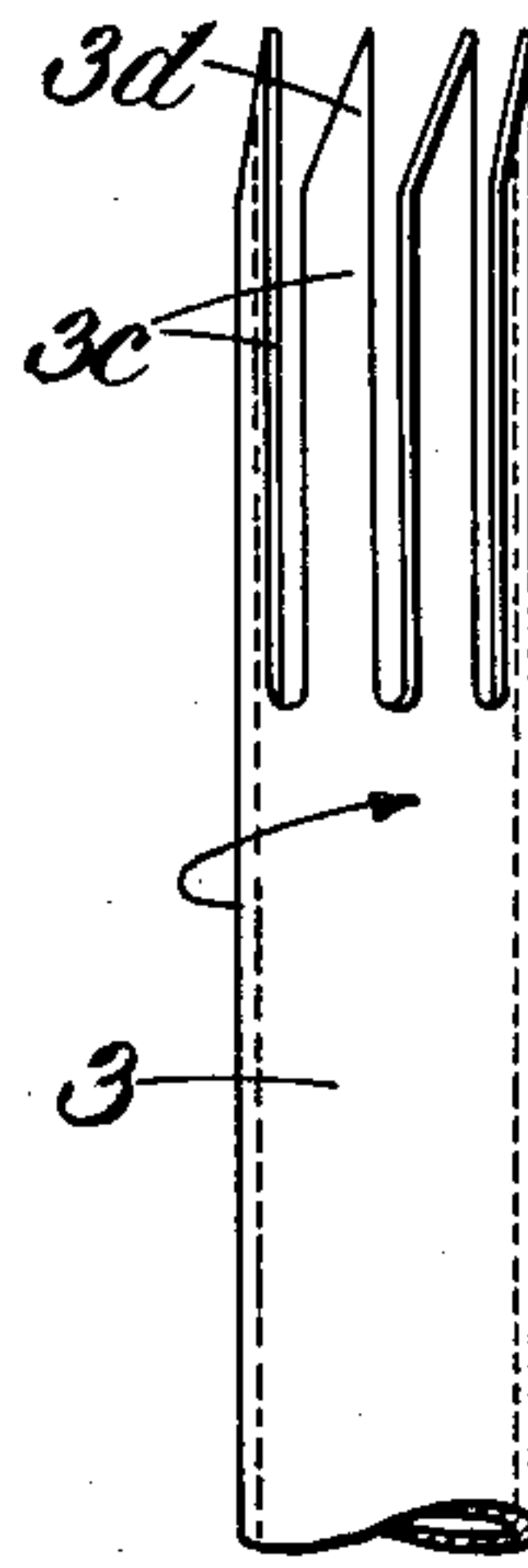


Fig. 4.

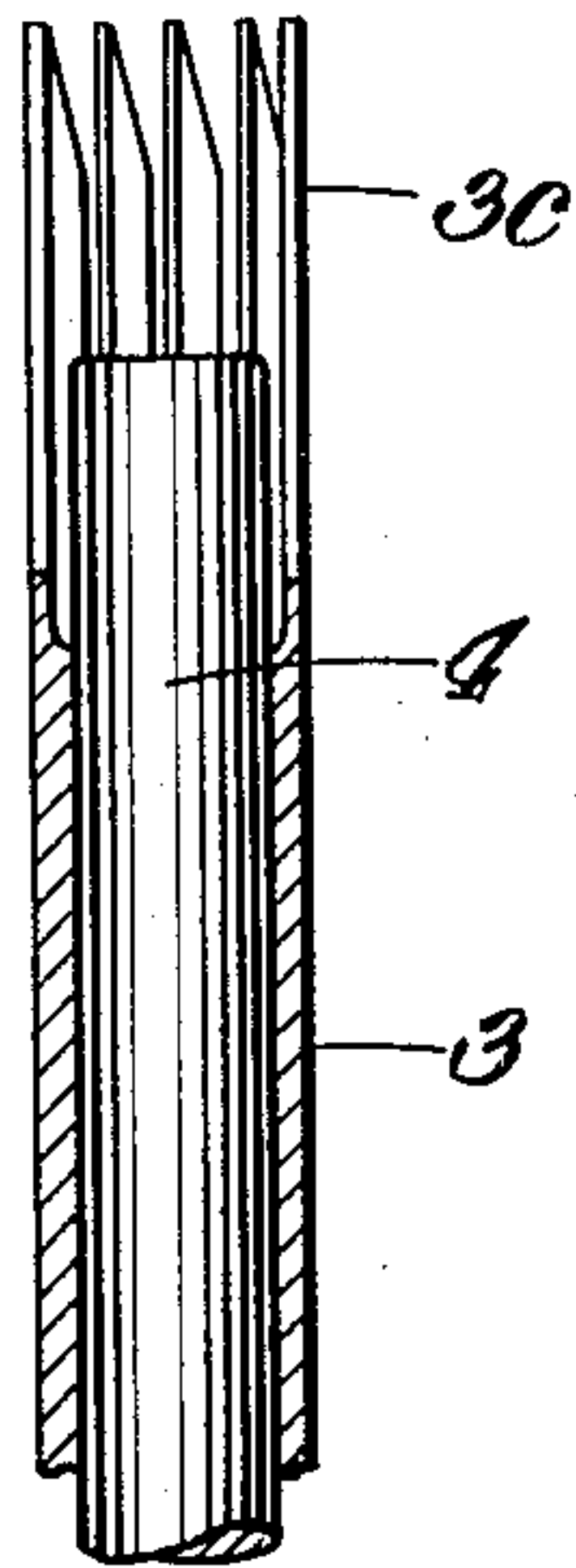
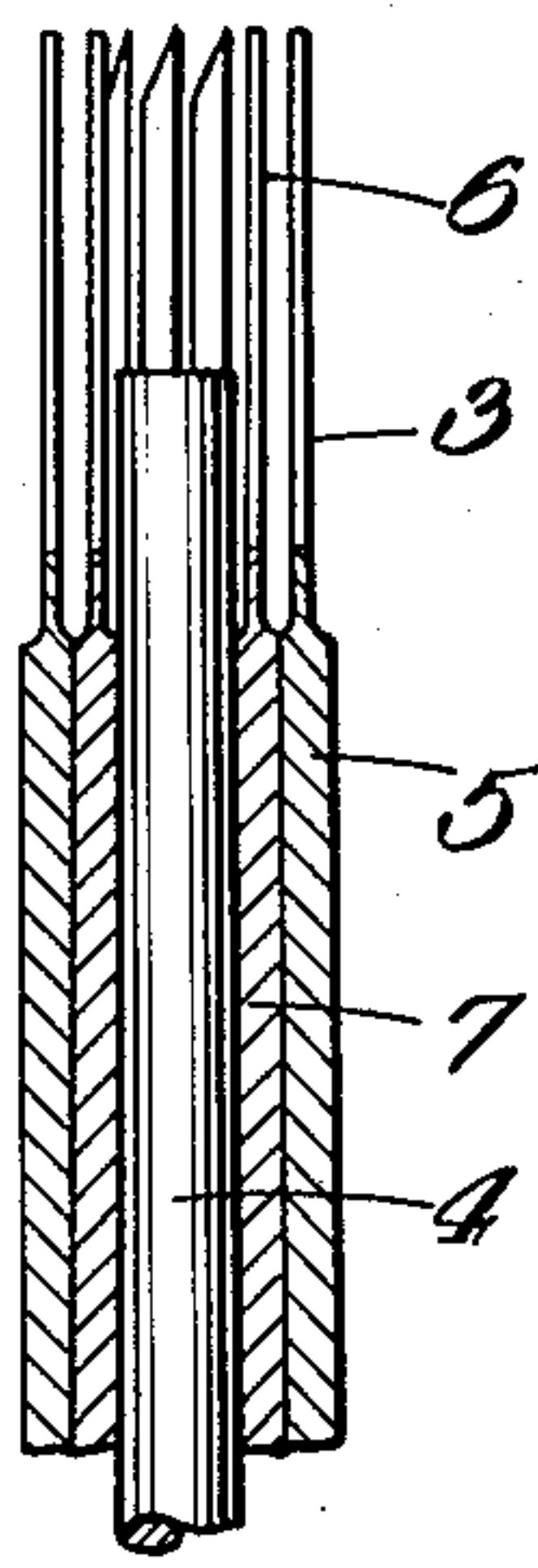


Fig. 5.



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MANUFACTURE OF CIGARETTES

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14 Claims. (Cl. 131—5)

This invention relates to the manufacture of cigarettes and is particularly concerned with improved means for use in forming a cavity in the mouthpiece end of a cigarette, for example, in the manufacture of filter tip cigarettes by a method wherein a part of the tobacco filling of ordinary cigarettes, such as produced on continuous rod machines, is removed and a filter tip or like mouthpiece filling inserted.

According to the present invention the improved means comprises a device adapted to exert a cutting action on the tobacco filling adjacent the wall of the cigarette paper tube or mouthpiece to facilitate effective withdrawal of part of the tobacco filling. In one embodiment, the device comprises a cutter consisting of a thin-walled tube provided at its extremity with one or more cutting elements adapted to cut around the tobacco filling adjacent the wall of the cigarette paper tube or mouthpiece. The tube may be slotted to provide one or more helically extending cutting elements or provide longitudinally extending cutting elements, or the cutting elements may be in the form of teeth or serrations. Two concentrically arranged tubular rotatable cutters may be utilized, if desired, in which case they are preferably rotated in opposite directions. Such tubular rotatable cutters having longitudinally extending cutting elements may be provided with elements adapted to be movable towards and away from the centre of the cutter for the purpose of more positively effecting withdrawal of part of the tobacco filling.

The tobacco removed by the above-mentioned devices may be ejected therefrom by means of an axially movable plunger.

The devices according to the invention are used in conjunction with mechanism, for example such as described in the prior Patent No. 1,967,610, whereby cigarettes are carried successively into alignment with the devices which are caused to operate on the cigarettes by relative movement between the devices and the cigarettes.

The invention is hereinafter described by way of example with reference to the accompanying diagrammatic drawing, in which:—

Figure 1 is a perspective view illustrating one construction of device according to the invention;

Figures 2 and 3 are side elevations illustrating modifications;

Figure 4 is a longitudinal section illustrating the manner in which the ejecting plunger may be employed;

Figure 5 is a longitudinal section illustrating a further modification;

In carrying the invention into effect according to one construction and with reference to Figure 1 of the accompanying diagrammatic drawing, a rotatable cutter is provided consisting of a thin-walled steel tube slotted to provide one or more helical cutting elements 1 extending from a rotatable spindle 2 which may be tubular, the cutting elements having sharpened extremities 1a and preferably also having sharpened edges 1b. The cutter which is rotated at high speed effectively separates or loosens the part of the tobacco filling to be extracted from the wall of the cigarette paper tube or mouthpiece and on withdrawal of the cutter, preferably while still rotating, the helical formation of the cutting element or elements 1 may effect the withdrawal of such part of the tobacco filling.

In a modification, as illustrated in Figure 2, the cutter may consist of a thin-walled steel tube 3 having a number of teeth or serrations 3a at its outer end, such teeth or serrations having sharpened leading edges 3b which preferably are disposed more or less parallel to the axis of the spindle so that the teeth or serrations 3a are of ratchet or like formation.

In a further modification, as illustrated in Figure 3, the tube 3 may be slotted to provide longitudinally extending cutting elements 3c, the leading edges 3d of which are sharpened. As shown in Figure 4 the tobacco removed by its frictional engagement with such tubular cutter may be ejected therefrom by means of a plunger 4 movable axially within the cutter.

As shown in Figure 5 two concentrically arranged cutters, such as hereinbefore described, may be mounted to rotate in opposite directions, the outer cutter 3 being carried by a sleeve 5 and the inner cutter 6 by a spindle 7 or tube running in such sleeve 5. If desired, an ejecting plunger 4 axially movable within the device may be employed as before described.

Such cutters may extract part of the tobacco filling on withdrawal from the cigarette paper tube or mouthpiece, or, if necessary, the withdrawal of the part of the tobacco filling may be effected subsequently by means of a separate extracting device, for example, such as described in the prior Patent No. 1,967,610, having gripping members adapted to enter between the tobacco filling and the wall of the cigarette paper tube or mouthpiece and in closing together to engage and withdraw a part of the filling in a substantially unbroken condition.

It will be understood that the invention is not limited to the particular embodiments hereinbefore described. For example, the various forms of the device according to the invention may be used together or in succession in any suitable combination or in conjunction with extracting devices followed, if desired, by a facing cutter or cutters, as described in the prior patent referred to.

10 What I claim is:

1. A device for use in forming a cavity in the mouthpiece end of a cigarette, comprising a rotary tubular tool having a sharpened edge adapted to exert a cutting action on the tobacco filling adjacent the wall of the cigarette paper tube or mouthpiece to facilitate effective withdrawal of part of the tobacco filling in the form of an unbroken slug.

2. A device for removing a section of tobacco from the mouthpiece end of a cigarette to form a cavity for an insertion, comprising a thin-walled rotary tube having an exterior diameter substantially equal to the interior diameter of a cigarette tube and provided at its extremity with a cutting element adapted to cut around the tobacco filling adjacent the wall of the cigarette tube to separate a tobacco slug in unbroken form.

3. A device according to claim 2, wherein the tube is slotted to provide one or more helically extending cutting elements.

4. A device according to claim 2, wherein the cutting element is in the form of a tooth or serration.

5. A device according to claim 2, wherein the tube is slotted to provide longitudinally extending cutting elements.

6. A device according to claim 2, including a plunger movable axially within the tube, for ejecting tobacco gathered therein.

7. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion, comprising a rotary thin blade-like tubular element having a sharpened edge adapted to be inserted into a cigarette adjacent the wall of the wrapper to cut the tobacco immediately adjacent said wall, so that the section of tobacco can be removed intact.

8. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion, comprising a rotary thin-walled tubular element of a diameter substantially equal to the interior diameter of the cigarette wrapper, and means on one end thereof for cutting the tobacco adjacent the wall of the cigarette wrapper upon introduction of said end into the cigarette from which the section of tobacco is to be removed so that the section of tobacco can be removed intact.

9. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion, comprising a rotary thin-walled tubular element of a diameter substantially equal to the interior diameter of the cigarette wrapper, said tubular element having slots in

the wall thereof to form individual cutting members, and each of said cutting members having a cutting edge for cutting the tobacco adjacent the wall of the cigarette wrapper upon introduction of said tubular element into the cigarette from which the section of tobacco is to be removed so that the section of tobacco can be removed intact.

10. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion, comprising a rotary thin-walled tubular element of a diameter substantially equal to the interior diameter of the cigarette wrapper, said tubular element having helical slots in the wall thereof to form individual helically-shaped cutting members, and each of said cutting members having a cutting edge for cutting the tobacco adjacent the wall of the cigarette wrapper upon introduction of said tubular element into the cigarette from which the section of tobacco is to be removed so that the section of tobacco can be removed intact.

11. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion, comprising a rotary thin-walled tubular element of a diameter substantially equal to the interior diameter of the cigarette wrapper, and a plurality of serrations formed on one end of said tubular member for cutting the tobacco adjacent the wall of the cigarette wrapper upon introduction of said end into the cigarette from which the section of tobacco is to be removed so that the section of tobacco can be removed intact.

12. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion comprising rotary concentric tubular cutting elements having sharpened edges adapted to be inserted into the end of the cigarette for cutting the tobacco adjacent the wall of the cigarette wrapper so that the section of tobacco can be removed intact.

13. A tool for removing a section of the tobacco filling at one end of a cigarette to provide a cavity for an insertion comprising a pair of concentric tubular rotary cutting elements, and individual cutting means formed on each of said elements, said elements being adapted to be introduced into the cigarette while rotating in opposite directions to cut the tobacco adjacent the wall of the cigarette wrapper so that the section of tobacco can be removed intact.

14. A device for removing a section of tobacco from the mouthpiece end of a cigarette to form a cavity for an insertion, comprising two concentrically arranged thin-walled rotary tubes, the outer of which has an exterior diameter substantially equal to the interior diameter of a cigarette tube, and cutting elements provided on the corresponding extremities of said tubes for cutting around the tobacco filling adjacent the wall of the cigarette tube to separate a tobacco slug in unbroken form.

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