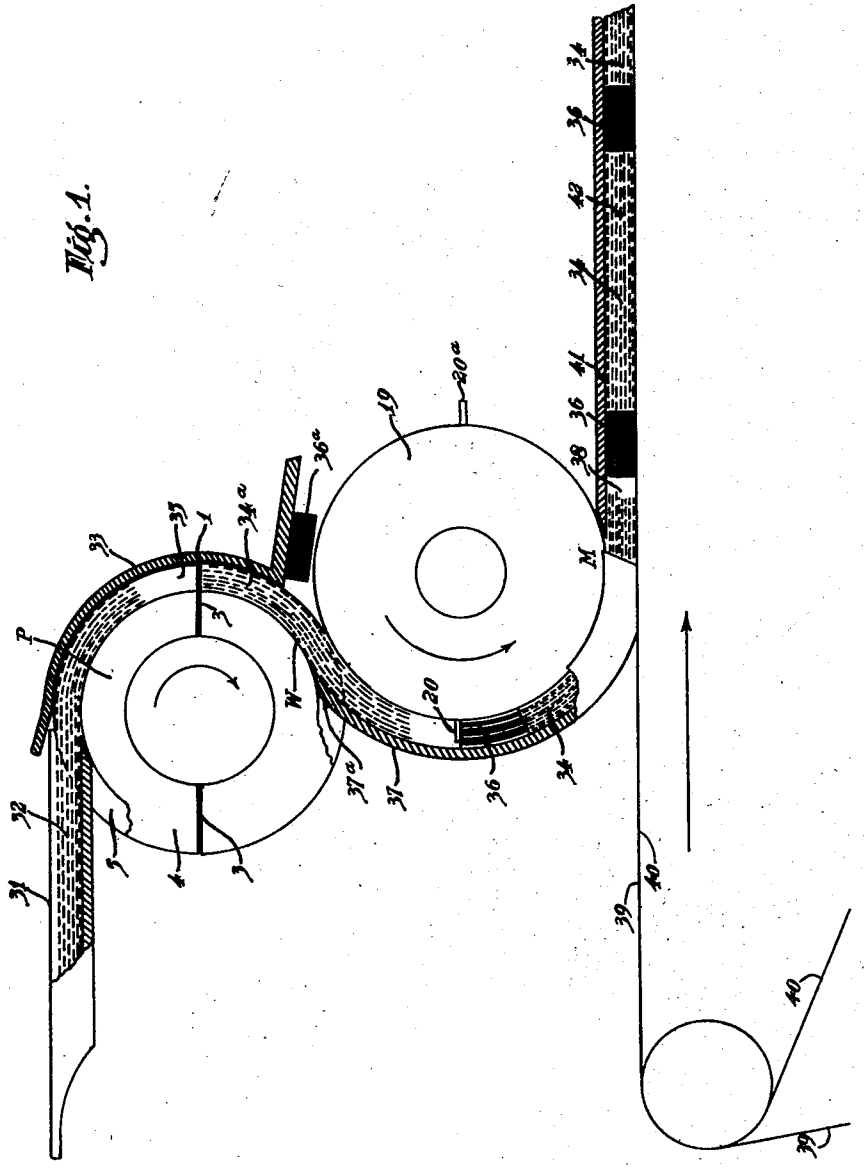
July 22, 1952 H. POLICANSKY 2,604,099

METHOD OF AND MEANS FOR THE PRODUCTION OF FILTER-TIP CIGARETTES

Filed Sept. 11, 1946 5 Sheets-Sheet 1

Fig. 1.



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METHOD OF AND MEANS FOR THE PRODUCTION OF FILTER-TIP CIGARETTES

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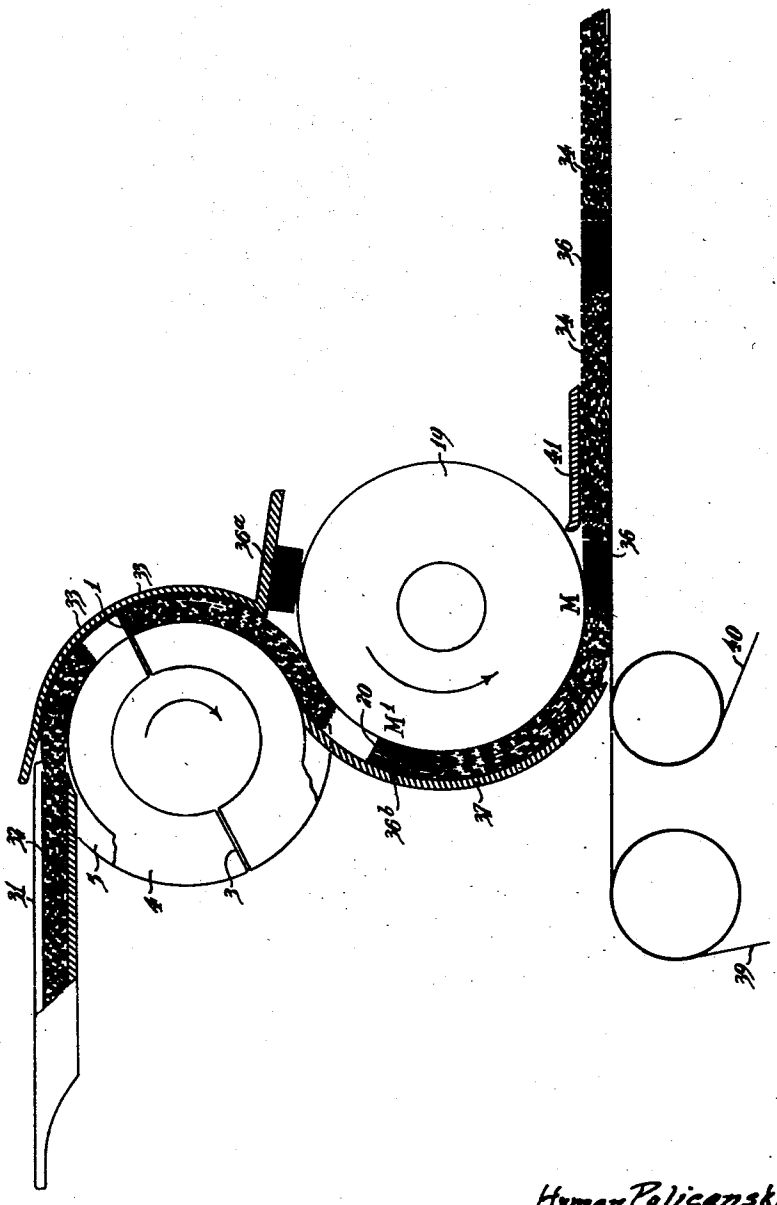


Fig. 1.

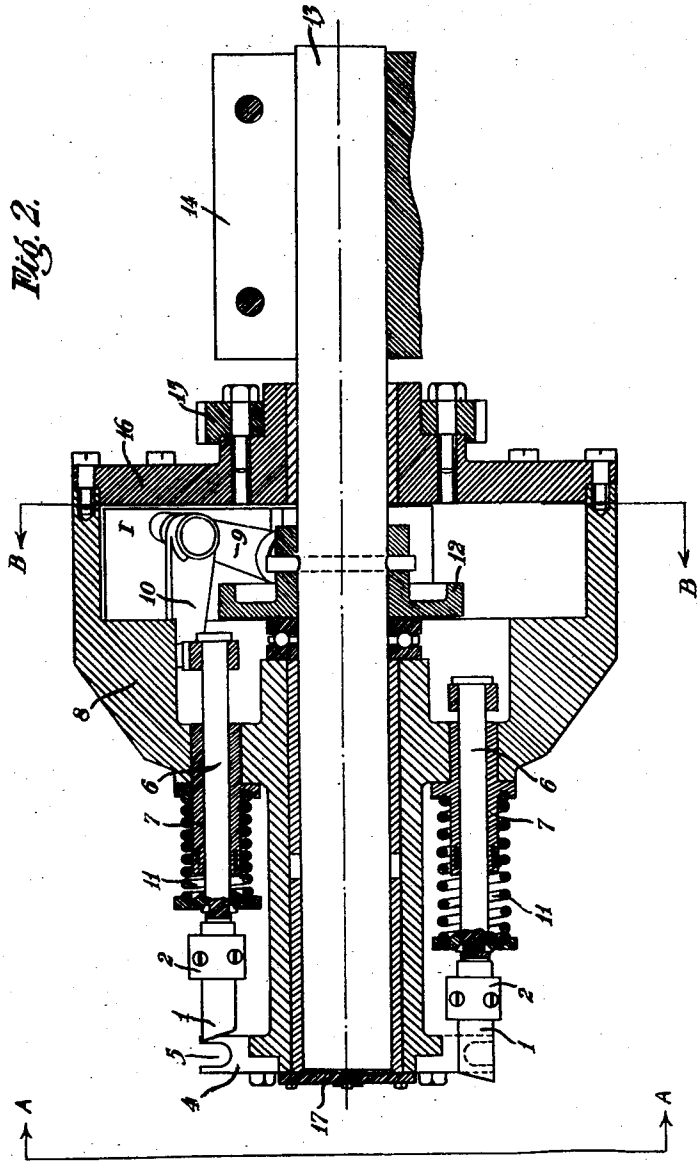
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METHOD OF AND MEANS FOR THE PRODUCTION OF FILTER-TIP CIGARETTES

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Fig. 2.



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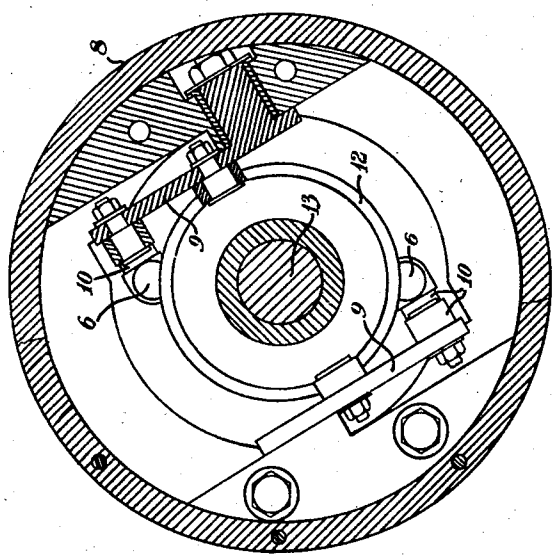


Fig. 4.

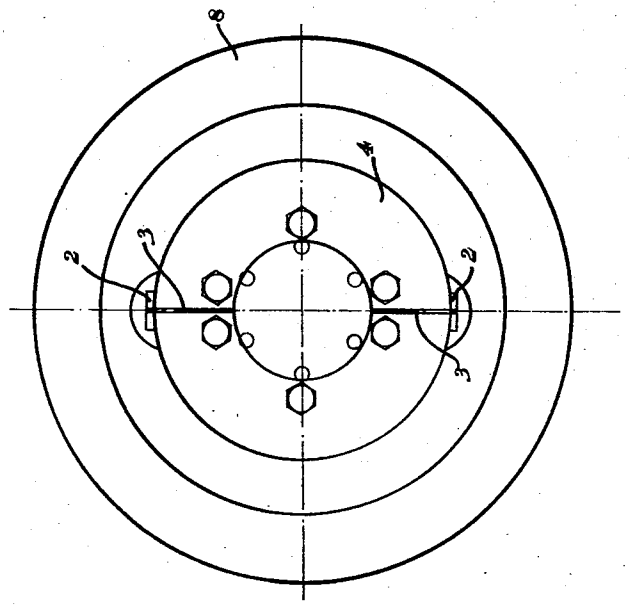


Fig. 3.

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METHOD OF AND MEANS FOR THE PRODUCTION OF FILTER-TIP CIGARETTES

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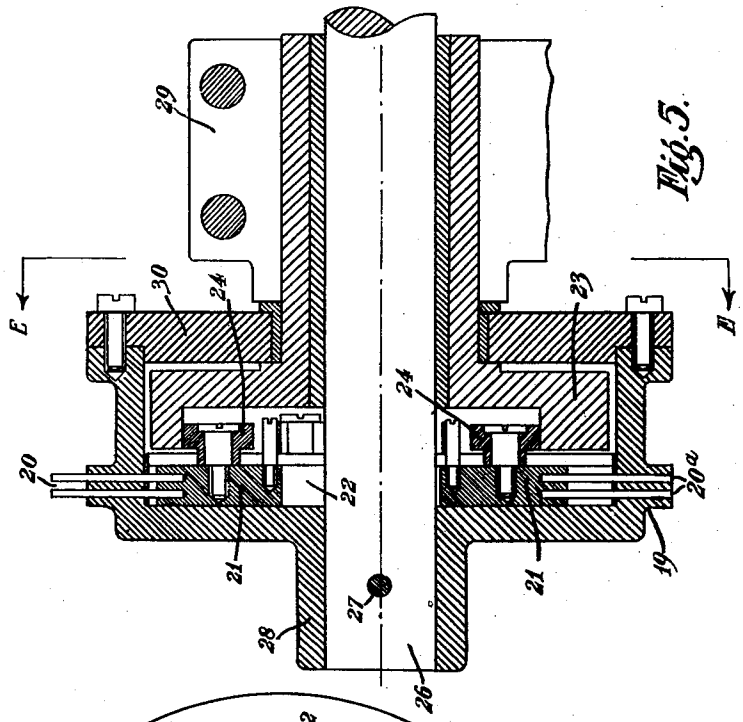


Fig. 5.

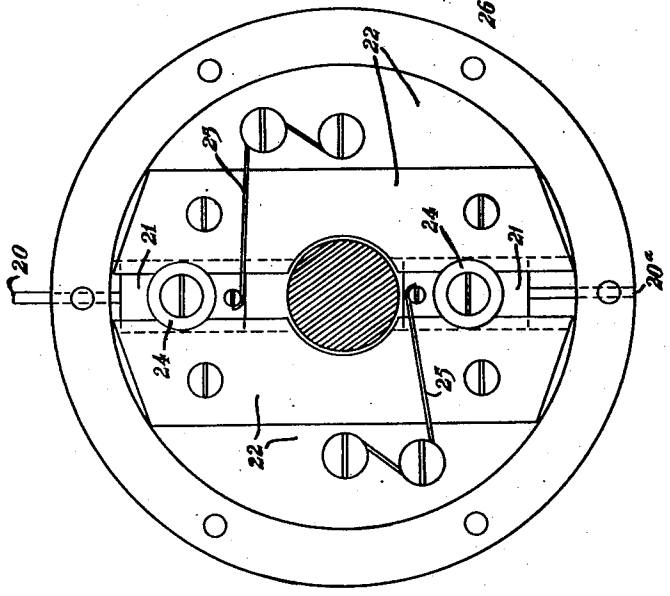


Fig. 6.

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UNITED STATES PATENT OFFICE

2,604,099

METHOD OF AND MEANS FOR THE PRODUCTION OF FILTER-TIP CIGARETTES

Hyman Policansky, Cape Town, Union of South Africa, assignor to Industrial Machinery Company Limited, London, England

Application September 11, 1946, Serial No. 696,206
In Great Britain October 22, 1945

20 Claims. (Cl. 131—61)

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This invention relates to a method of and means for the production of filter tip cigarettes and is concerned with improvements in or relating to apparatus for the high speed production of filter tip cigarettes on a cigarette making machine of the type known as a continuous rod machine, wherein before being wrapped and cut into individual cigarettes a continuous unwrapped tobacco rod or rope is transformed into a continuous rod comprising alternate abutting lengths of filter plugs, mouthpieces or other like objects, and lengths of tobacco rod or rope. For the purpose of this specification the words filter plugs shall be taken to mean filter plugs, mouthpieces, or the like.

According to the present invention a method of transforming a continuous tobacco rope moving along a rectilinear path of travel into a continuous rod comprising alternate abutting lengths of tobacco rope and filter plugs consists in diverting the rectilineal path of travel of the tobacco rope to cause the latter to move along and through an arcuate path of travel to which the said rectilinear path is tangential or substantially so, severing the tobacco rod or rope at or beyond the point of contact between the tangent and the arc, positively moving the severed portion away from the main tobacco rope body at a speed greater than the speed of travel of said tobacco rope in and along the curvilinear axial direction of the arcuate path, to create a gap and introducing filter plugs into each gap so formed.

The invention further consists in guiding and feeding the separated lengths of tobacco rope and filter plugs into and along an arcuate path forming a continuance of the arcuate path but of opposite hand during which the tobacco rope was severed and causing the filter plugs and lengths of tobacco rope to abut against each other longitudinally in their direction of motion, either during their motion through the arcuate path or during their motion through a portion of the arcuate path or during their motion through a portion of the arcuate path and a portion of a rectilineal path ending in an approximate point removed from the junction of the arcuate and rectilineal path by a distance not greater than the combined length of a filter plug and a length of tobacco rope.

Mechanism according to the invention comprises means for transforming a continuous unwrapped tobacco rod or rope into a continuous rod consisting of alternate abutting lengths of tobacco rope and filter plugs, means for severing lengths of unwrapped tobacco rope and for separating the lengths from the main body of tobacco rope in order to enable and effect successive delivery of the severed separated lengths, said means comprising a single wheel provided with cutting knives or a knife, movable with the wheel and about the axis of rotation thereof, the said wheel being adapted to rotate continuously and with a uniform peripheral speed greater than that of the forward moving tobacco rope fed thereto, and so disposed in relation to the path of travel of the tobacco rope that the path or line of travel of the tobacco rope forms a tangent or substantially a tangent to the said wheel.

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For the purpose of this specification the said wheel shall hereinafter be referred to as a section wheel.

Further according to the invention, means are provided for receiving the successively delivered separated lengths of tobacco rope and filter plugs and longitudinally abutting the said filter plugs and tobacco rope, said means comprising essentially a single wheel operating in conjunction with an arcuate chute, the said wheel being provided with retractable conveyor pins for transferring the lengths of tobacco rope and filter plugs through the arcuate chute on to a moving web of paper, or endless band, and causing them to abut longitudinally to form a continuous composite rod of alternate lengths of tobacco rope and filter plugs.

For the purpose of this specification the said wheel shall hereinafter be referred to as a transfer wheel.

A section wheel performs the functions of severing tobacco rope and separating the severed lengths from a main forward moving body of tobacco rope, enabling and effecting the successive delivery of the separated lengths, and is for these purposes constructed with a suitable smooth peripheral groove of cross-sectional dimensions large enough to accommodate the tobacco rope freely and completely within the said groove, and is provided with one or more knives, each knife operating in a narrow slot constructed transversely across the peripheral groove. By virtue of the dimensions of the peripheral groove of the section wheel and the smooth surfaces thereof, the speed of the tobacco rope within the groove is independent of the peripheral speed of the section wheel before a length is severed from the said tobacco rope. Operating in conjunction with a section wheel a tobacco rope cutting knife (or knives) is so mounted that the knife rotates continuously with the section wheel about the axis of rotation of the section wheel and has a

component of motion parallel to or substantially parallel to the said axis of rotation.

According to one form of the invention after severing a length of tobacco rope within the peripheral groove of a section wheel, operation of a transverse rope cutting knife (or knives) is designed to ensure the positive acceleration and maintenance of the greater speed of the severed length of tobacco rope in that a knife, after completion of a cutting stroke, remains substantially in its forward position, for any desired arc of travel, thus forming an abutment across the peripheral groove of the section wheel, which abutment positively drives the severed length of tobacco with the section wheel.

Separation of a severed length from the main body of tobacco rope takes place within the peripheral groove of the section wheel and is achieved by arranging the section wheel to rotate with a peripheral speed greater, in predetermined ratio, than the forward speed of the tobacco rope before it is severed by a knife. It is evident from the foregoing that each severed length of tobacco is accelerated in its motion and moved apart from the main tobacco rope body inasmuch as before being severed from the main tobacco rope body it constituted part of the said body and consequently moved with the speed thereof whereas after severance therefrom it acquires the speed of the peripheral groove of the section wheel which, as stated, is greater than that of the tobacco rope. It will be understood that for any desired purpose the distance of movement of a severed length apart from the main tobacco rope body will be a function of the relative speeds of the said main tobacco rope body and the peripheral groove of a section wheel and the distance between the point of severance of the length from the main tobacco rope body and the point of delivery from the section wheel of the said severed length.

In the transformation of a continuous tobacco rod or rope into a continuous composite rod comprising alternate abutting lengths of tobacco rope and filter plugs, and according to one form of this invention, a transfer wheel operating in conjunction with an arcuate chute performs the functions of receiving separated lengths of tobacco rope and filter plugs, transferring them in alternate succession through the arcuate chute on to a moving web of paper (or endless band) and forming a continuous rod by abutting them longitudinally against each other and is for these purposes provided with one or more sets of rectilinearly retractable conveyor pins and is adapted to rotate with a peripheral speed greater than that of the moving web of paper (or endless band) upon which the lengths of tobacco rope and filter plugs are deposited. The retractable conveyor pins engage filter plugs at a suitable position on the periphery of the transfer wheel and convey the said plugs into engagement with the end of the length of tobacco rope already guided and fed into the arcuate chute. The filter plugs may be guided to the transfer wheel by any convenient form of plug feeding means.

By virtue of the greater peripheral speed of the transfer wheel than the speed of the moving paper web (or endless band) on to which the lengths of tobacco rope and filter plugs are deposited and by which the said plugs and tobacco rope are carried away, it will be understood that the leading end of a length of tobacco rope will be brought into longitudinal abutment with the end of the filter plug which it pursues. At approximately the position where the retractable conveyor pins cause abutment to occur between a filter plug and a length of tobacco rope and the next filter plug and length of tobacco rope the conveyor pins are retracted.

According to an alternative mode of operating the invention abutment between a filter plug and a length of tobacco rope and the next filter plug and length of tobacco rope is completed within the arcuate chute, and the transfer wheel is so disposed in relation to the moving web of paper that the lengths of tobacco rope and filter plugs are pressed thereonto by the transfer wheel, thereby forcibly constraining the lengths of tobacco rope and filter plugs (which now comprise part of a continuous composite rod) to acquire the speed of the moving web of paper and by which means hesitation of the composite rod during its passage under the usual tongue of a continuous rod machine is prevented. It will be understood that, in the above alternative mode of operation of the invention, the peripheral surface of the transfer wheel is necessarily smooth to allow sliding pressure between the composite rod and the transfer wheel.

Having regard to the not infrequent presence of stones, nails or other similar hard bodies encountered in tobacco in cigarette making machines it is a feature of this invention that tobacco rope cutting knives, acting with and in a section wheel, are urged in the performance of their cutting strokes by springs. By this means, in the event of a tobacco rope cutting knife encountering a hard body in the tobacco rope the said knife is capable of being arrested in its cutting stroke whereby damage to a section wheel and/or the knife and knife operating or other related mechanism is prevented. Furthermore, by reason of the generally present dust in a cigarette making machine and with a view to ensuring sustained mechanical efficiency of the means of this invention it is a feature thereof that the major portion of the knife operating mechanism of a section wheel is enclosed in an oil bath, and that the operating mechanism of the retractable conveyor pins of a transfer wheel is contained in a dustproof housing within the said wheel.

One form of the invention and two modes of operation thereof will now be more particularly described by way of example with reference to the accompanying drawings in which:

Fig. 1 is a semi-diagrammatic elevation of the invention with parts broken away for clearance and showing the mode of operation thereof.

Fig. 1A is a similar view to Fig. 1 showing an alternative mode of operation of the invention.

Fig. 2 is a sectional elevation of the section wheel seen in Figs. 1 and 1A, showing the knife operating mechanism of a section wheel.

Fig. 3 is an end elevation of Fig. 2 seen in the direction of the arrows, A, A in Fig. 2.

Fig. 4 is a sectional view of Fig. 2 taken through the broken line B, B thereon.

Fig. 5 is an enlarged sectional elevation of the transfer wheel seen in Fig. 1.

Fig. 6 is an end elevation of Fig. 5 with the coverplate **30** and cam **23** removed and seen in the direction of line E, E.

Like references refer to like parts throughout the specification and drawings.

In the form of the invention shown in the accompanying drawings Figs. 2, 3 and 4 are views of a grooved section wheel **4**, provided with two cutting knives **1**, held in clamps **2** and op-

erating in slots 3 (Fig. 3), transversely located across the section wheel peripheral groove 5 (Fig. 2).

The knife clamps 2 are mounted on the ends of knife plungers 6 which protrude from bearings 7 in the casing 8 in which are mounted rocker arms 9. The rocker arms are connected to the knife plungers 6 by means of the links 10. The knives are urged outwardly by springs 11 and are withdrawn by cup cam 12 acting through the cam follower rollers mounted on the rocker arms 9. The cup cam 12 is pinned to the shaft 13 which is fixedly clamped in a bracket stand 14. Although not shown in the drawings the shaft may be extended and supported near the section wheel. The cover plate 16 is spigoted and screwed to the casing 8 and carries gearwheel 15 by means of which the casing and with it the knife operating mechanism and the section wheel is caused to revolve about the stationary shaft 13. An oil retaining coverplate 17 and washer is screwed to the casing and felt oil retaining washers (not shown) may be provided, where shafts protrude from the casing, thus sealing the casing against the escape of oil and the entry of dust. The casing is partially filled with oil (not shown in the drawings) and constitutes an oil bath for lubricating the knife operating mechanism.

With further reference to the drawings, Figs. 5 and 6 show two views of the transfer wheel seen in Fig. 1. The transfer wheel 19 is provided with two sets of radially retractable conveyor pins 20, 20*a*, one set shown in its retracted or inoperative position and the other in its protruded or operative position. The pins 20, 20*a* are machined to fit snugly in holes in the casing in order to prevent entry of dust to the inside of the casing as well as to prevent escape past them of lubricants from the inside of the casing, and in order to facilitate their construction with this end in view are constructed to retract and protrude with radial movement. In addition felt pads or washers (not shown) may be provided at a point in the casing where the retractable pins enter the rim thereof.

The pins 20, 20*a*, are mounted in slide blocks 21, which are restrained by slide block guides 22. The slide blocks are actuated by cam 23 and cam follower rollers 24 and by springs 25. The cam 23 has an elongated boss which may be bushed to provide a bearing for drive shaft 26 to which the transfer wheel is pinned at 27 through the transfer wheel boss 28. The cam 23 is non-rotatably clamped in a bracket stand 29 and the transfer wheel revolves about the stationary cam. A cover plate 30 completes the seal against escape of lubricant and entry of dust.

Referring to the drawings and with particular reference to Fig. 1 which illustrates the application of the invention tobacco issuing from the hopper of a continuous rod cigarette making machine and having been compressed into rod or rope form by any suitable compression device is guided to and across a bridge 31 to enter the peripheral groove 5 of the section wheel 4. The tobacco rope 32 is restrained within the peripheral groove by means of a circumferential guard 33. The said peripheral groove is sufficiently large to accommodate the tobacco rope freely yet not large enough to allow the rope to bend or buckle. The purpose of the foregoing is to allow free entry to and free exit from the groove of the tobacco rope as well as to

allow the surfaces of the groove in contact with the tobacco rope to slide past the rope without undue friction. The section wheel 4 is arranged to revolve with a peripheral speed greater than the speed of the tobacco rope 32 and consequently slides past the portion of the continuous tobacco rope engaged in the peripheral groove. Cutting knives 1 operating in transverse slots 3 in the section wheel 4 cut through the tobacco rope at an approximate position P.

On the completion of each cutting stroke and for a certain arc of travel each cutting knife remains substantially in its forward position thereby forming an abutment across the peripheral groove and thus ensuring positive carrying forward of the severed segment of tobacco rope. Again with reference to Fig. 1, the section wheel 4 is shown with a cutting knife 1 having severed a segment 34*a* from the continuous tobacco rod 32 at an approximate position P and having revolved approximately a quarter of a revolution from position P in the direction of the curved arrow. A gap 35 has been developed between the segment 34*a* and the end of the rope 32 by reason of the difference between the speed of the knife abutment 1 and the speed of tobacco rope 32. At an approximate position W the knife 1 is completely withdrawn from the peripheral groove to allow of its free passage past the tongue 37*a* of the arcuate chute 37 and to allow a filter plug 36*a* carried forward by oncoming retractable conveyor pins 20*a* on the transfer wheel 19 to enter the gap 35, enlarged at this position, between the severed segment 34*a* and the rope 32 and to abut against the said severed segment. Rotation of the transfer wheel 19 is in the direction of the curved arrow and causes by means of the conveyor pins the filter plug 36*a* and tobacco segment 34*a* to be moved through and along the arcuate chute 37 and at the position M is deposited on the band 40 which carries a paper web 39 in the direction of the straight arrow. The conveyor pins 20, 20*a*, are retracted on reaching position M to prevent damage to the ends of the filter plugs or the lifting of the said plugs from the cigarette paper and to allow of the free passage of the said pins past the cover guard 41.

By reason of the predetermined suitable difference in speed between the periphery of the transfer wheel 19 and the paper web 39, it will be understood that the gap 38 between a filter plug and the end of the following tobacco rod segment diminishes with the emergence of more of the tobacco rod segment from the aperture formed between the transfer wheel and the arcuate chute.

A transfer wheel 19 operating in conjunction with a section wheel 4 is timed to deposit a tobacco segment and an abutting filter plug on a moving paper web or endless band when the said paper web has moved through a distance equal to a length which is the sum of the lengths of a filter plug and a segment of tobacco rope. In this manner complete abutment of filter plugs 36 and the severed segments 34, 34*a* of a continuous tobacco rod or rope 32 is effected to reform a continuous composite rod 42.

According to the above mode of operating the invention, and when the composite rod is first deposited by the transfer wheel on to an endless band and subsequently transferred on to a moving paper web, it is found advantageous to cause the endless band to curl into tubular, or almost tubular, form for a portion of its length; that

portion of the band which is tubular being disposed close to the transfer wheel. The advantages of this lie in the elimination of disturbance of the rod by stationary guides before it is firmly held by the endless band and the ease of firmly holding the rod within the band by simply constricting the size of the tubular form at a suitable position.

According to the hereinbefore described alternative mode of operation of the invention and with particular reference to Fig. 1A of the drawings, the mode of operation resembles that described above with particular reference to Fig. 1 but differs therefrom in that the retractable pins **20** are retracted at a new position M' which, measured along the arc, is approximately distant from the bottom of the vertical diameter of the transfer wheel **19** by a length equal to the combined lengths of a filter plug and a length of tobacco rope. Furthermore the transfer wheel **19** is positioned somewhat lower than in Fig. 1 to press the lengths of tobacco rope and the filter plugs on to the moving paper web **39**. After the pins **20** are retracted the filter plug **36b** follows the length of tobacco rope and is assisted therein by the peripheral surface of the transfer wheel and/or by gravity. The composite rod having now been formed passes under a short suitable guide **41** and is wrapped and cut into individual cigarettes in known manner.

In one specific application of the invention, the transfer wheel retractable pins are placed at distances on the periphery equal to or very nearly equal to the sum of the length of a filter plug and a length of severed segment of tobacco rope and the peripheral speed of the transfer wheel pitch circle maintained at the same speed as the moving paper web or endless band which carries away the composite rod. It has been found in practice that as a result of this arrangement variation in the depositing of a length of tobacco rope and filter plug on the moving paper web is eliminated due to the fact that the retractable pins are withdrawn only after each filter plug is gripped between the transfer wheel and the moving band.

What I claim and desire to secure by Letters Patent is:

1. In a method of forming a continuous composite rod of abutting alternate tobacco lengths and filter plugs, the steps of transforming a continuous tobacco rope into a plurality of spaced tobacco lengths which comprises feeding a tobacco rope at a predetermined speed to a carrier moving in an arcuate path at a greater speed that the speed at which the tobacco rope is fed thereto, severing the tobacco rope when traveling in an arcuate path on said carrier to provide a tobacco length, positively moving the severed tobacco length along said carrier until a gap of sufficient length is formed between the trailing end of the tobacco length and the leading end of the tobacco rope to accommodate a filter plug and repeating the severing operations on the tobacco rope.

2. A method according to claim 1 wherein the positive moving of a severed tobacco length is accomplished simultaneously with the severing operation.

3. In the method of forming a continuous composite rod of abutting alternate tobacco lengths and filter plugs, the steps of transforming a continuous tobacco rope into a plurality of tobacco lengths which comprises feeding a tobacco rope at a predetermined speed in a rectilinear path to the periphery of an arcuate carrier moving at a greater speed than the speed at which the tobacco rope is fed thereto, severing the tobacco rope when traveling in an arcuate path on said carrier to provide a tobacco length, moving the severed length with the carrier to create a gap of sufficient length to accommodate a filter plug between the trailing end of the tobacco length and the leading end of the tobacco rope and repeating the severing operations on the tobacco rope each time a gap is formed to accommodate a plug.

4. In the method of forming a continuous composite rod of abutting alternate tobacco lengths and filter plugs, the steps which comprise feeding a tobacco rope at a predetermined speed in a rectilinear path to the periphery of an arcuate carrier moving at a greater speed than the speed at which the tobacco rope is fed thereto, severing the tobacco rope when traveling in an arcuate path on said carrier to provide a tobacco length, moving the severed length with the carrier to create a gap of sufficient length to accommodate a filter plug between the trailing end of the tobacco length and the leading end of the tobacco rope, repeating the severing operations on the tobacco rope each time a gap is formed to accommodate a plug and introducing a filter plug into each gap so formed.

5. A method according to claim 4 wherein the length of the gap formed between the trailing end of a tobacco length and the leading edge of the tobacco rope is longer than the length of a filter plug and causing said tobacco lengths and filter plugs to abut against each other longitudinally in the direction of their motion by the transfer thereof to a paper web moving at a speed less than that of the tobacco lengths and filter plugs.

6. A method according to claim 4 wherein the separated tobacco lengths and filter plugs are caused to move in an arcuate path substantially tangential to and forming a continuation of the periphery of the arcuate carrier but of opposite hand to that along which the tobacco lengths are formed and in which arcuate path the tobacco lengths and filter plugs are caused to abut against each other longitudinally in their direction of motion.

7. In the method of forming a continuous composite rod of abutting alternate tobacco lengths and filter plugs, the steps which comprise feeding tobacco lengths in longitudinally spaced relation to a rotating carrier to cause said tobacco lengths to travel in an arcuate path, feeding filter plugs to said rotating carrier so that each filter plug will be positioned in a space between two tobacco lengths and causing said tobacco lengths and said filter plugs during the course of their travel in the arcuate path to abut longitudinally against each other.

8. In the method of forming a continuous composite rod of abutting alternate tobacco lengths and filter plugs, the steps which comprise feeding tobacco lengths in longitudinally spaced relation to a rotating carrier to cause said tobacco lengths to travel in an arcuate path, feeding filter plugs to said rotating carrier so that each filter plug will be positioned in a space between two tobacco lengths and causing said tobacco lengths and said filter plugs to abut longitudinally against each other in the direction of their motion by the transfer thereof to a paper web moving at a speed less than that of the tobacco lengths and filter plugs.

9. In the method of forming a continuous

composite rod of abutting alternate tobacco lengths and filter plugs, the steps which comprise feeding tobacco lengths in longitudinally spaced relation to a rotating carrier to cause said tobacco lengths to travel in an arcuate path, feeding filter plugs to said rotating carrier so that each filter plug will be positioned in a space between two tobacco lengths causing said tobacco lengths and said filter plugs during the course of their travel in the arcuate path to abut longitudinally against each other and compressing the tobacco lengths and filter plugs radial to their axes at the terminus of said arcuate path and a rectilinear path which is tangent to the arcuate path.

10. In a machine for making filter-tip cigarettes each having a tobacco length and a filter plug, means for transforming a tobacco rope into a plurality of spaced tobacco lengths, comprising a rotatable member, means for feeding a tobacco rope along a predetermined path of feed at a uniform speed to the rotatable member, said rotatable member being driven to rotate at a uniform speed greater than that of the forward moving tobacco rope fed thereto, cutting means movable with the rotatable member about the axis of rotation thereof adapted to sever a tobacco length from said fed tobacco rope while on said rotatable member and positively move said severed tobacco length along the rotatable member to provide a gap between the trailing end of the tobacco length and the leading end of the tobacco rope, said gap being of a length greater than a filter plug of the cigarette.

11. A machine according to claim 10 wherein the path of feed of the tobacco rope is substantially tangential to the rotatable member.

12. A machine according to claim 10 wherein the path of feed of the tobacco rope is substantially tangential to the rotatable member and the cutting means operate to sever a tobacco length from the tobacco rope beyond the point of tangency of the tobacco rope with the rotatable member.

13. A machine according to claim 10 wherein the rotatable member has an annular groove for receiving the tobacco rope.

14. A machine according to claim 13 including a filter plug conveyor for delivering a filter plug into the groove in the rotatable member within each gap formed between adjacent tobacco lengths.

15. A machine according to claim 13 including a filter plug conveyor traveling along a path tangential with said groove to introduce a filter plug into the groove in the rotatable member within each gap formed between adjacent tobacco lengths.

16. In a machine for making filter-tip cigarettes each having a tobacco length and a filter plug, a rotatable carrier, a rotary conveyor for feeding tobacco lengths individually in spaced end to end relation to the carrier, whereby filter plugs may be fed to the carrier so that each filter plug will be positioned between the adjacent ends of two tobacco lengths and means for moving the tobacco lengths and filter plugs with the carrier during rotation thereof.

17. A machine according to claim 16 wherein an arcuate shield is mounted over a peripheral portion of the carrier to provide a guide chute for the tobacco lengths and filter plugs during their movement by the carrier and the means for moving the tobacco lengths and filter plugs through the guide chute during rotation of the carrier are retractably mounted in the rotatable carrier.

18. A machine according to claim 17 wherein a rectilinear traveling web is disposed in substantially tangential relation to the bottom of the guide chute and movable at a speed slower than the peripheral speed of the rotatable carrier and upon which web the alternate tobacco lengths and filter plugs are adapted to be brought into juxtaposition by said difference in speed and carried away from the rotatable carrier.

19. In a machine for making filter tip cigarettes each having a tobacco length and a filter plug, a rotatable member, a carrier, means for feeding a tobacco rope to the carrier, means for severing the tobacco rope and for separating the tobacco length thus formed by lengthwise movement in order to effect successive delivery of the separated tobacco length from the carrier to said rotatable member, said carrier having a smooth peripheral groove and being driven to rotate continuously with a uniform peripheral speed greater than that of the tobacco rope fed thereto, said severing means comprising a retractable cutting means moving with the carrier about the axis of rotation thereof and an arcuate guard covering a part of the periphery of said carrier.

20. In a machine for making filter-tip cigarettes each having a tobacco length and a filter plug, a rotatable member, means for feeding a tobacco rope at a uniform speed to the rotatable member, said rotatable member being adapted to rotate at a uniform speed greater than that of the forward moving tobacco rope fed thereto, means movable with the rotatable member about the axis of rotation thereof adapted to sever a tobacco length from said fed tobacco rope and positively move said severed tobacco length along with the member to provide a gap between the trailing end of the tobacco length and the leading end of the tobacco rope, said gap being of a length greater than a filter plug, a rotatable carrier the peripheral surface of which is substantially tangential to the peripheral surface of the rotatable member, the rotatable carrier being adapted to receive the spaced tobacco lengths from the rotatable member, whereby filter plugs may be fed to the carrier near the point of tangency between said carrier and the rotatable member so that each filter plug will be positioned in a gap between the adjacent ends of two tobacco lengths and means for moving the tobacco lengths and filter plugs during rotation of the carrier and bringing the adjacent end of said lengths and plugs into abutting relation to provide a continuous composite rod of alternate tobacco lengths and filter plugs.

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