Jan. 29, 1952 C. S. STEPHANO 2,584,060

APPARATUS FOR INDIVIDUALLY WRAPPING CIGARETTES

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Fig. 1.

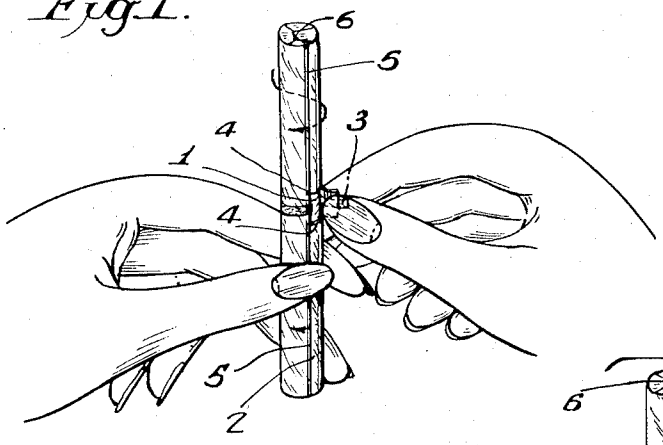


Fig. 2.

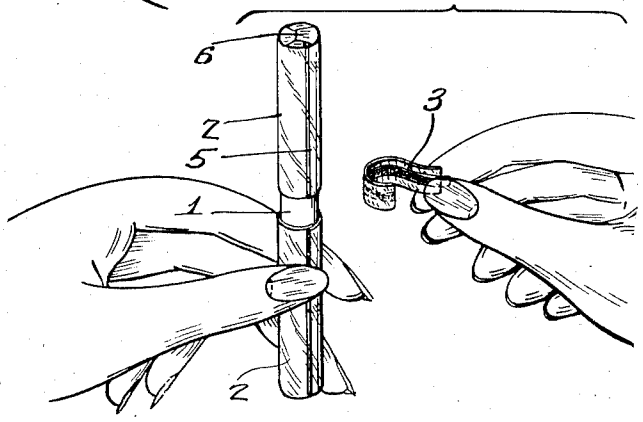
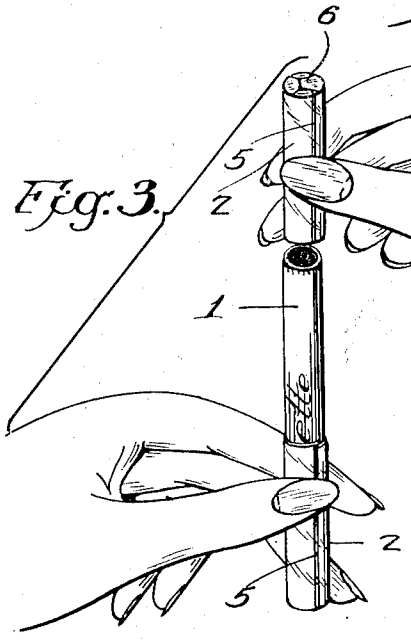


Fig. 3.



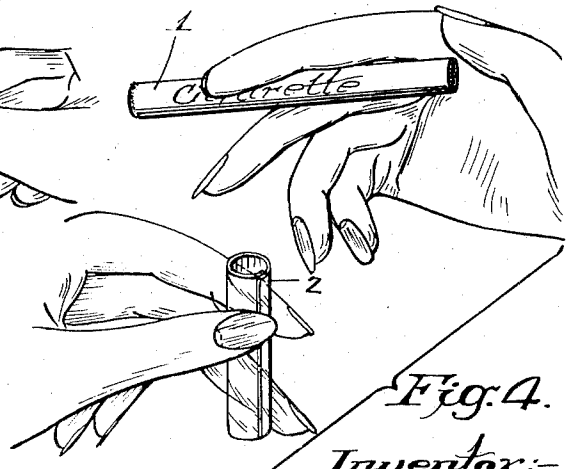


Fig. 4.

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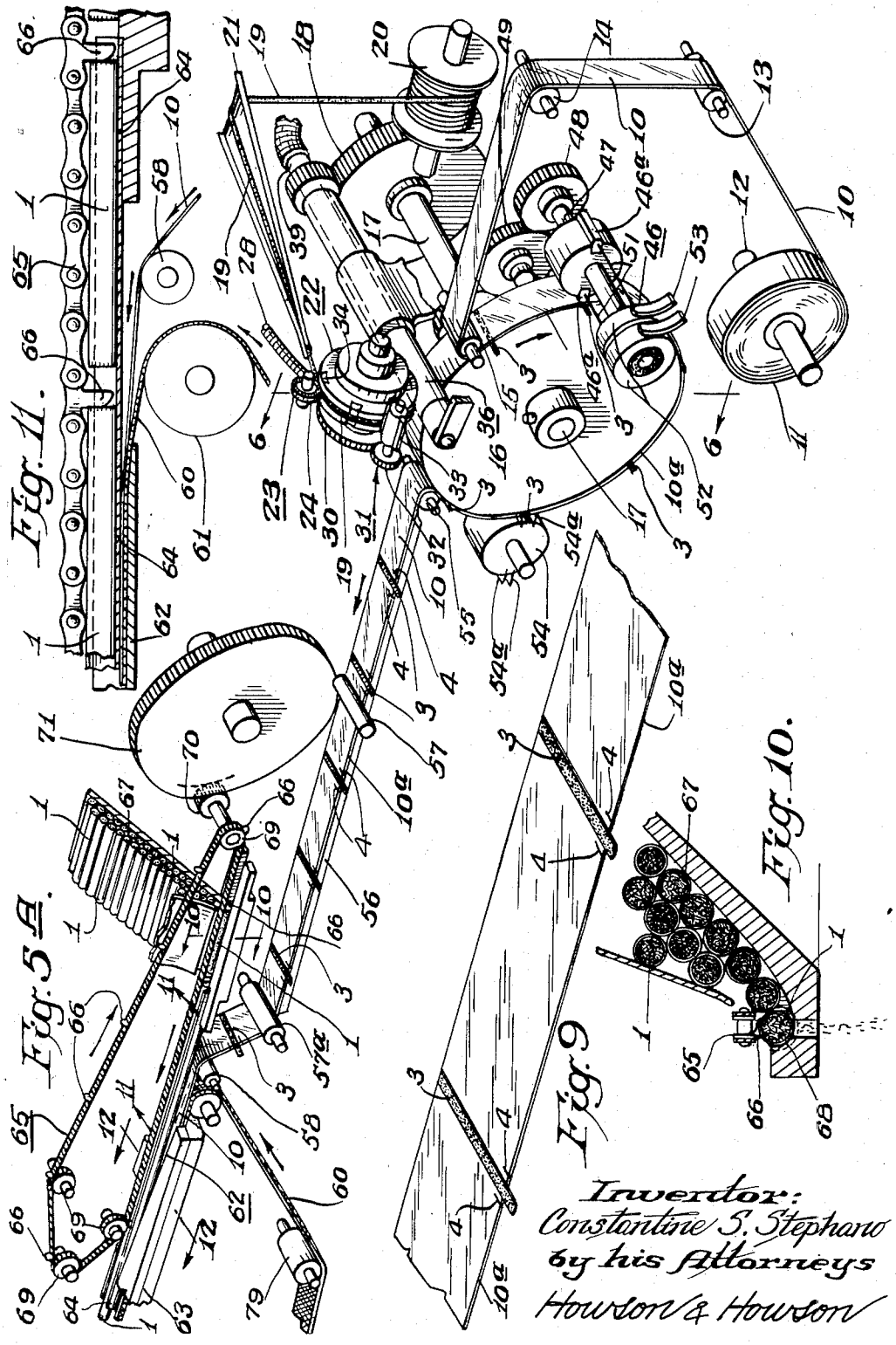


Fig. 11.

Fig. 5A.

Fig. 9

Fig. 10.

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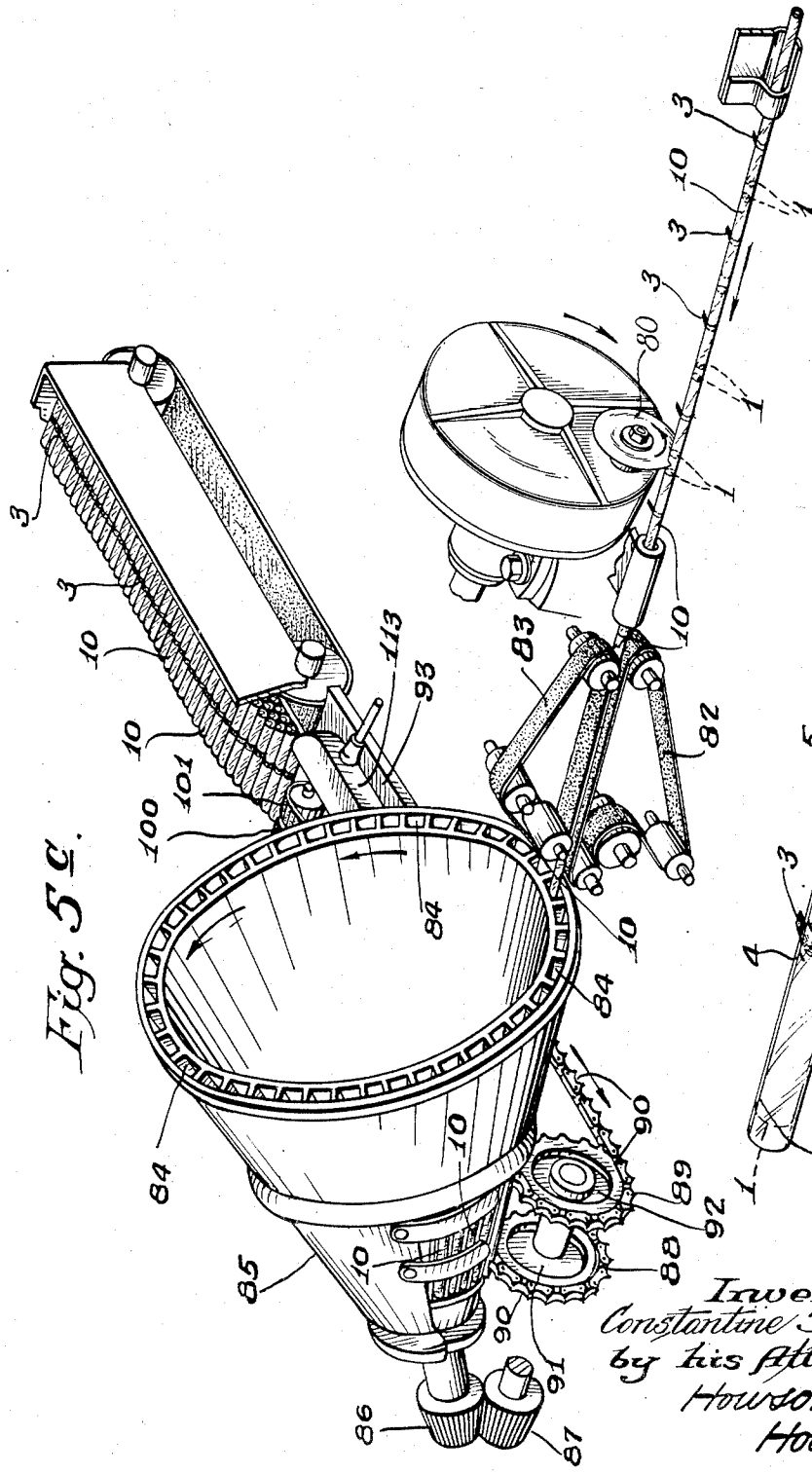


Fig. 5C.

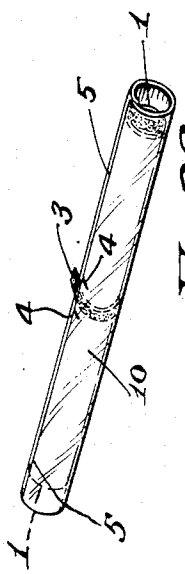


Fig. 22.

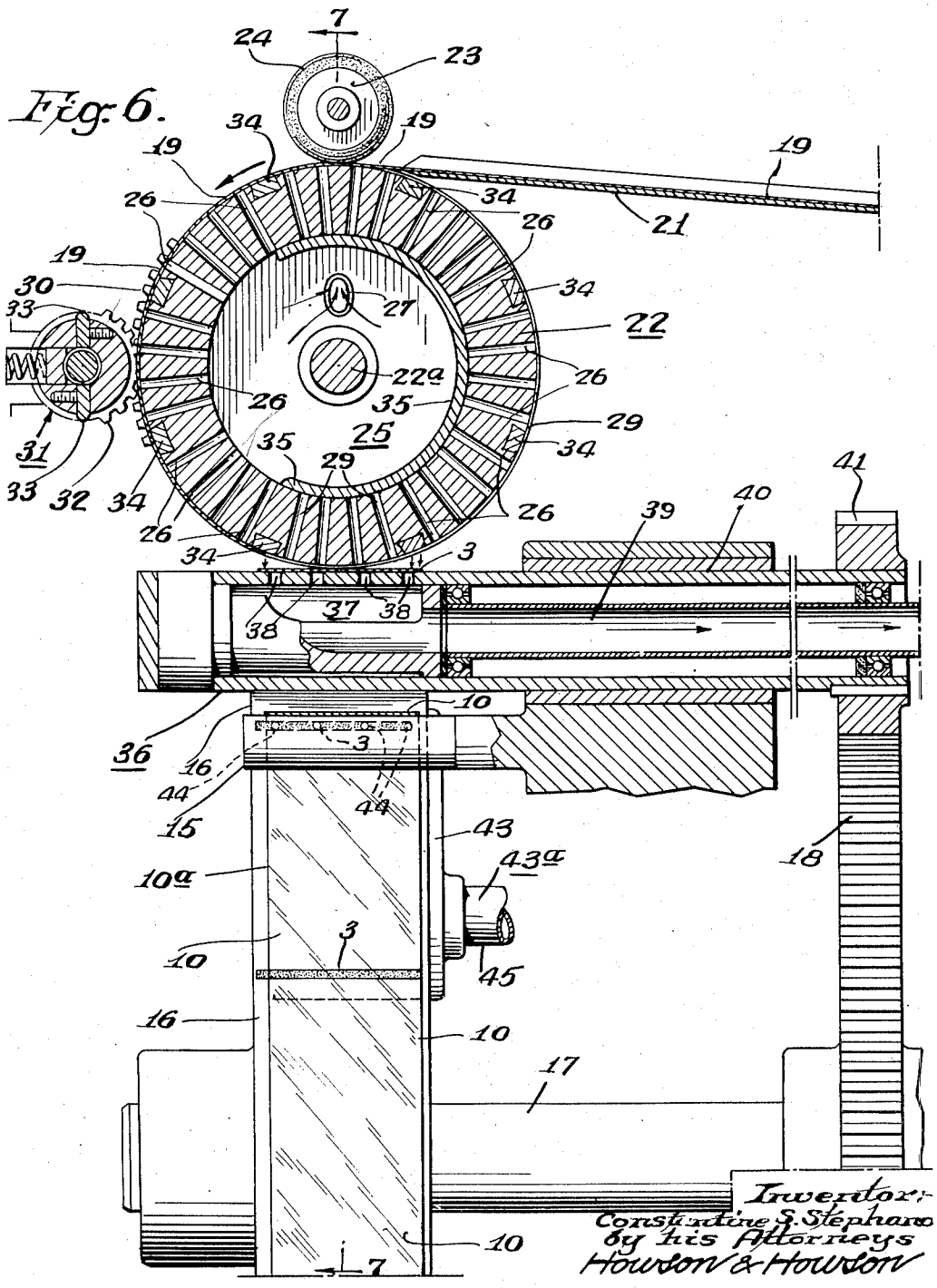
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Fig. 6.



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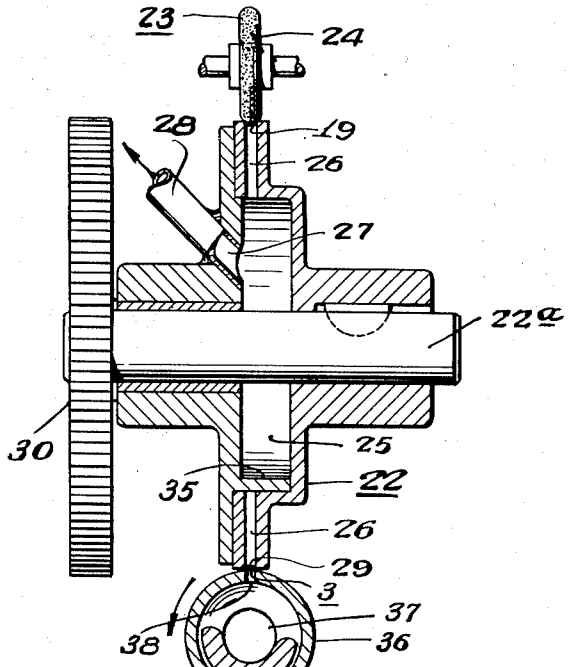
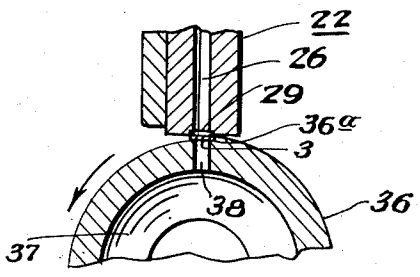


Fig. 8.



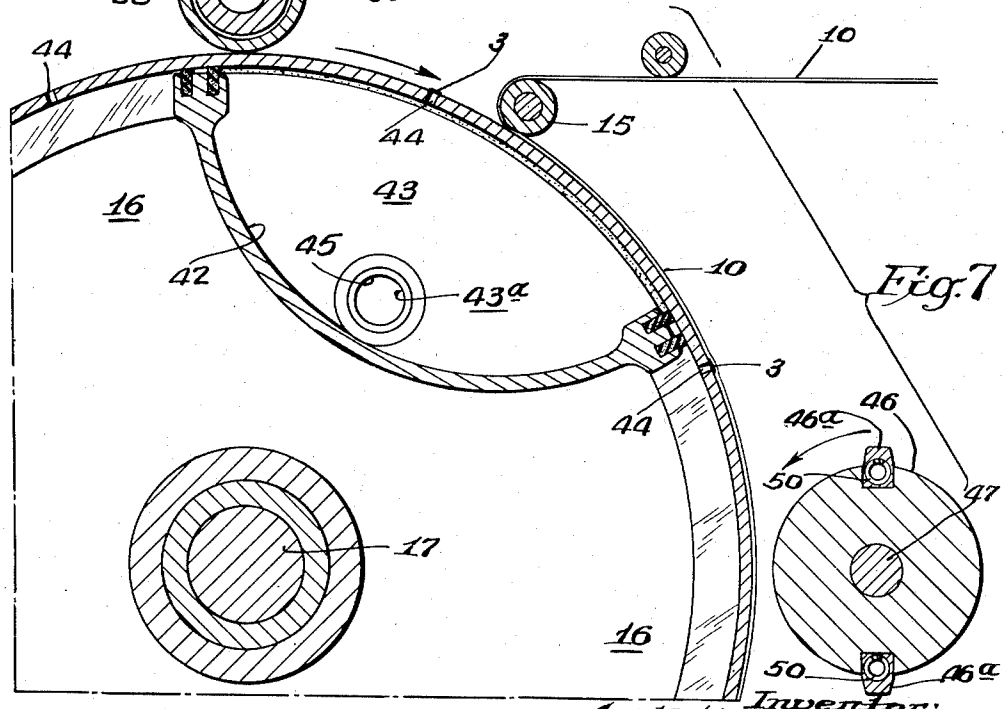


Fig. 7

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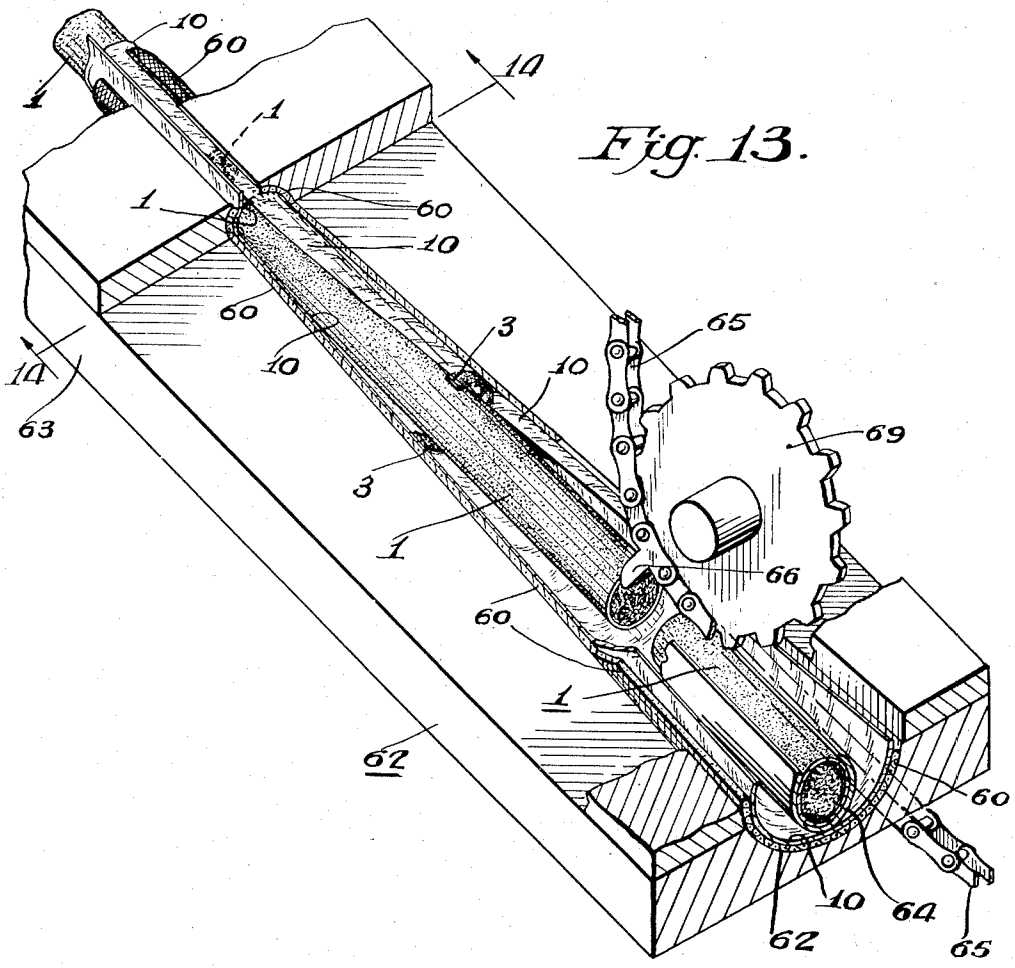
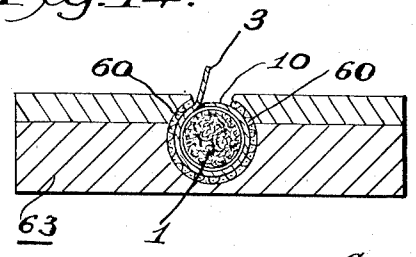


Fig. 13.

Fig. 14.



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Fig. 16.

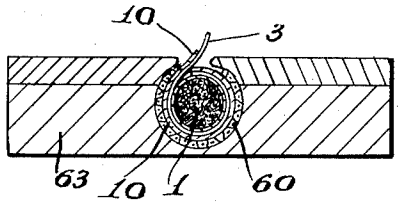


Fig. 17.

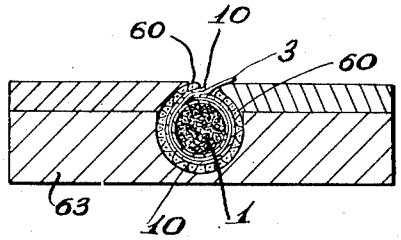


Fig. 18.

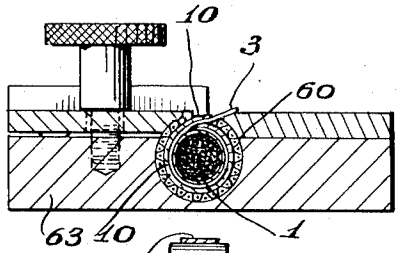
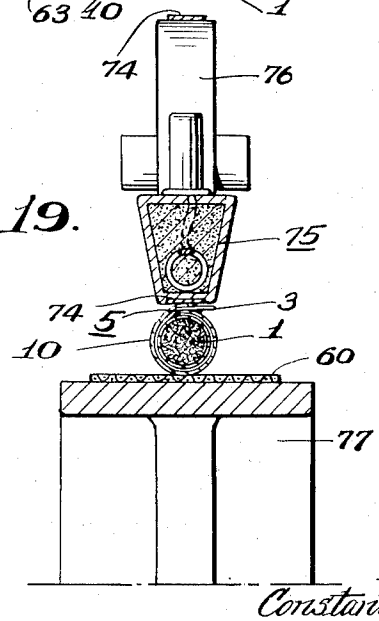


Fig. 19.

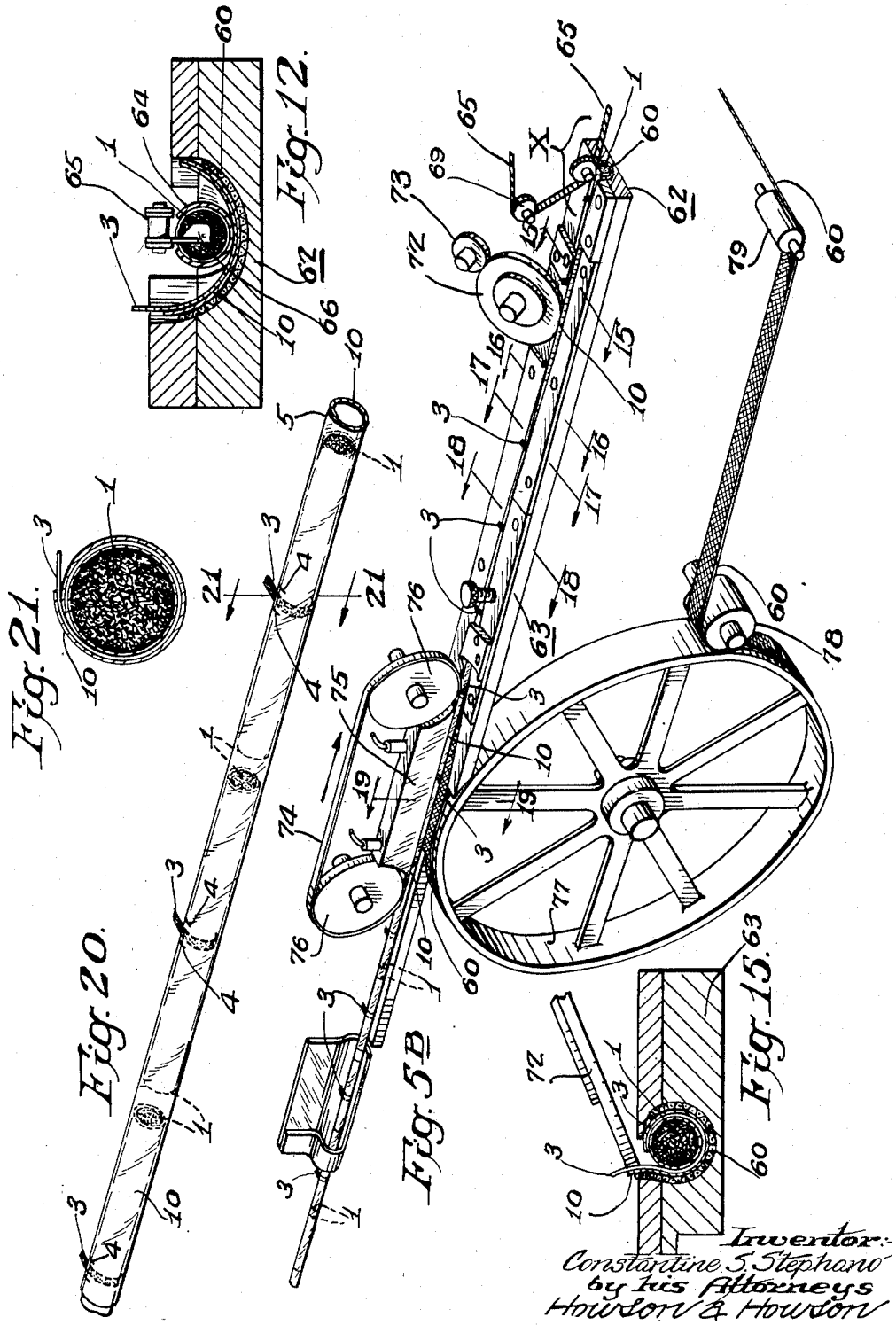


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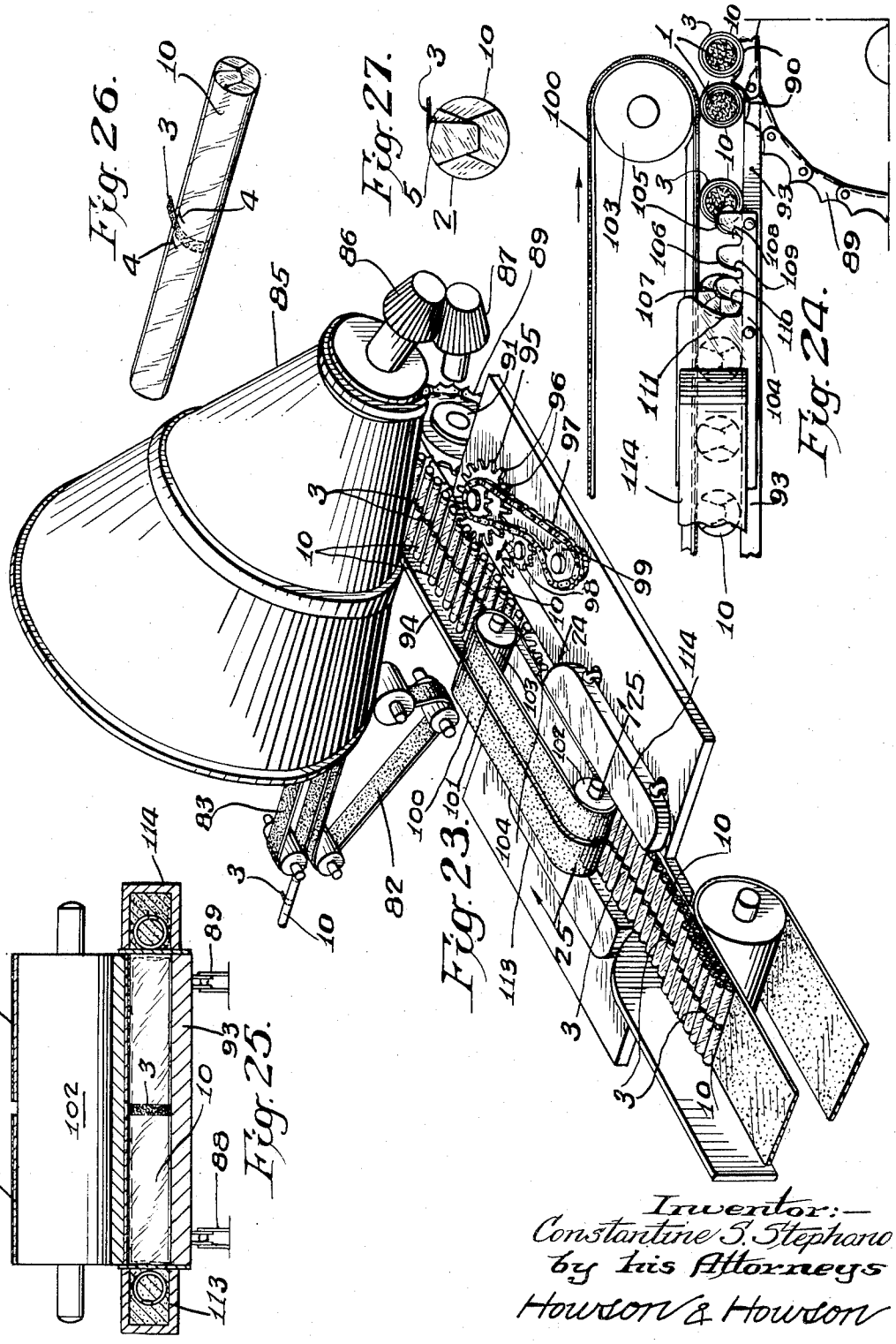
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APPARATUS FOR INDIVIDUALLY WRAPPING CIGARETTES

Original Filed Nov. 29, 1946 9 Sheets-Sheet 9



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Patented Jan. 29, 1952 2,584,060

UNITED STATES PATENT OFFICE

2,584,060

APPARATUS FOR INDIVIDUALLY WRAPPING CIGARETTES

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Original application November 29, 1946, Serial No. 712,956, now Patent No. 2,446,618, dated August 10, 1948. Divided and this application December 11, 1947, Serial No. 791,002

6 Claims. (Cl. 53—85)

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This invention relates to new and useful improvements in apparatus for producing wrapped articles and is a division of my copending application Serial No. 712,956, filed November 29, 1946 and issued as Patent No. 2,446,618 on August 10, 1948. More particularly, the invention relates to a novel apparatus for producing individually wrapped cigarettes.

It is well-known to smokers of cigarettes that once the conventional package of cigarettes is opened the tobacco in the cigarettes becomes dry in a relatively short time with resulting deterioration in the smoking qualities of the cigarette. In addition to this, it has not been possible heretofore to vend cigarettes individually, for example, in coin operated machines in railroad terminals, restaurants, and other public places of a similar nature, due to the fact that there has been no provision available for protecting the individual cigarette from the deleterious effect of the surrounding atmosphere or air.

With the foregoing in mind, one object of the present invention is to provide a novel apparatus for producing articles of merchandise comprising a single cigarette having an hermetically sealed moisture-proof wrapper thereabout.

Another object of the invention is to provide a novel apparatus for producing articles of merchandise comprising a single cigarette having a thermally sealed moisture-proof wrapper thereabout together with means of opening the wrapper to permit access to the cigarette.

Another object of the invention is to provide a novel apparatus for providing individual cigarettes with a wrapper which effectively seals the cigarette from the surrounding atmosphere and thereby preserves the initial good smoking qualities of the cigarette until the wrapper is opened to remove the cigarette for smoking purposes.

Still a further object of the invention is to provide a novel apparatus for producing an individually wrapped cigarette as described which is neat and compact and which may be packaged in the same machines as cigarettes devoid of such wrappers without adjusting such machines.

These and other objects of the invention and the various features and details of the construction and manufacture thereof are hereinafter fully set forth and described with reference to the accompanying drawings, in which:

Fig. 1 is a view in perspective showing an individually wrapped cigarette embodying the present invention.

Fig. 2 is a view similar to Fig. 1 showing the wrapped cigarette after the tear strip portion

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thereof has been removed by pulling upon the tear tape.

Fig. 3 is a view similar to Figs. 1 and 2 showing the upper severed section of the wrapper being removed.

Fig. 4 is a view similar to Figs. 1, 2 and 3 showing the smoker removing the cigarette from the lower severed section of the wrapper.

Figs. 5A, 5B and 5C, respectively, are diagrammatic views in perspective of successive portions of an apparatus according to the present invention which is operable to produce the article of merchandise shown in Figs. 1 to 4 of the drawings.

Fig. 6 is an enlarged fragmentary view (in perspective) taken on lines 6—6, Fig. 5A.

Fig. 7 is a fragmentary perspective view taken on line 7—7, Fig. 6.

Fig. 8 is an enlarged fragmentary view in section of the portion of Fig. 7 bounded by dot and dash lines.

Fig. 9 is an enlarged fragmentary view in perspective showing a portion of the continuous wrapper web with the tear tapes secured in position thereon.

Fig. 10 is an enlarged fragmentary sectional view taken on line 10—10, Fig. 5A.

Fig. 11 is an enlarged fragmentary sectional view taken on line 11—11, Fig. 5A.

Fig. 12 is an enlarged sectional view taken on line 12—12, Fig. 5A.

Fig. 13 is an enlarged fragmentary perspective view partially in section of the portion of the apparatus embraced within the bracket designated by the letter X in Fig. 5B.

Fig. 14 is a sectional view taken on line 14—14, Fig. 13.

Fig. 15 is a partial sectional view taken on line 15—15, Fig. 5B.

Fig. 16 is an enlarged sectional view taken on line 16—16, Fig. 5B.

Fig. 17 is an enlarged sectional view taken on line 17—17, Fig. 5B.

Fig. 18 is an enlarged sectional view taken on line 18—18, Fig. 5B.

Fig. 19 is an enlarged sectional view taken on line 19—19, Fig. 5B.

Fig. 20 is an enlarged perspective view of a section of the tubular wrapper and cigarette construction after sealing of the longitudinal wrapper seam and prior to the cutting of the continuous tube into successive sections each containing a single cigarette.

Fig. 21 is an enlarged sectional view taken on line 21—21, Fig. 20.

Fig. 22 is a view in perspective of a section cut from the continuous tube construction of Fig. 20.

Fig. 23 is a view in perspective from the rear of the portion of the machine shown in Fig. 5C.

Fig. 24 is an enlarged fragmentary view of that portion of the machine embraced by line 24—24, Fig. 23.

Fig. 25 is an enlarged transverse sectional view taken on line 25—25, Fig. 23.

Fig. 26 is a view in perspective of the novel article of merchandise contemplated by the present invention; and

Fig. 27 is an enlarged end view of the article shown in Fig. 26.

Referring now to the drawings, and more particularly to Figs. 1 to 4 thereof, there is illustrated an article of merchandise which comprises an individual or single cigarette or like article 1 provided with a wrapper 2 thereabout that is composed of moisture-proof cellophane or similar flexible material having associated therewith a tear tape or the like 3 which may be used for opening the wrapper preparatory to removing the same.

As shown in the drawings, the tear tape 3 is arranged circumferentially of the cigarette 1 internally of the wrapper 2 to which it is secured, for example, by heat sealing, and an end portion of the tape 3 extends or projects freely outwardly from the lapped longitudinal edge portions of the wrapper so that it may readily be grasped by the fingers of a person desiring to open the wrapper. To facilitate tearing of the wrapper 2 by means of the tear tape 3 the wrapper is provided with relatively short slits or cuts 4 in the exposed longitudinal edge thereof adjacent opposite sides of the tear tape 3.

The wrapper 2 is of cylindrical cross-section shape and snugly embraces the cigarette 1. The lapped longitudinal edges of the wrapper 2 are sealed together, preferably by heat sealing, to provide an air-tight seam 5 lengthwise of the wrapper 2, and the end portions of the wrapper 2 are tucked and folded over the ends of the cigarette as at 6 and likewise sealed to provide a completely moisture- and air-tight enclosure for the cigarette 1.

Opening of the wrapper 2 to obtain access to the cigarette 1 may be accomplished as shown in Figs. 1 to 4 of the drawing, for example, by holding the wrapped cigarette in the fingers of one hand, grasping the free end of the tear tape 3 with the fingers of the other hand and drawing it in a direction circumferentially of the cigarette counterclockwise with respect to Figs. 1 and 2. Drawing the tear tape 3 in this manner operates to sever a strip from the wrapper 2 circumferentially of the cigarette substantially midway between the ends thereof so that the wrapper 2 is divided into sections as shown in Fig. 2 which may be removed readily and easily from opposite ends of the cigarette in the manner shown, for example, in Figs. 3 and 4 of the drawings.

The novel article of merchandise just described comprising a single cigarette contained within a moisture-proof wrapper provided with a tear tape for opening the same may be produced, for example, as diagrammatically illustrated in Figs. 5A, 5B and 5C of the drawings. Thus, in accordance with the present invention and referring to Fig. 5A of the drawings, a continuous strip or web 10 of material having moisture-proof properties is fed from a supply roll 11 which is suitably mounted upon a supporting shaft 12. The width of the web 10 transversely thereof is

such as to permit it to be wrapped circumferentially about a cigarette or similar article with sufficient overlap at its edges to provide a longitudinal seam which may be sealed against the penetration of moisture and air. Preferably the web 10 is composed of moisture-proof cellophane or other similar transparent material having thermoplastic or heat-sealing properties. From the roll 11 the web 10 passes about rolls 13 and 14, and then passes about a roll 15 into contact with the peripheral surface of a drum 16 which is fixed on a shaft 17 and rotationally driven at a preselected speed in the clockwise direction by a gear 18.

Simultaneously with the feed of the web 10, a narrow tape 19 is fed continuously from a roll 20 over a support 21 arranged transversely of the course of travel of the web 10 and thence onto a drum 22 against which said tape is initially urged by means of a pressure wheel 23 having a rubber or other resilient periphery 24. Preferably the tape 19 is composed of cellophane or similar material and it is generally desirable that it be of a contrasting color to the web 10.

As shown in Fig. 6 of the drawings, the drum 22 has a hollow internal chamber 25 therein and communicating from this chamber outwardly to the periphery of said drum is a plurality of radial ports or passages 26 arranged circumferentially of the drum. Connected to the internal chamber 25 of the drum 22 through an opening 27 is a suction line 28 which operates through the chamber 25 and radial passages 26 to retain the narrow tape 19 against the periphery of the drum 22 as it rotates in the counterclockwise direction with respect to Figs. 5A and 6. In order to properly locate the narrow tape 19 upon the drum with reference to the ports or passages 26 therein the periphery of the drum 22 preferably is provided with a circumferential groove, for example, as indicated at 29 in Fig. 8. The drum 22 is mounted on a shaft 22a and driven in timed relation to the speed of travel of the web 10.

Associated with the drum 22 is a cutting mechanism 31 which is rotationally driven in timed relation to the drum 22 by a gear 32 which is meshed with a gear 30 on drum shaft 22a. The cutting mechanism 31 is provided with hardened steel cutting elements 33 arranged to cooperate with hardened steel inserts 34 disposed transversely in the peripheral surface of the drum 22 to sever the narrow tape 19 thereon into successive tape sections of predetermined equal length. In this connection it is to be noted that the radial ports or passages 26 in the drum 22 are arranged circumferentially thereof in groups of four alternately with the hardened steel inserts 34 so that there is thus presented to each successive section cut from the tape 19 a plurality of suction passages 26 for holding each section against the drum 22 as counterclockwise rotation thereof continues.

It is to be noted with reference to Fig. 6 of the drawings that the inner openings of the ports or passages 26 in the drum 22 are closed at their inner ends over about one-half the circumference of the internal chamber 25 by means of a shield or plate 35 which serves to prevent air from being drawn into the drum chamber 25 through the passages 26 as the latter traverse that portion of each revolution of the drum 22 in which said passages 26 are not covered by the narrow tape 19 or the cut sections thereof. In addition, the shield or plate 35 operates to break or interrupt the suction and thereby release the severed sec-

tions of the narrow tape 19 from the drum 22 as said cut tape sections are moved successively into position for transfer to an underlying transfer cylinder 36.

With reference to Fig. 7 of the drawings, there is formed in the transfer cylinder 36 an internal chamber 37 from which an aligned series of ports 38 communicate radially outward and are arranged to underlie the cut sections of the tape 19 that are brought into position by the drum 22 for transfer to the cylinder 36. In this connection and with reference to Fig. 8, it is to be noted that the cylinder 36 is provided with a longitudinally extending shoulder 36*a* of relatively shallow depth which performs the dual function of picking the tear tape sections from the drum 22 during the transfer operation and of accurately aligning the said sections axially of the cylinder 36 in overlying relation with respect to the suction ports 38. A suction line 39 is connected to the chamber 37 and this suction force is utilized to retain the cut tape sections in position upon the transfer cylinder 36 during transfer movement of the latter. The transfer cylinder 36 is rotationally journaled in a bearing 40 and is driven in timed relation to the drum 16 by means of a gear 41 which is meshed with the gear 18 on the shaft 17 of said drum 16.

Referring to Fig. 7 of the drawings, the drum 16 is hollow and rotates about an internal housing 42 that forms, in conjunction with the inner surface of the drum 16, a suction chamber 43 of relatively small arcuate length with respect to the over-all circumference of the drum 16.

Formed transversely in the drum 16 are groups of a plurality of ports or passages 44 which are arranged circumferentially of the drum 16 at spaced intervals equal to the circumference of the transfer cylinder 36 so that the series of ports 38 in the latter will register with a succeeding group of passages 44 in the drum 16 during each revolution of the said transfer cylinder 36. Connected to the suction chamber 43 through a suitable opening 43*a* is a suction line 45.

The sections cut from the tape 19 constitute the tear tapes 3 of the previously described individually wrapped cigarettes and the construction, arrangement and operation of the drum 22, transfer cylinder 36 and drum 16 is such that the successive tear tapes 3 will be transferred by the cylinder 36 from the drum 22 to the periphery of the drum 16 in overlying relation with respect to each successive group of the ports or passages 44 therein so that said tear tapes 3 will be held accurately in position transversely upon the drum 16 by the suction force created internally of the chamber 43.

Held upon the drum 16 in the described positions the tear tapes 3 are carried by the drum 16 into underlying association with the continuously advancing web 10. In this connection it is to be noted that the tear tapes 3 have a length somewhat greater than the width of the continuous web 10 so that one end portion of the tear tapes 3 projects or extends freely beyond one lateral edge 10*a* of the web 10, for example, as indicated in Fig. 6.

As clockwise rotation of the drum 16 continues carrying with it the continuous web 10 and associated tear tapes 3, the said tear tapes 3 are secured to the web 10 by means of a suitable heat-sealing mechanism 46 having diametrically spaced apart heater elements 46*a* adapted successively to engage the continuous web 10 transversely thereof in accurate registry with the underlying transverse tear tapes 3. The heating mechanism 46 is fixed upon a shaft 47 that is rotatably driven by means of a gear 48 from a gear 49 driven from the main drive of the machine. An electric current is supplied to the resistance coils 50 of the heater elements 46*a* from contact rings 52 by means of conductors 51, the said rings 52 being rotatable with shaft 47 and engaging a pair of fixed resilient contacts 53.

Continued rotation of the drum 16 with the web 10 and associated sealing tapes 3 advances the web 10 for engagement by a suitable cutting mechanism 54 having diametrically arranged pairs of cutting elements 54*a* that operate to produce the relatively short tear slits or cuts 4 inwardly of the edge 10*a* of the web 10 at opposite sides of each transverse tear tape 3 as shown in Fig. 9 of the drawings. As in the case of the heat sealing mechanism 46, the cutting mechanism 54 is rotatably driven in predetermined timed relation with respect to the drum 16.

Soon after leaving the cutting mechanism 54 the web 10 and associated tear tapes 3 leaves the drum 16, passing about a roll 55 and pursues a horizontal course of travel upon a support or platform 56 against which it is retained by one or more rolls 57, 57*a*.

As the web 10 passes about the roll 57*a* it leaves the support 56 and travels upwardly about a roll 58 and then into overlying contact with a continuous belt 60 in the relation shown in Fig. 11 just after the belt leaves a roll 61 and prior to entering the horn portion 62 of a web former 63, which operates in the manner hereinafter described to form the web 10 into a tube circumferentially about a series or succession of aligned equally spaced cigarettes 1.

The belt 60 and web 10 traverse the forepart of the former (horn portion 62) beneath the outlet end portion of a guide tube 64 (see Figs. 12 and 13) through which the cigarettes 1 are conveyed from a feed point by means of an endless chain 65 having projecting dogs 66 thereon at predetermined equally spaced intervals which are adapted to engage behind a cigarette and advance the same from the feed point through the tube 64 to the web former 62.

As shown in Fig. 10 of the drawings, the cigarettes 1 are fed by gravity singly from an inclined stack 67 thereof to a trough or the like 68 arranged beneath the chain 65 and positioned so that successive cigarettes deposited in the trough are engaged by the dogs 66 on the chain 65 which is driven at the speed of travel of the web 10. The chain 65 is suitably mounted upon a plurality of sprockets or the like 69 at least one of which may be driven by a gear 70 from a gear 71 associated with the main drive mechanism of the machine.

With reference more particularly to Fig. 13 of the drawing, it is to be noted that the passage through the horn portion 62 of the former 63 is of relatively shallow U-shape in cross-section at the point where the belt and web enter the same and from that point the cross-sectional shape of the horn changes gradually from said shallow U-shape to a substantially circular cross-sectional shape which forms the web 10 and belt 60 into generally cylindrical tubular cross-section shape snugly surrounding or embracing the cigarettes 1, for example, as shown in Fig. 14 of the drawings.

It is to be noted that the outlet end of the tube

64 terminates a short distance inwardly of the web former horn 62 so that the cigarettes 1 leave the said tube 64 prior to entering the substantially circular portion of the former 63. Also, it is to be noted that the dogs 66 of the chain 65 remain in engagement with the rearward end of the cigarettes 1 for a short period after they emerge from the tube 64 and until the forward or leading end of each cigarette has just entered the substantially circular or tubular portion of the former 63, for example, at the section line 14, 14 in Fig. 13. At this time the dogs 66 of the chain 65 move out of engagement with the rearward end of the cigarettes and the latter and the surrounding tubular web 10 are carried the remainder of the distance through the former 63 by means of the encircling belt 60.

Passage of the cigarettes in aligned space relation with the surrounding tubular web 10 and embracing belt 60 through the remainder of the former 63 takes place in the manner shown in Figs. 16 to 18 of the drawings and it is to be noted that in the portion of the former 63 between the stations where Figs. 15 and 16 are taken, the inner or underlying surface of the free edge portion of the tubular web 10 receives an application of a suitable thermoplastic adhesive from a wheel 72 which in turn receives adhesive from a suitable feed or supply wheel 73.

Upon leaving the former 63 the tubular web 10 containing the cigarettes 1 at predetermined spaced intervals therein is gradually released from the grip of the belt 60 as the web and cigarettes are conveyed by the latter and an overlying continuous belt 74 beneath an elongated electric heating element 75 which operates to set the thermoplastic adhesive applied by the applicator wheel 72 and thereby provide a continuous hermetic seal between the lapped edge portions of the tubular web 10 surrounding the cigarettes. The belt 74 is mounted on spaced pulleys or the like 76, and driven at the speed of linear travel of the web 10 from the main drive of the machine. As the tubular web 10 containing the cigarettes nears the end of its passage beneath the heater 75 the belt 60 moves out of supporting contact beneath the web 10 and proceeds on its course about a wheel 77 and rolls 78 and 79 to the roll 61 where it again enters the web former 63.

After the lapped longitudinal edges of the tubular web 10 are heat-sealed as described by passage beneath the heating element 75, the the tubular web and cigarettes therein embody the construction and arrangement shown in Figs. 20 and 21 of the drawings. As there shown, the web 10 is in continuous tubular form of substantially circular cross-sectional shape enclosing the cigarettes 1 disposed therein in predetermined equally spaced relation and with the tear tapes 3 extending circumferentially of the cigarettes 1 internally of the web 10 with the end portions of said tapes 3 projecting outwardly through the web longitudinal seam between the pairs of tear slits or cuts 4 in the overlapping edge of the tubular web 10.

From the heat sealing element 75 the continuous tubular web 10 and cigarettes 1 arranged therein as described continue their travel through the machine to a cut-off mechanism of conventional type comprising a rotary cutting element 80 which is driven and brought into engagement with the traveling tubular web 10 at predetermined equal intervals timed to sever the continuous web midway of the space provided between adjacent ends of successive cigarettes. Thus there is severed from the continuous tubular web 10 successive tube sections each containing a single cigarette 1 of shorter length than the tube sections so that the ends of the latter project substantially the same distance beyond opposite ends of the said cigarettes, for example, as shown in Fig. 22 of the drawings.

When cut from the continuous tube, these individual tube sections are conveyed by relatively opposed endless belts 82 and 83 and discharged thereby into the successive channels or passages 84 of a conventional type speed-reducing cone 85. The cone 85 is rotationally driven in the direction indicated by the arrows in Fig. 5C by means of a gear 86 which is meshed with a gear 87 that is driven from the main drive of the machine and the speed of rotation of the said cone 85 is such that succeeding passages 84 therein are presented to receive the successive individual cigarette tube sections cut from the continuous tubular web 10.

The individual cigarette tube sections entering the passages 84 of the cone 85 are conveyed by rotation of the latter through substantially 360° during the course of which they are conducted toward the apex of the cone 85 for discharge by gravity through an opening at the underside of the cone onto a pair of laterally spaced endless chains 88, 89 provided with suitable recesses 90 to receive the successive individual cigarette tube sections as they discharge from the cone 85. The chains 88, 89 are mounted upon suitable sprockets 91, 92 driven in predetermined timed relation with respect to the other component mechanisms of the machine, and deposit the successive individual cigarette tube sections in the order received from the cone 85 upon a platform or support 93. During travel of the individual cigarette tube sections upon the chains 88, 89 from the cone 85, to the platform 93, a wheel 95 having radial teeth 96 engages the outwardly facing ends of the cigarettes 1 and moves them inwardly of their tube sections thereby properly aligning the said cigarettes so that the free ends of the tube sections project an equal distance from opposite ends of the cigarettes. This aligning and centering operation performed by the wheel 95 is made necessary by reason of the fact that as the cigarette tube sections slide through the speed reducing cone 85 and impact against the apex end thereof the cigarettes 1 are caused to slide forwardly within their surrounding tube sections thus making it necessary to recenter the cigarettes with respect to the ends of their tube sections. The wheel 95 may be driven by a chain 97 driven from one or the other of a pair of sprocket wheels 98, 99.

After being deposited upon the platform 93 by the chains 88, 89 as described, the cigarette tube sections are caused to be rolled successively along said platform 93 by means of a pair of laterally spaced apart endless belts or the like 100, 101 mounted on rolls 102, 103 and driven approximately at twice the speed of travel of the chains 88, 89. As the cigarette tube sections traverse the platform 94 the opposite projecting ends of the tubes are engaged by folding members 104 arranged at opposite sides of said platform 93. As shown, the folding members 104 are provided with rounded teeth or fingers 105, 106 and 107 defining rounded notches or grooves 108, 109 and 110 therebetween, the edge 111 defining the rear of the notch 110 being bent slightly outwardly.

Thus, as the ends of the rotary tubes engage

the round tooth 105 of the members 104 a portion of the tube is folded inwardly as shown in Fig. 24 and the edge of the remaining portion rolls into the notch 108 while another fold is made by the tooth 106. As the open portion of the tube end rolls into the notch 109 and engages the tooth 107, a third fold is made, and the fourth and final fold is made as the last portion of the tube end is enclosed in the notch 110 against the edge 111 as shown also in Fig. 24 thus forming a complete fold. With their ends folded as described the tube sections pass between laterally spaced heaters 113 and 114 which heat the folded end portions of the tube to seal the same thereby completing the provision of an air- and moisture-proof wrapper about each individual cigarette.

From the foregoing description, it will be apparent that the present invention provides a novel method and apparatus for producing novel articles of merchandise comprising a single cigarette or the like having an hermetically sealed moisture-proof wrapper thereabout and provided with tear tape means and slits for opening the wrapper to remove the cigarette. The cigarette this us protectively sealed from the surrounding atmosphere and the initial good smoking qualities of the cigarette will be preserved until the wrapper is opened.

While particular embodiments of the present invention have been illustrated and described herein, it is not intended that the invention be limited to such disclosures, and, therefore, changes and modifications may be made therein and thereto within the scope of the following claims.

I claim:

1. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material, forming means traversed by said web including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and terminating a short distance inwardly of the tapered portion of the forming means to discharge cigarettes from the tubular guide onto said continuous web before entering the substantially circular portion of the forming means, and feed means movable longitudinally of the tubular guide and projecting therein to engage and advance cigarettes successively through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous tube.

2. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material including an endless belt movable in supporting association with said web during at least a portion of its travel, forming means traversed by said belt and web and including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and terminating a short distance inwardly of the tapered portion of said forming means at a point spaced from the web forming portion of substantially circular cross-sectional shape a distance greater than the length of a cigarette to be wrapped to discharge cigarettes from the tubular guide member before entering the substantially circular portion of the forming means, and feed means movable longitudinally of the tubular guide and projecting therein to engage and advance cigarettes successively through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous tube.

3. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material, forming means traversed by said web including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and having its outlet opening a short distance inwardly of the tapered portion of the forming means to discharge cigarettes from the tubular guide onto the web before entering the substantially circular portion of the former, a trough arranged axially of said guide member adjacent the other end thereof, and feed means movable longitudinally of the tube and projecting therein to engage and advance cigarettes successively from said trough through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous tube.

4. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material, forming means traversed by said web including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and terminating a short distance inwardly of the tapered portion of the forming means at a point spaced from the web forming portion of substantially circular cross-sectional shape a distance greater than the length of a cigarette to be wrapped, a trough arranged axially of said guide member adjacent the other end thereof, means to feed cigarettes individually to said trough, and feed means movable longitudinally of the tube and projecting therein to engage and advance said cigarettes successively from said trough through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous tube.

5. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material, forming means traversed by said

web including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and terminating a short distance inwardly of the tapered portion of said forming means to discharge cigarettes from the tubular guide onto the web before entering the substantially circular portion of the forming means, feed means movable longitudinally of the tube and projecting therein to engage and advance cigarettes successively through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous tube and before entering the substantially circular portion of the forming means, means to seal the lapped longitudinal edge portions of the web to provide an air and moisture-proof seal lengthwise of the continuous tube, cutting means operable to sever the continuous tube transversely thereof midway of the spaces between successive cigarettes therein to provide successive tube sections each containing a cigarette of shorter length than its tube section, means for folding the projecting end portions of the tube sections over the opposite ends of the cigarette, and means to seal the said folded over end portions of the tube sections.

6. In apparatus for individually wrapping cigarettes, means to advance a continuous web of sheet material, forming means traversed by said web including a tapered portion of relatively large generally semi-circular configuration converging in the direction of web travel and terminating at its other end in a portion of substantially circular cross-sectional shape operable to convert said web from flat sheet form into a continuous cylindrical tube with the opposite side edge portions of the web disposed in lapped relation longitudinally of the tube, a guide member of split tubular construction extending axially of said forming means and terminating a short distance inwardly of the tapered portion of said forming means at a point spaced from the web forming portion of substantially circular cross-sectional shape a distance greater than the length of a cigarette to be wrapped to discharge cigarettes from the guide tube onto the web before entering the substantially circular portion of the forming means, a trough arranged axially of said guide member adjacent the other end thereof, means to feed cigarettes individually to said trough, feed means movable longitudinally of the tube and projecting therein to engage and advance said cigarettes successively from said trough through said guide member and deposit the same in equally spaced apart end-to-end relation in said web during conversion of the same into said continuous web, means to seal the lapped longitudinal edge portions of the web to provide an air and moisture-proof seal lengthwise of the continuous tube, cutting means operable to sever the continuous tube transversely thereof midway of the spaces between successive cigarettes therein to provide successive tube sections each containing a cigarette of shorter length than its tube section, means for folding the projecting end portions of the tube sections over the opposite ends of the cigarette, and means to seal the said folded over end portions of the tube sections.

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