

May 20, 1952

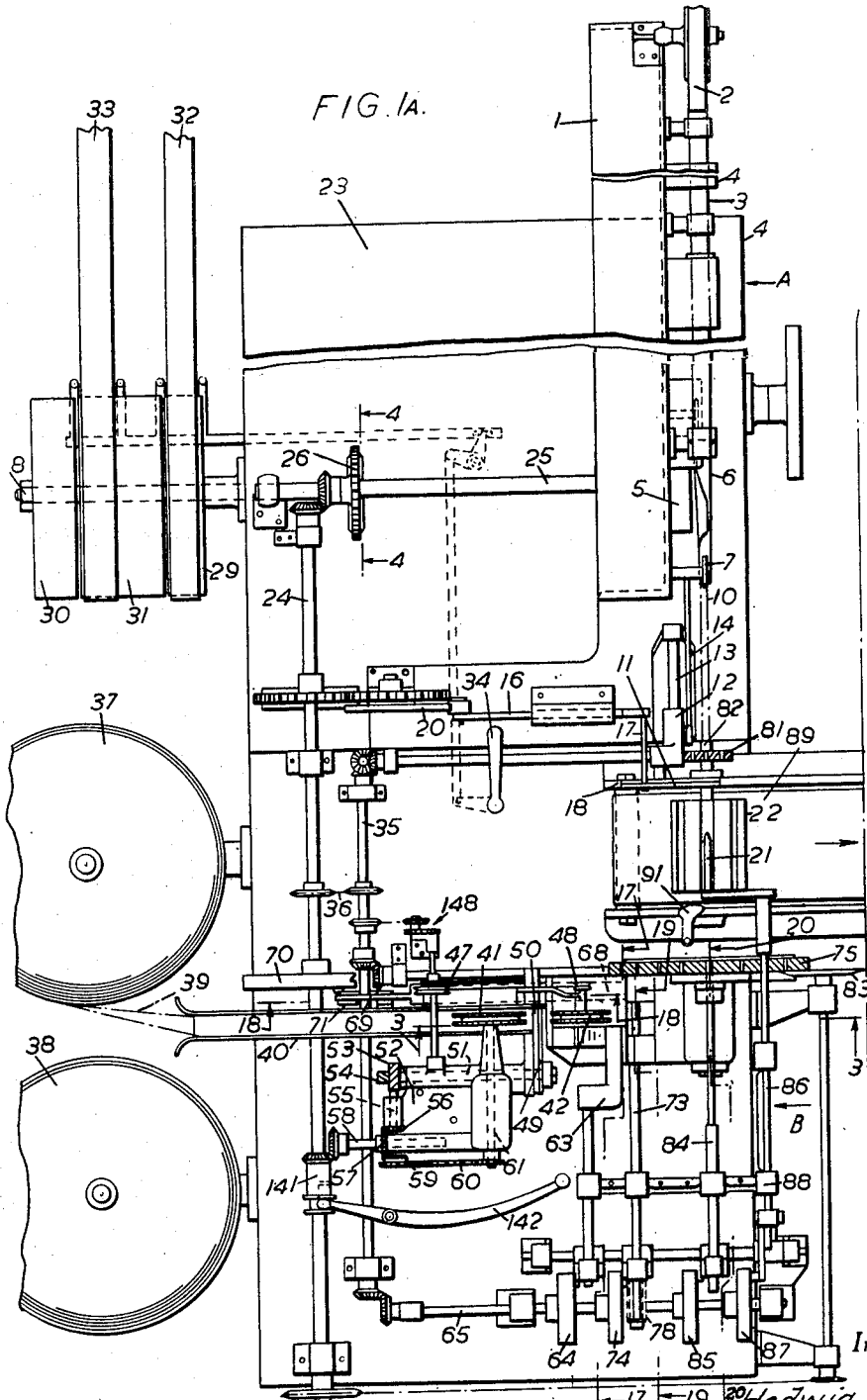
H. GAMBLE

2,597,720

MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

Filed July 27, 1950

14 Sheets-Sheet 1



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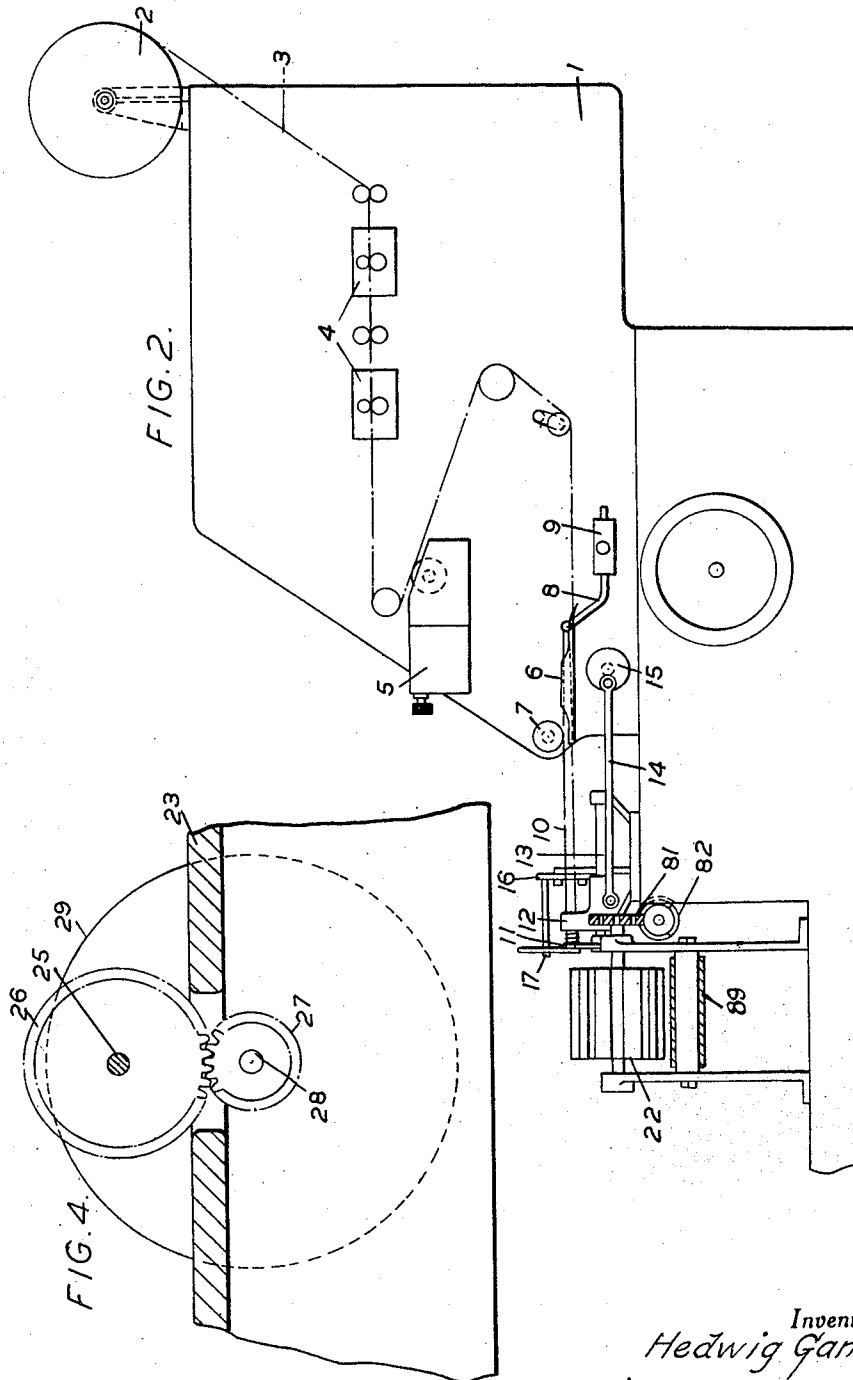
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 3



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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

Filed July 27, 1950

14 Sheets-Sheet 4

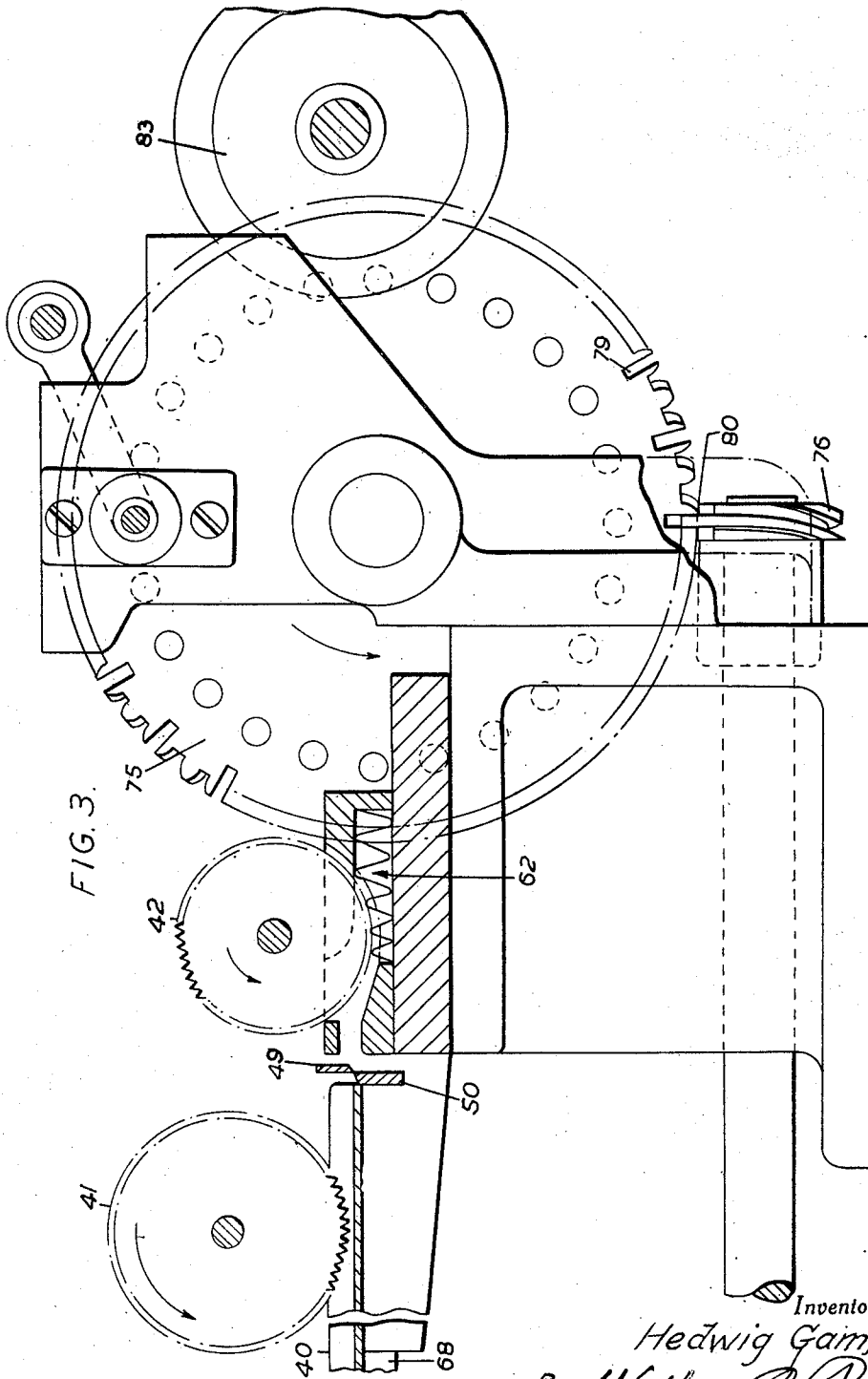


FIG. 3.

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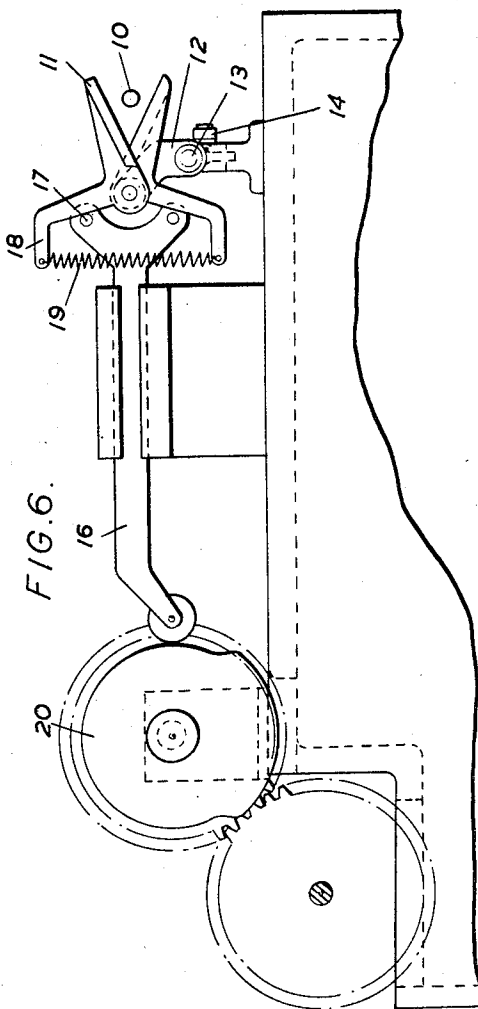
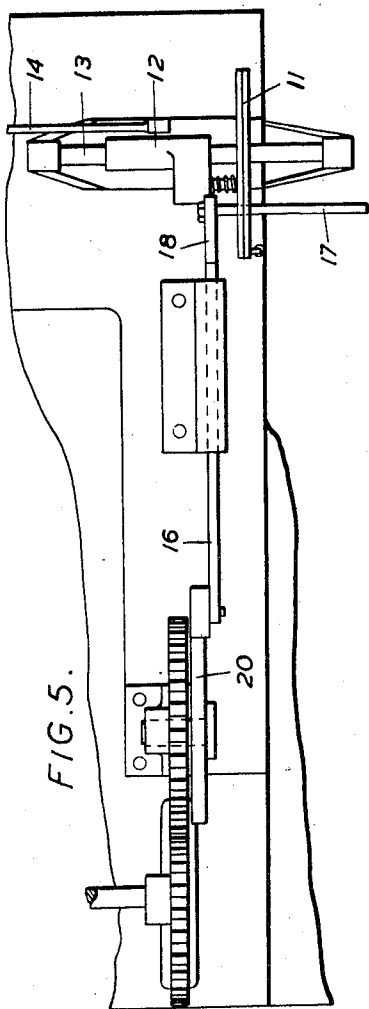
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 5



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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 6

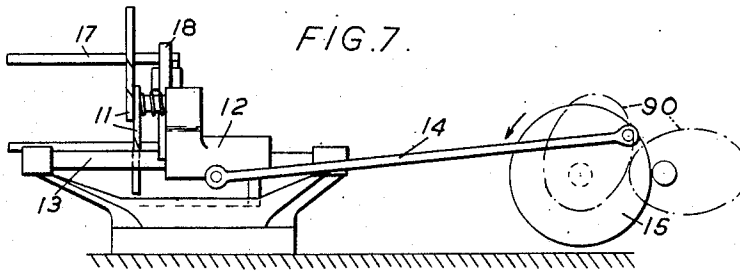
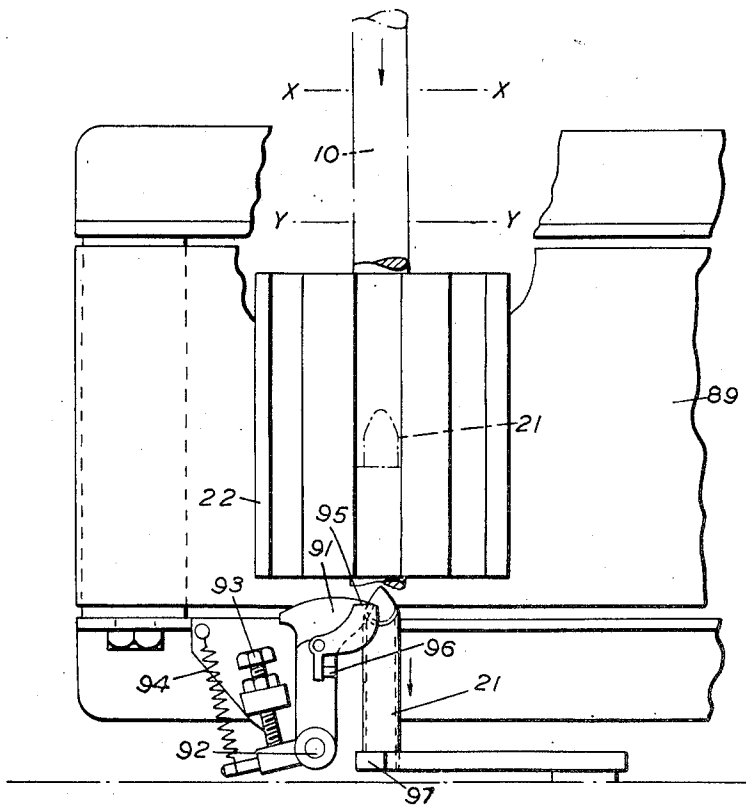


FIG. 8A



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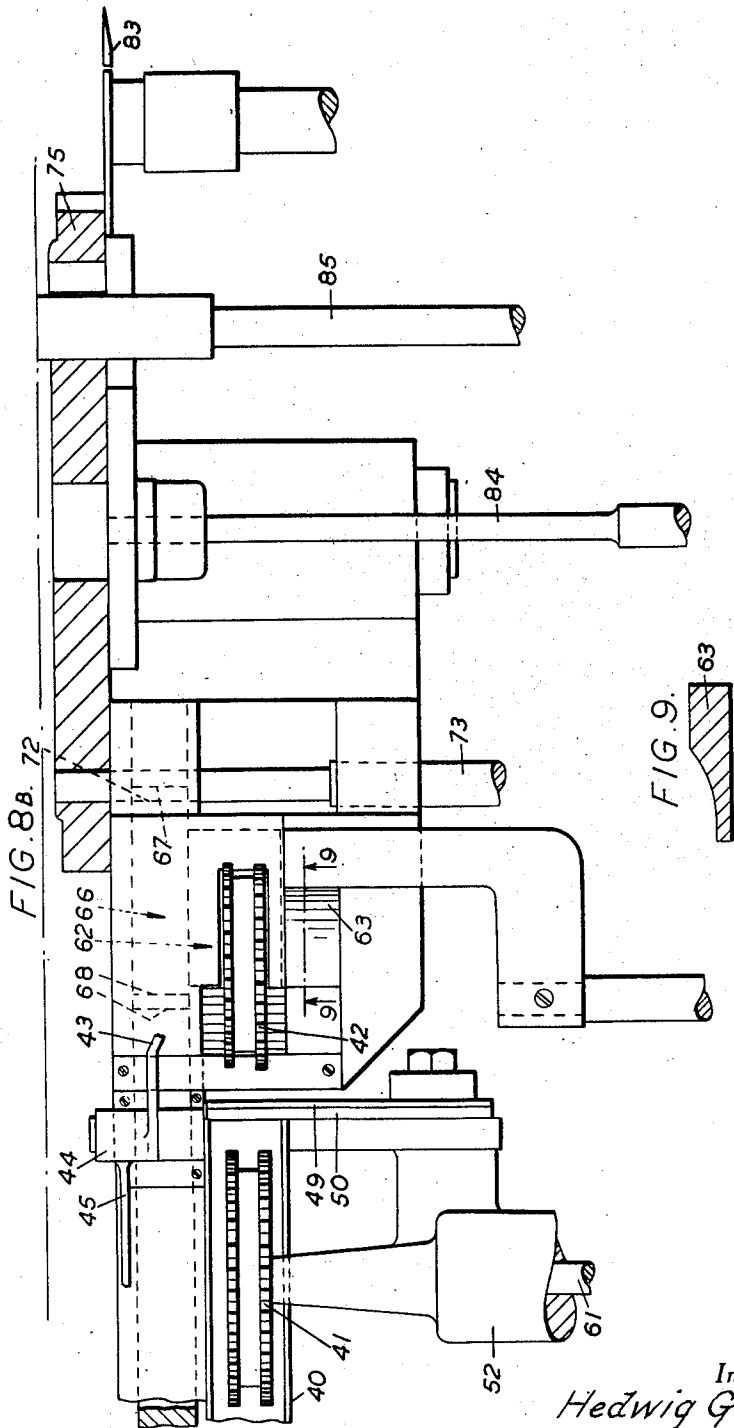
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

Filed July 27, 1950

14 Sheets-Sheet 7



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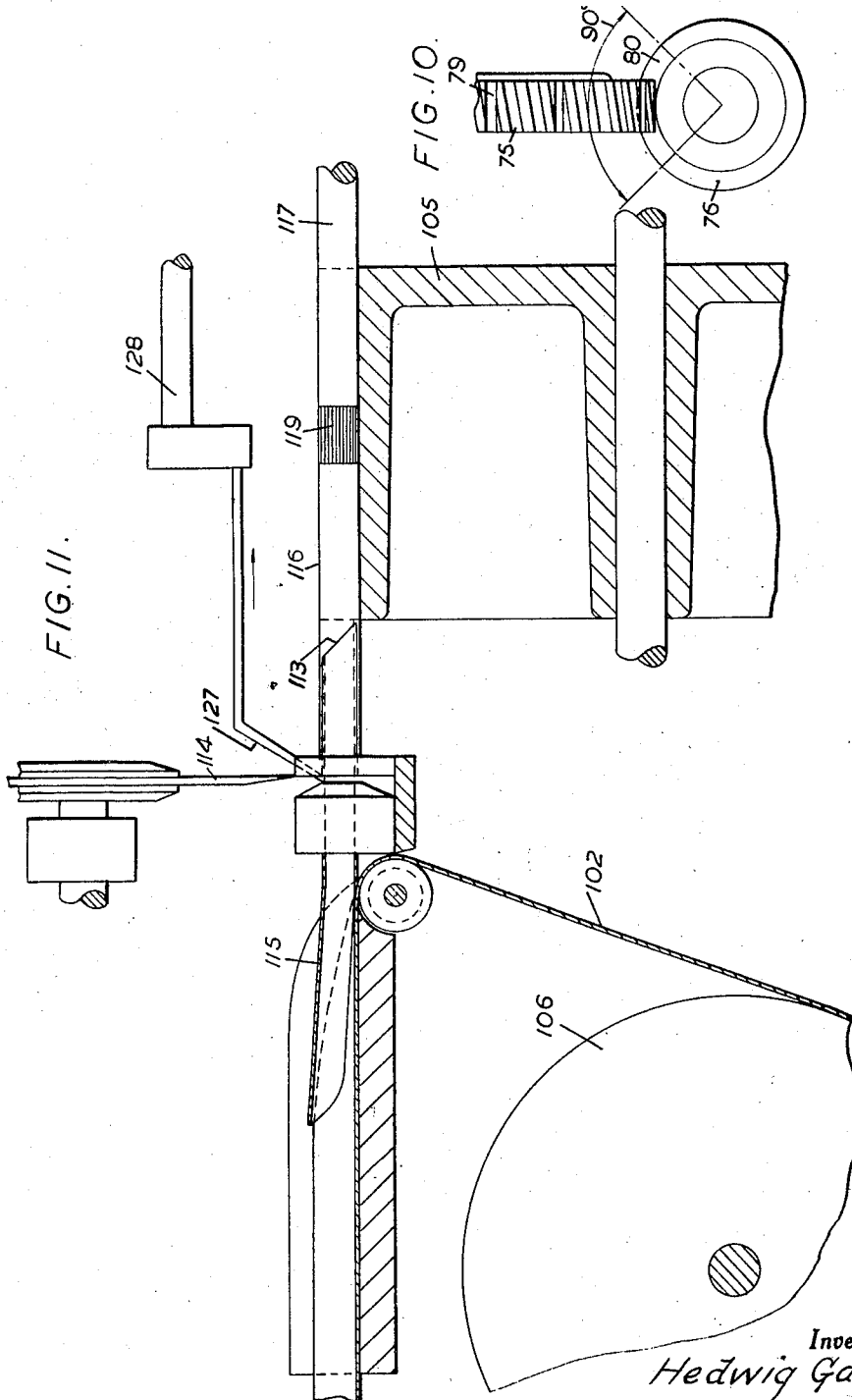
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 8



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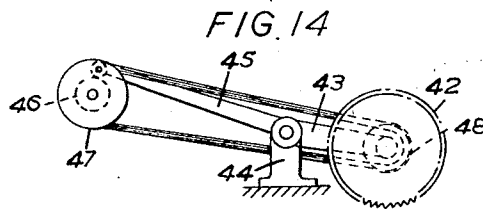
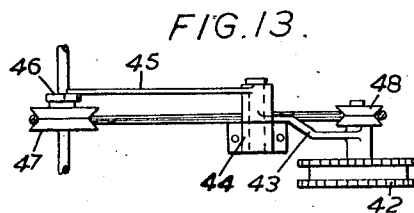
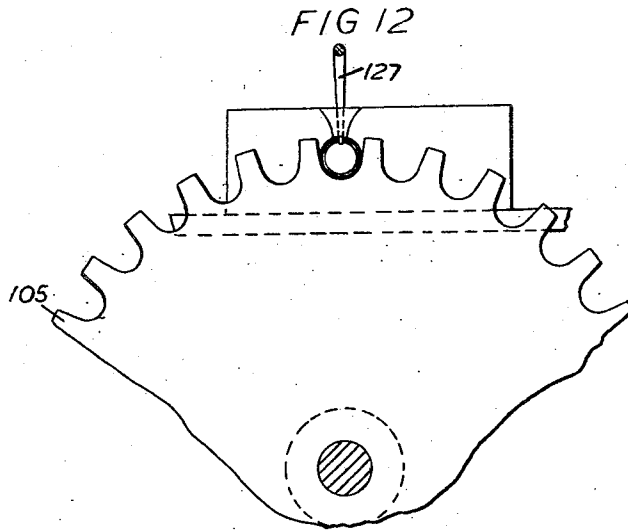
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 9



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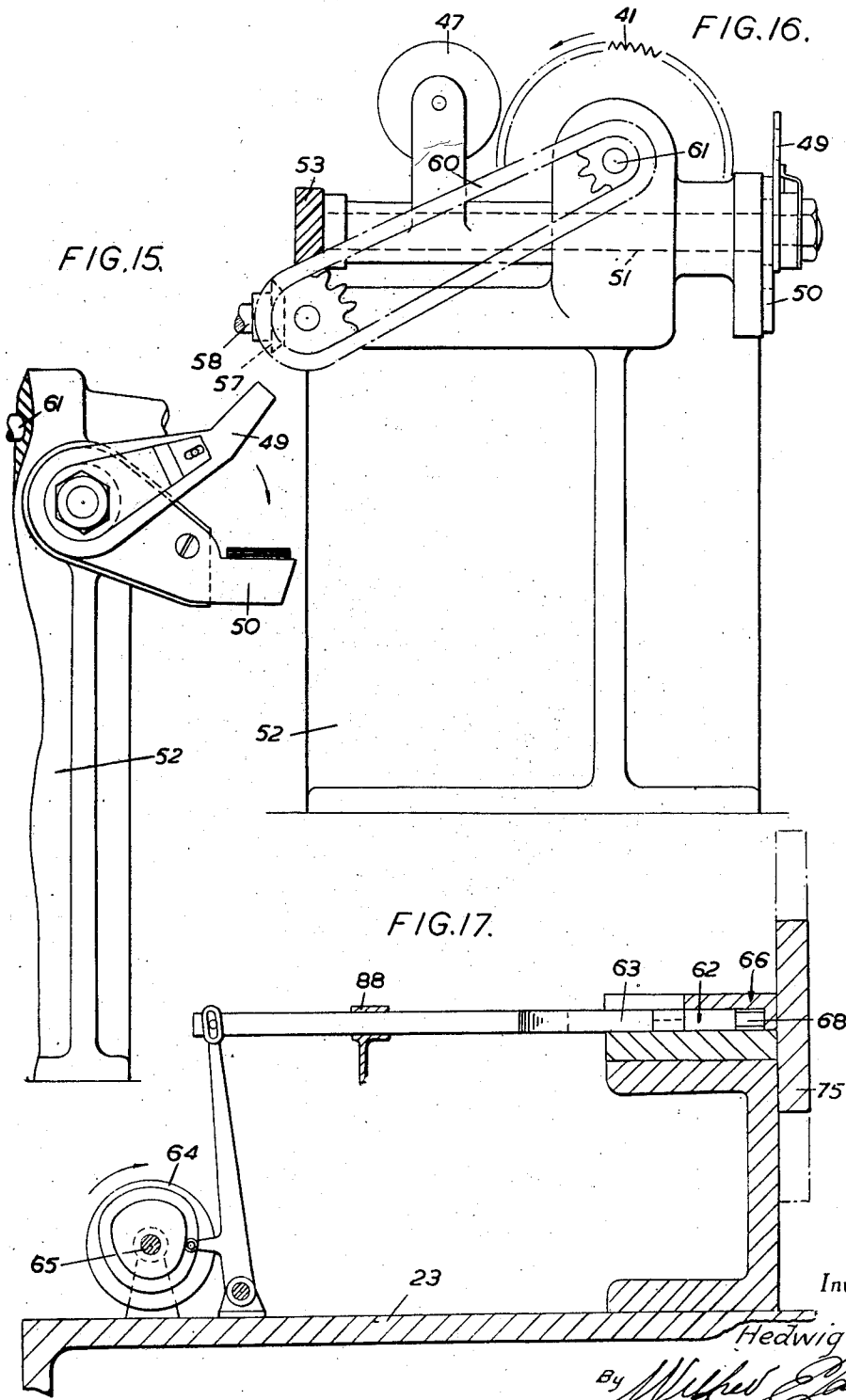
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 10



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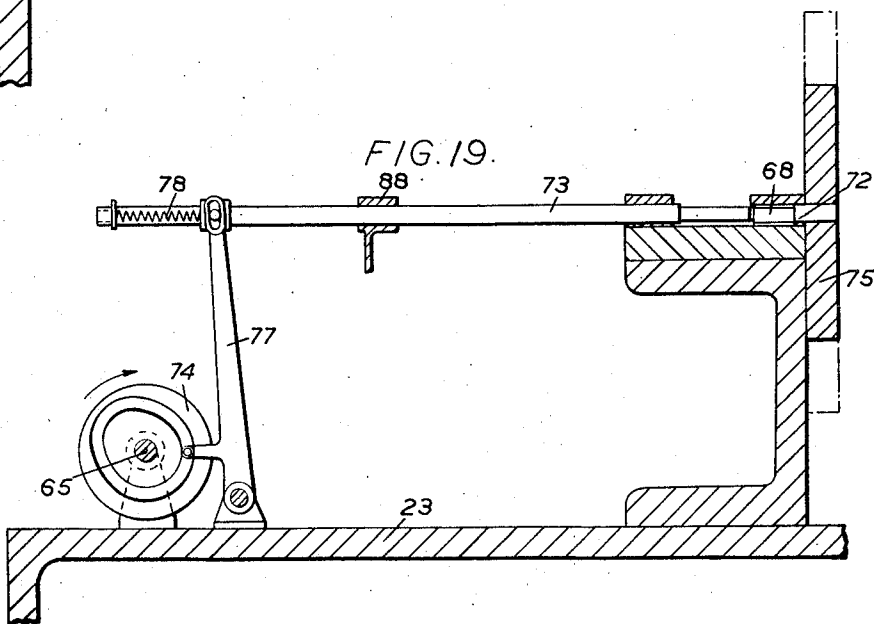
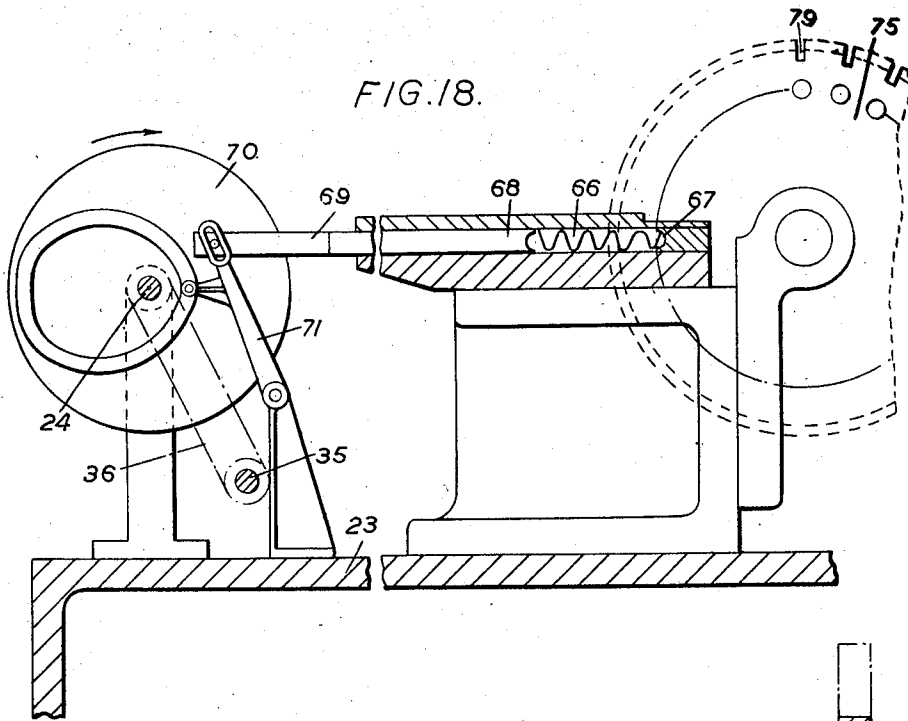
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 11



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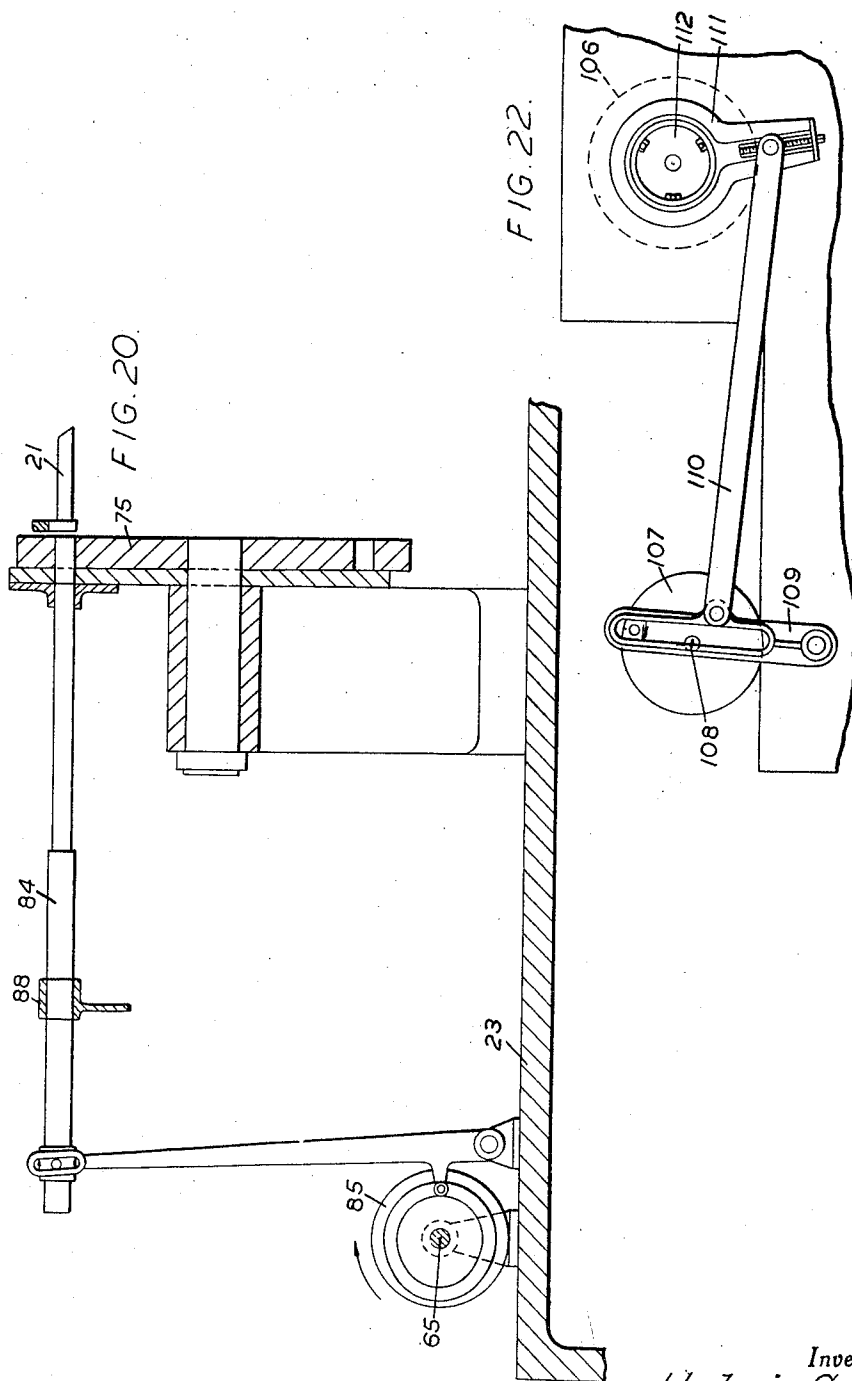
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

Filed July 27, 1950

14 Sheets-Sheet 12



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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 13

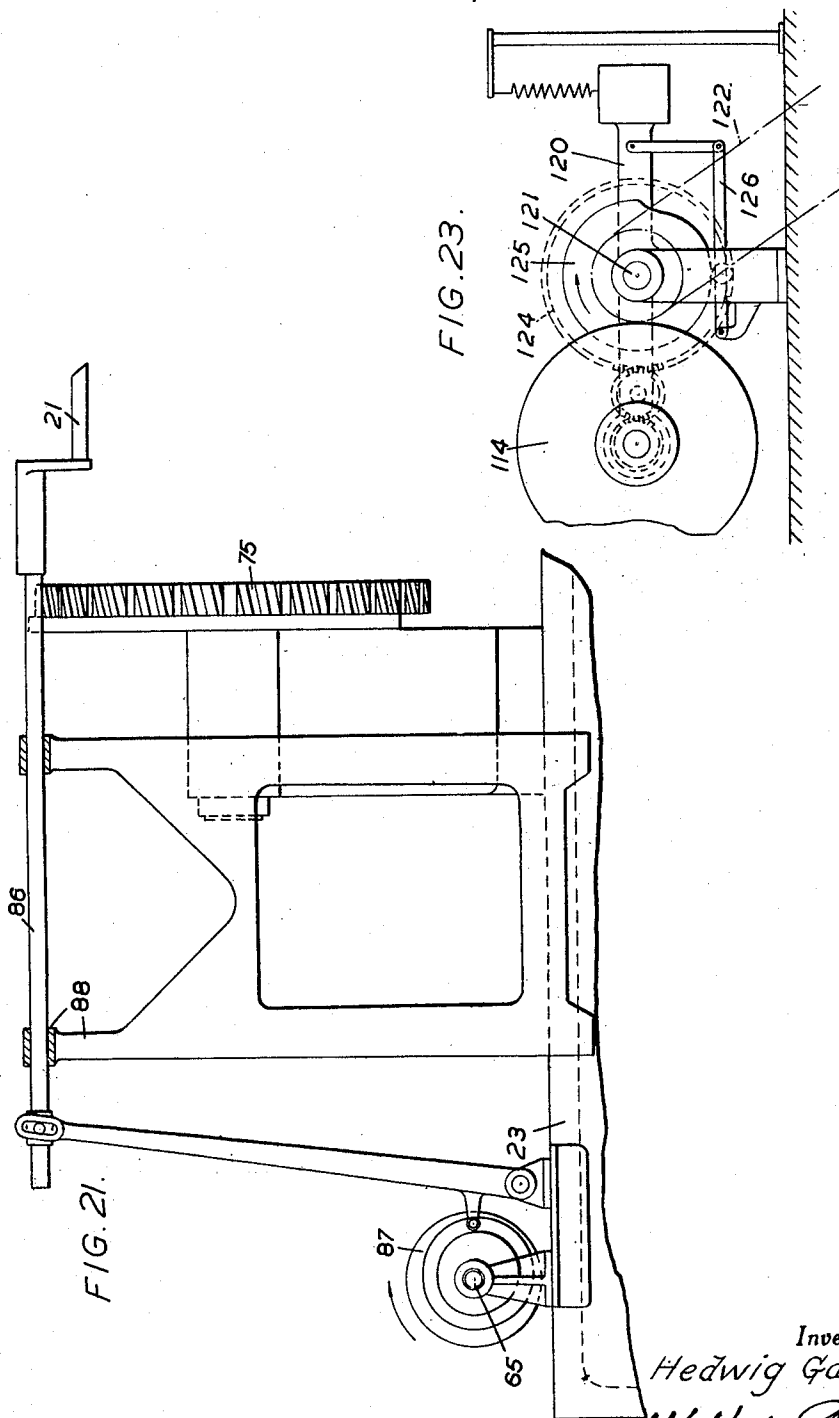


FIG. 21.

FIG. 23.

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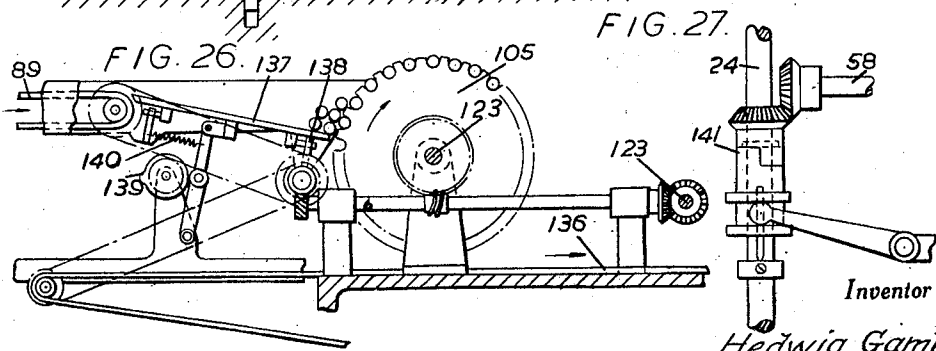
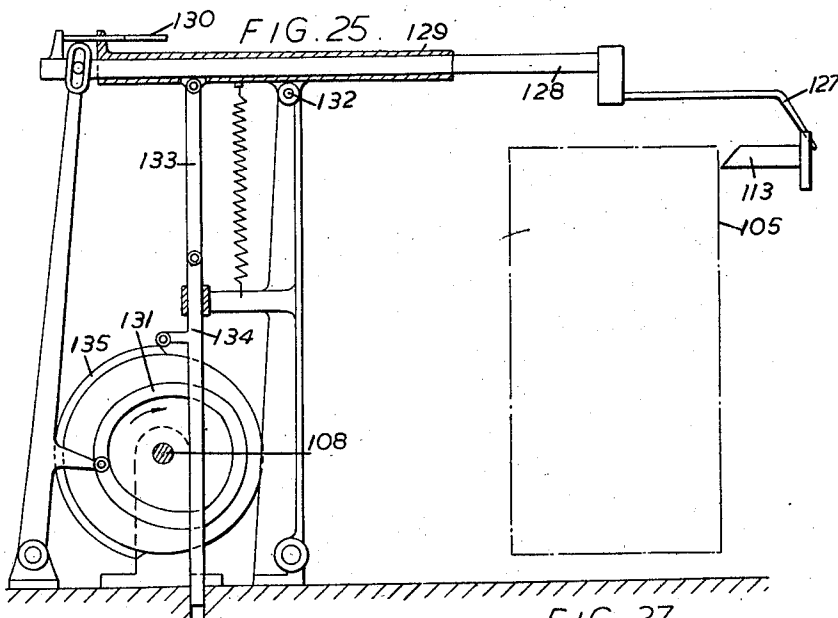
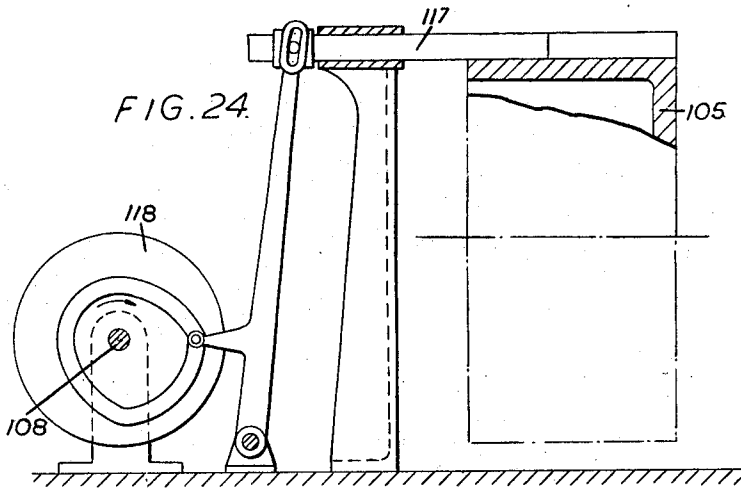
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MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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14 Sheets-Sheet 14



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# UNITED STATES PATENT OFFICE

2,597,720

## MACHINE FOR INSERTING FILTER PLUGS IN CIGARETTE TUBES

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Continuation of application Serial No. 544,020,  
July 8, 1944. This application July 27, 1950,  
Serial No. 176,240

4 Claims. (Cl. 93-1)

1

Hitherto in the manufacture of filter tip cigarettes it has been customary to employ separate machines for performing the different operations entailed. Thus for example in some cases the cigarette rod has been made and cut to length on one machine while filter tips of the absorbent wad type made by another machine are ultimately combined with the lengths of cigarette rod by means of a cork, cellulose, paper or similar wrapping on a third machine. Also it is known to employ one machine to make the paper tube complete with a filter tip and a second machine to fill such tubes with a length of tobacco rod. These known methods entailing the use of different machines necessitate frequent transfers of partly made components from one machine to another and each needs to be kept under close observation and stopped at intervals to change exhausted reels of paper, corp strip or like stock materials employed.

The primary object of the present invention is to improve the method of manufacture of filter tip cigarettes by combining together in an improved manner in a single machine, the various mechanism required in the manufacture of filter tip cigarettes and providing as a part of said machine an automatic conveyor mechanism for transferring the partly made cigarette from one operation stage to another. The invention discloses a machine for making filter tip cigarettes comprising paper tube maker, a filter wad maker, means for inserting said wads into the ends of the paper tubes and means for conveying the paper tubes with inserted wads to a tobacco filling device which inserts tobacco into said paper tubes, the tobacco filling device being adapted to form the tobacco into a continuous rod which is advanced intermittently and cut into sections for insertion into the paper tubes. Since for the proper operation of the machine there must of necessity always be a number of paper tubes with filter wads either travelling to or awaiting treatment at the tobacco filling device and since the tube forming and filter making devices require to be stopped occasionally to replenish paper supplies or to rectify irregularities it is preferred normally to drive the paper tube and filter making devices at a rate somewhat in excess of that of the tobacco filling devices and to provide in the drive system a speed changing mechanism whereby the rate of production of the paper tubes may be reduced occasionally when a surplus of paper tubes accumulates on the machine.

The improved machine for making filter tip cigarettes and the method of operation are here-

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inafter more particularly described with reference to the accompanying drawings wherein there is shown by way of example only a machine constructed in accordance with the present invention.

In these drawings:

Figures 1A and 1B together constitute a plan view of the machine with some parts broken away. The views join up by a conveyor band a part of which is shown broken in each figure.

Figure 2 is a side elevation of part of Figure 1A looking in the direction of the arrow A.

Figure 3 is a section of part of Figure 1A on the line 3-3.

Figure 4 is a section of Figure 1A on the line 4-4.

Figure 5 is an enlarged view of part of Figure 1A, showing details of a scissors device.

Figure 6 is a front elevation of Figure 5.

Figure 7 is a side elevation of Figure 5.

Figure 8A is an enlarged view of part of Figure 1A, partly broken away.

Figure 8B is an enlarged view of part of Figure 1A, partly in section.

Figure 9 is a section of a pusher shown in Figure 8, the section being on the line 9-9.

Figure 10 is an end elevation of a fragment of Figure 3 showing details of a worm drive.

Figure 11 is a section on the line 11-11, Figure 1B.

Figure 12 is an end elevation of part of Figure 11.

Figure 13 is an enlarged view of part of Figure 1A showing details of a feeding wheel device.

Figure 14 is a front elevation of Figure 13.

Figure 15 is a side elevation of a knife device shown in Figure 1A, the supporting bracket being broken away.

Figure 16 is a front elevation of the supporting bracket of Figure 15, looking from the left hand of that view.

Figure 17 is a section on the line 17-17, Figure 1A, showing details of cam mechanism for operating a pusher.

Figure 18 is a section on the line 18-18, Figure 1A, showing details of cam mechanism for operating a wad forming pusher.

Figure 19 is a section on the line 19-19, Figure 1A, showing details of cam mechanism for operating a wad pusher.

Figure 20 is a section on the line 20-20, Figure 1A, showing details of cam mechanism for ejecting a wad into a spoon.

Figure 21 is a view in the direction of the arrow

B, Figure 1A, showing details of cam mechanism for operating a spoon.

Figure 22 is a view looking in the direction of the arrow C, Figure 1B, showing mechanism for intermittently rotating a tape drum.

Figure 23 is a front elevation of a cutting knife and operating mechanism therefor looking in the direction of arrow D, Figure 1B, the parts being shown partly broken away in Figure 1B to expose other parts.

Figure 24 is a section of Figure 1B on the line 24—24.

Figure 25 is a section of Figure 1B on the line 25—25.

Figure 26 is a section of Figure 1B on the line 26—26, parts being broken away to show inner parts.

Figure 27 is an enlarged view of a fragment of Figure 1A showing a clutch device.

This application is a continuation of application Serial No. 544,020, filed July 8, 1944, now abandoned.

Referring to the drawings:

The machine comprises a number of units or mechanisms each unit performing one part of the whole operation of manufacturing a filter tip cigarette, the units being operated in timed relationship with one another. The units which will now be described in detail consist of a paper tube maker, a filter wad maker, comprising a device for inserting the wads into the paper tubes, a conveyor for transferring the tubes containing their wads to a tobacco filling position and a tobacco feeding and rod forming mechanism comprising a device for cutting the rod into sections and a device for inserting the sections of rod into the paper tubes. Except for the paper tube maker and the conveyor for the tubes containing their wads, the machine moves intermittently and though this will be clear from the description of the driving mechanism which follows later, it will help in understanding the invention to state that one intermittent movement is made for each filter tip cigarette produced.

The paper tube maker is shown in Figures 1A and 2 and comprises a frame 1 on which is mounted a paper reel 2. The web of cigarette paper 3 from this reel passes through printing, coloring, or bronzing devices 4 and thereafter past a paster 5 which applies adhesive to one edge of the web. The web then passes through a former 6 of circular cross section whereby it is formed into a tubular shape and the overlapping edges of the tube are sealed by a roller 7 which cooperates with a small roller located inside the tube and supported by a pivoted arm 8 provided with a balance weight 9. The sealed tube 10 passes onwards to a cutting device comprising scissors 11, see also Figures 5, 6 and 7, which are mounted on a bracket 12 arranged to be reciprocated in the direction of movement of the paper tube on a guide rod 13 under the action of a connecting rod 14 driven by a crank disc 15. A slide member 16, provided with two rods 17, to engage levers 18 to operate the scissors and open them against a spring 19 is arranged to be actuated by a cam 20 for the purpose of operating the scissors as and when required as explained later. Just before a cigarette tube is cut from the end of the tube 10, the leading end thereof passes onto a hollow tube or spoon 21 where the tube receives a filter wad as will be explained in greater detail later, after which it is stripped-off into one of a series of flutes or grooves in an intermittently rotating drum 22, moving at the rate

of 1 flute pitch per cigarette produced by the machine.

The frame 1 is mounted on the bed 23 of the machine and journaled in suitable bearings on this bed is a driving shaft 24 which is driven, as shown in Figure 1A, by bevel wheel gearing from a cross-shaft 25 which also drives the tube making devices supported on the frame 1. The shaft 25 carries a large spur gear wheel 26 which engages with a smaller one 27, Figure 4, beneath the bed and fixed to the main driving shaft 28. On the shaft 28 are two loose pulleys 29 and 30 and a single fast pulley 31. Belts 32 and 33 may, alternatively, be put on the fast pulley by manipulating the belt forks shown, by a handle 34. The shaft 24 is coupled to a secondary driving shaft 35 by even ratio chain and sprocket wheel gearing at 36, Figure 1A. The shafts 24 and 35 rotate once for each cigarette to be produced.

The filter wad maker is shown in Figures 1A, 3 and 8 and comprises various pieces of mechanism which are supported on the bed 23. At the side of the bed two reels of crepe paper 37 and 38 are mounted, the reel 37 being the running reel while the reel 38 is in reserve. The crepe web 39 passes along a guide or channel 40 to a feeding wheel 41 which pulls it from the reel 37. The leading end of the web is engaged by a further feeding wheel 42 carried upon an oscillating arm 43.

The arrangement is best seen in Figures 13 and 14. The arm 43 is pivoted on a bracket 44 and has an extension arm 45 which has a roller at its end engaging a cam 46. The cam is fixed to a pulley 47 which drives a smaller pulley 48 attached to the spindle of the wheel 42. Thus as the pulley 48 rotates, the wheel 42 is rotated and oscillated. The purpose of the oscillation is to enable the wheel 42 to engage cut pieces of crepe paper and feed them onwards, as will be better understood later. The pulley 47 is driven from the shaft 35 by the gearing shown in Figure 1A at 143. Between the two wheels 41 and 42 is arranged a rotatable knife 49 which cooperates with a fixed knife 50 and operates to cut off a section of crepe of a suitable length to form a wad. Referring also to Figures 15 and 16 the knife 49 is fixed to a shaft 51 journaled in a bracket 52 fixed to the bed 23 and having a spiral gear wheel 53 at its other end. This wheel meshes with a similar gear wheel 54 fixed at one end of a shaft 55 also journaled in the bracket 52 and having a bevel gear wheel 56 at its other end. The wheel 56 meshes with another bevel gear wheel 57 on a shaft 58 also journaled in the bracket 52 and driven by equal ratio bevel wheel gearing from the shaft 24 as shown in Figure 1A. Thus the knife 49 revolves once for each cigarette to be produced. A further bevel gear wheel 59 rotatable on a stub shaft fixed to the bracket 52 has a chain wheel fixed to it on which runs a chain 60 which also passes over a chain wheel fixed to a shaft 61 journaled in the bracket 52 and at the other end of which is fixed the feeding wheel 41. The wheel 41 rotates at such a rate as to feed a piece of crepe paper of the desired length for each revolution. The leading end of the web passes into a chamber 62, Figure 3, prior to the cutting. The end of the crepe web is engaged by the feeding wheel 42 just before the piece of crepe is cut and as the wheel 42 feeds the cut portion into the chamber 62, it naturally crumples up the crepe as soon as the leading end thereof meets the far end of the chamber. This crumpling is indicated in Figure 3 by a wavy line.



Referring now chiefly to Figures 3, 8B, 17, 18, 19, 20 and 21 one side wall of the chamber 62 is formed by a side pusher 63 which is operated by a cam 64 on a camshaft 65 and pushes the cut piece of crepe across the chamber into an extension thereof marked 66 in Figures 8B and 17. One end wall 67, Figure 18, of the chamber extension 66 is of concave cross-section and the opposed wall is formed by a concave-ended pusher 68 which is fixed on a bar 69 operated by a cam 70 on the shaft 24. The arrangement is shown best in Figure 18 from which figure it will also be seen that the cam 70 (shown broken in Figure 1A) oscillates a lever 71 which is connected to the rod 69 by a pin and slot device of usual construction. As the bar 69 moves to the right, Figure 18, the strip of crepe is bunched or compressed into a wad of substantially cylindrical form.

The finished wad is ejected through a hole 72, Figure 19, in the far side of the chamber by a push-rod 73, operated by another cam 74 on the camshaft 65 and is pushed thereby into one of a series of holes in a disc 75 which comprises a wormwheel or gear, intermittently driven by a worm 76 of the kind shown in Figure 3. In order to avoid danger due to possible jams, the rod 73 is coupled to its cam lever 77 by springs 78. The worm and wormwheel shown in Figures 3 and 10 are of special construction. The wheel has slots 79 on the same radii as the holes in the wheel disc and the worm has a part 80 of its thread of zero lead, so that although the worm rotates continuously, the wormwheel stops each time the part 80 of the worm is passing through a slot 79. In this example the worm has 90° of circumference for the part of zero lead. The same general arrangement is used for the intermittently rotating drum 22 but in that case the wormwheel 81 is driven by a worm 82 having 270° of circumference for its zero lead. Thus the drum is still for a long time and makes its intermittent movement very rapidly. It does not appear necessary to illustrate the drum and worm further than the showing in Figure 2, in view of this explanation. As the disc 75 rotates carrying the wads, see Figure 3, the ends of the wads which ultimately constitute the ends of the corresponding cigarettes are trimmed square and to length by a rotatable disc knife 83. Further rotation of the disc 75 brings the wads one at a time into line with an ejector rod 84, see Figure 20, operated by a cam 85 on the camshaft 65 and this rod ejects the wads from the disc one at a time into the spoon 21.

The spoon 21 is carried on a rod 86, Figure 21, reciprocated by a further cam 87 on the camshaft 65. All the rods 73, 84 and 86 move in a guide bracket 88. As the rod 86 moves and carries the spoon into contact with the disc 75, the ejector rod pushes a wad out of the hole in the disc which is then aligned with the spoon and after the latter has received the ejected wad it moves back and enters a flute of the drum 22 which is stationary at that time. The paper tube enters the same flute from the other end and as soon as the leading end of the tube has passed over the spoon by about 12 millimetres, see Figure 8A, the tube is cut by the scissors 11 which are at that moment moving substantially at the linear speed of the paper tube. Thereupon the scissors, which travel at a variable speed because the crank disc 15 is driven by elliptical gears 90 as shown in Figure 7, rapidly push the cut piece of tube along the rest of the spoon and the instant this is done the spoon is withdrawn from the drum

flute. At the instant the scissors have finished pushing the cut piece of tube along the flute and over the spoon they open and forthwith start to move back again as the crank disc 15 continues to rotate. It will be understood that the tube and spoon may be moving along the flute at the same time. That is at the moment the paper tube encounters the spoon both may be moving towards one another. Thus no time is wasted. The cutting position is indicated on Figure 8A by a line X—X and the end of the scissors travel by a line Y—Y. It will be seen that the forward end of the cut tube is flush with its end of the drum 22 and the rear end overhangs the drum, the latter being rather shorter than the cut tube. As the spoon moves out of the flute it carries the tube a short distance until its ends overhang the drum by equal amounts, the tube then being exactly above a conveyor belt 89 which moves continuously beneath the drum. Continued movement of the spoon towards the wheel 75 does not however move the tube any farther because a stripper blade 91, which enters a thin slot along the side of the spoon, engages the wad and tube and holds them still so that the spoon is withdrawn from the tube and leaves the wad inside it. Immediately the spoon is quite clear of the tube the drum 22 moves one flute pitch and the operations repeat. During these operations, from the time the scissors have cut the paper tube until the drum has made its movement of one pitch the paper tube has of course been continuing to advance at uniform speed but the time gained by the increased speed of movement of the cut piece of tube is sufficient to permit the recited operations to take place and the drum to move, before the tube starts to enter the next flute of the drum as the latter comes to rest. In order to prevent the stripper blade from displacing a wad as the spoon, carrying said wad, moves into the flute of the drum, the stripper is pivoted at 92 and held against a stop 93 by a spring 94, so that it can be rotated on its pivot to move the blade out of the way of the spoon. This movement is effected by the engagement of an abutment 97 on the spoon holder with a small pawl 95 on the stripper. As the spoon moves towards the fluted drum the abutment strikes the pawl but as this cannot move on its pivot because of a stop 96, the stripper is swung on its pivot. On the reverse movement of the spoon the pawl turns on its pivot, a torsion spring being provided to urge the pawl against the stop 96. These operations are performed on a tube located in a flute in the upper part of the drum and after further rotation of the drum the tube, complete with its wad, falls from the flute on to the conveyor band 89 which moves in the direction of the arrows Figures 1A and 1B and conveys the tubes in a row towards the tobacco filling device.

The tobacco feeding and rod forming mechanism may be of any suitable kind but as shown in Figure 1B is of the kind usually employed on continuous rod cigarette making machines and comprises a tobacco hopper 100 having suitable means for carding and combing the tobacco and delivering it as a shower at 101 on to an endless tape or band 102 which moves intermittently in a trough 103 and conveys the tobacco in the direction of the arrow, during which movement it is formed by compressing wheels or the like 104 into a rod of circular cross-section, if round cigarettes are being made. All these operations and devices being quite well known. As however the leading end of the formed rod has to enter

a paper tube carried by an intermittently rotated drum 105, as will be explained in more detail later, the tape is driven intermittently and not continuously as in certain other known cigarette machines. For this purpose the tape drum 106 is driven by a ratchet wheel and pawl device. This is shown in Figure 22. A crank disc 107 is fixed on a shaft 108, which is also used as a camshaft, and a slotted link 109 is oscillated by rotation of the disc. A long link 110 couples the slotted link to a lever 111 which comprises an annular hub mounted on a disc 112 fixed on the shaft of the tape drum. Between the annular hub and the disc is a friction ratchet device of known construction, consisting of balls lodged in suitable grooves in the disc. Thus as the link 109 oscillates, the tape drum is intermittently moved.

The devices for introducing the tobacco rod into the paper tubes carried by the drum 105 are best seen in Figure 11 and include a slotted spoon 113 aligned with the delivered end of the tobacco rod, said spoon being mounted in a fixed position adjacent to a rotating cutting knife 114. The end of the formed tobacco rod enters this spoon 113 by way of a guide tube 115 and at approximately the same time a paper tube 116 from the drum 105 is slid over the outside of said spoon by the action of a pusher rod 117 actuated by a cam 118 and advancing against the filter insert as shown. In Figure 11 the paper tube 116 is shown in section so that the wad 119 and spoon can be seen clearly. When a sufficiency of the tobacco rod for filling the cigarette has entered the spoon the rod is severed by the rotating disc knife 114. The knife 114 is supported on a pivoted arm 120 the arm being freely mounted on a spindle 121 driven by chain and sprocket gearing 122 at equal speed with a shaft 123 which is the main driving shaft of this part of the machine. A large gear wheel 124 rotates with the spindle 121 and drives the knife, as shown in Figure 23). The spindle also has a cam 125 fixed on it so that once per revolution the arm 120 is moved on its pivot by the links 126 and the knife moved down to cut the tobacco rod and up again to clear it. Parts of this device are broken away in Figure 1B but its construction is clear from Figure 23). Immediately the cut has been effected and the knife 114 has moved up a stripper pin 127 descends and enters the slot in the spoon 113 and then moves back towards the fluted drum carrying the filled cigarette off the spoon and leaving it once more in the appropriate flute in the drum 105. The movements are best followed from Figure 25. The pin is fixed to the end of a slidable rod 128 which slides in a guide tube 129 and is prevented from rotating therein by the guide 130. A cam 131 moves the rod 128 to and fro. The tube 129 is pivoted at 132 and swung up and down on its pivot by a link 133 coupled to a cam rod 134 which is moved up and down by a cam 135 formed on the periphery of the cam 131.

Further rotation of the drum 105 eventually allows the finished filter tip cigarette to fall on to a delivery band 136 moving in the direction of the arrow, Figure 1B.

In order to ensure that the tubes containing the filter wads are transported in a spaced and orderly manner by the conveyor band 89 to the drum 105, means may be provided to ensure true parallel alignment of said tubes with the drum axis. This means, as shown in Figure 1B and in more detail in Figure 26, comprises a platform or plate 137 reciprocated as indicated by the double headed arrow, Figure 1B, which by its

movement straightens any tubes which may be approaching otherwise than transversely, to the conveyor. Referring to Figure 26 it will be seen that the plate 137 is slidable in guide blocks 138 and reciprocated by a cam 139 and a spring 140. This view also shows how the belts 89 and 136 are driven from the main shaft 123. It also illustrates the drive to the drum 105, this being the same sort of device as for the disc 75, and the drives for the two belt conveyors.

In order to ensure an adequate supply of paper tubes with filter inserts in the hopper of the filling mechanism despite temporary stoppages for the changing of paper reels it is preferred to arrange for the output of the tube making mechanism to exceed slightly that of the tobacco filling mechanism but means may also be provided whereby the speed of the tube making mechanism may be reduced occasionally when required, as when the supply of tubes in the hopper is excessive.

A convenient method of effecting the necessary speed changes is shown in Figure 1A. The tobacco rod forming and filling mechanism is all driven from the main shaft 123. This shaft may be driven by a pulley or motor (not shown) on the end of the shaft beyond the tobacco hopper. The paper tube maker, filter wad maker and the assembly devices therefor are all driven from the pulley 31 having a two speed belt drive by the belts 33 and 32. The belt 33 runs faster than 32. The handle 34 operates the belt forks by the transmission shown in Figure 1A. A clutch 141 operated by a handle 142 is provided to enable the production of wads to be stopped when required, as may be necessary if irregularities in performance are to be rectified or when it is desired merely to produce plain cigarettes. The device will be clear from Figure 27 from which it will be seen that the clutch is slidable on the shaft 24 and spined thereto and that the neighbouring bevel gear wheel, which comprises the other half of the clutch, is freely rotatable on the shaft 24. When the clutch is engaged the crepe feeding wheel is driven, so when the clutch is out no crepe is fed and the other wad making mechanisms driven by the main shaft merely move idly.

I claim:

1. Mechanism for forming filter tip cigarettes, comprising two co-axially arranged, axially spaced rotatable bodies, one of said bodies being of cylindrical form and having a plurality of axially extending flutes, the other body having a plurality of chambers arranged to be successively co-axially aligned with one of said flutes, means for imparting step by step rotation to the bodies whereby one of said chambers and one of said flutes may be momentarily stopped in co-axial relation, a paper tube forming means disposed upon the opposite side of the said one body from the other body and positioned to be aligned with the said one flute, filter plug forming means, means for introducing the filter plugs as formed into said chambers, a spoon disposed between the said rotatable bodies in line with the said one flute and a chamber, means for transferring a plug to the spoon from the chamber aligned therewith, means for moving the spoon and plug carried thereby into the said one flute and into the paper tube supported therein and subsequently retracting the spoon, and means for stripping the paper tube and the plug from the spoon upon retraction of the spoon.

2. Mechanism of the character stated in claim

1, with cutting means disposed upon the opposite end of the fluted cylinder from the chambered body for cutting the paper tube transversely.

3. Mechanism for forming filter tip cigarettes, comprising a rotatably supported cylinder, said cylinder having flutes formed longitudinally therein, means for intermittently rotating the cylinder to successively move the flutes to a cigarette tube receiving position, a cigarette tube forming means arranged to advance a tube into one of said flutes when moved into the said position, a disc rotatably supported co-axially with the cylinder at the end thereof remote from the tube forming means, said disc having a plurality of openings formed therethrough in position to be brought successively in alignment with one of said flutes when in the said one position, means for imparting step by step rotation to the disc, mechanism adjacent to the disc for crumpling and forming into a cylindrical plug paper material adapted to form a filter, means for transferring the plugs as formed into the disc openings, a tubular spoon supported between the disc and cylinder in alignment with the paper tube forming means for reciprocable axial movement, the spoon being arranged to move into one of said flutes when brought into the stated one position, means for imparting back and forth movement to the spoon, means for transferring a filter plug from the disc into the spoon, and a stripper pawl disposed adjacent to the spoon for

removing a plug and cigarette tube therefrom upon movement of the spoon away from the cylinder, the spoon in moving forwardly toward the cylinder being adapted to enter the advancing end of a tube in one of said flutes.

4. Mechanism of the character stated in claim 3, in which said cigarette tube forming means is designed to form a continuous tube from a ribbon of cigarette paper, and means disposed at the end of the fluted cylinder remote from said disc for severing the tube and thereafter continuing the movement of the cut portion over the spoon to secure the introduction of the filter plug in the advancing end thereof.

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