Oct. 29, 1940. A. PODMORE 2,219,491

APPARATUS FOR MAKING CIGARETTES

Filed Nov. 22, 1934 2 Sheets-Sheet 1

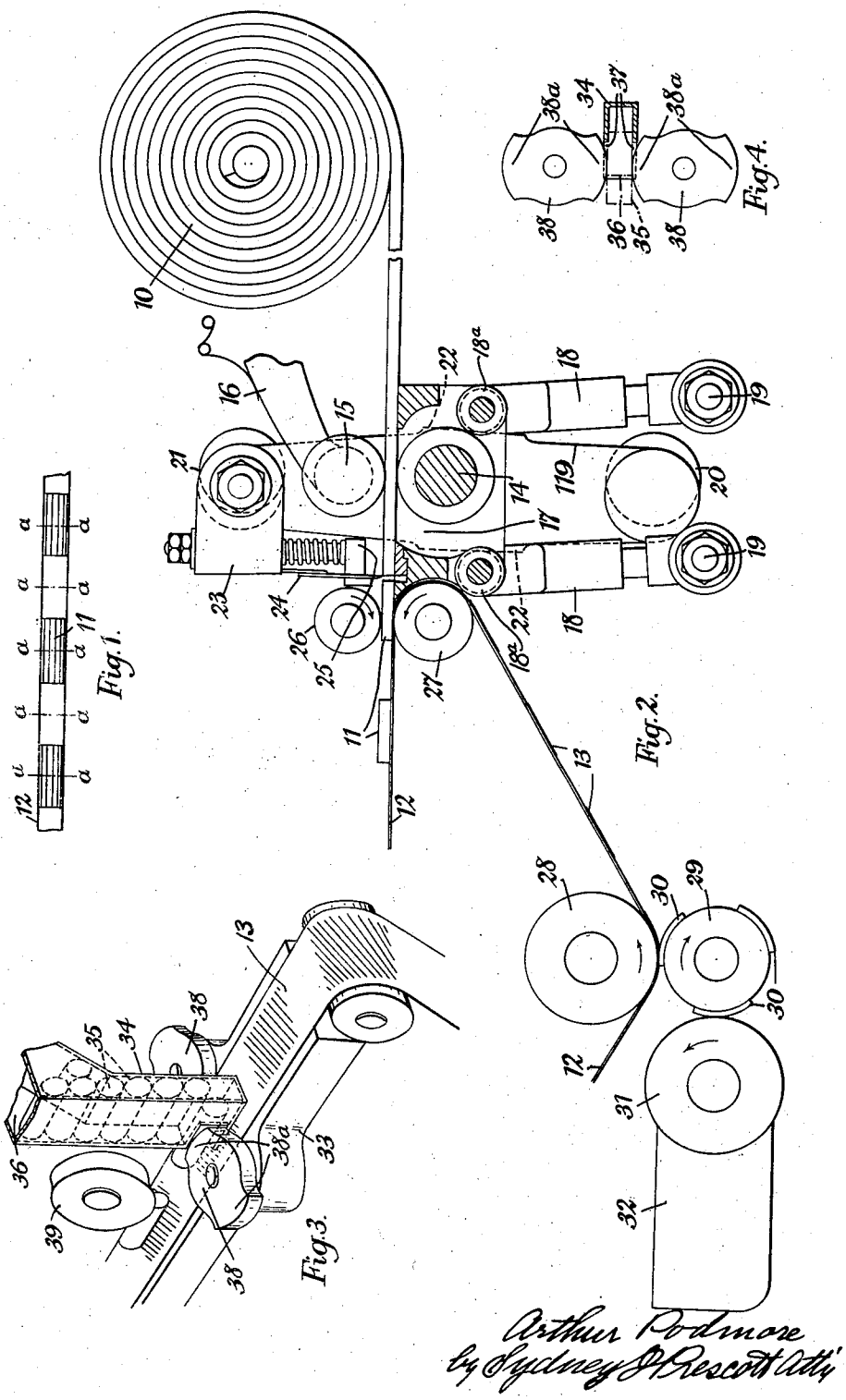


Fig.1.

Fig.2.

Fig.3.

Fig.4.

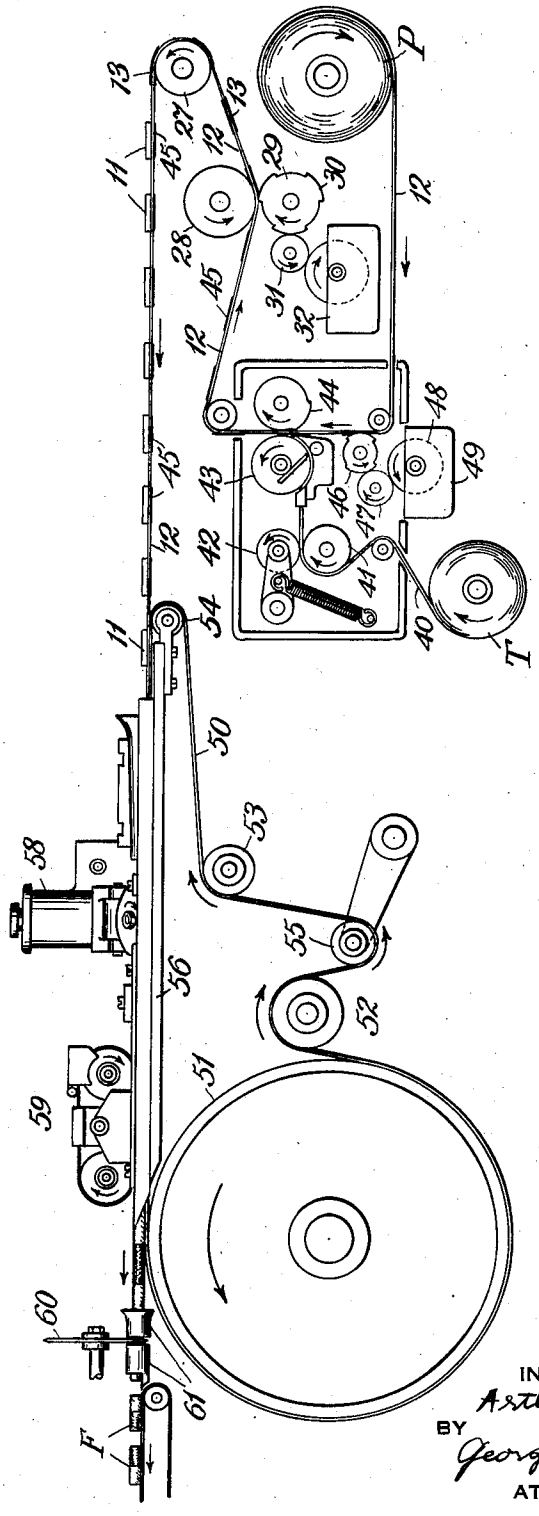
Arthur Podmore
by Sydney B. Prescott Atty

Oct. 29, 1940. A. PODMORE 2,219,491

APPARATUS FOR MAKING CIGARETTES

Filed Nov. 22, 1934 2 Sheets-Sheet 2

Fig. 5.



INVENTOR
Arthur Podmore
BY
George S. Hastings
ATTORNEY

Patented Oct. 29, 1940

2,219,491

UNITED STATES PATENT OFFICE

2,219,491

APPARATUS FOR MAKING CIGARETTES

Arthur Podmore, London, England, assignor to American Machine & Foundry Company, New York, N. Y., a corporation of New Jersey

Application November 22, 1934, Serial No. 754,291
In Great Britain November 29, 1933

2 Claims. (Cl. 93—82)

This invention relates to filter means adapted for use with cigarettes.

Hitherto it has been the practice to provide filter means for cigarettes by incorporating a filter tip portion axially with the tobacco portion and within the same wrapper.

It is an object of the present invention to provide an improved apparatus for making cigarette filter means which is adapted to be applied to an ordinary cigarette whereby the filter may be used or discarded according to the smoker's desires.

A further object is to provide an apparatus for forming the improved filter means whereby they may be manufactured in an expeditious manner and at a relatively low cost.

According to the invention the improved filter means may be manufactured as a continuous rod-like member comprising alternate filter tips and spaces within a continuous wrapper which is subsequently severed into sections comprising a tubular element having a filter tip at one end thereof and a space at the other whereby the device may be telescoped on to the end of a cigarette. The wrapper strip comprises a relatively stiff paper so that the empty portions will stand up to the action of the cutter and will be sufficiently rigid to ensure the telescoping on to a cigarette without difficulty.

In the accompanying drawings:

Figure 1 is a longitudinal section of a portion of filter tip rod indicating the positions of severance to form the individual tip elements.

Figure 2 is a diagrammatic view showing the preferred mode of applying the filter tip elements to a travelling wrapper web prior to the formation into the rod.

Figure 3 is a diagrammatic perspective view of a modification in which the filter tip elements are cut to length and delivered from a hopper.

Figure 4 is a detail plan showing the means for delivering the filter tips from the hopper.

Figure 5 is a diagrammatic view of a standard rod-forming and sealing mechanism and cutoff, in conjunction with a cork tipper applying cork tips to one face of the wrapper and a dauber roll for pasting spaced sections of its other face.

In carrying the invention into effect according to one convenient mode a supply or spool 10 of the filter tip material is provided from which portions 11 preferably of double length are severed and delivered to a travelling paper web 12 to which spaced patches 13 of adhesive have been applied. The web 12 is continuously fed by the rod-forming tape of a rod forming mechanism (not shown) similar to that shown in Fig. 5.

The tipping material is flat in cross section and is fed and severed into sections by an apparatus constructed on the lines of that for applying cork tips to a cigarette paper web described in British Patent Specification No. 394,732.

Thus the filter tip material is fed by feed rolls 14 and 15 which are geared together the lower roll being driven by any suitable mechanism. The upper feed roll is mounted upon a pivoted arm 16 and is spring pressed to give the necessary feeding grip.

The filter tip web is fed over a reciprocating table 17 mounted upon parallel arms 18 pivoted at their lower ends at 19.

The reciprocations of the table 17 are effected by a cross head 119 whose ends are mounted upon crank disks 20, 21 which are driven in unison by suitable means. The cross head is provided with guide surfaces 22 lying between rolls 18a carried by the upper ends of the arms 18.

The cross head 119 also carries a mounting 23 for a knife 24 and a spring pressed foot 25.

In operation the crank disks 20 impart an orbital motion to the crosshead 119 whereby the arms 18 and the table 17 supported thereon are given a to and fro movement through the engagement of the faces 22 of the crosshead with the rollers 18a on the arms 18. The knife 24 and presser foot 25, which are mounted on the crosshead and therefore have a similar orbital movement, follow the to and fro motion of the table; and during the forward reciprocating of the table 17 the knife descends by the action of the cranks and severs a suitable length of the filter tip web, the presser foot holding the web firmly upon the table. During this action the knife is displaced horizontally at a speed increasing from zero to a maximum speed at the moment it severs the filter tip, at which instant it is being displaced horizontally at a speed equal to the speed of the filter tip material at the same rate as the feeding rate of the web. The knife then rises and returns together with the table, the web being meanwhile fed forward by the rolls 14 and 15, and thereby pushing the severed filter tip on to the traveling wrapper web, so that the knife will re-engage the web rearwardly of the previous cut.

The severed piece of filter tip web is delivered on to a gummed section 13 of the wrapper web 12 and is pressed thereon by a pressure roll 26 associated with a guide roll 27 for the wrapper web.

The gumming of the wrapper web 12 may be effected in any suitable manner. For example,

the web may be delivered beneath a guide roll **28** with which is associated a dauber roll **29** having daubing surfaces **30** of suitable length and spacing according to the desired spacing of the filter tips.

The dauber roll receives a supply of adhesive from the feed roll **31** of a gumming device **32**.

The wrapper web **12** with the filter tip sections secured thereon are fed to a pasting device **58** to apply a line of paste along the edge and then to a folding device **56** which form parts of a standard rod-forming mechanism (Fig. 5) of known form in connection with continuous cigarette rod manufacture whereby a continuous tube is fashioned having the filter tip enclosed therein at spaced intervals.

This continuous filter tip tube in turn is delivered to a severing device or cutoff **60** whereby the tube is severed midway of the spaces and the tip sections as indicated by the lines *a—a* in Figure 1 as it passes through the ledger plate **61** and thus produce a filter tip device comprising a tubular element enclosing a filter tip at one end and having a space at the other for telescopically mounting it upon a cigarette.

It will be appreciated that the wrapper web **12** will be of relatively stiff paper suitable to stand up to the severing action and to produce a tube of sufficient rigidity to facilitate it being applied to a cigarette.

It will be obvious that sections of filter tip material of single length may be used instead of double length in which case severance of the continuous tube will take place adjacent an end of the filter tip.

When using a double length filter tip section, the severed elements may be collected in separate columns as is usual in connection with cigarettes having cork tips.

The wrapper web **12** prior to reaching the adhesive applying device **32** may pass through a cork or like tipping device adapted to apply tips at spaced intervals on the face of the web opposite to that adapted to receive the adhesive **13**. Such cork tippers may be of the form shown in Figure 5 for feeding the filter tips and driven synchronously therewith of any suitable type such as shown in British Patent #451,154, and include feed rollers **41** and **42** coacting to draw the web of cork from the roll T and deliver it between the cutter drum **43** and its concave whereon cork tips are severed and continuously advanced by the cutter into register with the areas of paste applied to wrapper web **12** which is drawn continuously from the roll P. The areas of paste are applied in properly spaced relation to the web **12** by a rotary segmental paster **46** which receives the adhesive from the transfer roll **47** which picks up paste from the paste wheel **48** revolving in the paste pot **49**. The cork tips applied to the web **12** are pressed into adhering relation with its pasted sections by the segmental roll **44**, whence the web is guided to the dauber roll **29** which applies patches of paste to its other face in properly spaced relation opposite to the cork tips to coincide with the filter tips deposited thereon. Alternatively the cork tips may be applied to the web and the web rereeled before feeding it to the filter tip apparatus.

The rates of feed of the wrapper web **12** and the filter tip material are preferably equal.

The spaces between adjacent filter tip sections on the wrapper web may be equal in length to the filter tip sections or may be greater or less than the sections.

Instead of severing sections from a continuous strip of filter tip material, preformed tips may be delivered from a hopper or supply to a travelling wrapper web. Thus referring to Figures 3 and 4 the wrapper web **12** having spaced application **13** of an adhesive is fed over a table **33** and beneath a hopper **34** containing a supply of preformed filter tip elements **35**. The lower wall of the hopper chute **35** lies adjacent the travelling paper and is provided with an opening **36** on the leading side.

The sides of the chute are provided with slots **37** through which feeding rolls or grippers **38** are adapted to engage the lowest filter tip **35** by the gripping surfaces **38***a*. The grippers **38** are rotated in opposite directions by gearing (not shown) driven from the shaft of the roll **29**, at a rate such that the peripheral speed of the gripping surfaces is equal to the speed of the wrapper web. The gripping surfaces are adapted to engage the filter tip elements and deliver them from the hopper so that they fall on to the wrapper web the movements being synchronised so that each filter tip engages the appropriate adhesive patch. The hopper chute may be provided with spaced guiding surfaces extending forwardly beyond the gripping zone to ensure the filter tip elements lying on the wrapper web parallel with the direction of feed thereof.

A grooved pressure roll **39** is located forwardly of the hopper and is adapted to press the filter tip elements on to the wrapper web so that it is effectively secured thereto.

The length of the gripping surfaces **38***a* may be equal to the length of the filter tips and each gripper roll may be provided with a number of spaced gripping surfaces according to the diameter of the roll and the spacing of the adhesive patches on the wrapper web.

The wrapper web with the spaced filter tip elements passes on to a paster for applying paste to one margin of the web, and thence to a folding apparatus where it is formed into a tube enclosing the filter tip. The continuous tubular filter tip rod is then delivered to a cut off device where it is severed into individual filter tip devices F. These various mechanisms all form parts of the cigarette machine shown in Fig. 5.

The wrapper may be formed of waxed paper, the sealing of the tube being effected, if desired, by the application of heat through the agency of the heat sealer mechanism (Fig. 5) such as shown in Patent #1,992,723 granted February 26, 1935, on the application of E. D. Smith. Such sealing may be assisted by passing the wrapper tube through a cold tube immediately after the application of heat.

Alternatively, the wrapper may be of unwaxed paper and spaced applications of wax at the positions corresponding to the tipping material may be made on the outside surface of the tube. The wrapper web is drawn off the roll T past the cork tipper, paste-applicator and filter tip applying mechanisms by the rod-forming tape **50**, which is driven by the tape wheel **51** and propels the web through the rod-former **56** (Fig 5).

Having now described my invention what I claim as new and desire to secure by Letters Patent is:

1. A machine for manufacturing filter tip devices of the kind described comprising means for feeding a wrapper web to a rod forming mechanism, a hopper for preformed filter tips located above the path of the web, means for applying

adhesive to the web at longitudinally spaced points and means for successively delivering the filter tips from the hopper to engage the wrapper web at said points.

2. A machine for manufacturing filter tip devices of the kind described as claimed in claim 1 wherein said delivering means including members operating to impart a movement to the filter tip in the direction of the feed and at the same speed as the travelling web.

ARTHUR PODMORE.