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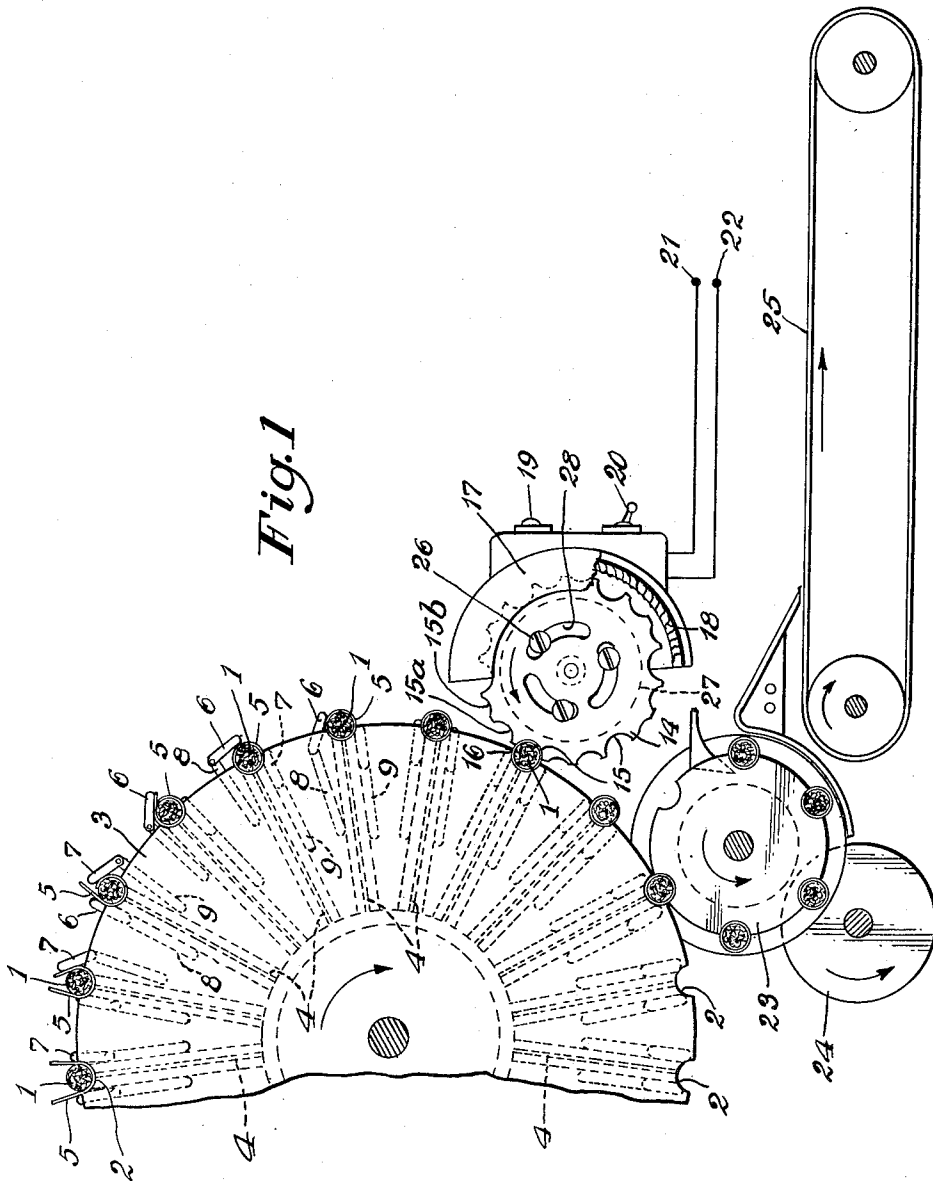
M. POLLMANN

2,808,060

WRAPPING DEVICE FOR FILTER-TIP CIGARETTE MACHINE

Filed April 5, 1956

2 Sheets-Sheet 1



*Inventor:*  
*Max Pollmann,*

*by Singer, Stern & Carlberg,*  
*Attorneys.*

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M. POLLMANN

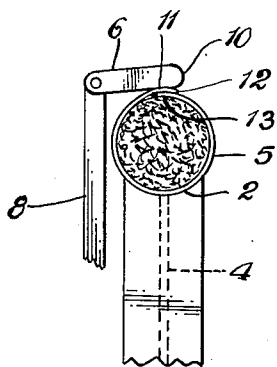
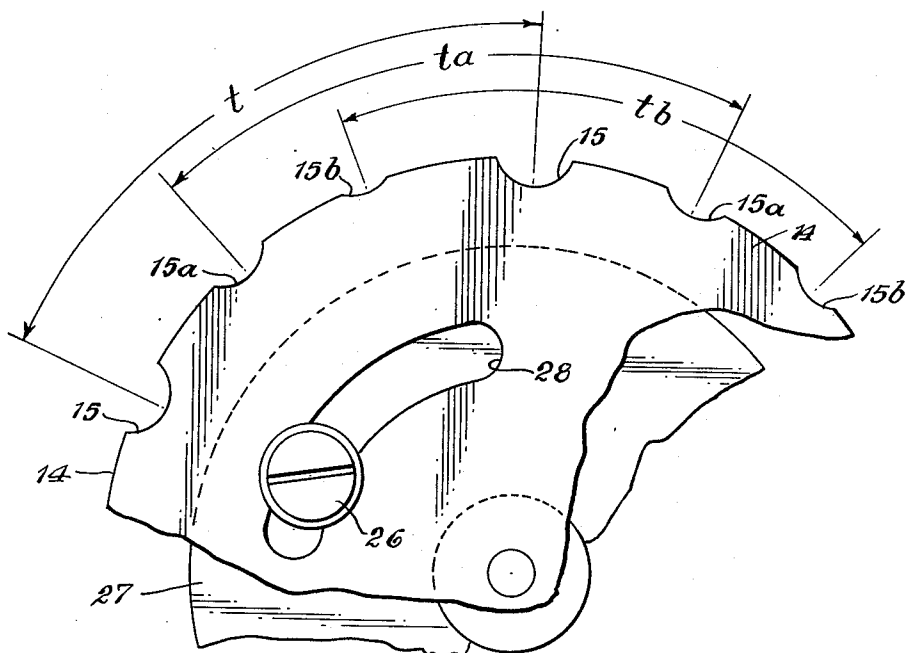
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2 Sheets-Sheet 2

*Fig. 2*



*Fig. 3*

*Inventor:*  
*Max Pollmann,*

*by Singer, Stern & Carlberg*  
*Attorneys.*

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WRAPPING DEVICE FOR FILTER-TIP  
CIGARETTE MACHINE

Max Pollmann, Hamburg-Bergedorf, Germany, assignor  
to Kurt Korber & Co., K. G., Hamburg-Bergedorf,  
Germany

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3 Claims. (Cl. 131—94)

My invention relates to wrapping devices for filter-tip cigarette machines, and, more particularly, to an improved wrapping device for wrapping a wrapper leaf about a cigarette group comprising a pair of cigarettes and an interposed filter tip of double length.

A general object of my invention is to provide an improved wrapping device for a filter-tip cigarette machine which will result in an improved glue seam on the wrapper leaf.

Another object of my invention is to provide an improved wrapping device for a filter-tip cigarette machine which will result in an improved appearance of the wrapper leaf and a strong fast seam line.

Still a further object of my invention is to provide an improved wrapper device for a filter-tip cigarette machine in which heating means is associated with the wrapper device to facilitate quick setting of the cemented seam.

Yet another object of the invention is to provide an improved wrapper device for a filter-tip cigarette machine in which spaced grooves on a conveyor drum register with spaced cooperating grooves on a cooperating disc, which result in the proper pressure being brought to bear upon the cemented seam of the wrapper leaf for the cigarette group disposed in the cooperating grooves.

It has been known to manufacture filter-tip cigarettes in groups disposed in grooves in a rotating drum, each group comprising a pair of cigarettes disposed in end-to-end relation with an interposed filter tip of double length between the two cigarettes. A wrapper leaf cemented on one side was wrapped about the adjacent ends of the two cigarettes and the interposed filter-tip of double length, such action preferably taking place on a wrapping drum.

The wrapping was carried out, for instance, in the following manner: A wrapping device provided on the wrapping drum was moved radially outwardly during an uninterrupted movement of the drum. First one flap of a cam-controlled flap-pair, following the rounding of the cigarette, wraps one of the laps of the connecting wrapper leaf around the adjacent ends of the cigarettes, and then the other flap wraps the other lap of the wrapper leaf around the adjacent ends of the cigarettes. After the wrapping is finished, the filter-tips are cut through in the middle, and both cigarettes are discharged in appropriate manner onto a discharge conveyor.

It was found in practice that when the speed of the arrangement was increased, it could be determined that the glue-seam of the wrapper leaf was not sufficiently dried prior to the cutting operation, so that the filter cigarettes had a poor appearance, or still worse, the filter cover fell off because of insufficient adhesive. The reason for this was that the front edge of the flap which finishes the wrapping of the wrapper leaf around the cigarettes because of the small dimensions, was not able to exert sufficiently strong pressure onto the place where the gluing was performed. Also the front edge of the wrapping flap did not reach to the end of the lap on the

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seam line. To make matters worse, it was also necessary to use a relatively thin glue so that the glue did not dry out before the wrapping was finished.

It has, therefore, been suggested in such machines for connecting cigarettes with filter tips, that the connecting wrapper leaf be wrapped around the cigarette by means of brushes, and then to transfer the cigarettes by appropriate guiding plates to a second drum, whereby the guiding plates are applied at the glue-seam and exert pressure upon the seam, in order to prevent a subsequent opening of the glue-seam.

In brief, the present invention differs from the foregoing suggestion in that a disc is provided which contains grooves, which cooperate with the grooves of the conveyor means, for instance, a conveyor drum. Thus a substantial pressure is exerted upon the seam of the connecting wrapper leaf on the cigarette groups disposed between two registering grooves.

As a result, the movement of the cigarette seam along the guiding plates in the machines of the prior art is eliminated, as well as possible charring of the cigarettes on such guiding plates.

It is, therefore, a further object of my invention to overcome the foregoing difficulties of prior art machines and to provide an improved product, as well as to speed up production.

Further objects and advantages will readily become apparent upon reading the following specification taken in conjunction with the drawing, in which:

Fig. 1 schematically shows a view of the improved machine and the operation thereof;

Fig. 2 shows in enlarged fashion a segment of the pressure disc; and

Fig. 3 is an enlarged schematic view of a filter-tip group directly after the wrapping process, whereby the flap which wraps the connecting wrapper leaf is in its final position on the glue-seam.

As shown in Fig. 1, the cigarette groups 1 are held in grooves 2 of a wrapping or conveyor drum 3 by vacuum produced by drawing air through apertures 4 of the conveyor drum 3. The cigarette groups 1 are delivered to the conveyor drum 3 in a usual manner, well known by those skilled in the art. The connecting wrapper leaves 5 are covered with glue and are brought to the adjacent ends of the cigarettes in the group 1. The cigarette groups 1 are thus disposed in the grooves 2 of the conveyor drum 3, and the connecting wrapper leaves 5 are wrapped around the same by means of two radially movable arms 6, 7, which follow the rounding of the cigarettes and wrap the abutting ends of the cigarette groups 1. The radial movement of the arms 6, 7 is performed by cam-controlled link rods 8, 9 (not shown in detail).

First the arm 7 wraps the wrapper leaf 5 around the abutting ends of the cigarette group 1. After this wrapping is completed, the arm 6, as shown in Fig. 3, assumes the position shown in Fig. 3 and after completion of its wrapping operation moves back again to its initial position. In order to prevent the edge 10 of the arm 6, which wraps the lap 11, coming into contact with the glue, which may protrude at the point 12, the arm 6 does not move quite to the end of the lap 11, but terminates its movement a short distance before this point 12, approximately 0.04".

Because of the above-described procedure, and depending on the state of the material of the connecting wrapper leaf used, the last part of the lap 11 is not always securely connected to the portion 13 of the wrapper leaf 5 disposed below the lap 11, and as a result, the glue-seam may not be of good quality. This disadvantage is made more critical since the glue used must be relatively thin so as not to dry out before the wrapping process is completed.

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In accordance with the present invention, these disadvantages pertaining to the glue-seam are eliminated by the provision of the disc 14. The grooves 15 in the disc 14 come into contact with the cigarette groups 1 disposed on the wrapping drum 3 at the point 16 following the wrapping process, and press against the seam of the cigarette group 1.

In order to obtain a rapid drying of the glue during the relatively short period of the pressure contact, the disc 9 is preferably heated. Heating means 17 may be employed, whereby heat is radiated from a heating element 18 upon the periphery of the disc 14. The heating element 18 and a signal lamp 19 are switched on by a switch 20. A suitable current source may be connected to the terminals 21, 22 of the heating device 18.

After the connecting wrapper leaves 5 are wrapped around the cigarette groups 1, they are transferred upon a drum 23, and are cut in the usual manner by a circular knife 24 into single cigarettes. They are then discharged upon the conveyor 25. All of the rotating parts of the machine are connected by means of gears, not shown, with the drive of the machine.

It is necessary to vary the pressure of the disc 14 upon the glue-seam of the wrapped cigarette filter-tip group to accommodate cigarettes and filters of slightly different dimensions without changing the disc 14. Also the cigarettes may have slightly different forms and employ different wrapping material, all of which means that the contact pressure exerted by the grooves 15 of the disc 14 should be variable. This is obtained in the present invention by different sets of grooves 15, 15a, 15b of slightly different depths (Fig. 2), where  $t$ ,  $t_a$ ,  $t_b$  are the distances between like grooves which follow each other.

The adjustment for the variable contact pressure operates as follows: The disc 14 is adjusted in its circular position by means of screws 26 in a flange 27 which slide in longitudinal slots 28, so that at the point 16 of the cigarette group 1, a groove 15 of the disc 14 will come into contact with the glue-seam of a cigarette group 1 carried on the periphery of the conveyor drum 3. The next groove 15 will subsequently come into contact with the next cigarette group 1, etc. It will be noted that the grooves 15a and 15b do not participate in this operation.

In case a stronger pressure has to be exerted upon the seam of a cigarette group 1, the disc 14 is rotated relative to the flange 27, after the screws 26 are loosened, so that, for instance, the groove 15a comes into contact with the cigarette group 1 at point 16. After the screw 26 of the arrangement is tightened, the device is again ready for operation. Now only the grooves 15a will come into contact with the respective cigarette groups 1. In similar manner the disc 14 can be adjusted to have its grooves 15b in operation where still more pressure is required. It is also possible to provide more intermediate steps on the disc 14.

To prevent glue particles accumulating in the respective grooves 15, 15a, 15b it is advisable to provide the surface of the periphery of the disc 14 with glue-repelling plastic coating, which can be sprayed upon the surface of the periphery of disc 14. Or a thin layer of plastic can be glued upon the surface of the disc 14. For this

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purpose it was found particularly advantageous to use plastic materials, such as tetra-fluor-ethylene resins, in particular a resin such as polytetrafluoroethylene.

Although I have shown and described a particular structure, it is to be clearly understood that the same was merely for the purpose of illustration, and that changes and modifications may readily be made therein by those skilled in the art without departing from the spirit and scope of the invention.

I claim as my invention:

1. The combination in a wrapping device for a filter-tip cigarette machine of a conveyor drum having a plurality of spaced grooves on the periphery thereof, each groove on the conveyor drum being adapted to hold a cigarette group comprising two cigarettes and an interposed filter tip of double length for wrapping by a wrapper leaf coated with glue, a cooperating disc having at least two repeating sets of grooves of different depths, and only one set of grooves registering with the spaced grooves on the conveyor drum to subject the glue seam of the wrapper leaf to pressure.

2. The combination in a wrapping device for a filter-tip cigarette machine of a conveyor drum having a plurality of spaced grooves on the periphery thereof, each groove on the conveyor drum being adapted to hold a cigarette group comprising two cigarettes and an interposed filter tip of double length for wrapping by a wrapper leaf coated with glue, a cooperating disc having at least two repeating sets of grooves of different depths, only one set of grooves registering with the spaced grooves on the conveyor drum to subject the glue seam of the wrapper leaf to pressure, a drive for effecting rotation of the cooperating disc, and an adjustment means between the disc and its drive for selecting a desired set of grooves of a particular depth on the cooperating disc for registration with the grooves on the conveyor drum.

3. The combination in a wrapping device for a filter-tip cigarette machine of a conveyor drum having a plurality of spaced grooves on the periphery thereof, each groove on the conveyor drum being adapted to hold a cigarette group comprising two cigarettes and an interposed filter tip of double length for wrapping by a wrapper leaf coated with glue, a cooperating disc having at least two repeating sets of grooves of different depths, only one set of grooves registering with the spaced grooves on the conveyor drum to subject the glue seam of the wrapper leaf to pressure, and a heating device for heating the grooves of the cooperating disc for facilitating in the setting of the cement.

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