

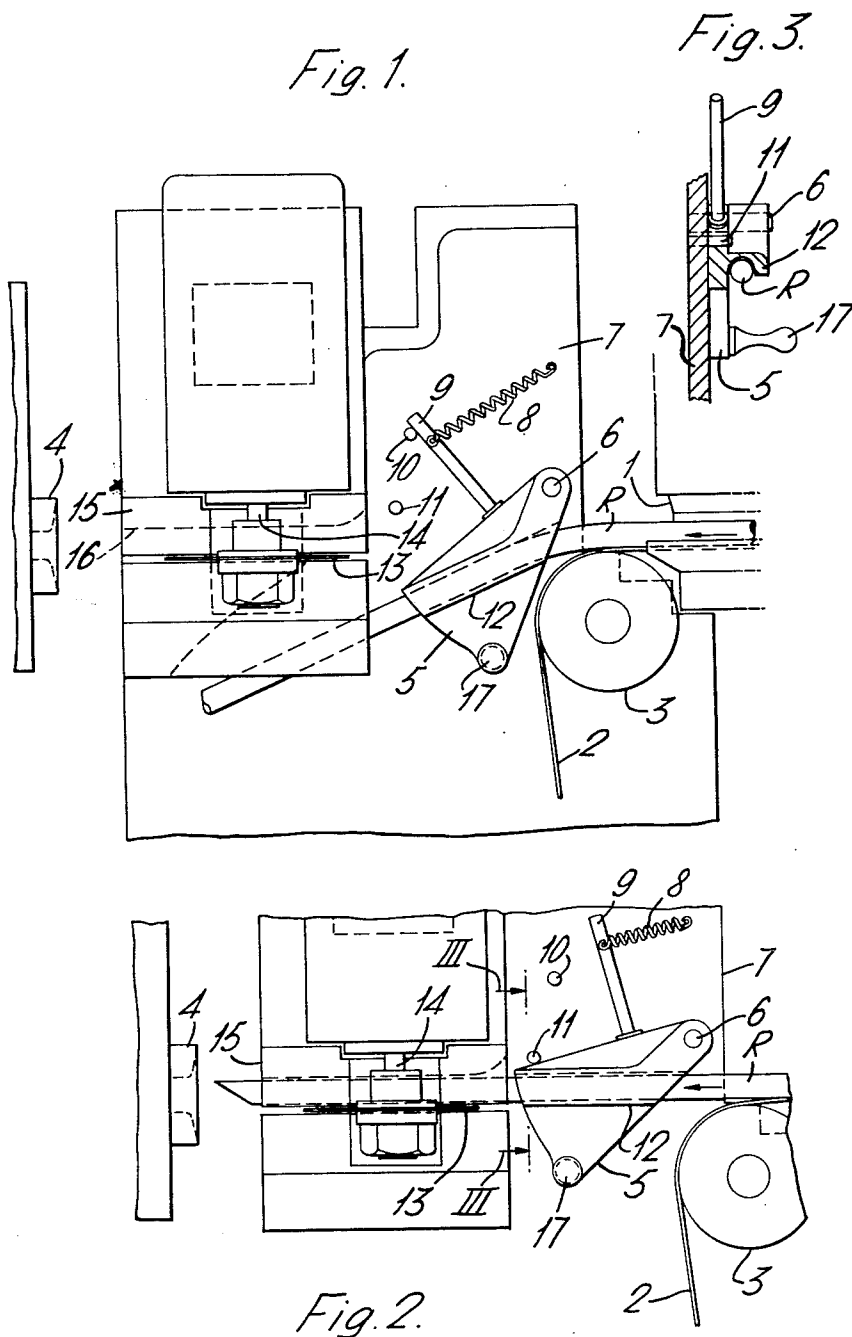
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MEANS TO SEVER THE LEADING END OF A CONTINUOUSLY MOVING ROD

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MEANS TO SEVER THE LEADING END OF A CONTINUOUSLY MOVING ROD

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3 Claims. (Cl. 83—418)

This invention concerns improvements relating to a continuous rod making machine, for example, to a continuous filter rod making machine.

In the manufacture of mouthpieces for mouthpiece cigarettes it is sometimes the practice to make a continuous rod of filtering material on a continuous filter rod making machine in which a filler of filtering material is enclosed in a paper wrapper web. The paper web is folded about the filler in the rod-forming mechanism of the machine, one edge of the paper web being pasted and then folded to overlap the other edge to which it adheres. The rod then passes beneath a heater to seal the adhering paper edges and the sealed rod travels across a gap to cut-off mechanism in which desired lengths are successively severed from the rod. When the machine is started the rod first issuing from the rod-forming mechanism is normally unsatisfactory in that it is not in a suitable state for passage to the cut-off mechanism. Further, it is common practice to retain the heater in a raised position, at which it does not seal the rod, until the rod forming mechanism is operating correctly so that the rod first issuing is also usually unsealed, which also renders it unsuitable for passage to the cut-off mechanism. Accordingly, it is sometimes the practice for the machine operator to divert by hand the unsatisfactory rod first issuing when the machine is started and, after the heater is lowered and a satisfactory rod is being produced, to temporarily stop the machine so that the rod can be severed (e.g. by means of a pair of pliers). The machine is then restarted, slowly at first, and the leading end of the severed rod is guided into the cut-off mechanism. The machine is then run up to full speed. Apart from the possible inconvenience of stopping and restarting the machine, the temporary break in the machine's running can sometimes have an undesirable effect on paste being applied by the pasting mechanism, which can sometimes cause a rod produced after the machine is restarted to be inefficiently sealed.

According to the present invention there is provided in a continuous rod making machine (e.g. a continuous filter rod making machine) in which, when the machine is operating correctly, a continuous rod issuing from rod-forming mechanism travels lengthwise in a substantially linear path across a gap to a rod-receiving member (e.g. a member forming an entry to cut-off mechanism), a rod-cutting device comprising diverting means and cutting means (e.g. a rotatable disc knife), the diverting means being operable to divert a rod issuing from the rod-forming mechanism and capable of being rendered inoperative so as to allow the rod to move from its diverted path to the said linear path, the cutting means being arranged to intercept the rod as it so moves and to sever it so that the leading end of the severed rod can be received by the rod-receiving member and so that the rod can thereafter travel across the gap in the said linear path. By this arrangement, unsatisfactory rod first issuing from the rod-forming mechanism when the machine is started can be diverted by the said diverting means from its path to the rod-receiving member, and when the machine is running correctly and producing satisfactory rod the said diverting means can be rendered inoperative so that the rod

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ceases to be diverted and is cut by the said cutting means so that the satisfactory rod travels to the rod-receiving member, and the rod can then be cut without temporarily stopping the machine.

The said diverting means may comprise a guide member movable from an operative position, at which it can engage and divert a rod issuing from the rod-forming mechanism, to an inoperative position, at which it is clear of the said linear path of the rod. The guide member may be movable about a pivot by means of a handle.

A rod-cutting device in accordance with the invention will now be described by way of example with reference to the accompanying drawing, in which:

FIGURE 1 is a side elevation of the device fitted to a continuous filter rod making machine,

FIGURE 2 is a view similar to FIGURE 1 showing some of the parts in a different position, and

FIGURE 3 is a section along the line III—III of FIGURE 2.

Referring to the drawing, rod R issues from a rod-forming mechanism of a machine in which a filler of filtering material is enclosed in a paper wrapper web, to form the rod, one edge of the paper being pasted and then folded to overlap the other edge to which it adheres. The rod R then passes beneath a heater 1, part of which is shown in FIGURE 1, to seal the overlapping paper edges. The rod R is carried on a moving endless tape 2, which passes about a roller 3, the rod being moved lengthwise in the direction shown by the arrow. When the machine is operating correctly the sealed rod issuing from the rod-forming mechanism travels in a substantially linear path across a gap between the roller 3 and a rod receiving member 4, which forms the entry to a cut-off mechanism (which is not shown) in which desired lengths are successively severed from the rod.

Positioned between the roller 3 and the member 4, as viewed in FIGURE 1, is a guide member 5 pivoted at 6 to a fixed bracket 7 and having a handle 17. The guide member 5 is urged by a spring 8, connected to the bracket 7 and to an arm 9 carried by the guide member 5, to move from an operative position (shown in FIGURE 1) to an inoperative position (shown in FIGURE 2), stops 10 and 11 being provided to locate correctly the guide member in each position.

The guide member 5 has a hooked portion 12 (see FIGURE 3) adapted to extend over the rod R and arranged so that when the guide member 5 is in the said operative position the issuing rod R is intercepted thereby and diverted from the said linear path across the gap, as shown in FIGURE 1. When the guide member 5 is moved to its inoperative position, i.e. the position shown in FIGURE 2, the portion 12 is moved clear of the said linear path of the rod, which, on account of its stiffness, can move from the diverted path towards the said linear path—that is, the diverted portion of the rod can move upwardly.

Between the guide member 5 and the rod-receiving member 4 is a horizontal disc knife 13 mounted on a driven rotatable shaft 14 and arranged adjacent a fixed part 15 provided with a guide groove 16. As the rod R moves upwardly it is intercepted and severed by the rotating disc knife 13, the direction of rotation of the latter being such that it tends to press the rod into the groove and to cut the rod against the fixed part. The leading end of the severed rod can then travel across the gap to the rod-receiving member 4 so that thereafter the continuous rod issuing from the rod-forming mechanism travels in the said linear path.

The operation of the device described above is as follows:

When the machine is started the guide member 5 is held by means of the handle 17 in the operative position

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shown in FIGURE 1 to divert the issuing rod downwardly. As previously explained, the rod first issuing from the rod-forming mechanism is normally unsatisfactory and the heater 1 is usually initially in a raised position from that shown in FIGURE 1 so that the rod is unsealed. The heater is then lowered to seal the rod, and when the issuing rod is satisfactory the guide member 5 is released and moves, under the action of the spring 8, to the inoperative position shown in FIGURE 2. The diverted rod then moves upwardly, on account of its stiffness, and is served during its upward movement by the rotating disc knife 13. The leading end of the severed rod then passes to the rod-receiving member 4 and the continuous rod thereafter travels across the gap, in its said linear path, to the cut-off mechanism. The drive to the disc knife 13 can then be disconnected.

In a modified form of the device described above, the guide member 5 is arranged to be automatically moved from its operative to its inoperative position responsively to the stiffness of the rod issuing from the rod-forming mechanism. This is achieved by the provision of an over-centre device acting on the guide member 5 so that the latter is initially urged towards its operative position, shown in FIGURE 1, at which it diverts the rod downwardly. As the stiffness of the issuing rod increases it acts to urge the guide member 5 upwardly until the centre position is passed and the guide member is urged to move to its inoperative position, shown in FIGURE 2. The diverted rod then moves upwardly and is severed as previously described. It will be appreciated that any suitable over-centre device could be used for this purpose.

It will also be appreciated that movement of the guide member could also be automatically effected responsively to the operation of some other part of the machine; for example responsively to the lowering of the heater.

The device described above is fitted to a continuous filter rod making machine, but it will be understood that

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a device according to the invention can be fitted to other forms of continuous rod making machine, for example to a continuous rod cigarette-making machine.

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

1. In a continuous rod-making machine in which, when the machine is operating correctly, a continuous rod issuing from rod-forming mechanism travels lengthwise in a substantially linear path across a gap to a rod-receiving member forming an entry to a cut-off mechanism, a rod-cutting device comprising diverting means and a disc knife carried by the frame of said machine and rotatable about an axis substantially normal to the linear path of movement of said rod, the diverting means being operable to divert a rod issuing from the rod-forming mechanism and capable of being rendered inoperative so as to allow the rod to move from its diverted path to the said linear path, the said knife being arranged to intercept the rod as it so moves and to sever it so that the leading end of the severed rod can be received by the rod-receiving member and so that the rod can thereafter travel across the gap in the said linear path.

2. A device as claimed in claim 1, wherein the diverting means comprises a guide member movable from an operative position, at which it can engage and divert a rod issuing from the rod-forming mechanism, to an inoperative position, at which it is clear of the said linear path of the rod.

3. A device as claimed in claim 2, wherein the guide member is movable about a pivot by means of a handle.

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