Nov. 6, 1956 H. DANK 2,769,446

TOBACCO OPENERS FOR CIGARETTE MAKING MACHINES

Filed May 21, 1953

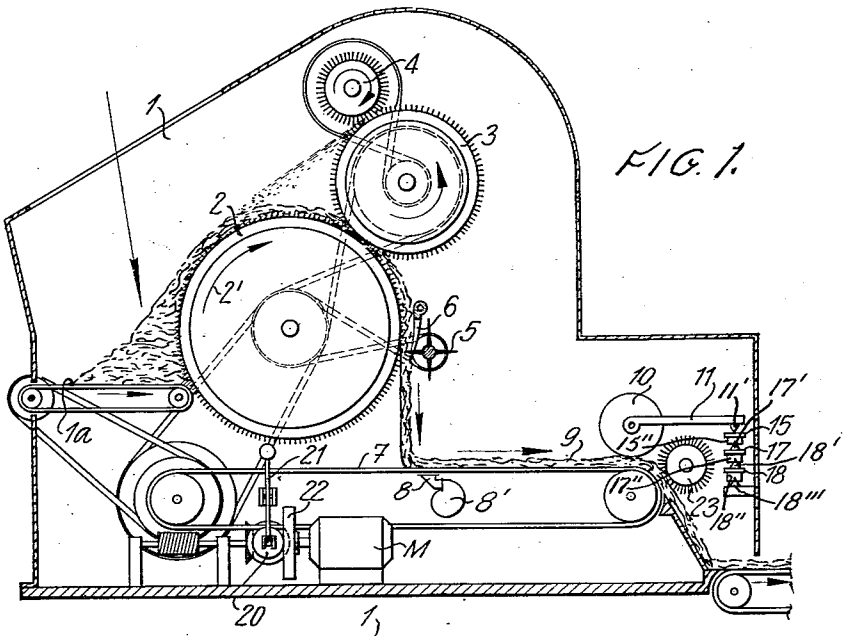


FIG. 1.

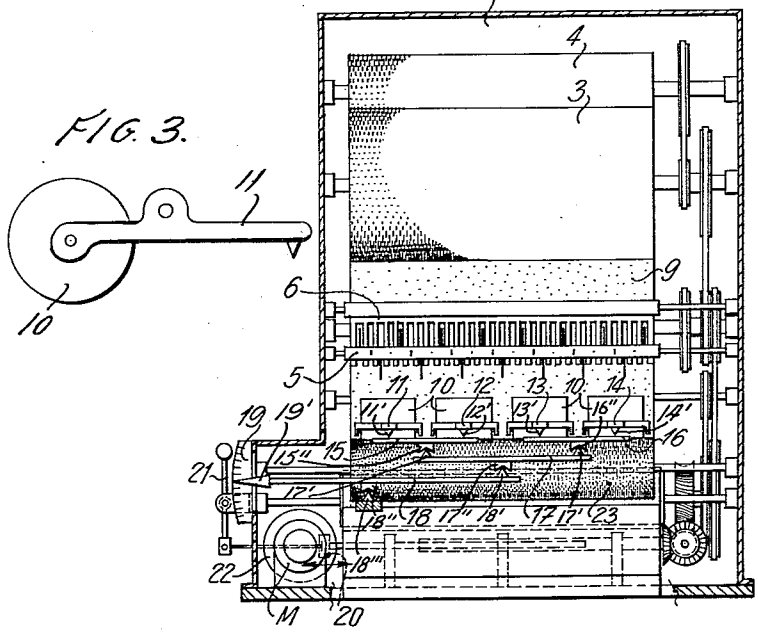


FIG. 3.

FIG. 2.

INVENTOR:
Hans Dank,
BY Singer, Stern & Carlberg,
Attorneys.

United States Patent Office 2,769,446 Patented Nov. 6, 1956

2,769,446

TOBACCO OPENERS FOR CIGARETTE MAKING MACHINES

Hans Dank, Vienna, Austria

Application May 21, 1953, Serial No. 356,392

Claims priority, application Germany June 14, 1952

3 Claims. (Cl. 131—110)

The invention relates to a tobacco opener for forming the tobacco stream or rod in cigarette making machines. The purpose of the opener of a cigarette machine, also termed the distributor, is the formation of a sliver, which is uniform as possible, from the cut tobacco introduced in a somewhat lumpy form. For breaking down and distributing the tobacco lumps or particles into individual fibres, a system is used consisting, as is known, of co-operating carding rolls, combs and picker rolls, which are present in a more or less modified form in every type of opener.

The simplest opener is the so called two-roll distributor with one picker roll and one comb-off roll. In further development the three-roll distributor has been used with two picker rolls and one comb-off roll, as well as the six-roll distributor with four picker rolls. In the latter the tobacco sliver is formed from four partial slivers laid one over the other, corresponding to the four picker rolls.

This last named multi-roll distributor is based on the fact that, by the overlaying of several individual slivers, a uniform tobacco sliver is obtained. This however only occurs if a point of reduced thickness of one component sliver coincides with a part of increased thickness of another component sliver. It is however also directly possible that a thick part of one sliver coincides with the thick part of another sliver whereby the deviation from the mean thickness in the final sliver is only increased.

It is understandable that, the greatest importance is laid on the formation of a regular and uniformly thick sliver in the various constructions, for the regular filling of the cigarettes depends essentially on this uniformity.

Attempts have therefore also been made to regulate the speed of the picker rolls dependent on the weight of the cigarettes, but this led to no acceptable result since the regulation is based on one condition which has already passed and can be quite different from that at the instant of the regulating impulse.

The tobacco opener according to the invention avoids these disadvantages by means which record the height of the sliver formed by the opener whereby the speed of the feeder device utilized for feeding the tobacco to the stream- or rod-forming point is adjustable dependent on the so-determined sliver thickness, being effected by hand.

Since the thickness of the sliver just formed can be directly recorded according to the invention, for example tested, and the result of this testing evaluated directly for the deviation so determined of the thickness of the sliver from the theoretical value, the possibility is offered of obtaining a stream or rod of quite uniform thickness and thereby to produce cigarettes with a much more uniform filling then heretofore.

Further inventive features are explained below on the basis of the constructional form shown by way of example in the drawings, wherein Figure 1 is a side elevational view partly in section and showing the manner

in which the indicator operating rollers engage the slivers, Figure 2 is a front elevational view partly in section and illustrating the arrangement of the rolls, and Figure 3 is a side elevational view of one of the sliver engaging rollers.

The tobacco is fed into the opener box 1 and taken therefrom either directly or indirectly by an endless conveyor belt 1*a*, by the picker rolls 2 or by the tines thereof in the direction 2'. The excess tobacco is removed by the comb-off roll 3 and this is cleaned by the brush roll 4. The conveyor belt 1*a* and the rolls 2, 3 and 4 receive their drive from a motor M through suitable V-belt drives.

The tobacco is taken off the picker drum 2 by the pin drum 5 and with the assistance of a comb 6, and the tobacco falls in a finely divided state on to the sifter belt 2 arranged below it. This band travels essentially slower than the picker drum and this slides together the tobacco falling on it to form a thick sliver. To obtain improved uniformity a suction nozzle 8 can be provided below the receiving point of the sifter belt and a suction fan 8' is suitably driven by means (not shown) and has its inlet connected to the suction nozzle 8.

The silver 9 formed in this way is examined, for example, by a system of actuated feeler rolls 10. The forked pivoted levers 11, 12, 13, 14 associated with the rolls act on a lever system 15, 16, 17, 18 formed as a multi-stage weighbeam whereby the differences in the thickness of the sliver are added or subtracted and the resulting sum is shown on a scale 19. The levers 11, 12 and 13, 14 are provided with fulcrum points 11', 12' and 13', 14' respectively which are arranged so that the fulcrum points 11' and 12' will engage the ends of the fulcrum lever 15, while the fulcrum points 13' and 14' will engage the opposite ends of the fulcrum lever 16. The fulcrum lever 17 is provided adjacent its ends with fulcrum points 17' which engage fulcrum blocks 15'' and 16'' on the intermediate portions of the levers 15 and 16. The fulcrum lever 17 is provided with a fulcrum block 17'' which rests on a fulcrum point 18' on the end of the lever 18. Similarly, the fulcrum lever 18 is provided intermediate its ends with a fulcrum block 18'' which rests on a fixed fulcrum point 18'''. One end of the lever 18 is shaped to form an indicator pointer or hand 19' adapted to register with a scale 19 suitably graduated to indicate the sliver thickness in linear units of measurement. According to the displacement of the pointer or indicator hand 19' relative to the scale 19 the speed of the sifter belt 7 and also of the picker drum 2 can be regulated by hand. For this purpose, for example, a friction drive can be provided the friction pinion 20 of which can be adjusted by means of a hand lever 21 more or less from the centre point of the friction disc 22.

In order that the relatively thick sliver 9 can be transferred in a finely divided state to the cigarette making machine it is brushed by means of a rapidly rotating brush roll 23.

What I claim is:

1. In a tobacco opener for producing a tobacco sliver and feeding it to a cigarette forming device, an endless sifter belt means, drive means, means operatively connecting said drive means with said belt means for driving said belt means continuously in one direction, supply means associated with said belt means for delivering a stream of tobacco to the top side of said belt means for transport by said belt means in the form of a sliver towards a discharge place, suction cup means adjacent said belt means at the underside thereof in the vicinity of the supply place of said belt means, means for creating suction in said suction cup means to act on said sliver through said belt means, a series of rollers arranged co-

axially and extending transversely above said belt means, pivoted levers for each of said series of rollers adapted to support the same so that the rollers will rest on said sliver, sliver thickness indicator means, fulcrum lever means operatively connecting the levers of said rollers resting on the sliver with said indicator means to cause said indicator means to move in one direction when the thickness of the sliver passing beneath said series of rollers resting thereon increases and in the opposite direction when said thickness decreases, said fulcrum lever means being fulcrumed intermediate its ends and the levers of said rollers operatively engaging the ends of said fulcrum lever means, and manual control means operatively connected with said drive means for control of the velocity of said belt means, whereby said velocity may be controlled in accordance with the indication on said indicator means.

2. In a tobacco opener for producing a tobacco sliver and feeding it to a cigarette forming device, an endless sifter belt means, drive means, means operatively connecting said drive means with said sifter belt means for driving said sifter belt means continuously in one direction, supply means associated with said belt means for delivering a stream of tobacco to said sifter belt means for transport by said sifter belt means in the form of a sliver towards a discharge place, a series of coaxially spaced rollers arranged transversely of and above said sifter belt means arranged to rest on said sliver, manual control means in said connection between said drive means and said sifter belt means for changing the velocity of said sifter belt means without changing

the speed of the drive means, individual levers carrying said rollers, an indicator adapted to indicate sliver thickness, a lever for actuating said indicator, and a series of fulcrum levers operatively connecting said indicator lever with the individual levers of said rollers resting on said sliver whereby movements of said rollers and corresponding levers caused by variation of the thickness of the sliver operate to give a mean indication of the sliver thickness to permit the manual control to be manipulated and restore the sliver thickness to a predetermined thickness, said fulcrum levers being fulcrumed intermediate their ends and the levers carrying said rollers operatively engaging the ends of said fulcrum levers.

3. The tobacco opener as set forth in claim 2, in which said indicator includes a graduated scale and an indicator hand, and said lever for actuating said indicator operates said indicator hand.

References Cited in the file of this patent

UNITED STATES PATENTS

466,759	Thompson	Jan. 5, 1892
1,869,395	Stelzer	Aug. 2, 1932
2,162,443	Muller	June 13, 1939
2,585,572	Molins	Feb. 12, 1952

FOREIGN PATENTS

378,143	Great Britain	Aug. 11, 1932
385,946	Great Britain	Feb. 2, 1933
482,108	Germany	Sept. 4, 1929