May 13, 1930. W. E. MOLINS 1,758,800

CIGARETTE MACHINERY

Filed July 2, 1928 2 Sheets-Sheet 1

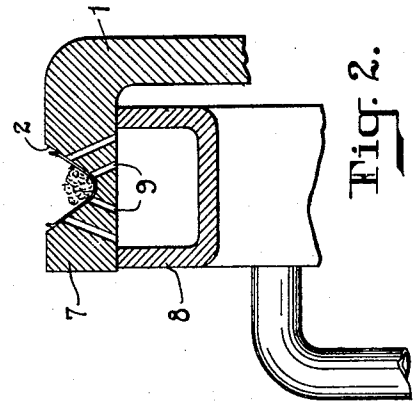


Fig. 2.

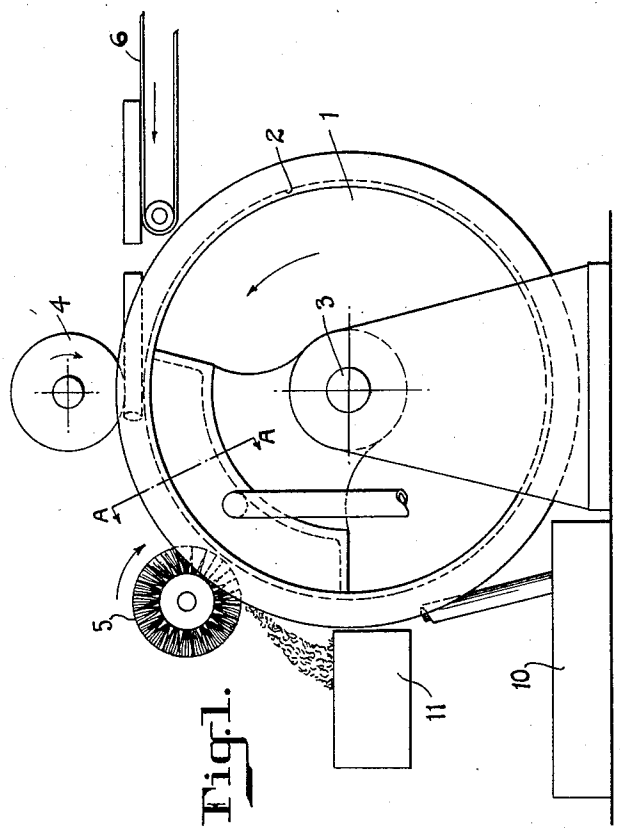


Fig. 1.

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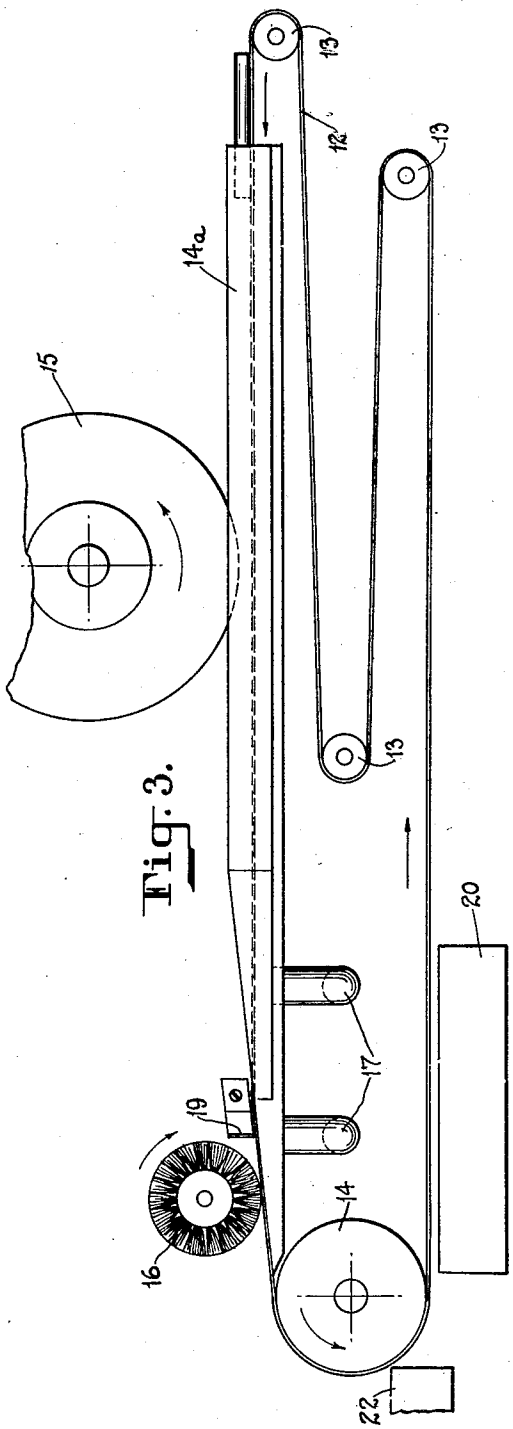


Fig. 3.

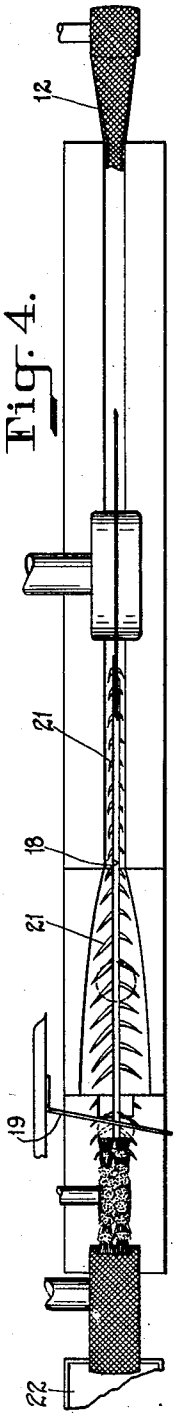


Fig. 4.

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UNITED STATES PATENT OFFICE

WALTER EVERETT MOLINS, OF LONDON, ENGLAND

CIGARETTE MACHINERY

Application filed July 2, 1928, Serial No. 289,930, and in Great Britain July 4, 1927.

This invention is for improvements in or relating to cigarette machinery and more particularly to an apparatus for recovering tobacco from defective cigarettes which are produced during the course of manufacture.

The object of the present invention is to provide an efficient apparatus which will ensure that all the tobacco from the waste cigarettes is recovered, because in view of the high taxation upon tobacco it is essential that the loss of tobacco should be reduced to a minimum.

In tobacco stripping machines at present employed, the cigarette after being slit is discharged into a rotary or moving sieve and the tobacco is sifted from the paper, with the result that the tobacco is converted into very short shreds, which have to be mixed with a volume of long shreds, to be employed again.

According to the present invention there is provided a stripping machine wherein the longer shreds of tobacco are not subjected to such a sifting operation, thus retaining the long shreds in their original form and obviating the accumulation of short shreds.

The present invention consists of a stripping machine which comprises means for positively conveying each cigarette beneath a knife arranged to slit the paper of the same, means (for example a folder) for unfolding the slit paper from about the tobacco of each cigarette and means for positively separating the tobacco from the paper.

The invention is more particularly described with reference to the accompanying drawings, in which:—

Fig. 1 is a front elevation of a machine constructed according to the present invention.

Fig. 2 is a section on line A—A of Fig. 1.

Fig. 3 is a front elevation of a modified form of slitting machine, and

Fig. 4 is a plan of Fig. 3.

Referring to Figs. 1 and 2:—A Wheel 1 provided with a V groove 2 in the periphery thereof is arranged to receive cigarettes from a travelling band 6. The wheel 1 is mounted on a spindle 3 and is arranged to be rotated in the direction indicated so as to carry the cigarettes beneath a rotary slitting knife 4, and a rotary brush 5, arranged to remove the tobacco from the cigarette paper.

The cigarettes are held in the groove 2 of the wheel 1 by suction to which they are delivered by the conveyor band 6.

The wheel 1 is provided with a flange 7 disposed parallel to the axis of the spindle 3 and a fixed suction chamber 8 is mounted so as to engage with the underside of the flange 7 so that as the wheel rotates the inner surface of the flange is maintained in contact with the suction chamber 8. Small holes 9 formed in the flange 7 constitute a communication between the V groove 2 and the chamber 8.

The suction chamber 8 is arranged so as to cover a portion of the periphery of the wheel 1 sufficient to ensure that a cigarette is held whilst it is being slit and the tobacco brushed from the paper. As soon as the cigarette paper held by the wheel passes the suction chamber, the suction ceases and the paper falls freely into a box 10. By this construction the power required to drive the suction pump (not shown) is small, as the suction is only exerted over a small area.

If desired, however, the wheel 1 may be made in the form of a hollow drum, the interior being connected to a suction pump. The brush 5 is preferably shaped to conform to the shape of the groove 2, in order to carry out its work as efficiently as possible.

Immediately the cigarette paper has been slit by the knife the same will be opened out by suction through the holes in the side walls of the V groove. The slit open cigarette then meets the rotary brush 5 which brushes the whole of the tobacco off the paper and ejects it into a box 11. The paper passes on and falls down into the box 10 as previously described. If necessary, a stripper may be fitted to ensure that the paper leaves the wheel at the desired position.

The air drawn through the suction chamber is passed through a screen in the usual way, to prevent the loss of any dust or small tobacco which it may carry with it.

Referring to the form of the invention shown in Figs. 3 and 4; a conveyor band 12

carried on rollers 13 and 14 is adapted to receive cigarettes from any suitable form of hopper (not shown) and convey the same through a channel member 14a. One end of the channel comprises a U shaped groove which gradually spreads out into a flat V and, ultimately, into a flat surface. The conveyor band runs through the said channel and conforms to the configuration thereof at any particular section in the same maner as the tape on a cigarette machine conforms to the shape of the garniture channel.

A rotary cutter 15 is provided which is arranged to slit the cigarettes.

The portion of the channel member 14a which lies between the cutter 15 and the brush 16 is made hollow and is connected by pipes 17 to an exhaust pump. Grooves 21 are made in the surface of the main channel and these are connected by means of a central opening 18 to the hollow portion of the channel block.

A plate 19 is fixed to the side of the machine which lies in the path of the cigarettes and close to the surface of the tape where the guide channel for the tape comprises a substantially flat surface.

The operation of the machine is as follows: The cigarettes are fed on to the band which conveys the same through the channel and beneath the knife which slits the same open after which the paper is sucked downwardly so as to conform to the transverse configuration of the sides of the channel by suction exerted through the tape or band. The cigarette paper is opened out and eventually lies quite flat on the band. As the opened cigarette passes under the plate 19 the long shreds of tobacco are swept off and fall into a container 20. The cigarette paper, together with a certain amount of short shreds of tobacco and dust, pass beneath the brush 16 which brushes all the tobacco off the surface of the paper and the tobacco falls down with the paper into a container 22 or to a rotating sieve (not shown). The paper and tobacco dust are then sifted in the usual manner, and owing to the fact that the dust has been positively brushed off the paper, it can readily be sifted from the loose cigarette papers delivered by the machine.

If desired, the cigarette papers may be separated from the dust by carrying the same on the band round the roller 14, the papers being caused to adhere to the band by suction.

Thus it will be seen that according to the present invention there is provided means whereby all the tobacco is removed from the cigarette, the long shreds of tobacco being deposited in one container, the short shreds in a second container and the cigarette paper deposited in a third container obviating the necessity of separating the same from one another by a sieve action.

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

1. In a machine for recovering tobacco from defective cigarettes, the combination with means for slitting the cigarette paper, of pneumatic means for unfolding the slit paper, and means for separating the tobacco from the paper.

2. In a machine for recovering tobacco from defective cigarettes, the combination with cutting means for slitting a cigarette paper axially of the cigarette, of a conveyer for moving said cigarette into and out of the active zone of said cutting means and pneumatic means for unfolding the slit paper from tobacco contained therein.

3. In a machine for recovering tobacco from defective cigarettes, the combination with means for slitting the cigarette paper, of pneumatic means for unfolding the slit paper, and means for separating the tobacco from the paper, said last mentioned means including a rotating brush adapted to sweep the inner face of the unfolded paper.

4. In a machine for recovering tobacco from defective cigarettes, the combination with cutting means, of a conveyer adapted to support and carry cigarettes beneath said cutting means for slitting the cigarette paper axially, and pneumatic means beneath said conveyer for thereafter unfolding the slit paper to expose the tobacco.

5. In a machine for recovering tobacco from defective cigarettes, the combination with a conveyer adapted to receive and carry cigarettes, of cutting means disposed on one side of said conveyer and acting to slit the paper of the moving cigarettes axially, and suction producing means disposed on the other side of said conveyer and acting through the latter to unfold the slit paper to expose the tobacco.

6. In a machine for recovering tobacco from defective cigarettes, the combination with cutting means, of a fixed vane, and a conveyer for carrying cigarettes through the active zone of said cutting means and past said fixed vane to slit the cigarette paper and remove tobacco therefrom.

7. In a machine for recovering tobacco from defective cigarettes, the combination with cutting means, of a fixed vane, and a conveyer for carrying cigarettes through the active zone of said cutting means and past said fixed vane to slit the cigarette paper and remove the longer shreds of tobacco therefrom, and separate means for thereafter removing the short shreds of tobacco from the paper.

8. In a machine for recovering tobacco from defective cigarettes, the combination with cutting means, of a fixed vane, and a conveyer for carrying cigarettes through the active zone of said cutting means and past said fixed vane to slit the cigarette paper and

remove the longer shreds of tobacco therefrom, rotating means adjacent the path of movement of the conveyer for brushing the short shreds of tobacco from the paper, and means for thereafter receiving the separated paper and short tobacco shreds from the conveyer.

9. In a machine for recovering tobacco from defective cigarettes, the combination with means for slitting the cigarette paper, of means provided with a throat gradually changing in cross section from a U shape to a substantially straight line through which the slit cigarettes are passed, and means for providing a difference in air pressure to the opposite sides of the cigarette paper to cause the latter to conform to the shape of the throat for gradually unfolding the paper.

10. In a machine for recovering tobacco from defective cigarettes, the combination with means for slitting the cigarette paper, of means provided with a throat gradually changing in cross section from a U shape to a substantially straight line through which the slit cigarettes are passed, and apertures in said last named means emerging in the wall of the throat to which suction may be applied to cause the cigarette paper to conform to the shape of the throat for gradually unfolding the paper.

11. In a machine for recovering tobacco from defective cigarettes, the combination with means for slitting the cigarette paper, of means provided with a throat gradually changing in cross section from a U shape to a substantially straight line, a tape for carrying the cigarettes through said throat, said throat being provided with suction apertures acting through said tape to cause the cigarette paper to conform to the shape of the throat during passage therethrough to gradually unfold the paper.

In testimony whereof I hereunto affix my signature.

WALTER EVERETT MOLINS.