May 9, 1967 J. M. RICHARD 3,318,178

DEVICE FOR EJECTING TOBACCO LEAF-TRIMMINGS

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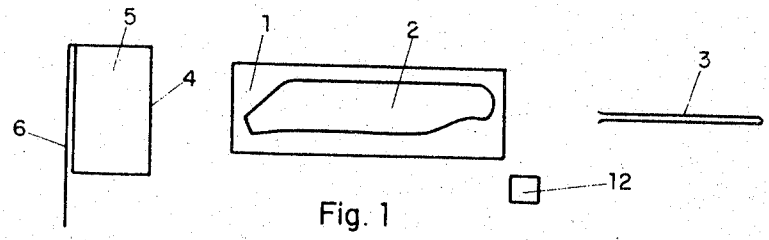

Fig. 1

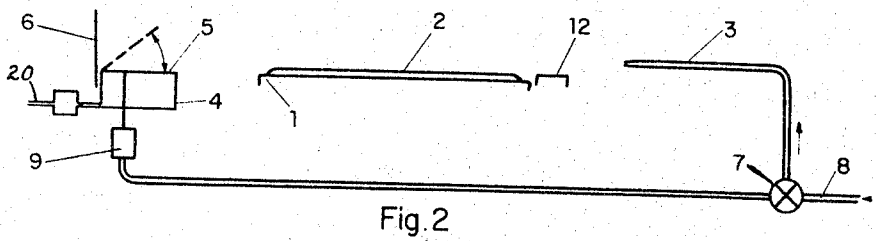

Fig. 2

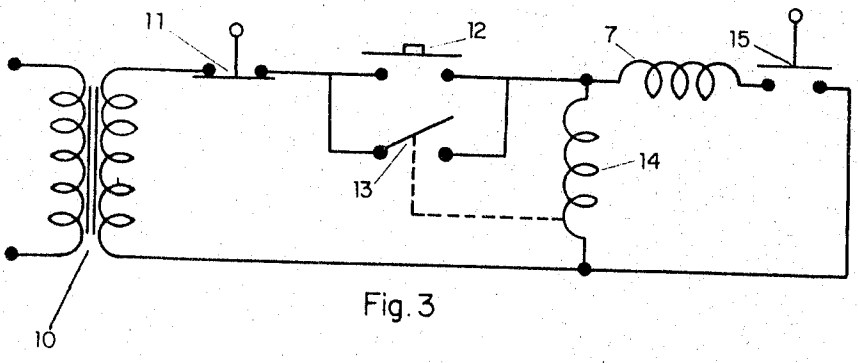

Fig. 3

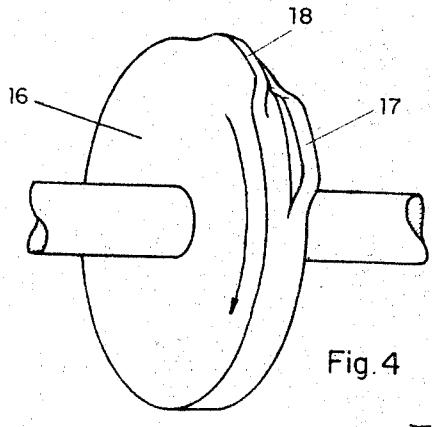

Fig. 4

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DEVICE FOR EJECTING TOBACCO LEAF-TRIMMINGS

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7 Claims. (Cl. 83—98)

This invention relates to a device for the ejection of trimmings which obstruct the die-plate on which pieces of wrapper have been cut from a tobacco leaf for subsequent rolling around rod-shaped smoking products such as, in particular, cigars, cigarillos and the like.

The present invention is applicable to the utilization of leaves of natural tobacco as well as leaves of artificial tobacco.

In the machines for forming smoking products which are made up of filler tobacco around which is rolled one or a number of wrapper leaves known as binders and wrappers, the rate of production of the machine is determined by the duration of one work cycle of the machine and by the skill of the operator in performing all the necessary operations during the progress of this cycle.

In point of fact, the manual operations carried out by the operator are not identical. Consequently, certain work cycles which are more complicated than others make it necessary for the operator to stop the machine temporarily or to regulate the speed of the machine below its mechanical possibilities.

This case arises when the operator has cut the pieces to shape on the die-plate and lifted them one after the other from the tobacco-leaf, then has to clear the die-plate of leaf-trimmings which are unfit for further use as wrappers owing to their unsuitable sizes and shapes, and finally has to take a fresh leaf of tobacco.

It is of particular interest to ensure that the production rate of the machine is limited solely by its maximum speed.

This result can be readily achieved by means of a device which effects the automatic ejection of leaf-trimmings during the corresponding work cycle in which the last piece is cut from the leaf and transferred by means of the suction arm.

The device according to the invention is designed precisely for this purpose. As a result of manual control by the operator, the device automatically ejects the leaf-trimmings in the brief time interval during which the transfer arm has moved away from the die-plate.

The present invention relates to a device for ejecting tobacco-leaf trimmings which remain on the cutting die-plate of a machine for wrapping rod-shaped smoking products after cutting from a tobacco leaf the maximum number of wrappers which said leaf is capable of supplying, said ejection process being intended to take place during that period of the work cycle of the machine in which the last piece cut from the leaf is transferred to the wrapping unit, said device being characterized in that it comprises a means for blowing fluid under pressure which is in principle compressed air and so designed as to sweep the table which supports the cutting die-plate in the zone of said die-plate, a chute for receiving leaf-trimmings which are swept by said fluid, said chute being placed on the path of said fluid and on the other side of the supporting table relatively to said blowing means, said chute being so designed as to exert a sucking action, in the die-plate zone of the supporting table, means adapted to actuate in synchronism said blowing means and said sucking action of the chute for a predetermined fraction of the work cycle of the machine.

The blowing means advantageously consist of a single blow-pipe or nozzle which is connected to the source of fluid under pressure.

The receiving chute can consist of a container which is continuously connected to a vacuum source and fitted with a movable closure flap which is actuated in synchronism with said blowing means in such a manner as to open at the moment of blowing.

The flap of the receiving chute can be actuated by a jack which is in turn actuated by the blowing fluid itself.

The means for putting the blowing and suction means into synchronized operation can consist of an electrovalve which is mounted in the circulation system for fluid under pressure and controlled by means which are dependent on the work cycle of the cutting machine.

The means for controlling the electrovalve can consist of an electric circuit in which is inserted a switch, the closing of which is controlled by a rotary cam, said cam being driven in such a manner as to perform one revolution per work cycle of the machine and provided with a boss having a predetermined length and position in order that the closing of said switch should correspond to a predetermined portion of the work cycle of the machine. In this case, the blowing and suction take place at each cycle of the machine.

Should it be desired to carry out this blowing and suction at will only during certain work cycles of the machine, there can in that case be provided a circuit for supplying current to the electrovalve and consisting of a manual-control relay and, in addition to the usual electrovalve supply switch, a second switch for de-energizing said relay, the rotary cam being in that case provided with two bosses for controlling the two switches.

One form of embodiment of the device according to the invention is shown by way of example in the accompanying drawings, in which:

FIG. 1 is an overhead view of the suction and blowing device;

FIG. 2 is a sectional view of the device of FIG. 1;

FIG. 3 is the electric control circuit of the device;

FIG. 4 is a view in perspective of the rotary cam which effects the automatic operation for a predetermined portion of the work cycle of the machine.

FIGS. 1 and 2 show the supporting table **1** and the die-table **2** for cutting tobacco leaves to shape which is mounted on said table together with the blow-pipe **3** which is connected to the compressed air source **8** and the continuous suction chute **4** which is connected to a vacuum pump (not shown in the drawing) by a vacuum pipe **20**. In the normal position, said chute **4** is closed by the cover **5** which is held in position as a result of suction. A deflector-plate **6** prevents the blowing action from being exerted beyond the chute **4**. A compressed-air jack **9** controls the opening of the cover **5**. Said jack is connected to the same source **8** as the blow-pipe **3**. An electrovalve **7** controls the flow of compressed air towards the blow-pipe **3** and towards the jack **9**.

In accordance with FIG. 3, the electric circuit consists of a power supply through the transformer **10**, two micro-contacts **11** and **15**, a self-maintaining contact **13** controlled by the manual push-button contact **12**, a relay **14** and the electrovalve **7**.

The boss **17** of the rotary cam **16** (as shown in FIG. 4) rotates in the direction of the arrow and accordingly produces action on the contact **15** whilst the boss **18** produces action on the contact **11**.

During operation and at each work cycle, the contact **11** is closed as the boss **18** passes, with the result that the contact **15** will have the effect of energizing the electrovalve **7** which controls the flow of compressed air towards the blow-pipe **3** and the jack **9** which controls

the opening of the flap 5, provided that the contact 13 is closed. The closing of said contact 13 is initiated by the action produced on the push-button contact 12 which controls the self-supply of the circuit through the relay 14. Under these conditions, the jet of air delivered by the blow-pipe 3 sweeps the table 1, with the result that the leaf-trimmings which obstruct said table are carried away towards the chute 4, the flap 5 of which is open. As the boss 18 passes over the contact 11, said contact opens and disarms the supply system; the electrovalve interrupts the flow of compressed air.

The position and size of the bosses 17 and 18 are so determined and regulated that the ejection of leaf-trimmings is carried out over a portion of the work cycle during which the transfer arm is located outside the field of action of the air jet which serves to eject said leaf-trimmings.

What I claim is:

1. Device for ejecting tobacco leaf-trimmings which remain on the cutting die-plate of a machine for wrapping rod-shaped smoking products after cutting from a tabacco leaf the maximum number of wrappers which said leaf is capable of supplying, said ejection process being intended to take place during that period of the work cycle of the machine in which the last piece cut from the leaf is transferred to the wrapping unit, comprising means for blowing fluid under pressure adapted to sweep the table which supports the cutting die-plate and in the zone of said die-plate, means for receiving leaf-trimmings which are swept by said fluid, said receiving means being placed on the path of said fluid and on the other side of the supporting table relatively to said blowing means, means for exerting a periodical sucking action in said receiving means on the die-plate zone of the supporting table, and means for actuating in synchronism said blowing means and said sucking means for a predetermined portion of the work cycle of the machine.

2. A device according to claim 1 wherein said blowing means comprises a single blow-nozzle connected to the source of fluid under pressure.

3. A device for ejecting tobacco leaf-trimmings which remain on the cutting die-plate of a machine for wrapping rod-shaped smoking products after cutting from a tobacco leaf the maximum number of wrappers which said leaf is capable of supplying, said ejection process being intended to take place during that period of the work cycle of the machine in which the last piece cut from the leaf is transferred to the wrapping unit, comprising blowing means connected to a source of fluid under pressure and adapted to sweep the table which supports the cutting die-plate and in the zone of said die-plate, a container continuously connected to a vacuum source and fitted with a movable closure flap actuatable in synchronism with said blowing means in such a manner as to open at the moment of blowing, said container being placed on the path of said fluid and on the other side of the supporting table relatively to said blowing means for receiving leaf-trimmings which are swept by said fluid, means for actuating in synchronism said blowing means and said closure flap for a predetermined portion of the work cycle of the machine.

4. A device according to claim 3 comprising a jack controlled by said blowing fluid for actuating said flap.

5. A device for ejecting tobacco leaf-trimmings which remain on the cutting die-plate of a machine for wrapping rod-shaped smoking products after cutting from a tobacco leaf the maximum number of wrappers which said leaf is capable of supplying, said ejection process being intended to take place during that period of the work cycle of the machine in which the last piece cut from the leaf is transferred to the wrapping unit, comprising means for blowing fluid under pressure adapted to sweep the table which supports the cutting die-plate and in the zone of said die-plate, means for receiving leaf-trimmings which are swept by said fluid, said receiving means being placed on the path of said fluid and on the other side of the supporting table relatively to said blowing means, a closure flap on said receiving means, said flap operated by said blowing fluid, said receiving means adapted to exert a periodical sucking action in the die-plate zone of the supporting table, an electrovalve mounted in the circulation system for fluid under pressure and controlled by means which are dependent on the work cycle of the cutting machine, for actuating in synchronism said blowing means and said sucking action for a predetermined portion of the work cycle of the machine.

6. A device as in claim 5 wherein said control means for said electrovalve comprises electric circuit means, a switch in said circuit means, a rotary cam for closing said switch provided with at least one boss having predetermined length and position in order that the closing of said switch corresponds to a predetermined portion of the work cycle of the machine and means for driving said cam in synchronism with the work cycle of the machine.

7. A device as in claim 5 wherein said control means for said electrovalve comprises electric circuit means, a first switch in said circuit means, a manual control relay, a second switch for de-energizing said relay, a rotary cam provided with two bosses for controlling said first and second switches, and means for driving said cam is synchronism with the work cycle of the machine.

References Cited by the Examiner

UNITED STATES PATENTS

1,174,349	3/1916	Reynolds	83—98
3,011,205	12/1961	Holtzclaw	15—312
3,191,473	6/1965	Maas et al.	83—98

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