Dec. 19, 1933. M. BERGER 1,940,526

APPARATUS FOR SORTING CIGARETTES

Filed June 26, 1931

Fig.1.

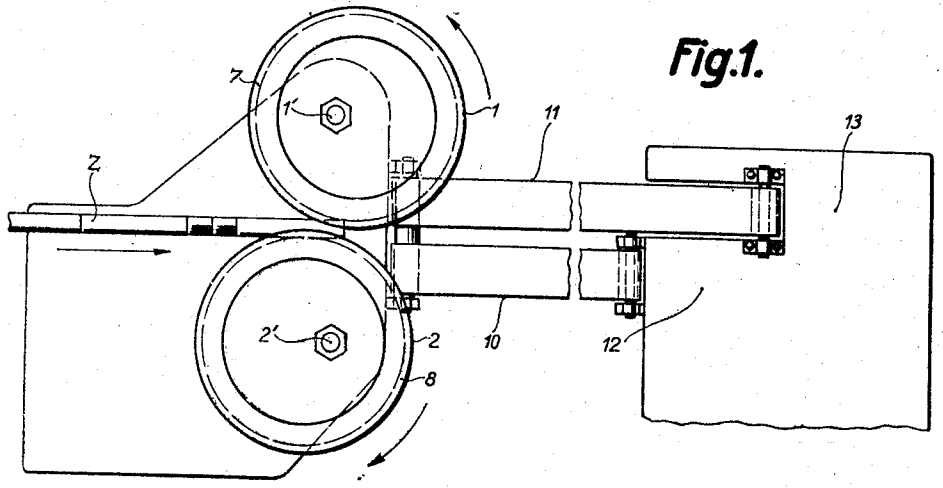


Fig. 4.

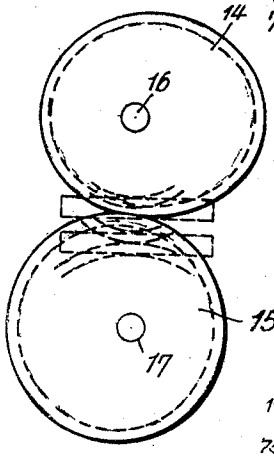


Fig.3.

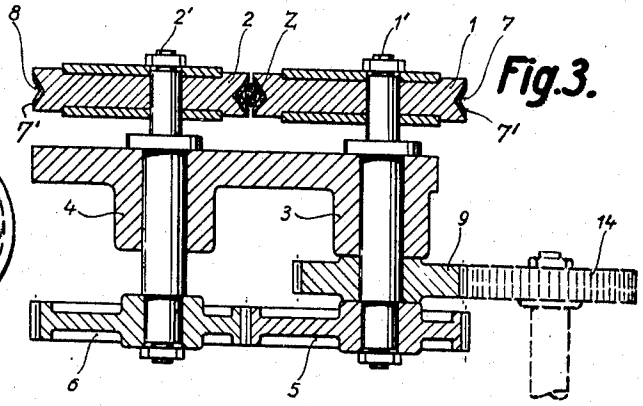
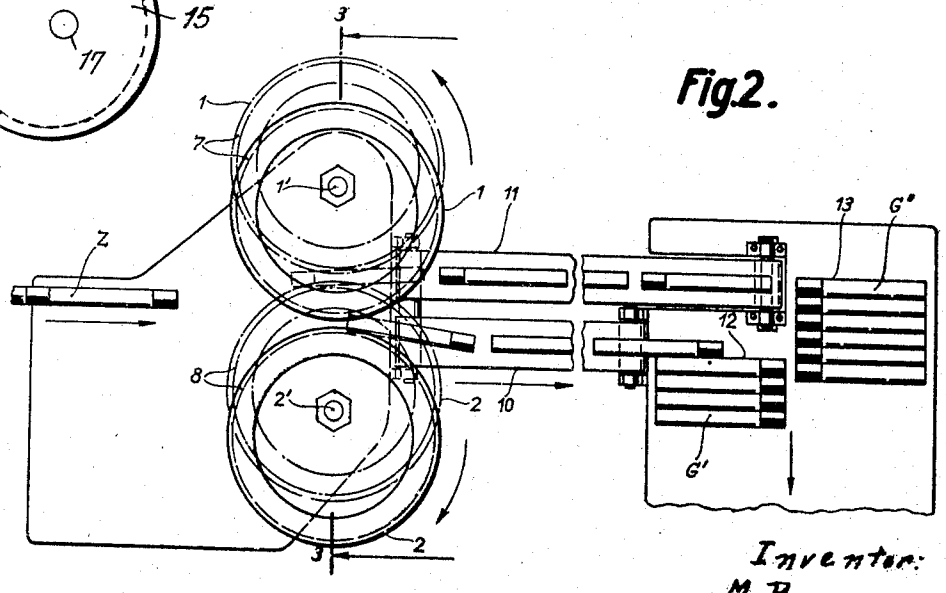


Fig.2.



Inventor:
M. Berger.
By E. F. Neidecker
Atty

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APPARATUS FOR SORTING CIGARETTES

Martin Berger, Freital, Germany, assignor to "Universelle" Cigarettenmaschinen - Fabrik, J. C. Muller & Company, Dresden, Germany

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10 Claims. (Cl. 131—39)

Cigarettes delivered from a continuous rod of the continuous rod machine must be deposited on a collecting device which generally consists of a conveyer belt running transversely to the longitudinal direction of the tobacco rod. If it is a question of cigarettes with an applied mouthpiece the cigarettes, as is well known, must be deposited at two separate positions in order that cigarettes with their mouthpieces directed the same way shall be arranged on each depositing position.

Many devices are known and have also been used which serve this purpose, but they can no longer cope with the increasing working speed of the machines. It is particularly important that the individual cigarettes shall be separated from the tobacco rod immediately following it and that, in spite of the extremely high feeding speed, the cigarettes shall not suffer damage when being deposited, and shall be deposited as gently as possible, that is with a reduction of their delivery speed.

The present apparatus is one which can be used even at the highest speeds for sorting the cigarettes delivered by the continuous rod cigarette machine at two collecting positions. The invention consists in that the cigarettes thrust forward by the tobacco rod arrive between two grooved discs which are mounted eccentrically in such manner that although they remain engaged with one another continually and hold the cigarette between them the point of engagement is moved to and fro between the two centres of rotation, which displacement is utilized for depositing the cigarettes at the two collecting positions.

As the speed of rotation of the grooved discs may be as high as desired, it is easily possible to deliver the cigarettes which have arrived between the two discs at so great a delivery speed that their separation from the continuous tobacco rod which follows is ensured. On the other hand, however, the connected delivering devices may be allowed to run at approximately half the speed because they do not receive a fresh cigarette until the time necessary for the thrusting forward of one cigarette has elapsed. By suitable construction of the discs, for instance, by giving them a circular, elliptical, or like shape, and by correspondingly selecting the peripheral velocities, it is possible to direct the cigarettes passing between the discs to one or the other side so that an exact distribution in the second depositing position is ensured even at the maximum working speed.

One form of construction of the invention is illustrated in the annexed drawing, in which:—

Figs. 1 and 2 are plan views,

Fig. 3 is a section on the line 3—3 of Fig. 2,

Fig. 4 is a schematic elevation of modified discs.

As may be seen in Figs. 1 and 2, the two grooved discs 1 and 2 are circular and are mounted eccentrically about their axles 1' and 2'. The latter are mounted in the bearings 3 and 4 and are provided with elliptical spur wheels 5 and 6 which engage with one another. The grooves 7 and 8 provided at the edges of the discs 1 and 2, at the point of contact come into the position shown in Fig. 3, so that an oval space remains between the two discs 1 and 2 which space is somewhat smaller than the cross-section of the cigarette. In the modification shown in Figure 4 elliptical grooved discs 14 and 15 are shown as mounted respectively on axles 16 and 17. The cigarettes Z discharged by the cigarette rod machine in the direction indicated by the arrow in Fig. 1, are now passed into the gap between the discs 1 and 2 (see Fig. 1). The discs 1 and 2 which are driven by the cogwheel 9 in the direction indicated by the arrows in Figs. 1 and 2, now pass the gripped cigarette into the position shown in Fig. 2, whereupon the cigarettes are passed on the right-hand conveyer belt 10 (in the direction of movement of the cigarettes). After a further revolution of the discs 1 and 2 through an angle of 90°, a further cigarette is introduced between the discs 1 and 2, which, after the discs have turned a further 90°, is then passed into the position on the conveyer belt 11 indicated by dotted lines in Fig. 2. The belts 10 and 11 which run parallel to one another, now pass the cigarettes to the depositing positions 12 and 13, where groups G' and G'' are formed with mouthpieces pointing the same way.

It should be noted that the discs 1 and 2 are preferably driven at such a speed that the cigarette engaged is given a certain lead in relation to the following cigarette rod, so that the discs run idle for a time, i. e. after depositing a cigarette the discs perform a rotation of approximately 90° without having a cigarette between them.

The edges of the grooved discs are preferably provided with a covering of friction material so that the cigarettes can be engaged with ease and certainty. Such construction is shown in the drawing, where the groove 7 of the disc 1 is shown as provided with friction material 7'.

Further, the peripheral speeds of the discs can be so relatively selected as to facilitate the oblique positioning of the cigarettes passing through them to one side or the other.

Having thus described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

1. Apparatus for sorting cigarettes delivered by a cigarette rod machine at two delivery positions, comprising a cigarette rod for thrusting the cigarettes forward, two grooved discs between which the cigarettes are thrust, and mounted eccentrically in such manner that they define an orifice of constant diameter, which orifice, thus defined, moves to and fro between the two centres of rotation, which displacement is utilized for depositing the cigarettes at the two depositing positions, and means for rotating said discs.

2. Apparatus according to claim 1, in which the disc-rotating means rotate the discs at a speed which considerably exceeds the feeding speed of the cigarette rod, and depositing belts driven by said rotating means at a speed which is less than this feeding speed.

3. Apparatus according to claim 1 in which the edges of the discs are covered with friction material.

4. Apparatus according to claim 1, in which the peripheral speeds of the discs are mutually synchronized so that oblique positioning of the cigarettes passing between them to one or the other side is facilitated.

5. Apparatus according to claim 1, in which the grooves of the discs are provided with a frictional surface.

6. Apparatus for sorting cigarettes delivered by a cigarette rod machine at two delivery positions, comprising a cigarette rod for thrusting the cigarettes forward, non-circular discs eccentrically mounted, two delivery belts for receiving the cigarettes from said discs, the said discs cooperating with each other to grip the cigarettes fed thereto by the rod, the region of cooperation of the two discs being oscillated between said delivery belts due to the eccentric mounting of the discs, means for driving the said apparatus, the discs being driven at a greater speed than that at which the cigarettes are fed, and the delivery belts being moved at a speed which is less than the speed at which the cigarettes are fed.

7. Apparatus for sorting cigarettes delivered by a cigarette rod machine at two delivery positions, comprising a cigarette rod for thrusting the cigarettes forward, non-circular discs, eccentrically mounted, two delivery belts for receiving the cigarettes from said discs, the said discs cooperating with each other to grip the cigarettes fed thereto by the rod, the region of cooperation of the two discs being oscillated between said delivery belts due to the eccentric mounting of the discs, elliptical gears secured to said discs, and constantly intermeshing with each other to rotate said discs, and means for actuating said apparatus, the discs being driven at a speed approximately twice that at which the cigarettes are fed, and the delivery belts being operated at a speed approximately half that at which the cigarettes are fed.

8. Apparatus for sorting cigarettes delivered by a cigarette rod machine at two delivery positions, comprising a cigarette rod for thrusting the cigarettes forward, non-circular discs having a covering of friction material and eccentrically mounted, at least two delivery belts for receiving the cigarettes from said discs, the said discs cooperating with each other to grip the cigarettes fed thereto by the rod, the region of cooperation of the two discs being oscillated between said delivery belts due to the eccentric mounting of the discs, and means for driving the said apparatus, the discs being driven at a greater speed than that at which the cigarettes are fed, said delivery belts being moved at a speed which is less than the speed at which the cigarettes are fed.

9. Apparatus for separating the cigarettes furnished from a rod cigarette machine having a discharge point, comprising two parallel conveyor bands rotating in the direction of the cigarette rod and on which the cigarettes may be placed, two eccentrically journalled grooved discs rotating in opposite directions in front of the said discharge point and defining between them an aperture of substantially constant size, but which aperture traverses the region between the conveyor bands, which grooved discs, at a central point of the said region between the discs, grasp the cigarettes between them and place them alternately on one and the other of the two conveyor bands.

10. Apparatus for separating the cigarettes furnished from a rod cigarette machine having a discharge point, two eccentrically journalled grooved discs rotating in opposite directions in front of the discharge point and defining between them an aperture of substantially constant size, two parallel conveyor bands rotating in the direction of the cigarette rod and on which the cigarettes may be placed from said discharge point, means for rotating the grooved discs at a speed in excess of the rate of advance of the cigarette rod, the said aperture defined by the grooved discs traversing the region between the conveyor bands and the grooved discs, at a central point of the said region between the discs, grasping the cigarettes between them and placing them alternately on one and the other of the two conveyor bands.

MARTIN BERGER.