Feb. 11, 1958 H. KUNATH 2,822,953

BRAKING DEVICE FOR A CIGARETTE MAKING MACHINE

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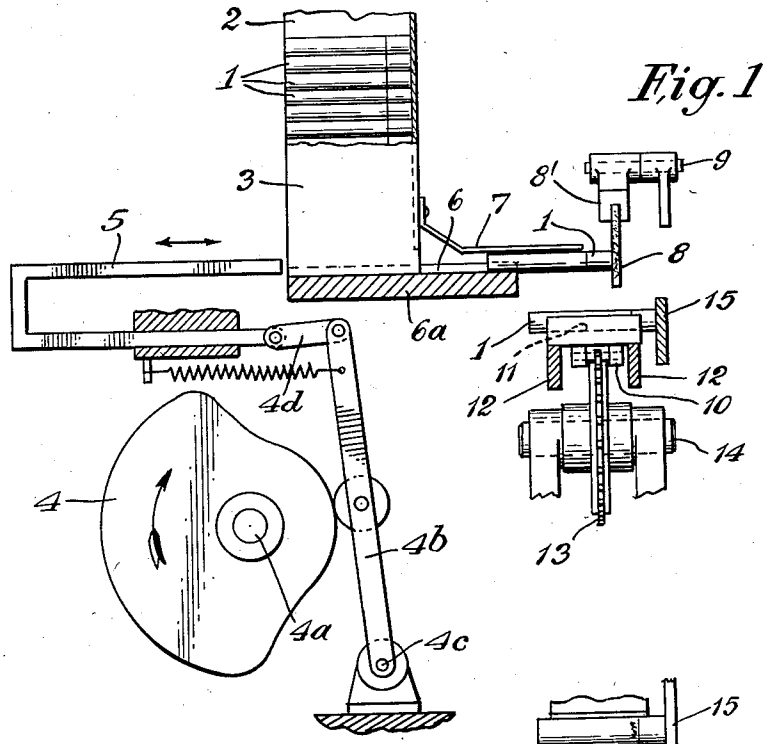


Fig. 1

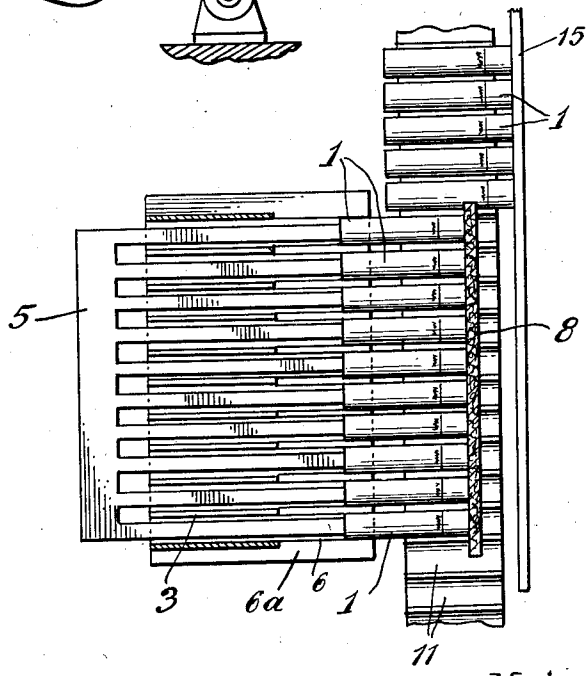


Fig. 2

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Fig. 3

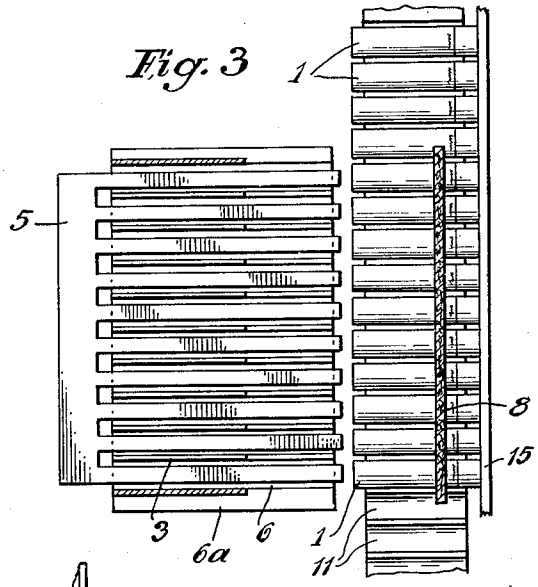
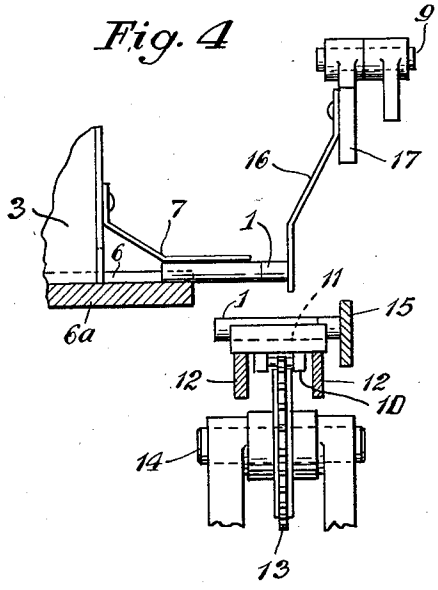


Fig. 4



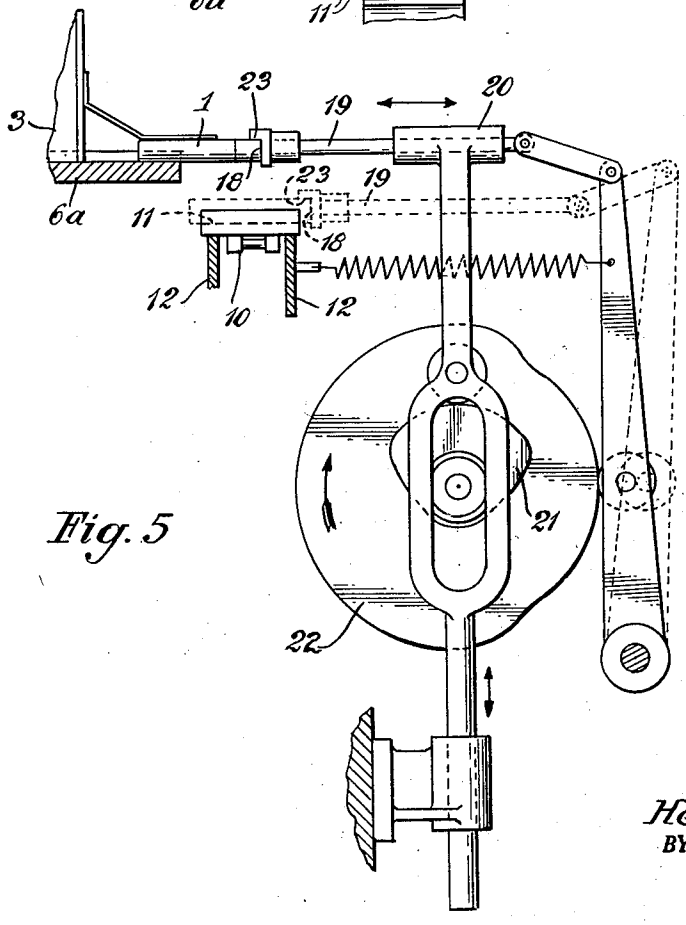


Fig. 5

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2,822,953

Patented Feb. 11, 1958

2,822,953

BRAKING DEVICE FOR A CIGARETTE MAKING MACHINE

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Application May 3, 1955, Serial No. 505,816

2 Claims. (Cl. 221—93)

The invention relates to a cigarette making machine, and in particular is directed to a braking device for acting upon cigarettes which are discharged from a storage container of a cigarette orienting machine. The invention relates more particularly to a cigarette orienting machine in which cigarettes which are oval or elliptical in cross section are to be transferred to a conveyor chain in which the individual links are provided with transverse grooves for receiving the cigarettes. This conveyor chain is preferably arranged in a plane below the lower discharge end of the storage container.

It is an object of the present invention to assure that the cigarettes which are discharged from the storage container are transferred to the conveyor without any loss of tobacco.

Until now, it was customary to simply let the cigarettes drop into the groove provided in the conveyor chain, without providing any means for braking or decelerating the same. When the conveyor chain operates with a relatively slow speed, this type of operation is possible without difficulty, and no disturbances will occur because the cigarettes have sufficient time to change their direction and drop downwardly.

However, when the machine, particularly of the conveyor chain, operates at high speed, the time during which the cigarettes drop into the grooves of the conveyor chain is very short with the result that the cigarettes drop onto the conveyor in a very irregular manner and may even be placed in a slanting position on top of the edges of the grooves. If this takes place, it is impossible during the following scanning of the cigarettes, for instance by means of light electric cells, to orient the brand name of the cigarettes at the correct position, said position being determined by the impulse necessary to turn the cigarettes into the correct position.

It is another object of the present invention to provide a machine of the character described, with a device which may be considered a yielding machine element against which cigarettes are pushed, said machine element being positioned above the conveyor chain.

The mentioned yielding machine element, according to another object of the present invention, may be constructed in the form of a soft felt disc which is attached to a frame, and if necessary may be rotatably moved away from its operating plane.

Still another object of the invention is to employ, in place of the felt disc, resilient leaf springs which are mounted with one of their ends to a common plate, said plate, if necessary being pivotally movable away from its operative position.

Still another object of the invention is to provide an angular plunger bar which by means of a gearing may perform reciprocating movement to move the cigarettes discharged from the storage container positively into the grooves of the conveyor chain.

With these and other objects in mind, the invention will now be described with reference to the accompanying drawings, which disclose various embodiments of the invention.

Fig. 1 illustrates a side elevation view of an ejecting device having associated therewith a conveyor chain with transverse cigarette receiving grooves and a felt disc.

Fig. 2 illustrates a top plan view of the ejector device shown in Fig. 1, and shows that the cigarettes have been ejected until they engage the yieldable machine element.

Fig. 3 is a top plan view of the cigarettes oriented in the grooves of the conveyor chain.

Fig. 4 illustrates in side elevation view a modified construction of the device of the invention, and

Fig. 5 shows still another modification of the device of the invention in which the cigarettes are positively guided downwardly onto the conveyor chain.

Referring to the drawings, the cigarettes **1**, which are oval or elliptical in cross section, are fed from the storage magazine **2** into a hopper **3**, which according to Fig. 2, is divided into a plurality of vertically arranged conduits. A rotatable cam **4**, which is fixedly attached to a drive shaft **4***a*, actuates a link **4***b* whose lower end is rotatably mounted to a bearing **4***c* on the machine frame, while the upper end of the link **4***b* is connected by means of a short arm **4***d* to a horizontally guiding ejector **5**.

The free ends of this ejector **5**, which consists of a plurality of horizontally arranged rods or the like, are adapted to push the cigarettes from the conduits into grooves **6** arranged in the upper surface of a plate **6***a*. The cigarettes are pushed outwardly of the vertical conduits and grooves **6** until the front end of the cigarette engages a resilient machine element **8**. Above the grooves **6** is arranged a resilient spring **7** which engages the cigarettes when they are ejected from the vertical conduits.

The yieldable machine element, according to Fig. 1, consists of a soft felt disc **8** secured to a metal frame **8'** rotatable about an axis **9** so that the felt disc **8** may be rotated away from its operative position.

Below the felt disc **8**, there is arranged a conveyor chain **10** provided with transverse grooves **11** for receiving the cigarettese. The conveyor chain **10** is supported by a pair of spaced parallel and substantially horizontally arranged rails **12**. The conveyor chain is driven by means of a sprocket wheel **13**, fixedly attached to a driven shaft **14**.

Fig. 2 illustrates that the cigarettes **1** are moved until they engage the felt disc **8**, and subsequently, as shown in Fig. 3, the cigarettes in an inclined position are transferred downwardly onto the conveyor chain **11** so that the cigarettes engage a rail **15** along which the cigarettes move.

In place of the felt disc **8**, there may be used, as shown in Fig. 4, a plurality of leaf springs **16** which correspond in number to the number of the cigarettes ejected from the vertical conduits. The leaf springs **16** are attached at one end to a disc **17** which is also rotatable about the axis **9** in order to move the springs away from their operative position. The operation of the embodiment, as shown in Fig. 4 is the same as that of the device illustrated in connection with the felt disc **8** in Figs. 1 and 2. The leaf springs **16** may be attached to their supporting disc **17** in an adjustable manner so that the braking power of the springs may be adjusted.

Fig. 5 illustrates an embodiment of the device of the invention in which the cigarettes are positively transferred into the grooves of the conveyor chain **10**. Cigarettes **1** are moved into engagement with a vertical end face **18** and a horizontal end face **23** of an angle bar extending transversely of the free end of a plunger **19**, which latter is mounted to perform not only a reciprocating movement in a horizontal plane but also a reciprocating movement in a vertical plane. For this purpose, the

plunger **19** is slidably mounted in a sleeve **20** which in turn is reciprocated vertically by a cam **21**. Another cam **22** controls the horizontal reciprocating movement of the plunger **19**.

During operation of this embodiment of the device, the cigarettes **1** are pushed by the ejector **5** outwardly of the lower portion of the hopper **3** and the grooves **6** to engage the vertical end wall **18** of the plunger **19**, said plunger moving outwardly by action of the cam **22** to decelerate the cigarettes. Simultaneously, the plunger **19** with its horizontal end face **23** is moved downwardly by the action of the cam **21** which has the effect of transferring the cigarettes in a horizontal position down a slope from the plate **6***a* into a secure position in the grooves **11** of the conveyor chain **10**.

What I claim is:

1. In a cigarette machine, a storage container for cigarettes, a substantially horizontal bottom in said container, a plurality of parallel grooves in said bottom each adapted to receive a cigarette therein, a side wall in said container substantially perpendicular to said grooves and having its lower end at a distance above said bottom so as to leave an opening between the bottom and said side wall, an extension of said grooved bottom outside said side wall opening, conveyor means adjacent the outer edge of said extension and at a lower level than the same and adapted to move transversely of said grooves, elongated recesses in said conveyor transverse to the direction of movement thereof and each adapted to receive a cigarette, ejector means associated with said container and adapted to eject cigarettes therefrom in said grooves through said opening, and a soft felt disc supported only along its upper edge above said conveyor means in the path of movement of said ejected cigarettes whereby said ejected cigarettes are retarded in their movement and deflected downwards towards said conveyor means by said soft felt disc.

2. In a cigarette machine, a storage container for cigarettes, a substantially horizontal bottom in said container, a plurality of parallel grooves in said bottom each adapted to receive a cigarette therein, a side wall in said container substantially perpendicular to said grooves and having its lower end at a distance above said bottom so as to leave an opening between the bottom and said side wall, an extension of said grooved bottom outside said side wall opening, conveyor means adjacent the outer edge of said extension and at a lower level than the same and adapted to move transversely of said grooves, elongated recesses in said conveyor transverse to the direction of movement thereof and each adapted to receive a cigarette, ejector means associated with said container and adapted to eject cigarettes therefrom in said grooves through said opening, yieldable means supported above said conveyor means in the path of movement of said ejected cigarettes, and vertically reciprocable drive means connected with said yieldable means and adapted to move said yieldable means towards and away from said conveyor means whereby said ejected cigarettes are retarded in their movement and deflected downwards towards said conveyor means by said yieldable means.

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