

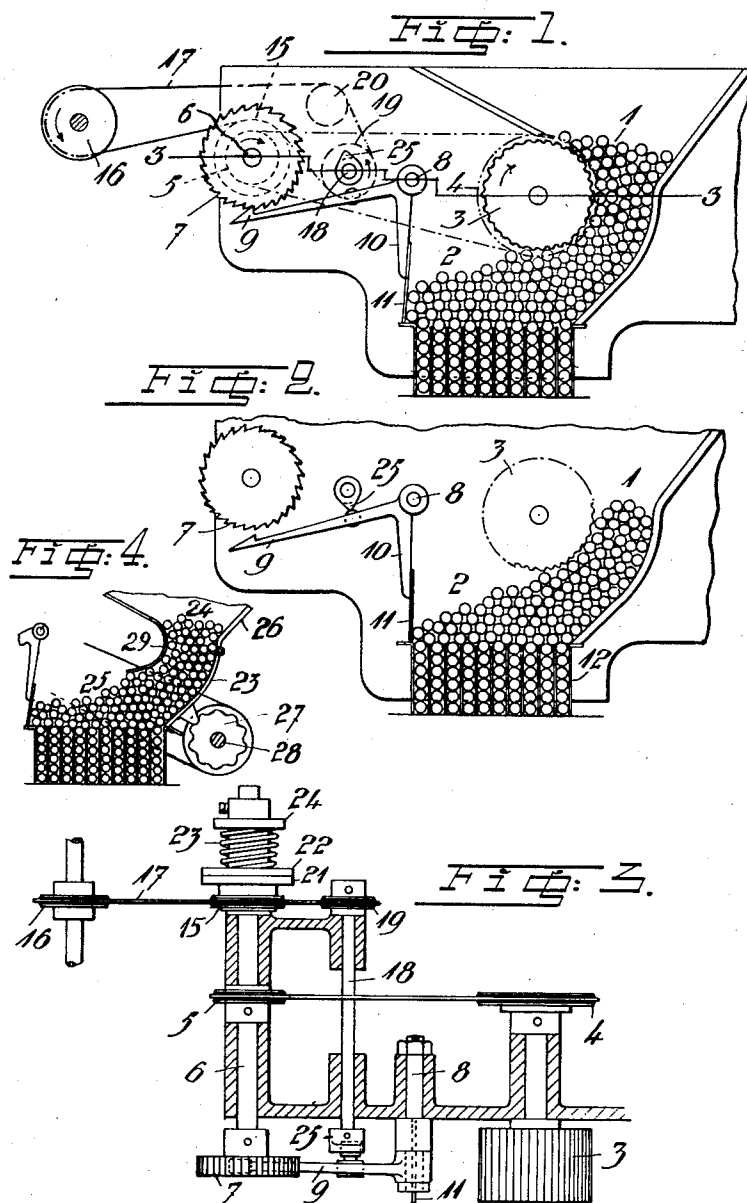
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MAGAZINE FOR MACHINES FOR PACKING CIGARETTES AND OTHER STAFF-SHAPED ARTICLES

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MAGAZINE FOR MACHINES FOR PACKING
CIGARETTES AND OTHER STAFF-SHAPED
ARTICLESGustaf Örström, Alsten, Sweden, assignor to
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5 Claims. (Cl. 226—5)

In machines for packing cigarettes and other staff-shaped articles the cigarettes generally are placed in a magazine at the bottom of which they are distributed into upright partitions from which the cigarettes are then introduced into a box or any other suitable package in the necessary number. In order to reduce the pressure on the cigarettes located above the said partitions, so that the descending of the cigarettes into the partitions is facilitated, the magazine is contracted at its bottom and communicates with a lateral chamber, into which the cigarettes rush downward and are distributed over the partitions. The cigarettes may be assisted in their descending motion by a rotating roller or any other feed device mounted in the transition between the magazine and the lateral chamber or by a mechanism which subjects the cigarettes to a shaking motion. However, it may happen, that a too great number of cigarettes rushes from the magazine into the lateral chamber, so that cigarettes are gathered above the partitions in such a great number or to such a high level, that stagnation of the cigarettes is effected and the cigarettes restrain each other, which results in some partitions being finally emptied of cigarettes. Besides the rubbing action and rolling motion, to which the cigarettes are subjected by the said roller and also the shaking of the cigarettes is injurious to the cigarettes and may result in tobacco falling out from the sleeves.

In order now to cause the cigarettes to descend into the lateral chamber in a stream as uniform as possible and preserve the cigarettes from a too great injurious action such an arrangement is provided according to the present invention that, as cigarettes have been gathered to a certain quantity or level in the lateral chamber, the operation of the feed device or the shaking means is interrupted and then again started, when cigarettes must again be introduced into the lateral chamber.

The invention is illustrated in the accompanying drawing which shows as an example a mechanism for executing the same in Fig. 1 in a side view with the front side wall removed. Fig. 2 shows in a side view the same members as Fig. 1 but in different positions. Fig. 3 is a plan view of the said mechanism partly in section on line 3—3 of Fig. 1. Fig. 4 shows in a side view a modified form of execution of the feed mechanism.

1 is the magazine of the cigarettes. In order to facilitate the descending of the cigarettes from the magazine into a lower distributing chamber 2 a roller 3, preferably provided in its peripheral

surface with longitudinal grooves, is journaled in the contracted lower part of the magazine, which roller by means of a chain or the like and sprocket wheels 4 and 5 is rotated in the direction indicated by the arrow by a shaft 6 to which the sprocket wheel 5 is fixed. A ratchet wheel 7, provided preferably with fine teeth, is fixed to the shaft 6 and engaged by a pawl 9 which is swingably mounted on a pin 8. An arm 10 extends downwards from the pawl 9 and carries a plate 11, which constitutes the outer wall of the chamber 2 and against which bears the collection of cigarettes contained by the magazine.

From the chamber 2 the cigarettes descend in vertical rows into partitions 12, from which sets of cigarettes are then pushed by a slide (not shown) in order to be packed in boxes or other packages.

A sprocket wheel 15 is loosely mounted on the shaft 6, which during the operation of the machine is rotated uninterruptedly by a sprocket wheel 16 rotated by the main shaft of the machine and a chain 17 which passes round the sprocket wheel 15, a sprocket wheel 19 fixed on a shaft 18 and a guide wheel 20. One 21 of the discs of a friction clutch is connected to the wheel 15. The second disc 22 of the clutch is slidably but not turnably mounted on the shaft 6 and is forced against the disc 21 by a spring 23 which bears against a ring 24 fixed on the shaft 6. A cam disc 25 is mounted on the shaft 18 and is adapted to act upon the pawl 9 and disengage the same from the ratchet wheel 7.

The described mechanism operates in the following manner. As long as there is a sufficient quantity of cigarettes in the lateral chamber 2, the cigarettes by their pressure on the plate 11 keep the pawl 9 in engagement with the ratchet wheel 7, Fig. 1, for which reason the sprocket wheel 5 does not impart any rotary motion to the feed roller 3 and no cigarettes enter the chamber 2 except the slight quantity, which rushes down solely acted upon by their weight. When, however, the cigarettes in the chamber 2 has sunk to such a low level, that feeding of cigarettes into the chamber is necessary, Fig. 2, the pressure of the cigarettes on the plate 11 is so slight, that the pawl 9, disengaged by the cam disc 19, is held by its weight or by a spring (not shown) out of engagement with the ratchet wheel 7. The sprocket wheel 5 now is caused to rotate by the friction clutch 21, 22 and rotates the feed roller 3, so that cigarettes are fed into the chamber. When a sufficient quantity of cigarettes has entered the chamber, the ciga-

rettes force the plate 11 outwards and brings the pawl 9 again into engagement with the ratchet wheel 7, so that the feed roller stops. The said operations are repeated when the level of cigarettes in the chamber has again sufficiently

5 sunken.
Owing to the fact that the pressure between the teeth of the ratchet wheel 7 and the tooth of the pawl 9 is equal to the power by which
10 the friction disc 21 tends to rotate the friction disc 22 and the ratchet wheel 7 and further owing to the fact that the plate 11 ought to bear against the cigarettes only with a slight pressure, while the pawl is disengaged, the pawl should not be
15 so heavy or acted upon by a spring of such a great tension, that the pawl is disengaged by itself. For that reason the cam disc 19 preferably is provided, which serves as an auxiliary device for bringing the pawl 9 out of engagement with the ratchet
20 wheel 7. The pawl is disengaged by the cam disc 19 during each revolution but is immediately brought into engagement with the ratchet wheel, if there is a sufficient quantity of cigarettes in the chamber.

25 As stated above other means may be provided for causing positively cigarettes to pass downwards into the lateral chamber and prevent clogging of the same in the magazine. For instance the part 23, Fig. 4, of the bottom constituting the transition between the magazine 24
30 and the lateral distributing chamber 25 may be hinged to the side wall 26 of the magazine and caused to move upwards and downwards by cam discs 27 (one being visible) which are fixed to
35 a shaft 28. The said shaft 28 may be rotated in just the same manner as the feed roller 3 and thus oscillate the part 23, so that cigarettes are caused to descend from the magazine into the lateral
40 chamber when necessary. A stationary wall 29 may be substituted for the feed roller, as shown, or both the feed roller and the movable bottom part may be used simultaneously.

Many other mechanisms than those described above may, evidently, be used for interrupting
45 the operation of the feed device and again start the same, which mechanisms are brought into and out of operation by the changed pressure of the cigarettes on a member movable in the lateral
50 chamber.

I claim:

1. In a machine for packing cigarettes and other staff-shaped articles the combination of a magazine for the cigarettes, a chamber which
55 communicates with the magazine and into which the cigarettes may descend for being distributed, a feed device provided between the said magazine and the said chamber, a driving mechanism for the said feed device, and a member partially

bounding the said chamber and acted upon by the pressure of the bulk of cigarettes, gathered in the chamber, which member normally keeps inactive the said driving mechanism but, when the cigarettes have sunk to a lower level, occupies
80 such a position that it releases the driving mechanism, so that the feed device enters into operation.

2. A machine as stated in claim 1, characterized by a wall of the chamber being movable and
85 acted upon by the pressure of cigarettes contained by the chamber.

3. A machine as stated in claim 1 characterized by an arresting device for the driving mechanism of the feed device, which driving mechanism is acted upon through a friction clutch or the like, and means by which the movable member
90 acted upon the pressure of the cigarettes releases the said arresting device, as the quantity of cigarettes is reduced and the position of the said movable member is changed.

4. A machine as stated in claim 1, characterized by an arresting device for the driving mechanism of the feed device, which driving mechanism is acted upon through a friction clutch or the like, means by which the movable member
95 acted upon by the pressure of the cigarettes actuates the said arresting device, and a cam mechanism or the like which periodically releases the said arresting device and shifts the position of the said movable member, until the pressure of the reduced quantity of cigarettes permits the
100 said movable member to remain in the position into which it has been brought by the cam disc mechanism and thus the arresting device to remain in inactive position.

5. In a machine for packing cigarettes and other staff-shaped articles the combination of a magazine for the cigarettes, a chamber, which communicates with the magazine and into which the cigarettes may descend, upright partitions
105 provided in the bottom of the chamber, in which the cigarettes are distributed, a roller for feeding the cigarettes from the magazine into the said chamber, a driving mechanism for the feed roller including a friction clutch, a pawl and ratchet
110 mechanism for keeping inactive the said driving mechanism, a movable end wall of the said chamber which is acted upon by the pressure of the cigarettes contained by the chamber, said wall being connected to the pawl, and a cam disc
115 mechanism which periodically disengages the pawl and shifts the position of the end wall, until the pressure of the reduced quantity of cigarettes permits the wall to remain in the position into which it has been brought by the cam
120 disc mechanism and thus the pawl to remain disengaged.

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