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J. NEFF

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CIGARETTE PACKING MACHINE

Filed April 4, 1931

Fig.1

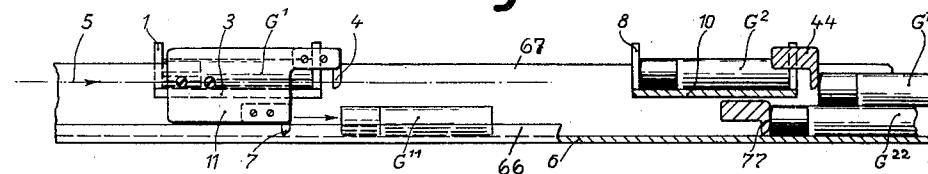


Fig.2

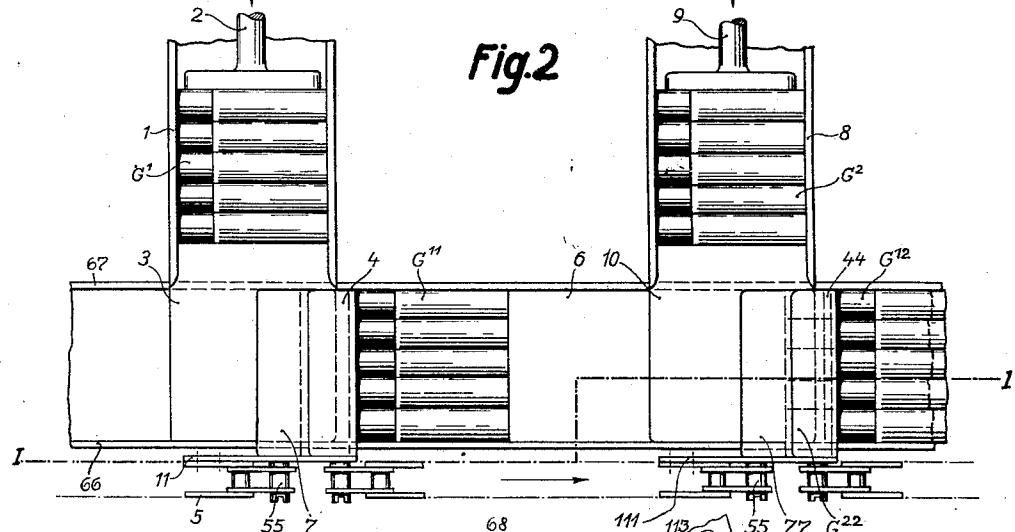


Fig.3

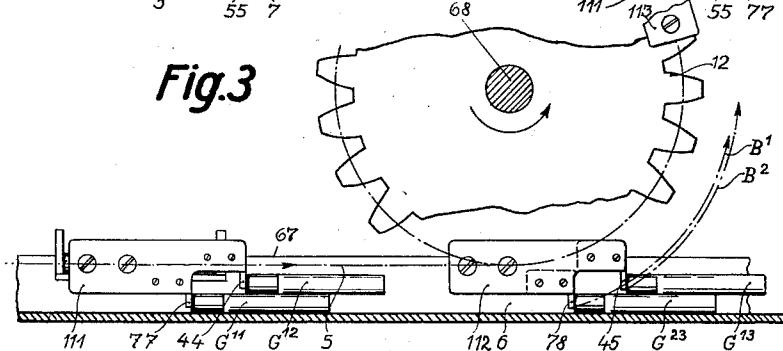


Fig.4

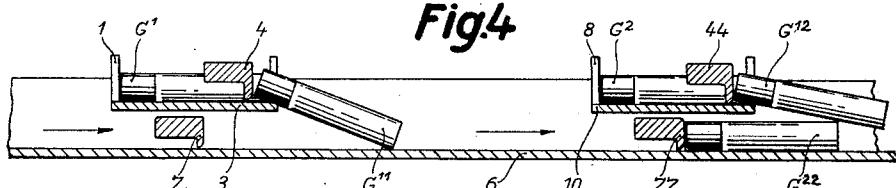
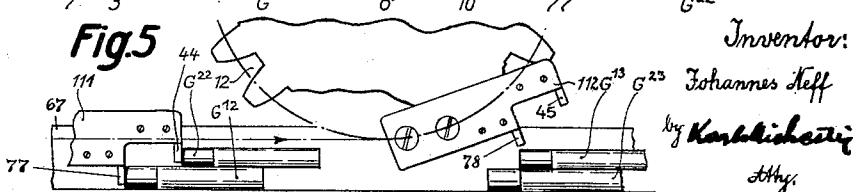


Fig.5



UNITED STATES PATENT OFFICE

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CIGARETTE PACKING MACHINE

Application filed April 4, 1931, Serial No. 527,724, and in Germany April 12, 1930.

My invention relates to cigarette-packing machines and more particularly to machines in which groups of cigarettes are fed to a collecting channel from grouping chutes extending transversely to this channel, the groups of cigarettes being thereafter moved on the channel and one group superposed to another group.

It is an object of my invention to provide improved feeding means for a machine of the type referred to. To this end, in combination with grouping chutes extending above the collecting channel, I provide feeders, each having one finger per grouping chute, the fingers being arranged at various levels above the bottom of the collecting channel and each upper finger leading the finger below.

Various types of packing machines of the kind referred to have already been suggested. In the improved machine according to this invention the upper finger of each feeder wipes each group of cigarettes from the grouping chutes down into the collecting channel whereupon the cigarettes are moved on in the collecting channel by the lower finger which lags with respect to the upper one. With this relative position of the fingers the lower finger will not interfere with the cigarettes before they have assumed their final position in the collector and damage to the cigarettes is thus avoided. In the old machines it was necessary to provide conveying cylinders or the like for moving the cigarettes out of reach of the lower finger.

In a preferred embodiment of my invention I fix the fingers on a feeder plate carried by an endless member, such as a sprocket chain. The fingers project freely from the inner sides of the plates and into the collecting channel.

I am now going to describe a machine having two grouping chutes and two fingers on each feeder, but it is to be understood that I may provide any number of grouping chutes and fingers if it is desired to superpose more than two groups of cigarettes.

In the drawings affixed to this specification and forming part thereof a machine embodying my invention is illustrated diagrammatically by way of example.

In the drawings

Fig. 1 is an elevation showing the collecting channel and two grouping chutes, partly in section on the line I—I in Fig. 2, while Fig. 2 is a plan view.

Figs. 3 to 5 are longitudinal sections of the collecting channel showing various stages of operation.

Referring to the drawings, 6 is the collecting channel. 66 is a lower flange at its front side, and 67 is a higher flange at its rear side. 1 and 8 are two grouping chutes of channel section with their flanges cut away in line with the rear flange 67 of the collecting channel 6, and their webs 3 and 10 extending across the collector. 2 and 9 are pushers in the chutes 1 and 8, respectively. 68 (Fig. 3) is a shaft which is mounted above the collecting channel 6 and is rotated in the direction of the arrow by suitable means (not shown), 12 is a sprocket on the shaft 68 which is arranged in front of the lower flange 66 and 5 is a sprocket chain which is supported on the sprocket 12 and on another sprocket (not shown) at the other end of the machine.

The links of the sprocket chain 5 are connected by the usual link pins, which are partly designed to form supports for the feeder plates. Three such plates 11, 111 and 112 are shown in the drawings, the rear end of a fourth plate, 113, appears in Fig. 3. The link pins 55, to which the plates are connected, are equipped with screws holding them. The plates 11, 111 and 112 are provided with inwardly projecting fingers 4, 7, 44, 77 and 45, 78, respectively. The fingers project freely from their plates across the channel 6. The upper fingers 4, 44, 45 move above, the lower ones 7, 77, 78 below the webs 3 and 10 of the grouping chutes 1 and 8, and the upper fingers lead the lower fingers in the direction of feed.

The front flange 66 of the channel 6 is partly cut away to make room for the connections of the lower fingers 7, 77, 78 to their feeder plates. The lower fingers themselves, as best seen in Fig. 1, extend substantially down to the bottom of the channel 6.

The operation of the machine is as follows: Two groups of cigarettes, at five each,

are ready for delivery in the respective grouping chutes at G^1 and G^2 (Fig. 2). A group G^{11} has just been delivered from the web 3 of chute 1 and is ready to be engaged by the lower finger 7 fixed to the plate 11. Two more groups G^{12} , G^{22} are shown in superimposed relation and are being carried along by the fingers 44 and 77 on the plate 111.

After the group G^{11} had been delivered to the web 3 in position above the channel 6, it is engaged by the finger 4 and pushed down onto the channel 6 from the web 3, as shown in Fig. 4. As the upper finger 4 leads the lower finger 7, the cigarettes of the group G^{11} are deposited on the bottom of the channel 6 in advance of the finger 7. Upon continued rotation of the sprocket 12 the rear ends of the cigarettes in group G^{11} are engaged by the fingers 7 and are entrained toward the web 10 of the second chute 8.

Fig. 1 shows the fingers 44 and 77 on the plate 111 in the position in which the cigarettes of group G^{12} preceding the group G^2 have been deposited on top of a group of cigarettes G^{22} , which precedes the group G^{11} , Fig. 4, showing an intermediate position. It will be understood that the same operation will be performed at the chute 8 when the plate 11 has reached this chute. Whenever a group of cigarettes G^{11} , G^{22} ... from the first chute 1 is pushed along the bottom of the channel 6 below the web 10 of the second chute, a group of cigarettes from the second chute is deposited on it, as shown for G^{12} and G^{22} in Fig. 1, and for two more groups G^{13} and G^{23} in Figs. 3 and 5.

Fig. 3 shows that interference with the upper groups G^{12} , G^{13} ... by the lower fingers 7, 77, 78... is prevented when the fingers 40 are lifted free of the channel 6. B^1 is the arc described by the lower finger 78, B^2 is the arc described by the upper finger 45, and it can be seen that finger 78 will not interfere with the upper group G^{13} ... as the radius of 45 its arc B^1 is shorter than the radius of the arc B^2 of the upper finger 45.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described for obvious modifications will occur to a person skilled in the art.

In the claims affixed to this specification no selection of any particular modification of the invention is intended to the exclusion of other modifications thereof and the right 55 to subsequently make claim to any modification not covered by these claims is expressly reserved.

I claim:—

1. In a cigarette-packing machine a channel, grouping chutes extending at right angles to and above said channel, fingers, one per grouping chute, arranged at various levels above the bottom of said channel, each upper finger leading the finger below, and means for 60 moving said fingers along said channel.

2. In a cigarette-packing machine a channel, grouping chutes extending at right angles to and above said channel, an endless conveying member arranged to move along one side of said channel and fingers secured to 70 said endless member, one per grouping chute, arranged at various levels above the bottom of said channel, each upper finger leading the finger below.

3. In a cigarette-packing machine a channel, grouping chutes extending at right angles to and above said channel, an endless conveying member arranged to move along one side of said channel, feeder plates on said member and fingers on each plate projecting 80 into said channel, one per grouping chute, arranged at various levels above the bottom of said channel, each upper finger leading the finger below.

4. In a cigarette-packing machine a channel, grouping chutes extending at right angles to and above said channel, rotary means arranged at one side of said channel, an endless conveying member operatively connected 90 with said rotary means, and fingers secured to said endless member, one per grouping chute, arranged at various levels above the bottom of said channel, each upper finger leading the finger below, so as not to interfere 95 with the group of cigarettes handled by said upper finger when the fingers partake in the rotation of said rotary member.

In testimony whereof I affix my signature.
JOHANNES NEFF.

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