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TRANSFER OR DELIVERY DEVICE FOR CIGARETTE ROD MACHINES

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Fig. 1.

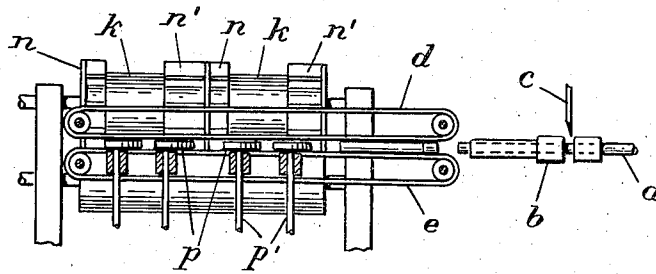


Fig. 2.

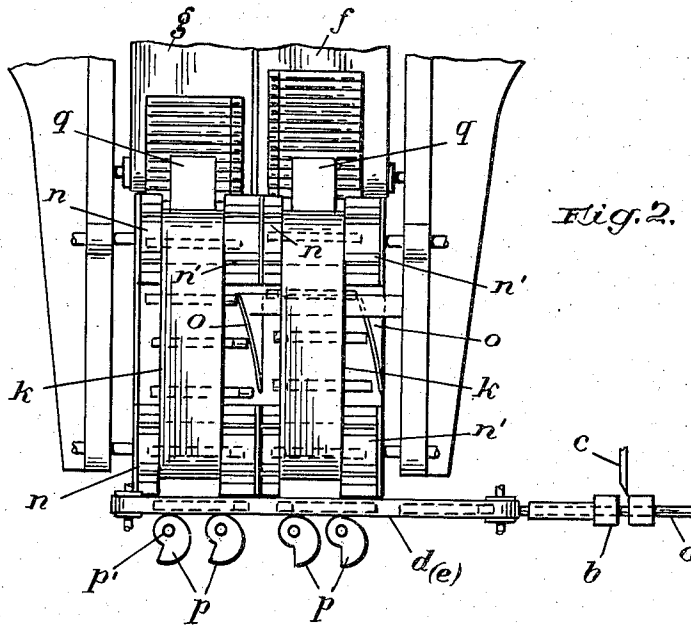
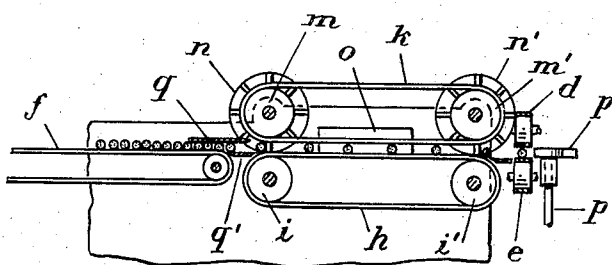


Fig. 3.



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TRANSFER OR DELIVERY DEVICE FOR
CIGARETTE ROD MACHINES

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4 Claims. (Cl. 198—31)

The cigarettes coming from the cigarette rod machine are, as is known, transferred onto a transversely running conveying band, or onto a plurality of such bands respectively. Various devices have already been proposed for diverting the cigarettes from the direction of motion of the cigarette rod, viz. their axial direction, into the direction of motion of the conveying bands which move at right angles thereto. Effecting that change of motion in a satisfactory manner is particularly difficult with rapidly running machines, because the cigarettes travel at a comparatively high speed which must be completely stopped in order to render it possible to move the cigarettes in a direction at right angles thereto. The known devices for stopping the high axial speed of the cigarettes, and for moving them in a transverse path, can easily damage the cigarettes, especially if the speed of the rod is very high.

The present invention relates to a transfer or delivery device for use in connection with cigarette rod machines, in which the stopping and the above mentioned change of the direction of motion are effected by means whereby the cigarettes are not damaged and at the same time a perfectly correct position of the same on the conveying band is ensured.

In this improved device the cigarettes after having been diverted from their axial direction, for instance by means of an eccentric or an equivalent member, are received between two bands extending at right angles with respect to the direction of motion of the rod, whereby the motion of the cigarettes in their axial direction is completely stopped by the bands, and simultaneously therewith said bands impart to the cigarettes a motion rectangulary to said axial motion, viz. in the direction corresponding to that of the bands, the cigarettes being then delivered onto the conveyor bands.

Preferably, in order to provide for the proper spacing between the individual cigarettes, one or both drums supporting and guiding the conveying bands are designed as cell drums which are so subdivided that every feed movement of a cigarette corresponds to the movement of the cell drum by one of the subdivisions of the same.

The invention is illustrated diagrammatically and by way of example in the accompanying drawing on which—

Figure 1 is a front view of the improved transferring device, partly in section,

Figure 2 is a plan, and

Figure 3 is a side view of the same.

On the drawing, *a* denotes the cigarette rod

which is guided in known manner through the rod tube *b* where it is cut into individual cigarettes by means of a cutting device *c*. The individual cigarettes are now fed between the adjacent portions of two endless conveying bands *d* and *e* by means of which they are moved with the same speed as the rod *a*. *f* and *g* denote the receiving bands. The device constituting the invention proper is inserted between the bands *d* and *e* on the one side and *f* and *g* on the other side. Said device comprises a lower band *h* running over rolls *i* and *i*¹, and an upper band *k* which is narrower than the band *h* and runs over two drums *m* and *m*¹ which project at both sides of the band (*k*), the projecting portions of said drums being designed as cell wheels *n* and *n*¹. It is preferable to make the cell wheel *n*¹ broader than the cell wheel *n*. If there are two receiving bands, as in the example shown in Figs. 1 and 2, there are, of course, also two pairs of cell wheels and two bands *k*. There may also be provided two lower bands *h*, but it is also possible to combine these bands into one. Above each band *h* there is provided, in the path of the cigarettes, an aligning plate *o*, the object of which is to align the cigarettes running between the bands *k* and *h*.

Moving the cigarettes from the line of the rod to a point between the bands *k* and *h* may be effected by any suitable device or member, for instance by means of cams *p* rotating around axes *p*¹. But also other devices or members may be employed for this purpose. Making use of cams is more suited to the purpose in view, as the pointed sections of the cams which engage the cigarettes have, besides their motion in the direction of feed of the bands *k* and *h*, simultaneously therewith also a component motion in the direction of the rod so that the friction between them and the cigarettes is reduced and any possibility of damage to the cigarettes is avoided. The ends of the bands *k* and *h* which lie opposite to one another are provided with guide plates *q* and *q*¹ which receive the cigarettes between them and conduct them further onto the bands *g* and *f*.

The manner of operation of the device is as follows:

The cigarettes conveyed to the device between the bands *d* and *e* are contacted by the cams *p* which rotate in timed relation relative to the feeding of the cigarettes, whereby these latter are moved transversely with respect to their former direction of motion, towards the bands *h* and *k*, and are conveyed into the cells of the front cell wheels *n* and *n*¹. The latter, in turn, take

the cigarettes around with them and convey them further to and between the bands *h* and *k* in cooperation with the subdivisions of these wheels. The cigarettes are now again further conveyed forward and into the cells of the rear cell wheels *n* and *n*¹ by means of which they are transported into the space between the two guide plates *q* and *q*¹ where the cigarettes join one another and are delivered onto the receiving bands *g* and *f* which are moving at a reduced speed. As the cigarettes, when entering into the cell wheels and when being conveyed between the bands *h* and *k*, are not always accurately aligned with respect to one another, they are moved along and past the aligning plates *o* by means of which they are shifted in axial direction in such a manner that they enter into the rear cell wheels *n* and *n*¹ in properly aligned position. Also the device can operate in a satisfactory manner when the cigarettes are introduced directly between the transversely running bands *h* and *k* by means of the cams *p* or an equivalent device.

By guiding the cigarettes between the bands *d* and *e*, shifting in any way other than parallel to themselves is avoided when their direction of motion is changed.

The rotary speed of the band drums *m* and *m*¹ must be so regulated that the cell wheels are turned by as much as one subdivision at every feed-movement of a cigarette. In the constructional form shown by way of example cell-wheels are provided at the receiving end and at the delivery end of the bands *k*, but I wish it to be understood that the cell wheels at the delivery end may, under some circumstances, be omitted. Also other minor departures in construction are possible within the scope of the invention.

I claim:

1. A device for transferring cigarettes coming from a cigarette rod machine to conveying bands running transversely with respect to the direction of motion of the cigarette rod, comprising means for diverting the cigarettes laterally, and two intermediate bands movably supported and extending at right angles with respect to the direction of

motion of the cigarette rod and located between the means and said conveying bands and adapted to receive between them the cigarettes to deliver them to the said conveying bands.

2. A transfer device for transferring cigarettes coming from a cigarette rod machine to conveying bands running transversely with respect to the direction of motion of the cigarettes, comprising means for diverting the cigarettes laterally, two superposed parallel endless intermediate bands extending at right angles with respect to the direction of motion of the cigarette rod and located between the means and said conveying bands and adapted to receive between them the cigarettes to deliver them to the said conveying bands, and supporting drums for said intermediate bands, the peripheral wall of one of said drums being subdivided to constitute cells each of which is adapted to receive a cigarette, and the subdivisions being such that every feed-movement of a cigarette corresponds to the rotary movement of the cell-drum by as much as one cell.

3. A transfer device according to claim 1, in which the means consists of a plurality of cams.

4. A device for transferring cigarettes coming from a cigarette rod machine to a conveying band running transversely with respect to the direction of motion of the cigarettes, comprising means for diverting the cigarettes laterally, two superposed parallel endless intermediate bands extending at right angles with respect to the direction of motion of the cigarette rod and located between the means and said conveying band and adapted to receive between them the cigarettes to deliver them to the said conveying band, and supporting drums for said intermediate bands, the peripheral walls of the drums of the upper band being subdivided to constitute cells at the sides of the band adapted to receive the cigarettes, and the cells of the drum at one side of the band being broader than the cells of the drum at the other side of the band.

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