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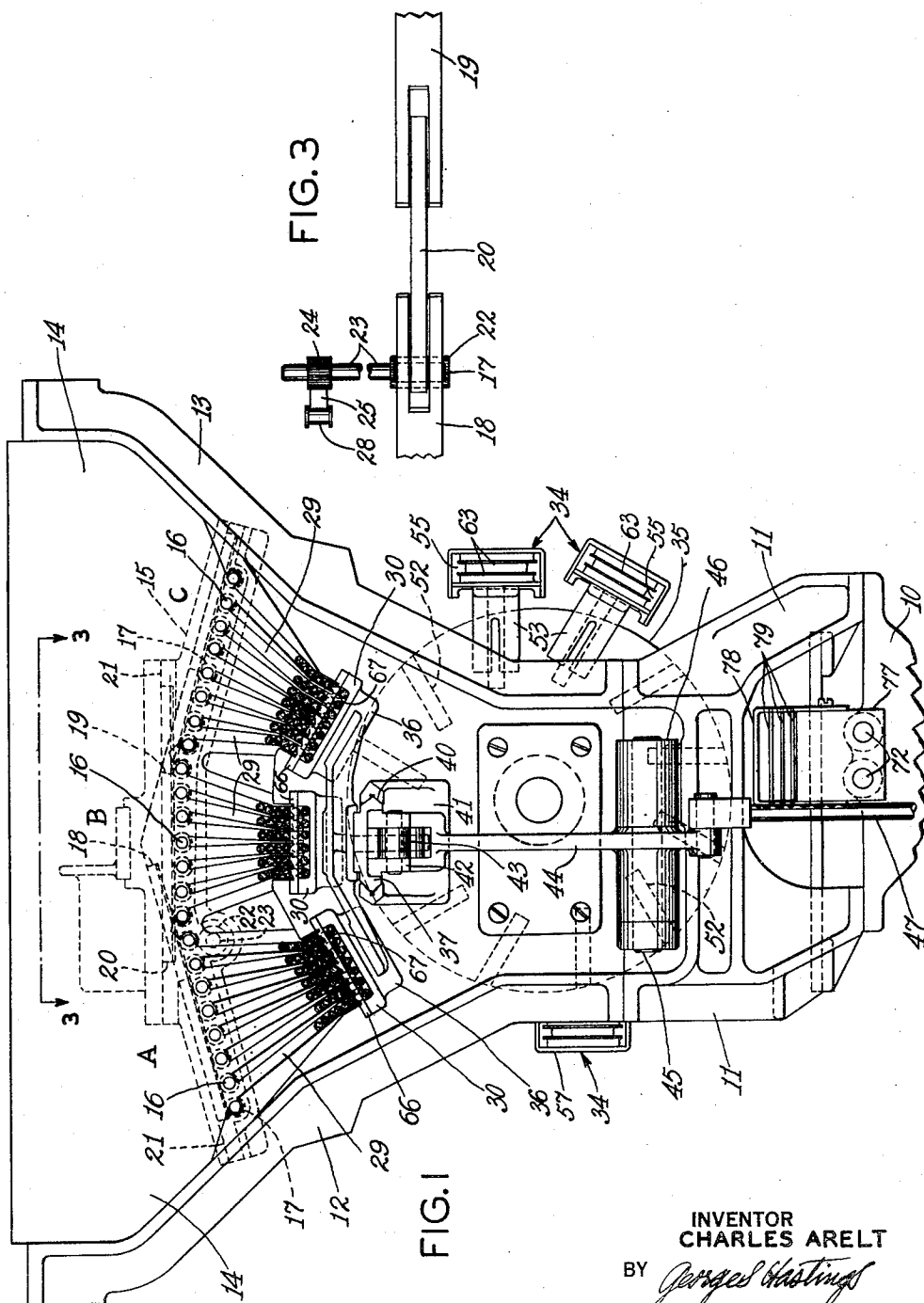
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2,334,142

CIGARETTE FEED FOR PACKERS

Filed May 4, 1940

3 Sheets-Sheet 1



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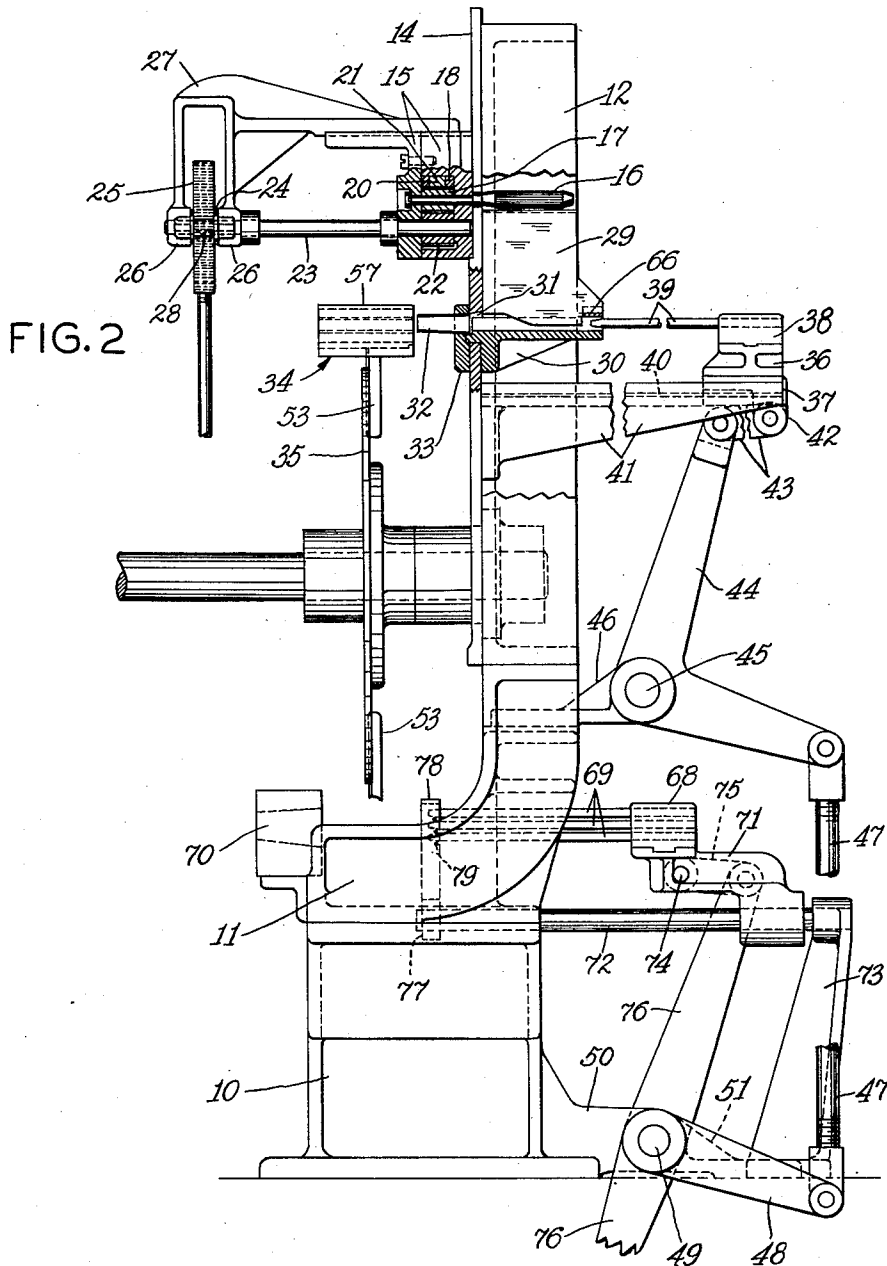
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3 Sheets-Sheet 2



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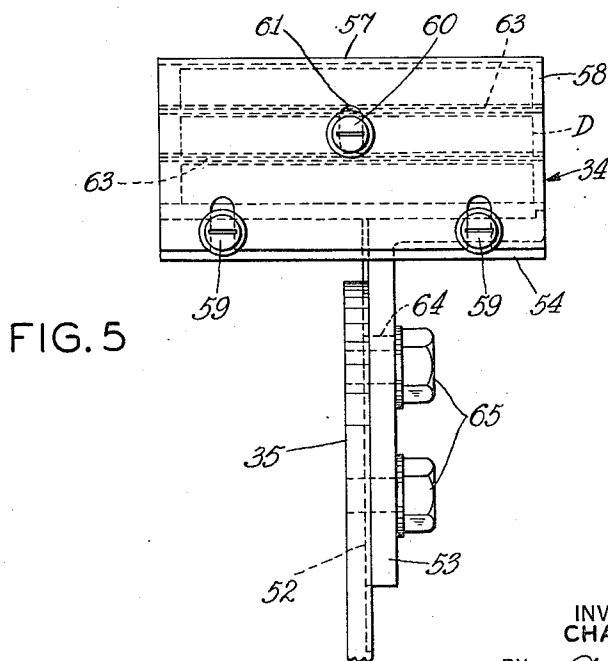
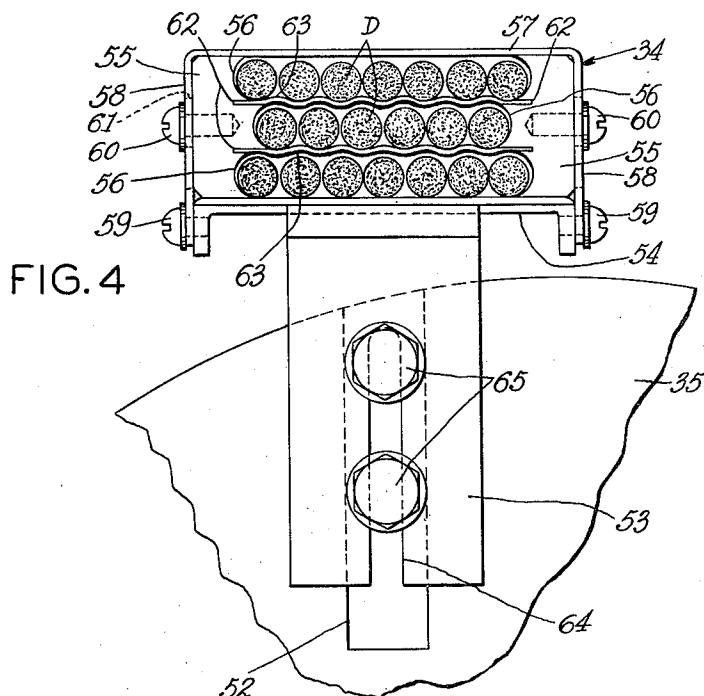
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3 Sheets-Sheet 3



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CIGARETTE FEED FOR PACKERS

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Application May 4, 1940, Serial No. 333,325

3 Claims. (Cl. 226—5)

This invention relates to cigarette feeds for cigarette packing machines, its main object being to provide more efficient means for feeding the cigarettes from a bulk supply of cigarettes into passageways in which the cigarettes travel in single rows to mechanism by which they are transferred to the packing machine.

An object of the invention is to avoid entirely the possibility for any cigarette to be crushed or damaged during the accumulation of the complete number of cigarettes (say twenty), required to fill a package.

Another object is to make feasible the packing of any number of cigarettes, say from one to twenty, as the case may be, and to make it possible to handle any type of cigarette, circular or oval, and cigarettes of any desirable dimensions.

In pursuance of the above objects, it is a further object of the invention to provide in a cigarette feed for a packaging mechanism the combination with a bulk source of cigarette supply, such as a hopper and agitating means at the bottom of said source, of a series of passageways below said agitating means equal in number to the entire number of cigarettes in a package, and leading from said source to a position where the cigarettes are to be gathered; also means operating successively at said position to gather cigarettes in lots each corresponding in number to that of the cigarettes constituting a row in the package, for which reason each such lot of cigarettes is designated a "row lot" for the sake of brevity. These row lots are so collected that they are discharged from said passageways independently as between the lots, in an assembly of such lots corresponding in number and arrangement to the eventual disposition of the rows of cigarettes in a package; and the invention provides means to transfer said assembly bodily to a remote station for delivery to packaging mechanism.

Among other and ancillary objects, it is an object of the present invention to provide as a novel combination with such a bulk source of cigarettes, and passageways leading therefrom, an intermittently actuated movable transfer device, such as a rotary turret having a considerable number of holders (say twelve) each adapted to receive from the passageways the complete assemblies of cigarettes to which reference is above made, and having means coordinated with the packaging mechanism to operate said turret, thereby effecting the regular transfer of the complete assemblies in response to the demands of the packaging mechanism.

With these and other objects not specifically

mentioned in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then particularly pointed out in the claims hereunto appended.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a view in front elevation of a feed mechanism in the construction of which the present invention has been embodied;

Fig. 2 is a view in side elevation thereof;

Fig. 3 is a fragmentary detail view in plan of the rack arrangement which drives the agitating rollers,

Fig. 4 is a fragmentary detail view in side elevation, and taken on a larger scale, of one of the accumulator pockets loaded with twenty cigarettes in 7—6—7 order; and

Fig. 5 is a fragmentary detail view in front elevation of the parts shown in Fig. 4.

Referring to the drawings, a pedestal 10 on the bed of a cigarette machine which may be of conventional or other suitable construction and which is not illustrated herein, supports a bracket 11 which carries the side wall brackets 12 and 13 having a fixed rear wall 14 forming the cigarette storage hopper. A frame 15 secured to rear wall 14 (see Fig. 2) supports a series of knurled or fluted agitating rollers 16 extending into the storage chamber. Rollers 16 are equipped with gears 17 in mesh with the inclined racks 18 and 19, and a horizontal rack 20, said racks being guided in suitable tracks 21 in frame 15. A gear 22 placed beneath and in mesh with one of the gears 17 is mounted on a shaft 23 having at its opposite end a gear 24 in mesh with a rack 25 operated from a suitable cam (not shown) of the machine. Shaft 23 is supported by frame 15 and the hubs 26 of a bracket 27 attached to the top of frame 15. Rack 25 is held in mesh with its gear 24 by a guide roller 28, Figs. 2 and 3, carried by bracket 27.

The gear 22 in turning causes its co-acting gear 17 to turn and thus impart motion to the rack 18 whereby the series of rollers 16 at the left of the hopper are agitated, the rack 18 overlapping a gear of the center series which imparts motion to rack 20 whereby this series of rollers receive motion. The rack 19, at the right, overlaps the end gear of the center series which imparts motion to the rack and its series of agitator rollers. The rollers 16 support the cigarettes D in the hopper and feed them into the passageways 29 running from the regions designated A, B and C (Fig. 1). As alternate rollers of the series 16

rotate in opposite directions, they prevent the cigarettes from sticking together, or from entering between the rollers two at a time or at an angle.

The passageways 29 feed the cigarettes D to ejecting position into the gatherers 30 secured to the wall 14 of the hopper, said wall being provided with openings 31 (Fig. 2) which are slightly larger in height than the diameter of the cigarettes. The cigarettes of each row lot, when ejected from the gatherers 30, pass through a tube 32, extending from a holder 33 attached to wall 14, and directing its row lot into the proper section of one of the accumulator pockets 34 of an intermittently driven turret 35.

A cross head 36, attached to a sliding bracket 37, supports blocks 38 carrying the ejector plates 39 adapted to engage and expel the cigarettes from the gatherers 30 into the pockets of turret 35. The members 38 and 39 are omitted in Fig. 1 in order to show more clearly the assembly of the cigarettes in the gatherers 30. The bracket 37 is guided in V tracks 40 provided in the up-rights extending from bracket 41 carried by wall 14. Bracket 37 is provided with a forked lug 42 supporting one end of a link 43 connecting to a lever 44 pivotally mounted on a stud 45 carried by a bracket 46 secured to bracket 11. The other end of lever 44 supports one end of a rod 47 connecting to an arm 48 fastened on a pivot shaft 49 (Fig. 2) carried by a lug 50 of pedestal 10 and a bracket 51 mounted on the bed of the machine.

The turret 35 is provided with a plurality of spaced guide slots 52 adapted to receive the holders 53 (Figs. 1, 4 and 5) each of which at its upper end supports a U shaped plate 54 forming the base of the accumulator pockets 34. Blocks 55 which constitute the side walls of the pockets have curved transverse surfaces 56 adapted to engage the end cigarettes of each layer to prevent the cigarettes making up each layer from being laterally displaced. It has been found that by using a curved portion to engage the end cigarette, no damage or deformation occurs in the cigarette when it is intermittently rotated around the turret in the accumulator pocket 34. A cover 57 serves to enclose the top of the pocket and the vertical end walls 58 provide means for securing the cover to the base plate 54 by screws 59. The blocks 55 are held in place by screws 60 which pass through elongated slots 61 provided in the walls of cover 57. The blocks 55 are provided with kerfs 62 serving to carry the fluted or corrugated divider sections 63 which support the cigarettes D. The fluted divider sections 63 properly position each cigarette with respect to the other cigarettes carried by the accumulator pockets 34. The fluted or corrugated portions of the divider also aid in preventing the cigarette from being laterally displaced. In Fig. 4, it will be seen that the crest of one divider section is formed opposite to a trough of an opposed divider section to minimize the opportunity for cigarettes to be placed diagonally in a row section or to be misplaced therein. The holders 53 have an open end slot 64 permitting adjustment of the pockets 34 so as to align the sections with respect to the gatherers 30 and when properly aligned the bolts 65 clamp the holder 53 in position. The open end slot 64 allows the accumulator pockets 34 to be quickly replaced with pockets of different size or shape. Such changes may be readily made whenever a manufacturer wishes to package cigarettes hav-

ing diameters different from those previously packaged, or to make a package containing a number of cigarettes different from the number previously packaged.

The turret 35 advances in a step by step manner and while it dwells, the cross head 36 moves inwardly causing the ejector plates 39 to engage the ends of the cigarettes in the gatherers 30 and delivers them into successively aligned pockets of the turret, the head 36 then retreating to its starting position, and the turret advances one pocket and dwells, whereupon the head again functions. When the ejectors 39 advance the cigarettes into the turret pockets, the cigarettes directly above any given row lot are held from moving by the end wall 14, and when the ejectors retreat, they are held from moving in the opposite direction by the covers 66 attached to the end of the gatherers 30. The covers 66 are provided with prongs 67 serving to guide the ejector plates 39. The seven cigarettes in the gatherer beneath the region A are delivered into the top section of the pocket, the six cigarettes in the gatherer beneath the region B passing into the center section of the succeeding pocket and the seven cigarettes in the gatherer beneath the region C passing into the lower section of the leading pocket. It will be seen that the pocket when in position under region A will receive seven cigarettes in its upper section and as the same pocket advances to region B its center section will receive six cigarettes and when advanced to region C its lower section will receive seven cigarettes, and thus the cigarettes will be assembled in a 7-6-7 arrangement as seen in Fig. 4.

When the pockets 34 arrive at their lower vertical position, the cigarettes therein are ejected by a plunger 68 provided with vertically spaced plates 69 adapted to engage the three rows of cigarettes and push the collected cigarettes through a mouthpiece 70 into the receiving chamber (not shown) of a compactor in which they are compressed into proper shape for packing, this operation being accomplished by conventional or otherwise suitable means. The plunger 68 is attached to an arm 71 sliding on rods 72 supported by a bracket 73 and pedestal 10. A stud 74 carried by arm 71 supports one end of a link 75 connecting to a cam actuated lever 76 mounted on pivot shaft 49, and it will be seen that ejectors 39 and 69 thus have the same actuator means and will therefore operate in unison.

A block 77 secured to the rods 72 supports a U-shaped channel 78 provided with spaced rods 79 adapted to guide the ejectors 69.

The invention above described may be varied in construction within the scope of the claims, for the particular device selected to illustrate the invention is but one of many concrete embodiments of the same. The invention therefore is not to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a cigarette packaging machine, a device for collecting cigarettes in rows from a supply comprising, a movable support; a casing adjustably mounted on said support; and a corrugated sheet metal partition mounted within said casing for separating said rows from one another and for maintaining the cigarettes making up said rows free from lateral displacement, said corrugated sheet metal partition being constructed and arranged so that the crests on one side of the corrugations are directly opposed to

the troughs on the other side of said sheet metal partition.

2. In a cigarette packaging machine, a device for collecting cigarettes in rows from a supply comprising, a movable support; a casing adjust-
ably mounted on said support; a corrugated sheet
metal partition mounted within said casing for
separating said rows from one another and for
maintaining the cigarettes making up said rows
free from lateral displacement, said corrugated
sheet metal partition being constructed and ar-
ranged so that the crests on one side of the cor-
rugations are directly opposed to the troughs on
the other side of said sheet metal partition; and
curved means, conforming to the sides of a ciga-
rette, constructed and arranged to engage the
cigarettes at the end of each row to prevent the
cigarettes making up the row from being later-
ally displaced and preventing damaging said end
cigarettes.

3. In a cigarette feed for a packaging ma-
chine, the combination with a bulk source of ciga-
rette supply, of a series of stationary passage-
ways below said source equal in number to the
entire number of cigarettes in a package, and
leading from said source to positions where the
cigarettes are to be gathered, means operating
successively at said positions to gather one ciga-
rette from each passageway in three row lots
corresponding in number and arrangement to
its eventual position in a package wherein there

are three superimposed rows having seven ciga-
rettes in each of the two outer rows and six ciga-
rettes in the middle row, means to transfer said
assembly bodily to a remote station for delivery
to packaging mechanism, said transfer means
comprising a turret provided with spaced col-
lecting devices each having three sections dis-
posed in a tier and each section being adapted
to receive a complete row lot, and a device for
delivering said row lots to three collecting de-
vices simultaneously, said pasageways being ar-
ranged so that the six cigarette row lot will be
horizontally disposed at its gathering position in
horizontal and vertical alignment with the mid-
dle section of one of said collecting devices and
the other two seven cigarette row lots will be
disposed in oppositely inclined relation in hori-
zontal alignment with the outer and inner sec-
tions of two collecting devices adjoining the de-
vice into which the six cigarette row lot is to
be inserted, and said seven cigarette row lots
being displaced radially of the turret with re-
spect to the six cigarette row lot to be in vertical
alignment with the outer and inner sections
of the collecting devices to which they are to be
delivered, and means to impart step by step ro-
tation to said turret to index at each step a group
of collecting devices corresponding to the total
set of row lots in an assembly for a package.

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