

(No Model.)

K. H. CARPER.

FILLER FORMING MECHANISM FOR CIGARETTE MACHINES.

No. 554,216.

Patented Feb. 4, 1896.

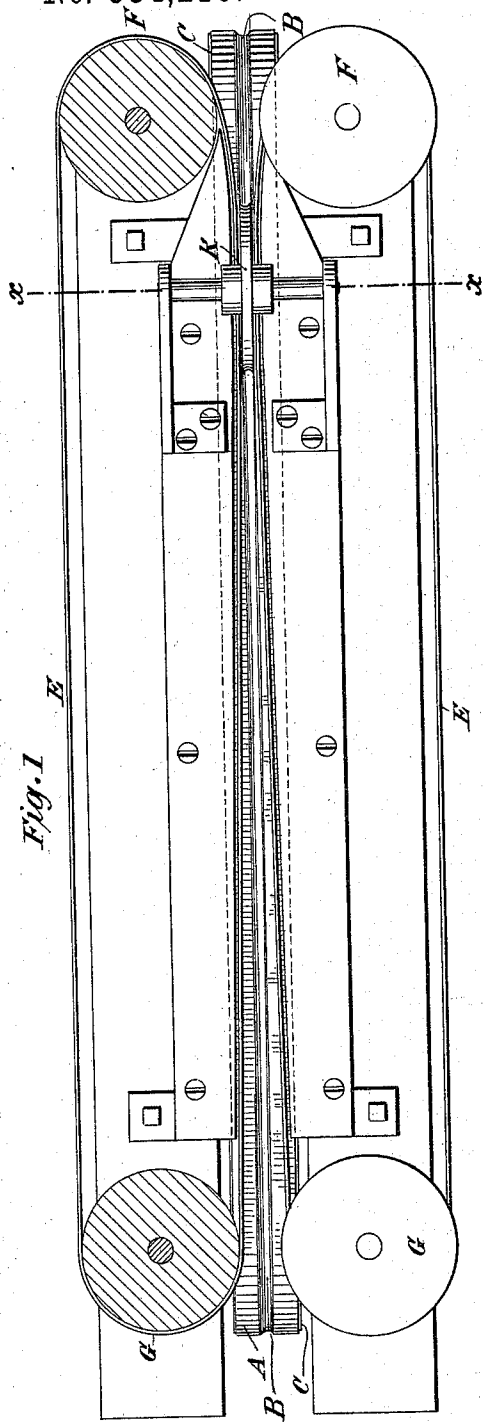


Fig. 1

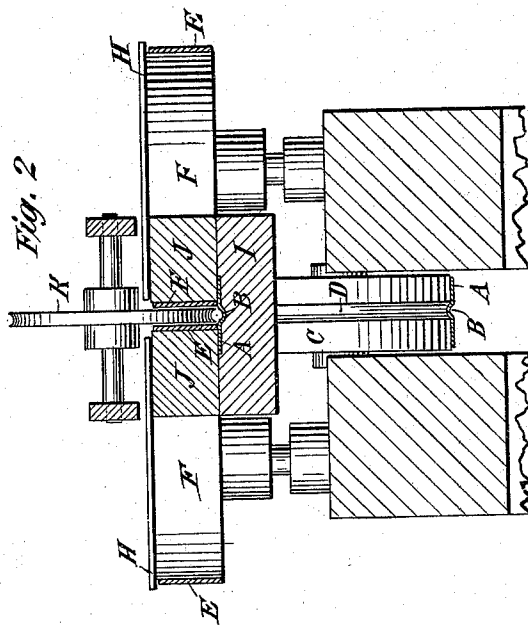


Fig. 2

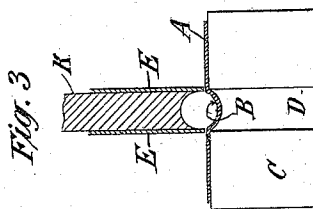


Fig. 3

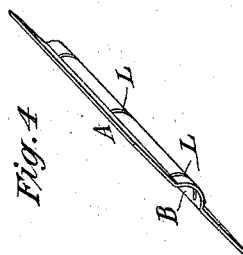


Fig. 4

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KENT H. CARPER, OF SALEM, VIRGINIA, ASSIGNOR TO THE BONSAK MACHINE COMPANY, OF SAME PLACE.

FILLER-FORMING MECHANISM FOR CIGARETTE-MACHINES.

SPECIFICATION forming part of Letters Patent No. 554,216, dated February 4, 1896.

Application filed February 19, 1895. Serial No. 538,953. (No model.)

To all whom it may concern:

Be it known that I, KENT H. CARPER, of Salem, in the county of Roanoke, in the State of Virginia, have invented a new and useful Improvement in Filler-Forming Mechanisms for Cigarette-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

The present invention relates to the filler-forming mechanism of machines for making continuous cigarettes and to the special class of the same which employ endless belts arranged to form an open trough, an instance of which is described and illustrated in United States Letters Patent No. 247,795, issued to James A. Bonsack and dated October 4, 1881. In this patent the trough or channel is formed of a plain bottom belt and two plain side belts which pass around suitable pulleys, the two side belts being arranged in vertical planes with their lower edges in contact with the upper surface of the bottom belt. The side belts are so guided that they converge toward each other as they pass from their rear to their forward pulleys, and at the point of their greatest convergence a grooved wheel is arranged to revolve in the open or top side of the trough to compress the tobacco. In operation, the tobacco, properly prepared, is delivered into the top of the trough in its rear end and is carried onward by the simultaneous movement of the belts and is gradually compressed by the convergence of the side belts and the grooved pressure-wheel, and brought into the form of a filler to receive the wrapper.

It will be seen from the above description that the vertical side belts and the horizontal bottom belt form three sides of a rectangular tapered trough or channel having square bottom corners, and this construction in its operation gives to the tobacco when compressed into a filler a corresponding shape in cross-section upon its lower half, while its upper half is rounded by the operation of the grooved pressure-wheel. The square or semi-square shape given to the filler is less desirable than a round or cylindrical shape, inasmuch as it is more difficult to properly apply

the wrapper thereto, and the completed cigarette by reason of its irregular shape is lacking in symmetry.

It is the object of the present invention to give to the bottom portion of the filler a rounded shape, and at the same time to preserve as nearly as possible the construction of endless belts and the parts immediately connected therewith, substantially as set forth in the said Bonsack patent. To accomplish this result, I make no change in the side belts, but form a rounded groove in the lower belt, which will have such relation to the side belts that at the greatest point of their convergence the rounded groove or depression of the bottom belt will give to the lower part of the filler a rounded or circular shape, while a suitably-shaped pressure device operating above the groove of the bottom belt and between the side belts will give a rounded or circular shape to the upper portion of the filler. The pulleys over which the bottom grooved belt runs are preferably grooved to correspond with the groove in the belt. The belts are made of thin steel, brass or other metal, and must be sufficiently flexible to pass around their pulleys, and the groove in the bottom belt may be formed by the well-known operation of spinning or in any other suitable manner.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the filler-forming mechanism of a cigarette-machine. Fig. 2 is a vertical cross-section through the line xx of Fig. 1. Fig. 3 is an enlarged view of certain parts shown in Fig. 2, and Fig. 4 is a perspective view of the bottom belt whose groove-wall is provided with transverse slits.

In the drawings, A represents the bottom belt provided with a concave rounded groove B, which passes around pulleys C C, which are provided with grooves D, corresponding with the groove of the belt.

E E are two plain side belts which pass around forward pulleys, F F, and rear pulleys, G G. These belts converge toward each other from their rear pulleys toward the front ones and thus form, in conjunction with the bottom belt, A, a tapering channel or trough whose top is open for a considerable distance

in advance of the rear pulleys to permit of the delivery of the tobacco therein.

The pairs of pulleys F and G are preferably provided with flanges H upon their upper edge faces to keep the lower edges of the belts E E in contact with the surface of the lower belt, A. An abutment or foundation-piece I is shown beneath the bottom belt, which is preferably grooved to correspond to the groove in the belt, and abutments or backing-pieces J are shown outside of the inner limb of the side belts for the purpose of guiding and holding these belts in proper relation to each other and to prevent them from yielding under the downward and outward pressure of the tobacco.

A pressure-wheel K is located at or near the point of greatest convergence of the side belts E E. This wheel is preferably grooved to give a rounded or cylindrical shape to the upper part of the filler as the tobacco is fed past this point. The periphery of this wheel revolves within the trough and near enough to the bottom thereof to form a filler of the desired diameter, and it is mounted in any desired manner to the frame of the machine and is preferably driven by the friction of the advancing filler against its periphery.

The pulleys over which the bottom and side belts pass may be supported upon the frame of the machine as shown in Fig. 2 of the drawings, and may be driven through any suitable connections with the main shaft or driving-pulley of the machine. In the said Letters Patent No. 247,795, above referred to, Fig. 3 shows the rear pulleys of the side belts as driven by beveled gears formed on their lower edges, which mesh with correspondingly beveled gears formed on the opposite edges of the face of the bottom belt-pulley, while the latter is driven by beveled gear connections with the shaft G³, as shown in Figs. 3 and 4 of said Letters Patent.

It will be observed from the above descriptions and the explanation of the accompanying drawings that the filler is formed or completed at the point shown in Figs. 2 and 3, where the lower edges of the side belts run along the edges of the groove B of the bottom belt, and the grooved pressure-wheel K operates to press the tobacco down into this groove and against the side belts, thus rounding the filler upon its bottom as well as upon its top portion.

If necessary to relieve the strain upon the bottom belt due to the presence of the groove therein as this belt passes round its pulleys, I form narrow slits L across the wall of the groove, as shown in Fig. 4. These slits permit the portions of the wall of the grooves on each side of the slits to come close together as the belt passes over its pulleys, and relieves the strain to which it would otherwise be subjected. The slits should be near enough together to accomplish this purpose and at the same time should be sufficiently narrow to prevent the fibers of tobacco from entering them when the tobacco receiving and carrying portion of the belt is running in nearly a horizontal plane.

Inasmuch as this invention relates solely to mechanism for forming the tobacco into a continuous filler or rod, it is obvious that it is immaterial what means or devices may be employed to prepare the tobacco and deliver it into the tapered channel or trough formed by the belts, or what devices may be employed to apply and secure the wrapper to the formed fillers, or to cut the continuous cigarette into marketable lengths, and, therefore, I do not wish to limit my invention to the use of any special means or devices for performing any of these operations.

What is claimed as new is—

1. In a filler-forming mechanism of a cigarette-machine, the combination substantially as set forth, of an endless grooved bottom belt of thin metal, correspondingly grooved pulleys over which the belt passes, two endless converging side belts and a grooved pressure-wheel operating to press down the tobacco between the side belts, whereby there is formed a tobacco feeding and compressing channel or trough with a rounded bottom and a device to round the top section of the filler.

2. In a filler-forming mechanism of a cigarette-machine, the combination substantially as set forth, of an endless grooved bottom belt of thin metal, the wall of whose groove is provided with narrow slits, two endless converging side belts and a pressure device operating to press down the tobacco between the side belts, for the purpose described.

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Witnesses:

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