No. 647,174. Patented Apr. 10, 1900.

W. BAGGULEY.

MECHANISM FOR CUTTING CIGARETTES.

(Application filed Feb. 28, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

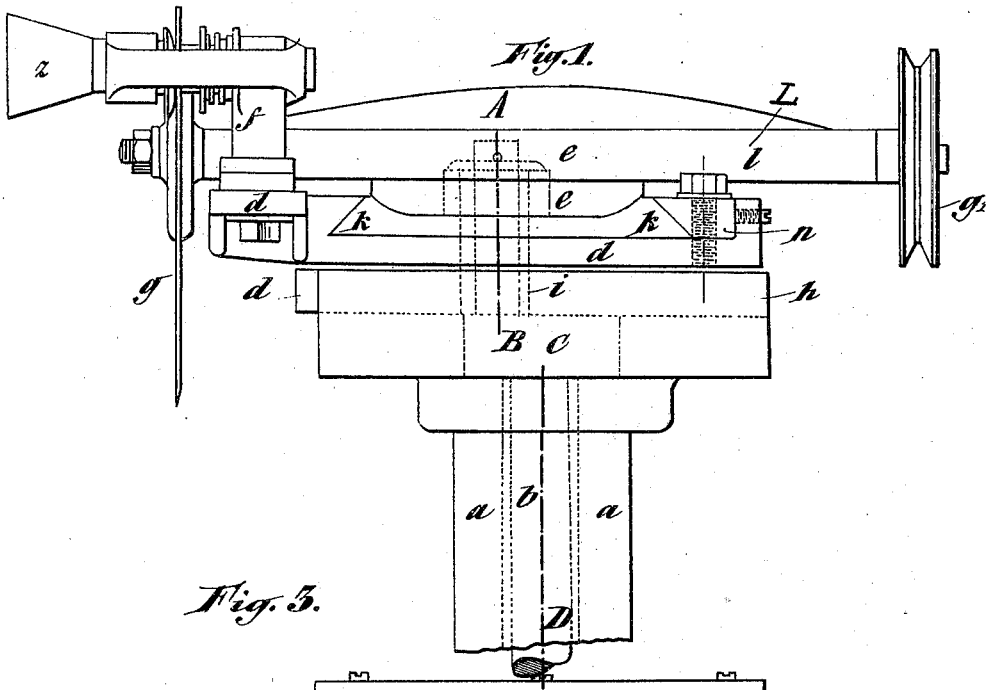
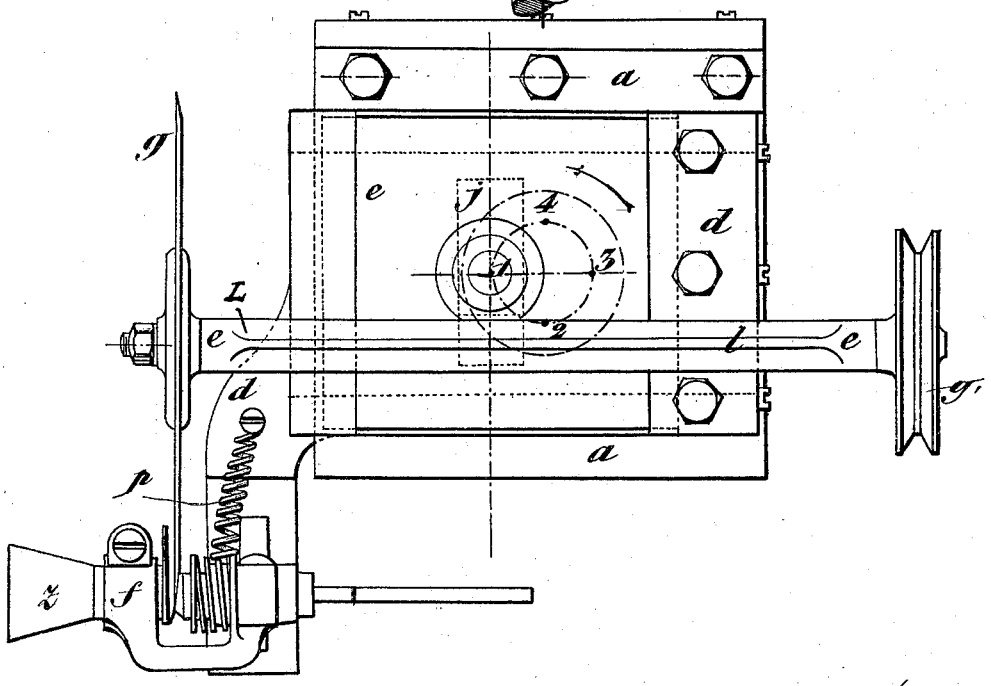


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

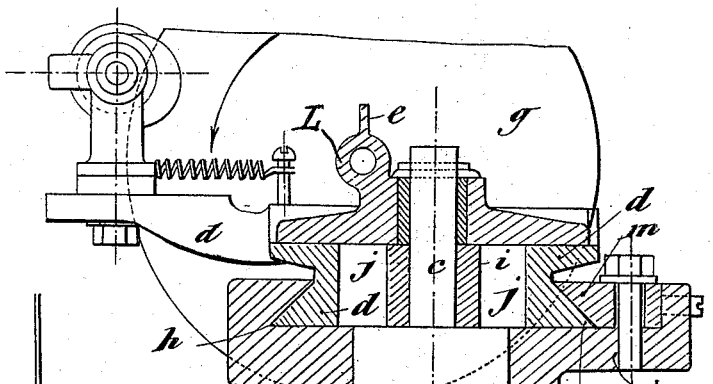


Fig. 4.

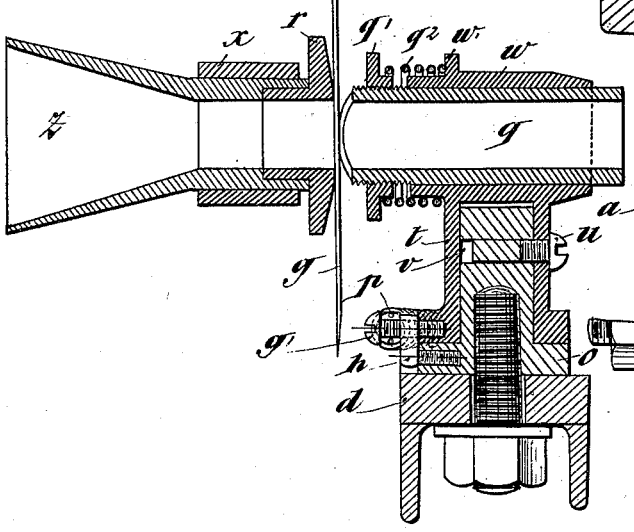
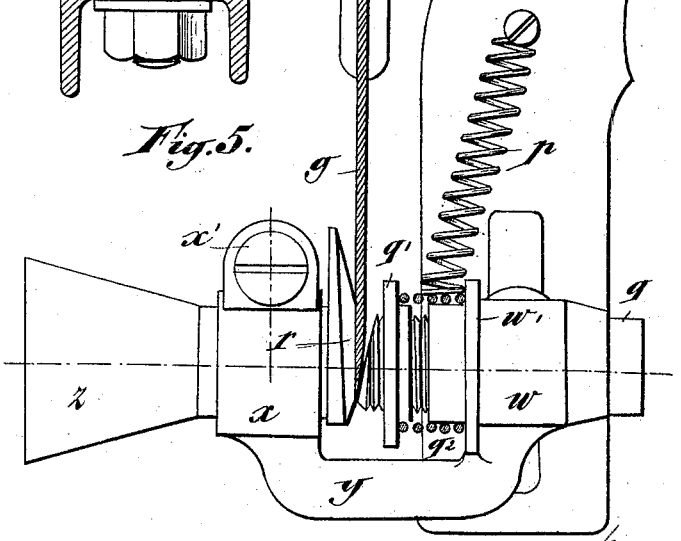


Fig. 5.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR CUTTING CIGARETTES.

SPECIFICATION forming part of Letters Patent No. 647,174, dated April 10, 1900.

Application filed February 28, 1899. Serial No. 707,140. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BAGGULEY, a British subject, residing at Brussels, Belgium, have invented new and useful Improvements in Mechanism for Cutting Cigarettes to the Desired Length in Cigarette-Making Machines, (for which I have applied for patents in Belgium, No. 137,310, bearing date August 9, 1898; in Italy, No. 101/27, bearing date August 12, 1898, and in Great Britain, No. 2,552, bearing date February 4, 1899,) of which the following is a specification.

This invention relates to cigarette-making machines that produce a continuous cigarette which is cut into sections of the desired length before it leaves the machine, and according thereto mechanism is provided which causes the knife to follow the continuous movement of the cigarette while it is cutting the latter into sections, so as to prevent the tearing of the paper, and means are also provided for preventing the breakage of the knife or of any other part of the machine if a hard body—such as a nail, for example—be inclosed in the cigarette where it is to be cut to the proper length by the knife.

In order to enable the invention to be well understood, I shall describe it with reference to the accompanying drawings, in which—

Figure 1 is a front elevation of mechanism for operating the knife and means for preventing the breakage of the latter according to this invention. Fig. 2 is a section corresponding to the lines A B C D of Fig. 1. Fig. 3 is a plan of the apparatus shown in Fig. 1; and Figs. 4 and 5 are respectively a vertical section and a plan of the protecting means drawn to a larger scale than Figs. 1, 2, and 3.

a is a support or framing fixed to the machine and provided with two guide-grooves *h*, of V shape, which are parallel to the axis of the cigarette and in which there moves a carriage *d*, the lower part of which fits exactly therein, while its upper part is provided with two other guide-grooves *k*, of V shape, whose axis is perpendicular to that of the guides *h* and to that of the cigarette. In the guide-grooves *k* there moves a carriage *e*, whose lower part fits exactly in these grooves. This carriage *e* is provided with a sleeve L, which is horizontal and parallel to the axis of the cigarette and in which turns the axle that carries the circular knife *g* and to which a rotary movement is imparted by a pulley *g'*. The inclined walls of one of the guide-grooves *h* and one of the guide-grooves *k* are formed by wedges *m* and *n*, which can be adjusted by means of screws and which enable corrections to be made for the wear of the walls of the guide-grooves *h* and *k* and of the carriages *d* and *e* without taking the machine to pieces.

The support or framing *a* is cast so as to form a sleeve or a socket, in which rotates, in the direction indicated by the arrow in Fig. 2, a crank-shaft *b*, whose crank-pin *c* transmits its motion to the two carriages *d* and *e*. This movement is transmitted to the carriage *d* through the medium of a roller *i*, that is movable in a groove *j*, cut in this carriage, to which it imparts a to-and-fro movement parallel to the axis of the cigarette and equal to the total travel of the crank-pin *c*. The carriage *e*, fitting in the guide-grooves *k*, formed in the carriage *d* and perpendicular to the guides *h* in the latter, will consequently follow the movement of the carriage *d*; but the carriage *e*, being likewise traversed by the crank-pin *c*, receives from the latter a to-and-fro movement in its guide-grooves *k* independent of the movement of the carriage *d* and perpendicular both to the latter movement and to the axis of the cigarette.

The combination of the two perpendicular to-and-fro movements of the carriage *e* produces a regular circular movement thereof equal to the axis of motion of the crank-pin *c*, as indicated by broken lines in Fig. 3.

The carriage *d* is provided with an arm which carries the apparatus *f*, through which the continuous cigarette passes freely in order to be cut into sections by the knife *g* before passing out of the machine. This apparatus *f* thus follows the to-and-fro movement of the carriage *d* parallel to the axis of the cigarette. The circular knife *g*, whose axle is carried by the carriage *e*, thus follows the movement of the latter while turning on its own axis as the result of the movement which is imparted to its axle by the pulley *g'*.

In the drawings the mechanism is shown with the parts in the position that they occupy at the moment when the knife is about to come into contact with the cigarette for

the purpose of cutting it. At that moment the axis of the crank-pin *c* occupies the point marked 1 in Fig. 3. When the pin *c* continues its revolution toward the point 2, the carriage *e* moves nearer to the apparatus *f* and the knife *g* enters the space between the two tubular sections of the said apparatus and comes against the cheek *r*, with which it forms shears, to cut the cigarette during its continuous travel in the apparatus *f* without exerting any momentary stopping effect upon it which would damage it. The cutting of the cigarette is terminated when the crank-pin *c* reaches the point 2, and as it continues its revolution toward the point 3 the knife moves out of the tube of the apparatus *f* while continuing to move forward therewith. From the point 3 the carriages *d* and *e* are moved back in their guides by the continuation of the revolution of the pin *c*, the apparatus *f* returning with the carriage *d* and the cigarette continuing its continuous movement in the tube of the said apparatus. The knife is thus brought back to the point shown in the drawings, and when it again enters the apparatus *f* the cigarette has advanced exactly to the length required to insure that the section which it will cut off will be equal to the sections that have been previously cut, each of which constitutes a cigarette ready to be distributed outside the apparatus.

As will be seen better from Fig. 4, the arm of the carriage *d* carries a stud *o*, upon which is simply placed the apparatus *f*, of which an extension *t* of socket shape fits exactly upon the part *o*, which forms a pivot. A screw *u*, extending through the wall of the socket *t*, enters an annular groove *v* in the pivot *o* and prevents the apparatus *f* from shifting vertically, while leaving it free to turn on the pivot *o*.

The socket *t* of the apparatus *f* is connected to the carriage *d* by means of a coiled spring *p*, which is attached at one end to the arm of the carriage *d* and at the other end to a screw *g'*, fixed in the socket *t*. The tension of this spring is such that the friction of the knife against the cheek *r* during the cutting will not have any effect upon it; but if in cutting the cigarette the knife meet a nail or other hard body in the tobacco, as is frequently the case, then if it bear upon the same and cannot cut it it will push it back and the effort exerted will have the result of tensioning the spring *p* and causing the apparatus *f* to turn on the pivot *o*, whereby the knife will be allowed to continue its course without cutting the cigarette and without breaking, and when the knife will have become disengaged from the apparatus *f* the spring will while becoming untensioned, return the apparatus into its normal position. A stop *h'*, which is fixed to the pivot *o*, Fig. 4, and against which the screw *g'* strikes, stops the rotation of the apparatus *f* at the desired point.

The apparatus *f* comprises two sockets *w* and *x*, connected together by a part *y* and bored coaxially. The socket *x* embraces a funnel *z*, which is intended to facilitate the introduction of the cigarette and to which the cheek *r* is fixed. The socket *x* is formed with tightening-lugs *x'*, which enable the position of the cheek *r* to be adjusted relatively to the knife *g*. The socket *w* surrounds a tube *q*, which is capable of moving longitudinally therein. Upon the tube *q* there is screwed a collar *q'*, and the socket *w* is formed with a corresponding collar *w'*. Between these two collars a spring q^2 is placed around the socket *w* and the tube *q*. By screwing the collar *q'* more or less on the tube *q* the force of the spring q^2 may be adjusted in such a manner that the tube *q* will offer the desired slight resistance to the introduction of the knife *g* between the end of the tube *q* and the cheek *r*, when it will enter the apparatus *f* to cut the cigarette.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for making cigarettes producing a continuous cigarette which is cut by a knife into sections of the desired length, the combination with the said knife of a stationary framing or support having guide-grooves formed therein parallel to the axis of the cigarette, a carriage fitted into and capable of sliding in the said grooves and in which carriage are formed guide-grooves at right angles to the said grooves in the framing, an arm on said carriage carrying the apparatus through which the cigarette passes to be cut into sections by the knife, a carriage which carries the axle of the knife fitted into and capable of sliding in the grooves in the first-mentioned carriage, a crank-shaft turning in the framing, and a crank-pin on said crank-shaft extending through the two carriages, substantially as hereinbefore described and shown in the accompanying drawings.

2. In a machine for making cigarettes producing a continuous cigarette which is cut by a knife into sections of the desired length, the combination with the said knife, of a framing, a support for the axle of said knife carried by said framing, an arm on said support, an upright pivot carried by said arm, an apparatus through which the cigarette passes to be cut into sections by the knife, said apparatus being freely mounted on said upright pivot whereby it can swing laterally and a spring connecting said apparatus to said support, said knife being adapted to approach and recede from said apparatus laterally, substantially as hereinbefore described and shown in the accompanying drawings.

3. In a machine for making cigarettes producing a continuous cigarette which is cut by a knife into sections of the desired length, the combination with the said knife, of a stationary framing or support having guide-grooves formed therein parallel to the axis of the cigarette, a carriage fitted into and capable of sliding in the said grooves, an arm on

said carriage, a pivot carried by said arm, an apparatus through which the cigarette passes to be cut into sections by the knife, said apparatus being freely mounted on said pivot, a spring connecting said apparatus to said carriage, a carriage which carries the axle of the knife fitted into and capable of sliding in the grooves in the first-mentioned carriage, and a crank-shaft turning in the framing and a crank-pin on said crank-shaft extending through the two carriages for transmitting a to-and-fro motion to the two carriages in their respective grooves, substantially as hereinbefore described and shown in the accompanying drawings.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM BAGGULEY.

Witnesses:
H. T. E. KIRKPATRICK,
GREGORY PHELAN.