(No Model.)

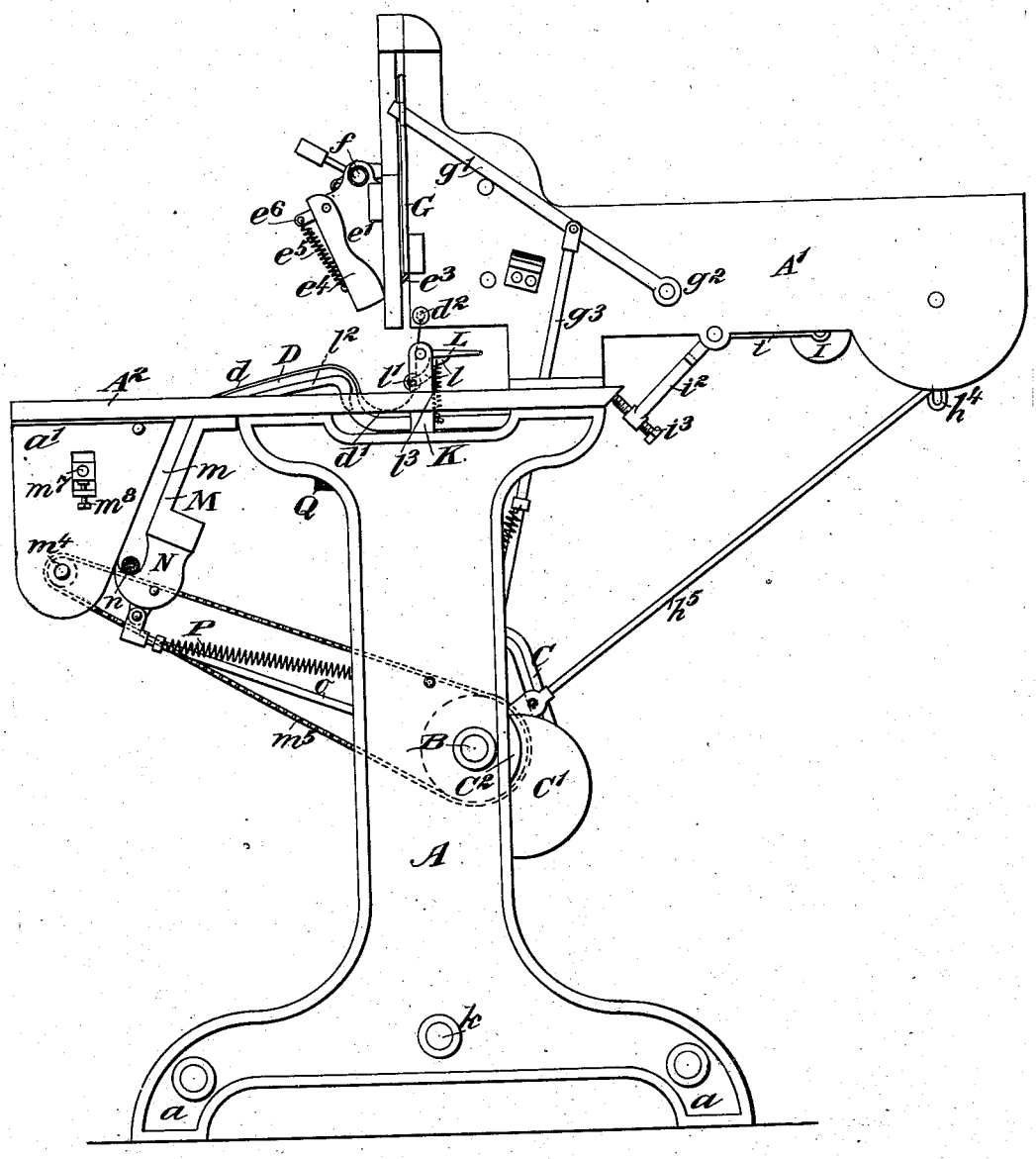
3 Sheets—Sheet 1.

J. H. DUNN.

CIGARETTE MACHINE.

No. 565,967. Patented Aug. 18, 1896.

Fig. 1.



Witnesses.
H. B. Edwards.
George Barry Jr.

Inventor. James H. Dunn.
by attorneys. Brown & Edwards.

(No Model.)

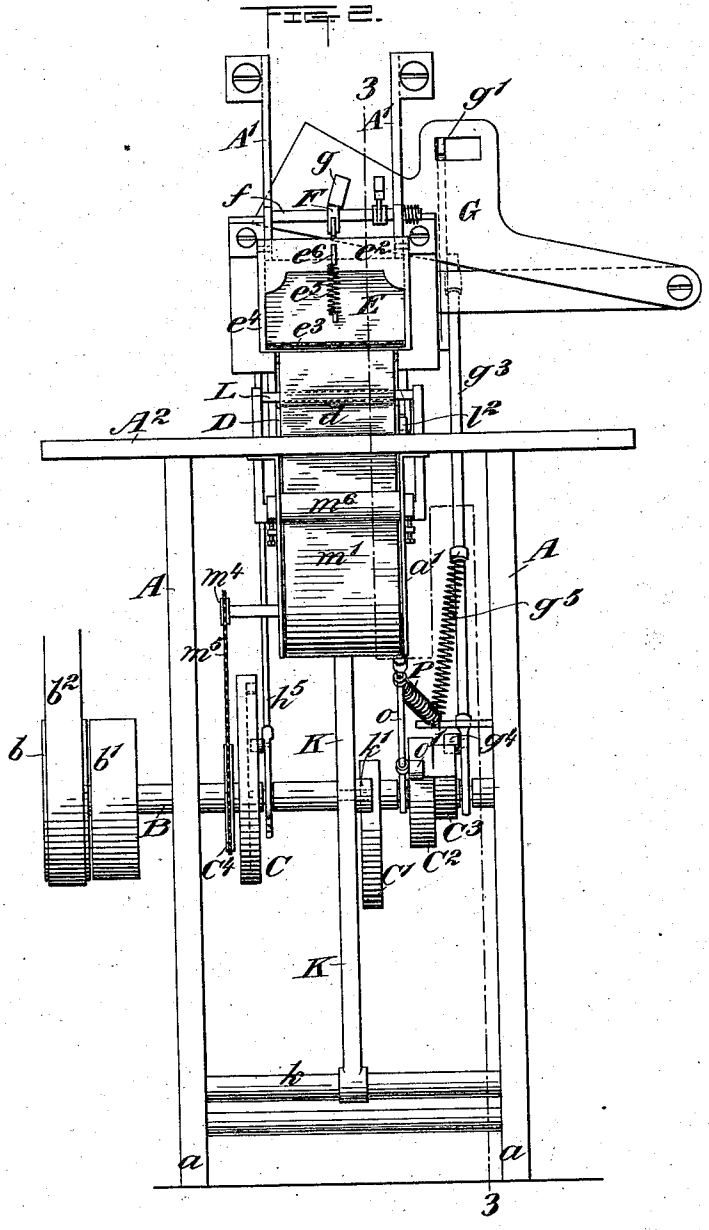
3 Sheets—Sheet 2.

J. H. DUNN.

CIGARETTE MACHINE.

No. 565,967. Patented Aug. 18, 1896.

FIG. 2.



Witnesses.
R. B. Seward
George Barry Jr.

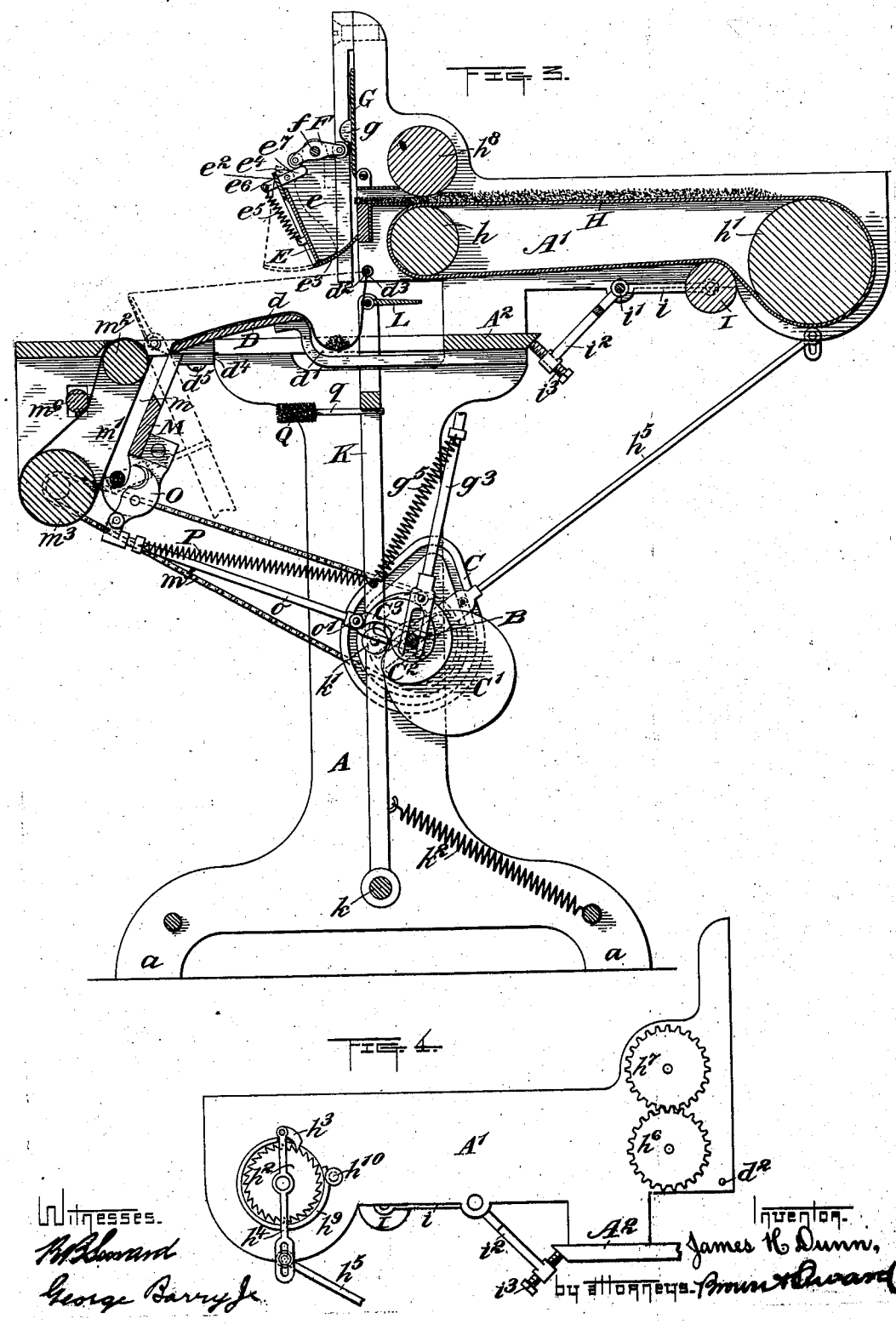
Inventor. James H. Dunn,
by attorneys. Brown & Seward

(No Model.) 3 Sheets—Sheet 3.

J. H. DUNN.

CIGARETTE MACHINE.

No. 565,967. Patented Aug. 18, 1896.



UNITED STATES PATENT OFFICE.

JAMES H. DUNN, OF NEW YORK, N. Y., ASSIGNOR TO HERMAN MANDELBAUM, OF SAME PLACE.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 565,967, dated August 18, 1896.

Application filed March 6, 1896. Serial No. 582,030. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. DUNN, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Cigarette-Machines, of which the following is a specification.

My invention relates to an improvement in cigarette-machines in which provision is made for automatically separating a filler from a supply, rolling it within the wrapper, and trimming the rolled cigarette.

The object is to simplify the mechanism for accomplishing the above-named results and to so arrange the operative parts that the machine will be compact and capable of being attended without requiring special skill of the operator.

In the accompanying drawings, Figure 1 is a view of the machine in side elevation. Fig. 2 is a view in front elevation. Fig. 3 is a view in vertical section from front to rear along the plane of the line 3 3 of Fig. 2; and Fig. 4 is a partial view in side elevation at the opposite side from that shown in Fig. 1, and reversed as to the positions of front and rear.

The framework of the machine consists of a pedestal A, supported upon legs *a* and surmounted by a rearward extension A' for the support of the feed mechanism and by a top plate A^2 for supporting the rolling-table and supporting a hanger *a'*, in which the drums or rollers for the finishing-belt are mounted.

The main shaft from which motion is transmitted to the several parts of the machine is denoted by B, and is provided with fast and loose pulleys *b b'*, of any well-known or approved form, for the reception of a driving-belt b^2 leading to a source of power. (Not shown.) The shaft B is provided with a cam C for actuating the feed, a cam C' for effecting the primary rolling of the cigarette, a cam C^2 for effecting the trimming of the cigarette, a cam C^3 for operating the knife which severs the filler from the supply, and a wheel C^4 for operating the secondary or finishing rolling.

The rolling-table on which the primary rolling of the cigarette takes place is denoted by D, and over it extends the rolling-apron *d*, fixed at one end to the front of the table D and extending thence over the table and down into a depression *d'* at the rear of the table, thence upwardly to a rod d^2 engaged with the frame A', where its opposite end is fixed. The rolling-apron *d* is made readily detachable from the machine, for purposes of renewal or cleaning, by having its rear end provided with a loop d^3, through which the removable rod d^2 passes and which latter has its ends engaged with the sides of the supporting-frame A'. The opposite end of the apron *d* is held fast between the under side of the table D and a clamping-block d^4, which may be adjusted to and from the table D by means of a set-screw d^5.

Above the depression *d'*, in which the apron naturally falls into the position shown in Fig. 3 to receive the filler from the supply, there is located a permanent front plate E, having sides *e e'* and a swinging bottom, sides, and top e^3 e^4 e^2, respectively, which, together with the front plate E and its sides, form a receptacle of a blunt V shape at its bottom in cross-section for the charge of material which is to form the filler. The bottom e^3 of this receptacle is located intermediate between the plane on which the tobacco which is to form the filler is fed and the rolling-apron, and serves the purpose of leveling the charge which is to form the filler and permitting it, when the bottom e^3, together with the sides e^4, are swung away toward the front into the position shown in dotted lines, to fall in a compact evenly-distributed mass into the open loop in the apron. A spring e^5, fixed at one end to the front of the plate E and at its opposite end to an arm e^6, projecting forwardly from the swinging top e^2, serves to hold the bottom and sides in their rearward position to complete the receptacle for the filling-charge of tobacco, and these parts are positively swung forwardly to drop the charge into the loop in the apron by means of a trip-lever F fixed to a spring-actuated rock-shaft *f*, one arm of said lever being in position to engage a rearwardly-extending arm e^7 on the swinging top e^2 of the receptacle to open the receptacle, and the other arm of which is in position to engage an operating-nose *g* fixed

to reciprocate with the knife G which severs the charge of tobacco from the supply.

The knife G is mounted to reciprocate vertically in the front portion of the frame A', and is operated by the free end of a lever g', pivoted to the frame A' at g^2, and connected by a rod g^3 with the cam C^3 on the shaft B. The cam C^3, by its engagement with the connecting-rod g^3, serves to lift the rod, and hence the lever g' and hence the knife, until the laterally-extending stud or roller g^4 on the rod g^3 reaches the ledge on the cam, when the said rod and the knife G connected therewith are caused to suddenly drop by means of their own weight and the tension of the actuating-spring g^5, connected with the rod g^3 and with the fixed support upon the pedestal A.

The supply of material to form the fillers is fed to the knife G by means of an endless apron H, carried by drums or rollers h h' mounted in the frame A'. The drum or roller h' is operated by means of a ratchet-wheel h^2 fixed on its shaft, (see Fig. 4,) which ratchet-wheel is operated upon by a pawl h^3, carried by a vibrating arm h^4 mounted concentric with the axis of the roller h'. The vibrating arm h^4 has a slot-and-pin connection, of any well-known or approved form, with a connecting-rod h^5, which leads to the cam C on the main shaft B, by which the arm h^4 is vibrated at suitable intervals to advance the apron H carrying the supply forward to be severed by the knife G.

The vibrating arm h^4 is given a throw to move the pawl h^3 the full distance which will be required for the greatest charge of filler that may be desired, and its effective action in turning the ratchet-wheel h^2 is limited at pleasure to make the feed, and hence the charge, less than the greatest amount by means of a circular curved guard h^9, having a screw h^{10} engaged therewith and with the supporting-frame A' in such a manner that the guard h^9 may be slipped in one direction or another around the periphery of the ratchet-wheel h^2 to protect more or less of the ratchet-teeth from the action of the pawl h^3, as may be desired.

The drum or roller h has fixed to rotate therewith a gear-wheel h^6, which intermeshes with a gear-wheel h^7 fixed to rotate with the compression-roller h^8, which serves to compress the supply of tobacco into a flat compact sheet before it reaches the path of the knife G. The apron H is kept at a suitable tension by means of a tightening-roller I carried in the free end of an arm i of an angle-lever pivoted to the frame A' at i', the opposite arm i^2 of said lever having engaged therewith a set-screw i^3, bearing at its free end against the top A^2 of the supporting-frame, and so that by turning the screw in or out of the roller I may be forced toward or away from the apron H to tighten or loosen it.

The rolling-apron D is operated to roll the cigarette, after the filler has been dropped therein and the wrapper laid thereon, by the following mechanism: A vibrating arm K is pivotally secured at its lower end at k to the pedestal A and extends upwardly to a point to the rear of the rear portion of the apron D, where it is provided with a rocking compressor L, pivoted thereto. The vibrating arm K is provided intermediate of its pivotal point and the compressor with a laterally-extending stud carrying an antifriction-roller k', which is located in position to bear against the cam C', which, as the shaft B is revolved, forces the arm K forwardly, carrying the presser L along over the rolling-table D. The arm is retracted by means of a spring k^2. The compressor L bears normally against the belt, as shown in Fig. 3, near the pintle on which it rotates, but as it is advanced by the arm K it is rocked into an upright position (shown in dotted lines in Fig. 3) by the engagement of an arm l (see Fig. 1) extending at an angle to the compressor L and preferably carrying on its end an antifriction-roller l', which engages the track l^2 at the side of the table D, so that the slack of the rolling-apron is taken up, and, when the arm K finally reaches the position shown in dotted lines in Fig. 3, the pocket in the rolling-apron, which originally contained the filler in which the wrapper was finally rolled around the filler, will be straightened out and the cigarette, having undergone its primary rolling to place the wrapper around the filler, will be ejected from the apron into a downwardly-slanting passage-way m between a slanting fixed plate M and the face of the secondary or finishing rolling-apron m'. The compressor L is retracted by means of a spring l^3 when its arm l is disengaged from the track l^2 as the arm K is returned.

The secondary or finishing rolling-apron is mounted upon drums or rollers m^2 m^3, the latter having fixed to rotate therewith a sprocket-wheel m^4, which is connected by a chain m^5 with the wheel C^4 on the shaft B. The apron m' is tightened and loosened, as may be desired, by means of a tightener-roller m^6, mounted in sliding boxes m^7 carried by the hanger a', and adjusted by means of screws m^8.

As the cigarette passes from between the plate M and the apron m', it is received at or near its ends upon the curved edges n of stationary blades N, and while so supported its ends are trimmed squarely off by means of rocking blades O, pivoted to the stationary blades N so that their cutting-edges shall coact as the blades are rocked with the edges n of the stationary blades. The rocking blades O are actuated to effect their cut by means of a spring P, connected at one end with the shank of the blade O and at the opposite end to a suitable support upon the pedestal A. The blade O is retracted and held in its position away from the cutting-edge of

the stationary blade, as shown in Fig. 3, by means of a rod *o*, connected at one end to the shank of the blade and at the opposite end provided with a laterally-projecting stud *o'*, preferably provided with an antifriction-roller which bears against the snail-cam C^2. As the stud *o'*, passes the outer edge of the ledge on the snail-cam C^2, the spring P is permitted to suddenly act and throw the cutting-blade O forward to cut, while the stud *o'* is promptly brought into engagement with the cam, which again gradually forces the blade O back out of the way of the next succeeding cigarette.

As the ends of the cigarette are trimmed by the rocking blades O, the completed cigarette falls from the knives into a suitable receptacle, to be removed at pleasure.

For the purpose of keeping the edges of the cutting-blades O and N free from gum and in condition to do their work perfectly, I provide for wiping off any foreign substance which may accumulate upon them as follows: A brush Q is fixed to a suitable support *q* extending forwardly from the arm K and so arranged that as the arm K advances to effect the primary rolling operation the brush Q will be forced between the cutting-blades located at the opposite ends of the cigarette and rubbing against them with sufficient friction to thoroughly clean them at each advance movement of the arm K.

The operation of the machine is as follows: The parts being in the position shown in full lines in Figs. 1 and 2, as the cam C is further rotated to carry the rod h^5 to the limit of its rearward movement it will advance the supply of tobacco on the feed-apron H, so that the charge will project in front of the path of the cutting-edge of the knife G. At this moment the cam C^3, which operates the knife G, has reached the point where the rod g^3 is permitted to drop from the periphery toward the center of the cam, and the blade G will fall, severing a sufficient quantity of tobacco from the supply to form one filler. As the blade G descends, the nose *g* on its face will pass idly by the lever F. The return movement of the blade G will rock the lever F, by the engagement of the nose *g* therewith, in a direction to swing the sides and bottom e^4 e^3 of the temporary receptacle for the filler toward the front, thereby permitting the charge within the temporary receptacle to fall into the pocket formed in the rolling-apron within the depression *d'* of the table. As soon as the filler is adjusted on the rolling-apron, the arm K, carrying the compressor L, is advanced by the cam C', thereby closing the apron *d* around the filler, and, the wrapper having been laid upon the belt *d* before the advance of the arm K, the said wrapper will be tightly rolled about the filler as the latter is carried along within the loop in the apron over the stationary table D. The apron *d*, as soon as the rolling action begins, is tightened by the rocking of the compressor L into an upright position, and is so held until the arm K reaches the limit of its forward stroke, (shown in dotted lines in Fig. 3,) at which moment the cigarette will be ejected from the loop in the apron *d* into the passage-way between the secondary rolling-apron *m'* and the plate M. After passing between the said apron and plate and receiving its finishing rolling, it will rest upon the stationary blades N. As the arm K is advanced it carries the brush Q forwardly into engagement with the trimming-blades, and as it begins its rearward movement while the cigarette is being rolled between the apron *m* and the plate M, the brush is carried back from its wiping position and the movable trimming-blades O are promptly operated to trim the cigarette by the action of the cam C^2, which, just after the cigarette is dropped onto the stationary blades, reaches a position which permits the rod *o* to drop from the periphery toward the center of the cam under tension of the spring P.

The timing of the parts is such that while the primary rolling action is taking place on the table D a previously-rolled cigarette is being trimmed by the blades N O and the supply is being fed rearward and a charge to form the filler severed and deposited in the temporary receptacle. The temporary receptacle is opened and the filler deposited in the pocket in the apron *d* just as the arm K reaches the limit of its rearward stroke, and the previously-gummed wrapper may be placed on the apron *d* on the table D at any moment after the arm K has receded to lay the apron *d* on the table and before it is advanced, so as to bring the closed loop in the apron into engagement with it.

What I claim is—

1. The combination with the feeding and rolling mechanism, the knife for severing the filler from the supply as it is fed and means for operating the feeding and rolllng mechanism and the knife, of a temporary receptacle for the filler, the said receptacle having a stationary front and a swinging bottom and means under the control of the knife for swinging the bottom along the lower edge of the stationary front to crowd the filler against the stationary front and finally permit it to drop into engagement with the rolling mechanism, substantially as set forth.

2. The combination with the feeding and rolling mechanism, the knife for severing the filler from the supply as it is fed and means for operating the knife, of a temporary receptacle for the filler comprising a permanent front plate, a swinging bottom, sides and top hinged to the front plate, a forwardly-extended arm carried by the swinging parts, a spring between the said arm and the permanent front plate for normally holding the swinging bottom closed, a rearwardly-extended arm, an operating-nose carried by the knife and a trip-lever adapted to be engaged by

the nose and to engage the rearwardly-extended arm for swinging the bottom forwardly to release the filler from the receptacle, substantially as set forth.

3. The combination with the rolling mechanism and the trimming-blades, of a wiper under the control of the rolling mechanism to free the trimming-blades from foreign substances and means for operating the rolling mechanism, the trimming-blades and the wiper, substantially as set forth.

4. The feeding mechanism comprising an apron for carrying the substances to be fed, a ratchet-toothed wheel for actuating the apron, a vibrating arm carrying a pawl for engaging the ratchet-wheel and a guard consisting of a segment of an annular ring surrounding a portion of the periphery of the ratchet-toothed wheel and means for clamping the guard in different fixed positions around the periphery of the ratchet-wheel to expose more or less of the ratchet-teeth to the pawl, substantially as set forth.

5. The cigarette-machine, comprising a suitable support, a feed mechanism, means for separating the filler from the supply advanced by the feed mechanism, a primary rolling mechanism, a secondary rolling mechanism, a trimming mechanism, a wiping mechanism, a single driving-shaft mounted in a supporting-frame and direct connections between the several aforesaid mechanisms and the single driving-shaft for operating the said mechanisms at suitable intervals, substantially as set forth.

JAMES H. DUNN.

Witnesses:
FREDK. HAYNES,
R. B. SEWARD.