

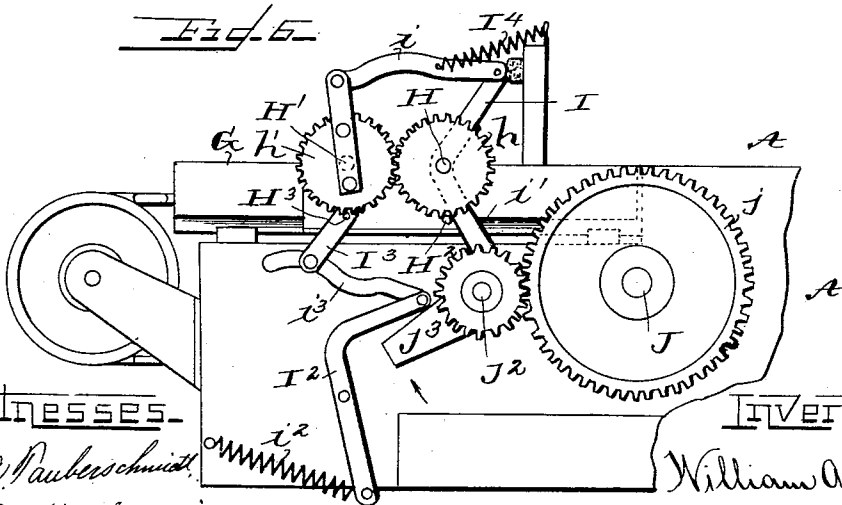
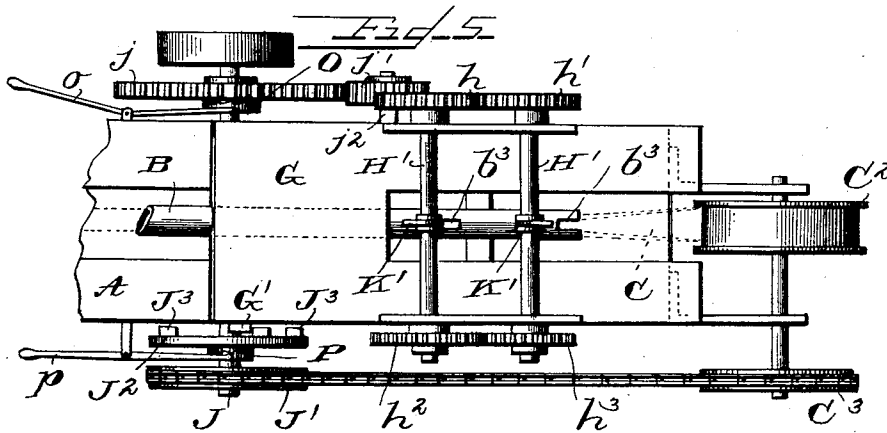
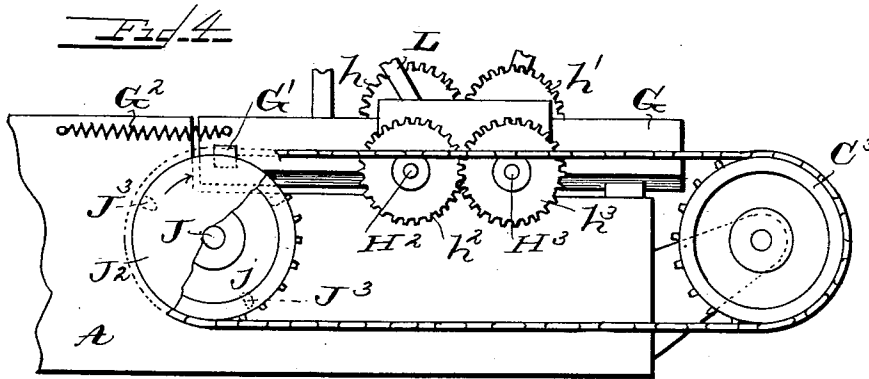
(No Model.)

3 Sheets—Sheet 2.

W. A. HUDSON.
CIGARETTE.

No. 587,827.

Patented Aug. 10, 1897.



WITNESSES.

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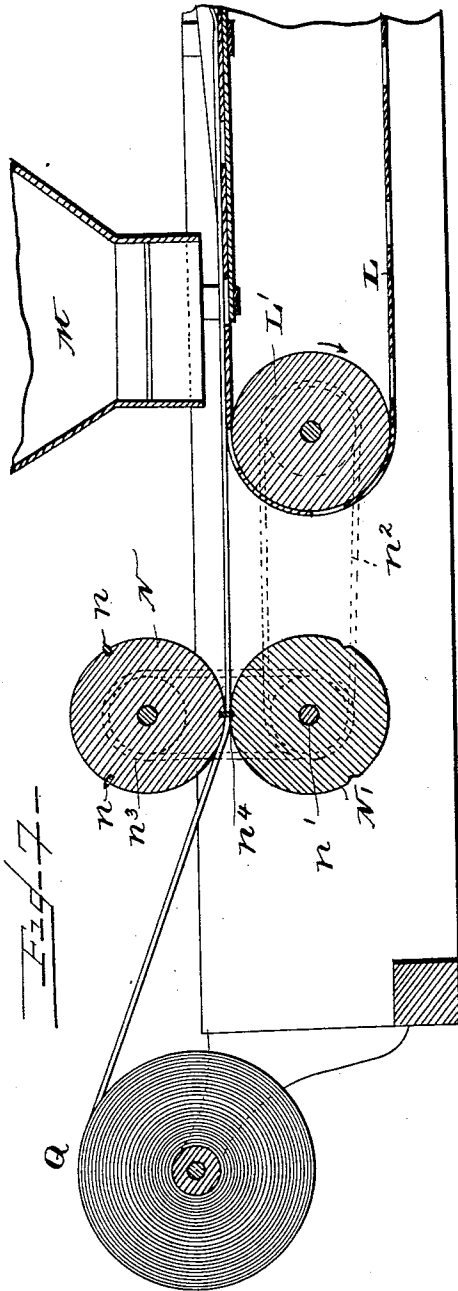
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3 Sheets—Sheet 3.

W. A. HUDSON.
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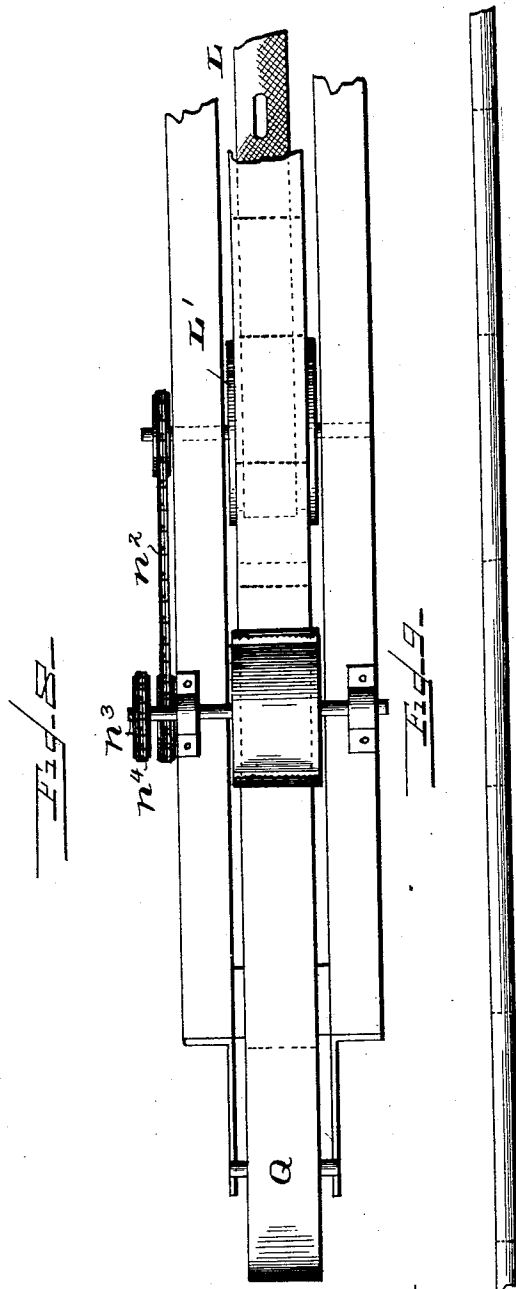
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UNITED STATES PATENT OFFICE.

WILLIAM ARCH HUDSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

CIGARETTE.

SPECIFICATION forming part of Letters Patent No. 587,827, dated August 10, 1897.

Application filed April 30, 1896. Renewed December 22, 1896. Serial No. 616,686. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ARCH HUDSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Cigarettes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel continuous cigarette hereinafter fully described, reference being had to the accompanying drawings, which illustrate one form of machine which I have contemplated using in the manufacture commercially of said continuous cigarette, and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a longitudinal sectional view of a machine adapted to form the herein-described continuous cigarette. Fig. 2 is a top plan view of the cigarette-forming tube, showing the slotted forming-belt and the perforated paper. Fig. 3 represents a detail view of a portion of the belt and paper. Fig. 4 is a side elevation of a portion of the machine adjacent to the tucking devices. Fig. 5 is a top plan view of the same. Fig. 6 is a side elevation of the same, taken from the side opposite to that shown in Fig. 4. Fig. 7 is a sectional view of the rear portion of the machine, showing a device for perforating the paper web applied thereto. Fig. 8 is a top plan view of the parts illustrated in Fig. 7. Fig. 9 is a detail view showing a section of a continuous cigarette adapted to be separated into single cigarettes by breaking the paper wrapper apart at transversely-weakened portions of the wrapper.

In the drawings, A represents the main frame of a cigarette-machine which can conveniently be employed in making my improved continuous cigarette, said frame being formed preferably with two side pieces. Between the side pieces of the frame and extending longitudinally thereof is the forming-tube B, which is supported by means of suitable brackets or hangers from the side frames. This tube is shown in detail in Fig. 2 and consists for a portion of its length of a cylindrical tube, its rear portion being open and

gradually flattened, as shown at *b*, and provided adjacent to said flattened portion with the usual folding-lip *b'* for turning one edge of the paper under the other.

C represents the folding and carrying belt, which is supported in this instance upon grooved rollers *C'* *C''*, the shafts of which are mounted in opposite ends of the main frame, the upper side of said belt passing through the forming-tube. The belt C is of such a width that when folded around the cigarette-stem within the forming-tube its edges will be far enough apart to permit the upper tucking-fingers, hereinafter described, to pass between them, and in order to allow the lower tucking-fingers to engage the ends of the cigarettes I provide the belt C with a series of elongated openings *c*, disposed centrally thereof and at such a distance apart that the space between the centers of adjacent openings *c* will be equal to the length of a cigarette before tucking. Any suitable form of tightening mechanism (not shown) may be employed to hold the belt taut on its supporting-rolls.

D represents the paper strip, which is preferably drawn from a roll *D'*, revolvably supported at the rear end of the main frame and provided with a spring-actuated tension device *d*, as shown, or other preferred form of tension device. The paper strip, as shown in Figs. 2 and 3, is provided with weakened portions extending transversely of the paper at intervals, the distance between two adjacent weakened portions being equal to the length of a cigarette before tucking, so that the portions of the wrapper between adjacent weakened portions will be exactly the length desired for a single cigarette. I prefer to weaken the paper in this manner by providing it with a series of perforations at intervals extending transversely of the wrapper, but the paper may be weakened in other ways, if desired or found convenient.

When the paper is introduced into the machine, care must be taken that each line of perforations lies across the center of one of the apertures in the belt, as shown in Figs. 2 and 3. The paper is led into the machine from the roll *D'*, adjacent to the rear belt-roller *C'* and above the path of the paper, and above the flattened open end of the forming-tube I locate the tobacco-feeding hopper E,

having a suitable stirrer *e* and a contracted delivery-mouth, which delivers tobacco upon the paper in a narrow stream and in sufficient quantities to form a continuous tobacco rod or filler. It is of course obvious that this feeding device could be done away with and the tobacco fed by hand, if desired.

When the belt is in motion, the paper will be drawn into the forming-tube and folded about the continuous tobacco rod to form a continuous cigarette or stem. In some instances it is desirable to paste the edges of the continuous paper wrapper as it is folded about the tobacco rod, and in Fig. 1 of the drawings I have shown a paste-wheel *f*, extending through a slotted portion of the forming-tube B between the edges of the belt and engaging the overlapping edge of the wrapper, the said paste-wheel being supplied with paste by a small horizontal roll *f'* from a paste-receptacle F, supported on the main frame. I do not, however, limit myself to any particular form of pasting mechanism, and the pasting mechanism may be entirely dispensed with, if desired.

Adjacent to the front end of the forming-tube B are the tucking devices, which tuck the ends of the cigarette-wrapper when the machine is arranged to form individual or single cigarettes, as in my application filed December 22, 1896, and given Serial No. 616,684, and in the act of tucking sever the paper along the lines of its weakened portions, thus separating the stem into individual cigarettes without the use of a knife or cutter. The tucking mechanism is carried by a movable sliding carriage G, supported upon the side pieces of the main frame and preferably connected thereto by a dovetailed construction, the side pieces of the frame being cut away to receive the sliding carriage, as shown. Above the sliding carriage and supported thereby are the upper tucker-shafts H H', extending transversely across the machine and connected for joint movement in opposite directions by intermeshing gears *h* and *h'*, mounted upon said shafts H H', respectively. (See Figs. 4, 5, and 6.) Directly beneath the shafts H H' are corresponding shafts H² and H³, respectively, also connected for joint movement in opposite directions by gears *h*² *h*³, which for convenience are located on the opposite side of the carriage from the gears *h* *h'*.

An operating-lever I is mounted pivotally upon the shaft H and is connected by a link *i* with an arm I', rigidly connected with the shaft H', for moving the upper tucking devices, and the said operating-lever I is also provided with a downwardly-extending arm *i'*, adapted to be engaged by a suitable operating means. The shaft H³ is provided with an operating-arm I³. In this instance I have shown a lever I² pivoted to the main frame and having a part in position to be engaged by the tucker-operating device, said lever having one end connected with the arm I³ by a link *i*³ and its

other end connected with a retracting-spring *i*², secured to the main frame.

J represents the main driving-shaft of the machine, which is located by a belt-pulley from any suitable source of power and is provided with a gear-wheel *j*, (see Fig. 6,) which meshes with and drives a pinion *j'* on a short shaft *j*², on which is secured a tucker-operating arm or cam *j*³. This cam *j*³ rotates in the direction indicated by the arrow and first engages a lever I², thereby moving the arm I³ and the lower-tucker shafts, and after passing the lever I² the said cam *j*³ strikes the depending arm *i'* of the lever I, thereby operating the upper-tucker shafts. The upper-tucker shafts are drawn back into their normal position; after the cam *j*³ passes the arm *i'* of the lever I, by a suitable spring I⁴, connected in this instance with the link *i*, thereby drawing the lever I back against a buffer or cushion *i*⁴, which is used to relieve the jar.

The tuckers are shown best in Fig. 1, and consist of the upper tuckers K and K', mounted, respectively, on the shafts H and H', and the lower tuckers K² K³, similarly mounted on the shafts H² H³. These tuckers consist of curved arms which when their shafts are rotated are forced into the opposite ends of the cigarette, turning in portions of the paper and forcing them into the ends of the cigarette. As before described, the lower tuckers are operated first by the cam *j*³ to make the first part of the tuck, after which the upper tuckers complete the tucking of the ends of the cigarette, as will be readily understood.

As the belt is moved forward continuously, it is obvious that the tucking mechanism must also be moved forward during the tucking operation at the same speed as the cigarette-stem, so as to avoid retarding the progress of the stem and belt. This is accomplished by means of mechanism best shown in Figs. 4 and 5. On the drawing-shaft J is a sprocket-wheel J', which drives a sprocket-wheel C² of the same size on the shaft which supports the belt-roller C², thereby driving the belt-roller and belt at the same speed as the driving-shaft. On the driving-shaft J, I also secure a cam-disk J², (see Figs. 2 and 5,) provided with a series of studs or cam projections J³, in this instance three in number, located in a circle about the shaft J equal in diameter to the diameter of the belt-driving roller C², so that the movement of the cams or studs will be equal to the travel of the belt, and said studs are located a distance apart exactly corresponding to the distance between adjacent lines of perforation of the paper. These studs or cams J³ engage a lug or projection G' on the movable carriage G and move said carriage forward during the tucking operation at the same speed as the travel of the cigarette-stem and its carrying-belt C, thus enabling the tuckers to operate upon the stem without moving longitudinally with respect thereto.

In order to allow the tuckers to engage the stem, the tube B is provided with slots *b*² *b*³

on its lower side to allow the lower tuckers to enter the tube, pass through the openings in the belt, which will at that moment register with said slots, and tuck the ends of the cigarette. The upper side of the tube is also provided with similar slots $b^3 b^3$, which are slightly in advance of the slots $b^2 b^2$, as the upper tuckers are operated after the lower ones, and will enter the tube farther along the same by reason of the movement imparted to the carriage G, as previously described. As soon as the tucking operation is completed the stud or cam J^3 , which is in engagement with the lug G' on the carriage, will disengage said lug and the carriage will be drawn back to its normal position by springs G^2 , remaining motionless until the stem has been fed forward by the belt, so as to bring the length of another cigarette into position in the tube to be tucked, when the tucking operation will be repeated. It will be seen that at each tucking operation the rear tuckers will tear the paper along the line of perforation and thus separate the cigarette to be tucked from the continuous stem. The tuckers will then crimp or tuck the severed ends of the cigarette.

If the pasting device previously described is employed and the tucking devices are held out of operation, it will be readily seen that a continuous cigarette or stem, having its wrapper weakened or perforated at intervals a distance apart equal to a single cigarette, will be formed and delivered from the machine. I have contemplated making this continuous stem in any desired lengths containing a number of individual cigarettes and placing them on the market, leaving it to the consumer to separate the stem into individual or separate cigarettes. In order to make these continuous stems or continuous cigarettes, it is only necessary to stop the movement of the tucking devices and the reciprocating carriage, when the stem will be formed and will be delivered from the machine continuously and may be severed in the desired lengths by hand or in any other desired way. In this instance I have shown the driving-shaft provided with movable clutches O and P for securing the gear-wheel j and cam-disk J^2 , respectively, to the driving-shaft, and the said clutches are provided with operating yoke-levers o and p , respectively, by means of which they can be thrown out of operative engagement with said gear-wheel and cam-disk, so that the carriage G and the tuckers will remain stationary.

If it is desired, I may dispense with the use of a perforated belt, such as is shown in the drawings, and employ a plain belt, in which case the belt will not extend entirely through the tube, but will leave the tube before it reaches the tucking devices and will pass around a suitable driving-roller C^5 on the driving-shaft, as indicated in dotted lines in Fig 1.

In order to supply perforated paper to the machine, I may use a paper web which has

been previously perforated, as is indicated in Figs. 1 to 6, inclusive, or I may provide the machine itself with a perforating mechanism interposed between the belt and a roll of plain unperforated paper, as shown in Figs. 7 and 8, and perforate the paper as it passes through the machine. In these figures, in which L indicates the belt, L' the rear belt-carrying roller, and M the hopper, N designates a perforating-roller which is provided in this instance with three knives or blades n , provided with serrated cutting edges and separated upon the periphery of the wheel distances equal to the desired length of the cigarette-wrappers before tucking. Beneath the perforator N is a roll N', provided with depressions or recesses to accommodate the knives n . This roller N' supports the paper and coöperates with the perforating-roller in its operation. Q represents the roll of paper supported at the rear end of the main frame of the machine.

I prefer to drive positively both of the rollers N and N', and in this instance I have shown the shaft n' of roller N' provided with a sprocket-wheel and driven by a chain n^2 from a similar sprocket-wheel on the shaft of the belt-roll L'. The shaft n' of roller N' is then geared to move with the shaft n^3 of roller N by a sprocket-chain n^4 , so that the two rollers N and N' move simultaneously and in opposite directions, as required to produce the desired result. By this construction it will be seen that plain unperforated paper can be employed and perforated as it is drawn into the machine.

It is obvious that the continuous cigarette which forms the subject-matter of this invention can be made by hand and can also be made by other forms of machine than that which is herein shown and described.

What I claim, and desire to secure by Letters Patent, is—

1. A continuous cigarette composed of a rod of tobacco wrapped with a paper perforated at intervals, the portions of said paper between adjacent perforations being of the length of a single cigarette, whereby the wrapper and rod can be separated at the perforations into separate cigarettes, substantially as described.

2. A continuous cigarette composed of a rod of tobacco wrapped with a paper weakened transversely at intervals, the portions of said paper between adjacent weakened portions being of the length of a single cigarette, whereby the wrapper and rod can be separated at the weakened portions of said paper into separate cigarettes, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM ARCH HUDSON.

Witnesses:

L. P. WHITAKER,
J. D. KINGSBERRY.