

(No Model.)

2 Sheets—Sheet 1.

S. BROWN.

CIGARETTE CUTTING MACHINE.

No. 260,836.

Patented July 11, 1882.

Fig. 1.

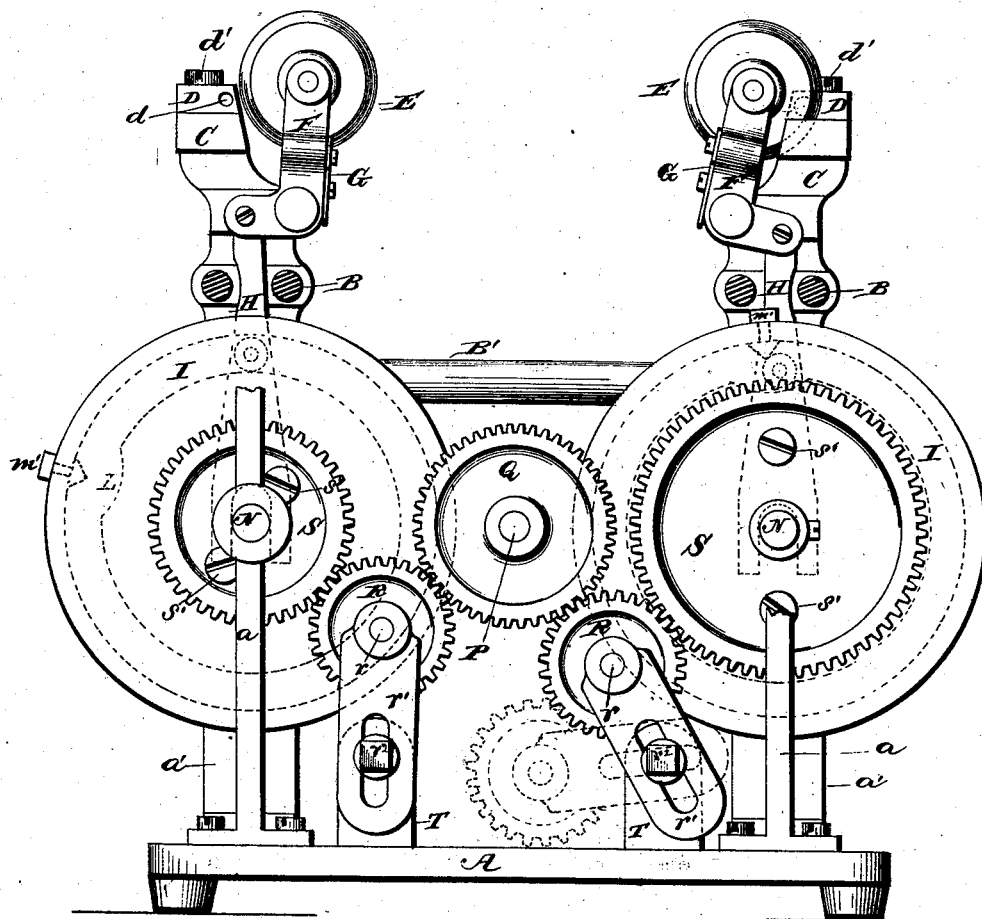


Fig. 2.

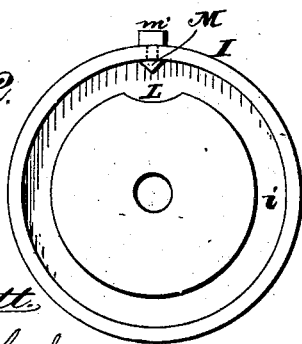
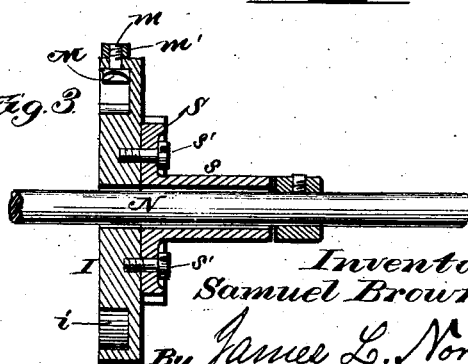


Fig. 3.



Witnesses.

Robert Emmett.

J. A. Rutherford.

Inventor
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(No Model.)

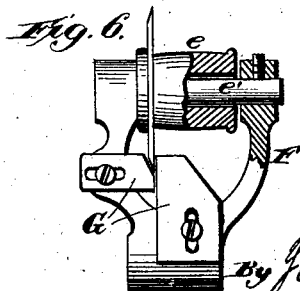
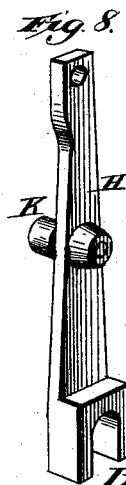
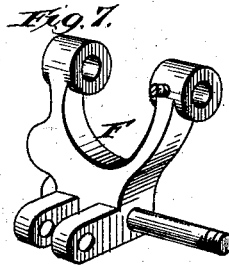
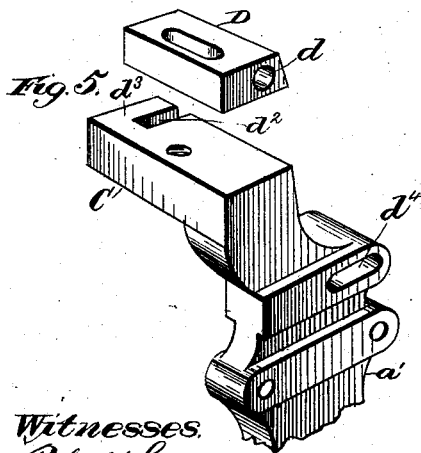
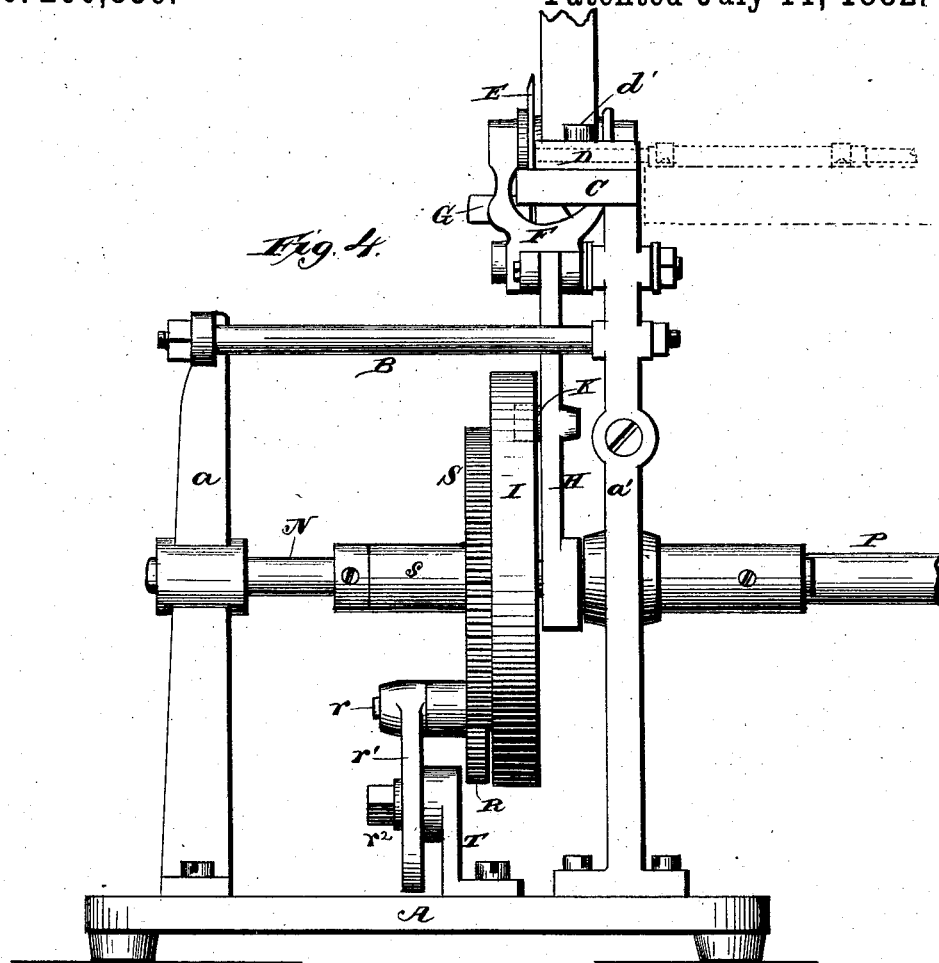
2 Sheets—Sheet 2.

S. BROWN.

CIGARETTE CUTTING MACHINE.

No. 260,836.

Patented July 11, 1882.



Witnesses.
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UNITED STATES PATENT OFFICE.

SAMUEL BROWN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
CHARLES G. EMERY, OF BROOKLYN, NEW YORK.

CIGARETTE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 260,836, dated July 11, 1882.

Application filed August 5, 1881. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL BROWN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Machines for Cutting Cigarettes, of which the following is a specification.

This invention relates to certain improvements upon the invention forming the subject-matter of Letters Patent of the United States granted on the 3d day of June, 1879, No. 216,164, and on the 31st day of August, 1880, No. 231,779. In the machines secured by said Letters Patent the loose tobacco is formed into a continuous filler, and a continuous inclosing wrapper is applied around said filler and the overlapping edges of the same coated with cement, forming a continuous cigarette, which is fed forward and cut into suitable lengths by an automatically-operating machine.

The present improvement is confined to the mechanism for severing the continuous cigarette into equal and uniform lengths, the objects being to compensate for the wear of the cutter, to provide simpler and more effective devices for supporting and operating the cutter, to provide for the wear of certain devices in the cutter-operating mechanism, to provide means whereby the machine can be readily adapted to cut cigarettes of different lengths, and to provide means whereby the operation of the cutter-operating mechanism can be checked without stopping the main shaft, also to provide means for insuring a smooth, even, and clean cut of the cigarettes. These objects I attain by means of the devices hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved machine. Fig. 2 represents the channeled side of a wheel employed for actuating the pitman. Fig. 3 is a section taken through the said wheel with a gear-faced hub secured thereto. Fig. 4 is an end elevation of the machine. Fig. 5 represents a bracket that is at the upper end of one of the standards, and also a block adapted to be adjustably secured thereto. Fig. 6 represents the cutter, rocking bearing, and scraper. Fig. 7 is a perspective view of the rocking bearing, and Fig. 8 illustrates the pitman.

In order to provide a strong and rigid frame for supporting the operative parts of this machine, I arrange upon the base or stand A the four standards *a a'* and connect the same together in pairs by means of the rods B B, also connecting together the two front and taller standards *a'* by means of a suitable horizontal bar or tie-rod, B'.

In illustrating this machine I have shown two cutters having a vibratory motion imparted to them from a common driving-shaft through the medium of devices which will admit of either one or of both of the cutters being brought into action at the same time.

As a description of one cutter and the mechanism by means of which vibratory motion is imparted thereto from the rotary driving-shaft will answer for both of the cutters and their actuating mechanisms, the following description will be confined to one, it being understood, however, that one or two cutters can be employed, as may be desired.

At the upper end of the standard *a'* is a support or bracket, C, upon which is arranged a block, D, having the horizontal bore *d* formed through the same and adapted to constitute a continuation of the conductor of the machine described in the aforesaid patents, by means of which said bore the continuous cigarette will be guided in its forward movement to the rotary cutter E. This block D is adjustably secured upon the standard-bracket, which adjustment can be effected by means of a set-screw, *d'*, passing through a slot in the block, thereby allowing the block to be moved nearer to the plane in which the cutter vibrates when the latter becomes worn by constant use.

The rotary cutter, which consists of a disk having a cutting-edge formed at its periphery, is provided with a hub, *e*, arranged to revolve upon a shaft, *e'*, which is detachably secured in the upper forked arm of a two-armed rocking bearing, F, so that it can be detached in order to remove the cutter for the purpose of sharpening the same. This rocking bearing is arranged to vibrate in a plane at right angles to the axis of the bore or conductor through which the cigarette is fed, whereby a vibration of said bearing in one direction will move the cutter past the delivery end of the bore and in close proximity to the end of block D, so as to cut off a length from the continuous cigar-

ette. The bracket upon which the block is adjustably secured is formed with a recess, d^2 , which receives a portion of the cutter when the latter is moved forward to sever the cigarette, that portion d^3 of the bracket which is at one side of the said slot or recess constituting a support for the cigarette as the latter is being fed forward and cut.

Continued use and repeated grinding of the cutter necessarily reduces the diameter of the same, and hence to compensate for such wear I provide an elongated slotted bearing, d^4 , through the standard and for the shaft upon which the rocking bearing is mounted, and secure the shaft in said bearing by means of a nut or other equivalent means, whereby the shaft can be adjusted laterally in proportion to the wear of the cutter. The cutter will be driven by means of belt-power applied to its hub, which is adapted for such purpose, the belt being passed around a suitable driving-pulley impelled in any suitable manner.

In cutting cigarettes it is found that, as the tobacco is always more or less moist, the cutter will become gummed, and hence in a short time not only fail to sever the cigarette with a neat, clean cut, but also discolor the end of the cigarette-wrapper. To avoid this defect in a cigarette-machine, I connect with the rocking bearing a scraper, G, adapted to prevent the accumulation of gum or any other substance on the rotary knife near its edge. I have illustrated this scraper as being composed of two metal plates adjustably secured to the rocking bearing and cut away at their upper meeting corners so as to form a V-shaped recess, through which the cutting-edge of the rotary cutter passes. By adjustably connecting these scraper-plates with the rocking bearing they can be brought in close proximity to the cutter after the periphery thereof has been reduced by wear and grinding. The requisite rocking movement is imparted to the rocking bearing by means of a pitman, H, that is connected at its upper end with the lower arm of the rocking bearing. In order to impart an intermittent reciprocating movement to the said pitman, I provide a wheel, I, having formed in one of its sides a circular channel or way, i , which receives a roller, K, that is mounted upon a stud projecting from one side of the pitman, and in the inner wall of this circular channel I form a concavity, L, into which the roller upon the pitman will drop at the moment the said concavity is brought under the roller by the rotation of the wheel. To insure the dropping of the roller into this concavity and its travel over the bed of the same, a cam-projection, M, is arranged upon the outer wall of the channel at a point opposite the center of said concavity, whereby as the wheel revolves the cam will strike the roller, and hence force the same into the concavity, thus constituting a short camway, which will cause the pitman first to descend and then to rise as the concavity passes the roller, thereby insuring a positive motion of the mechan-

ism. There will be but little wear of the roller during operation, but there will be considerable on the part of the cam-projection; and hence to provide for such wear the cam-projection is provided with a screw-threaded shank, m , that passes through the rim of the wheel and receives upon its outer end a nut, m' , which is tightened up against the wheel. By this means the cam-projection can, when worn, be readily removed and replaced by another. The lower end of the pitman is recessed or forked, so as to straddle a stationary shaft, N, upon which the wheel I is mounted so as to revolve freely. The above arrangement in no wise affects the free reciprocating movement of the pitman, while at the same time the shaft constitutes a guide for the lower end of the same.

P indicates the main rotary driving-shaft, which is provided with a gear, Q, arranged to transmit motion to a gear upon the wheel I through the medium of an intermediate gear-wheel, R, as best illustrated in Fig. 1. The gear S, that is secured to the wheel I, is provided with a sleeve, s , loosely mounted upon the shaft supporting said wheel, the gear being detachably secured to the side of the wheel by means of screw-bolts s' , so that when the wheel and the gear are thus connected the latter constitutes a hub for the wheel. The number of the teeth of this gear determines the number of revolutions of the wheel in a given time, and hence the number of vibrations of the rocking bearing and cutter during the same period. Hence, in order to adapt the machine for cutting cigarettes of different lengths, the gear is detachably secured to the wheel, as above described, so that by removing the shaft N from its bearing in the standards, in which it can be held by a set screw or screws, the gear can be detached from the wheel and also from the shaft N, first loosening a collar held upon the said shaft at the outer end of the said hub by means of a screw. The intermediate rotary gear, R, which transmits motion from the gear on the driving-shaft to the gear upon the wheel, is mounted upon a shaft, r , that is fixed in the upper end of a slotted arm, r' , adjustably secured upon the arm of a support, T, secured to the bed or base of the machine. The arm of this support passes through the slot of the arm or bar, carrying the gear R, and a nut, r^2 , is tightened up against the slotted arm, so as to hold it in place. By loosening this nut the slotted arm can be dropped so as to disconnect the gears of the wheel and the driving-shaft without checking the motion of the latter. It will be seen that both of the cutters illustrated are operated by means of similar devices, the wheels I both having gears connected therewith, and motion being transmitted thereto from the gear upon the main driving-shaft by means of intermediate rotary gears. As represented, the gear attached to one wheel is larger than that attached to the other, whereby the revolution of one wheel will be more rapid, and hence the cigarettes will be cut in shorter lengths; but

these gears can be the same, if desired; or the machine can be constructed with but one wheel and cutter, if preferred.

By the above machine the continuous cigarette will be severed into uniform lengths by the combined rotary and vibratory action of the circular knife with a clean, even, and smooth cut.

Having thus described my invention, what I claim is—

1. The combination, in a machine for cutting cigarettes, of the cigarette-conductor, the rocking bearing carrying a rotary cutter, the pitman having a pivotal connection with the said rocking bearing, and mechanism for actuating the pitman, substantially as described.

2. The combination, in a machine for cutting cigarettes, of the cigarette-conductor, the rotary and vibratory cutter supported upon a rocking bearing, and the scraper composed of two adjustable plates secured upon the said rocking bearing, substantially as described.

3. The combination, in a machine for cutting cigarettes, of the cigarette-conductor with the rotary and vibratory cutter supported upon a rocking bearing provided with an adjustable scraper adapted to be maintained at all times in position along the sides of the cutter for keeping the same clean, substantially as described.

4. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter, mounted upon a rocking bearing, with a scraper composed of two plates adjustably secured upon the said rocking bearing, substantially as described.

5. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter with the scraper composed of two plates adapted to operate at all times on the sides of the cutter, substantially as and for the purpose described.

6. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter with an adjustable block formed with an opening serving as a conductor for a continuous cigarette, substantially as described.

7. The combination, in a machine for cutting cigarettes, of the bracket C, formed with a recess for receiving the rotary cutter when the latter is vibrated to sever a cigarette, with the rotary and vibratory cutter and an adjustable block having a bore for the passage of the cigarette, said block being secured upon the bracket with the delivery end of its bore in position to deliver the cigarette over said recess in the bracket, substantially as described.

8. The combination, in a machine for cutting cigarettes, of the cigarette-conductor with the rocking bearing carrying the cutter and mounted upon a shaft adjustably secured in its bearings, whereby the same can be adjusted laterally with reference to the wear of the cutter, substantially as described.

9. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter,

supported upon a rocking bearing, with the wheel I, having in one of its sides a cam-groove, and the pitman pivotally connected to the rocking bearing and carrying a roller arranged in the cam-groove, substantially as described.

10. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter, supported upon a rocking bearing, with the wheel I, having a circular channel formed in one of its sides and a concavity in one of the walls of said channel, the cam-projection detachably secured to the wheel at a point in the channel opposite concavity, and the pitman provided with a roller projecting into the channel of said wheel, substantially as described.

11. The combination, in a machine for cutting cigarettes, of the cigarette-conductor and the rotary and vibratory cutter for cutting a continuous cigarette into regulated lengths, with the gear detachably secured to the wheel I and arranged to revolve upon the shaft upon which said wheel is mounted, whereby said gear can be detached and replaced by a gear having a different number of teeth, in order to vary the vibrations of the cutter, and hence vary the length of the cigarette, substantially as described.

12. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter, the wheel I, adapted to actuate the devices for vibrating the cutter, the gear secured to said wheel, and a gear arranged to mesh both with the gear upon the wheel and with a gear upon the driving-shaft, all constructed and arranged to operate substantially as described.

13. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter with the wheel I, adapted to actuate the devices for vibrating the cutter, the gear secured to said wheel, the gear upon the driving-shaft, and the intermediate gear supported by an adjustable arm capable of being lowered so as to throw its gear out of mesh with the gear upon the wheel, all arranged to operate substantially as described.

14. The combination, in a machine for cutting cigarettes, of the rotary and vibratory cutter, the conductor for guiding and delivering a continuous cigarette to the cutter, the rocking bearing supporting the cutter and provided with a scraper for keeping the cutter clean, the pitman, having a roller, the wheel I, having a cam-groove to receive said roller, and the gears for actuating said wheel, all the parts being relatively arranged to operate substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

SAMUEL BROWN.

Witnesses:

E. A. DICK,
JAMES A. RUTHERFORD.