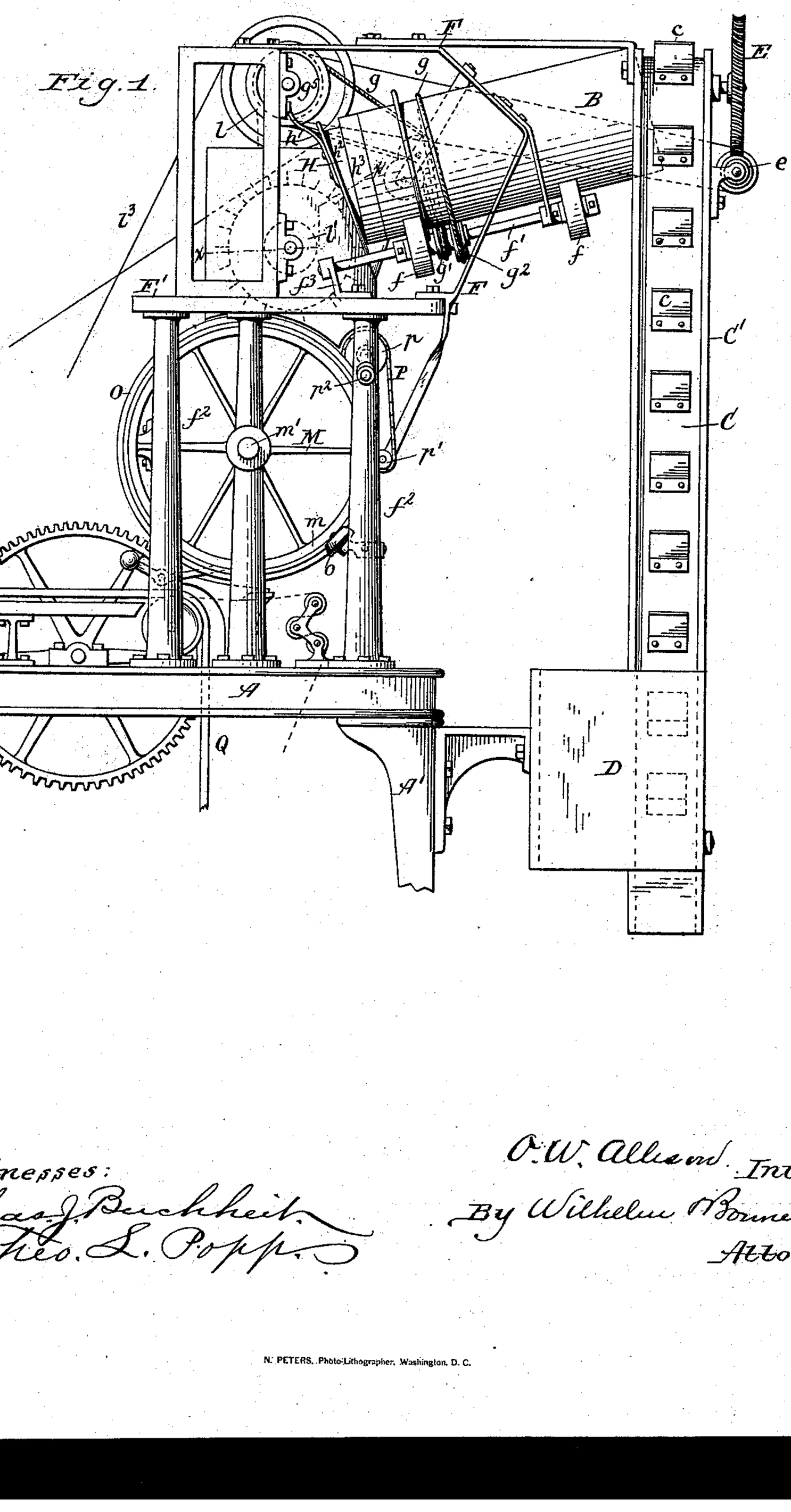
(No Model.) 2 Sheets—Sheet 1.

O. W. ALLISON.

CIGARETTE MACHINE.

No. 406,612. Patented July 9, 1889.

Fig. 1.



Witnesses:
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(No Model.) 2 Sheets—Sheet 2.

O. W. ALLISON.

CIGARETTE MACHINE.

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Fig. 2.

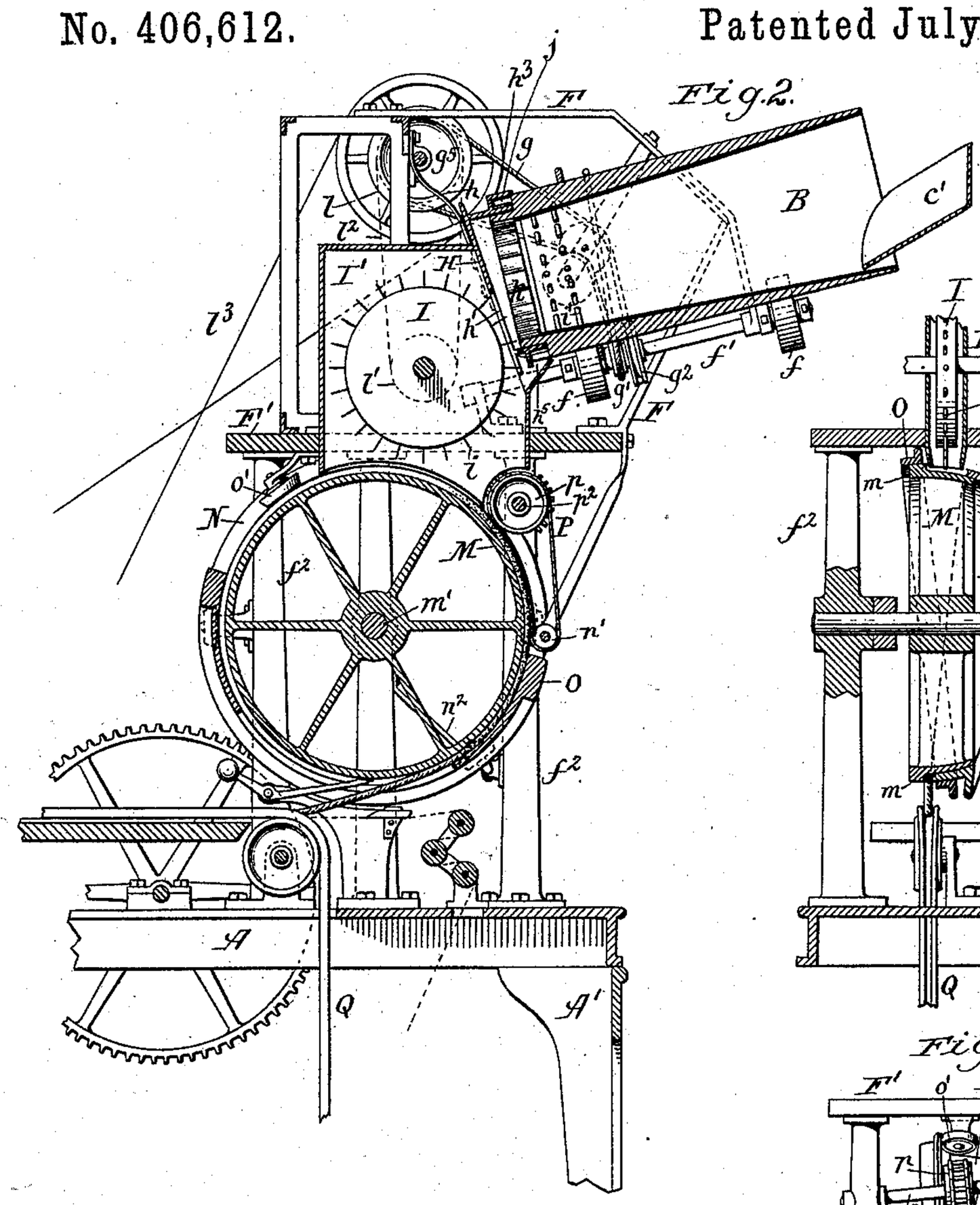


Fig. 3.

Fig. 7.

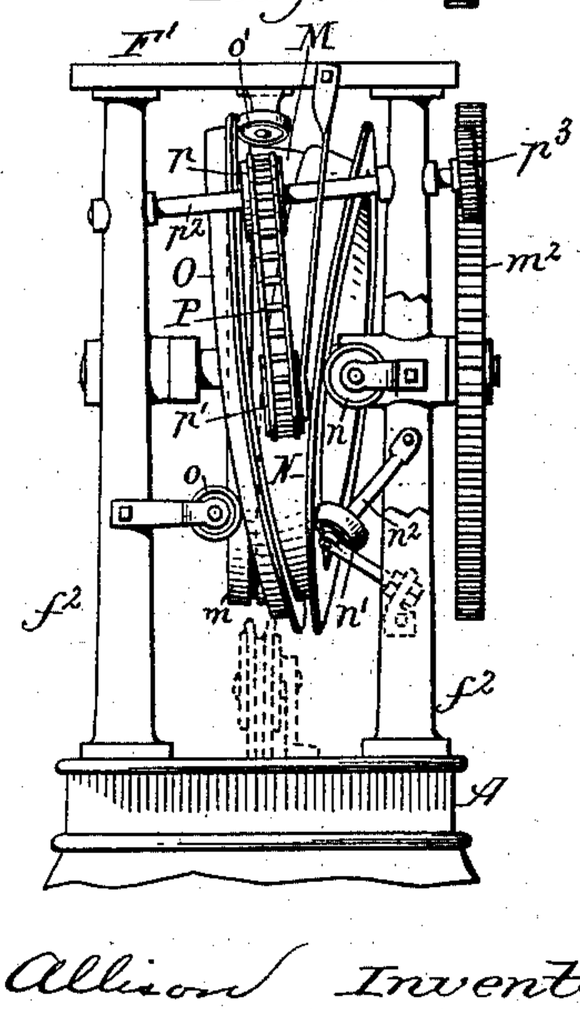


Fig. 4.

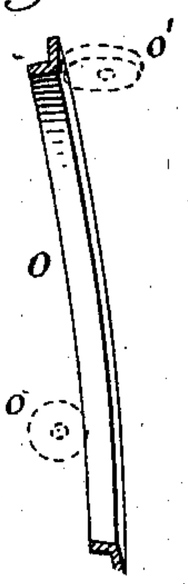
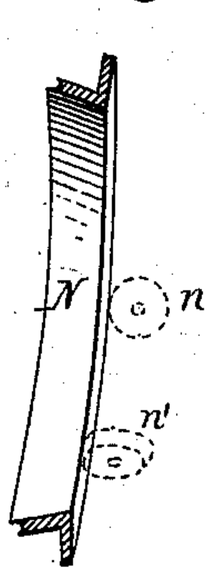


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

OSCAR W. ALLISON, OF ROCHESTER, NEW YORK.

CIGARETTE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 406,612, dated July 9, 1889.

Application filed September 10, 1888. Serial No. 284,988. (No model.)

To all whom it may concern:

Be it known that I, OSCAR W. ALLISON, of the city of Rochester, in the county of Monroe and State of New York, have invented new and useful Improvements in Cigarette-Machines, of which the following is a specification.

This invention relates to improvements in that class of cigarette-machines in which the tobacco is formed into a continuous filler or rod which is delivered upon a continuous web of paper, the latter being pasted along one edge and then closed upon the filler and the continuous cigarette so formed being then cut into suitable lengths.

The object of my invention is to improve the tobacco-feeding mechanism and the filler-forming mechanism; and the invention consists of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of the feed end of my improved cigarette-machine. Fig. 2 is a vertical longitudinal section of the feed end of the machine with the tobacco-elevator removed. Fig. 3 is a vertical cross-section of the filler-forming mechanism. Fig. 4 is a cross-section of the covering-ring of the filler-forming mechanism. Fig. 5 is a cross-section of the receiving-wheel of the same. Fig. 6 is a cross-section of the compressing-ring. Fig. 7 is a front elevation of the filler-forming mechanism.

Like letters of reference refer to like parts in the several figures.

A represents the bed of the machine supported by legs A′ A′.

B represents a revolving feeding-cylinder, and C is a tobacco-elevator, whereby the tobacco is delivered into the outer end of the feeding-cylinder from a feed-box D, in which a quantity of tobacco is placed, and from which the operator supplies the tobacco to the elevator by placing it in small quantities upon the buckets or flights *c* of the elevator.

The elevator-belt C is arranged in a casing C′, which is provided near its upper end with a discharge-spout *c*′, projecting into the outer end of the feed-cylinder. The elevator-belt runs around pulleys arranged at the upper and lower ends of the casing C′, and is driven by a gear-wheel E, secured to the shaft of the upper pulley, and a worm *e*, which is connected with the main driving-shaft of the machine in any suitable manner.

The revolving feed-cylinder B is supported in an inclined position upon rollers *f*, which are mounted upon two inclined parallel shafts *f*′, journaled near their outer ends in a frame F, as shown in Figs. 1 and 2. The frame F is secured to a horizontal table or platform F′, which is supported above the bed A by columns f^2. The inner ends of the shafts *f*′ are journaled in brackets f^3, secured to the top of the table F′. A rotary motion is imparted to the feeding-cylinder B by a round belt *g*, running around the cylinder and around pulleys *g*′ g^2, mounted on the shafts *f*′, suitable guide-pulleys, and a driving-pulley g^5, which latter is connected with the main driving-shaft of the machine in any suitable manner. The feed-cylinder is provided with a groove, in which the belt *g* runs. The inner surface of the feed-cylinder is preferably made conical or tapering from its outer toward its inner end, as represented in Fig. 2.

H represents a stationary circular plate which closes the inner end of the feed-cylinder, and is provided with an arm *h*, whereby it is secured to the frame F. The plate H is provided in its lower portion with a number of upright slots *h*′, through which the tobacco is discharged from the feed-cylinder.

I represents the picker-wheel arranged at the inner end of the feed-cylinder, and I′ is the casing or hopper which incloses the wheel and is secured to the table F′. The picker-wheel is journaled in suitable bearings in the frame F, and provided in its periphery with one or more rows of teeth *i*, which, as the picker-wheel revolves, pass through the slots *h*′ of the plate H and extract the tobacco from the feeding-cylinder in a continuous stream.

i′ represents one or more annular rows of pins arranged within the feeding-cylinder B, near the inner end thereof, and which serve to stir up the tobacco in the cylinder and present it to the slots in the plate H. The latter is provided on its rear side with a ring or collar h^2, which fits over the contracted inner end of the feed-cylinder B.

h^3 represents a ring surrounding the inner

end of the collar h^2, and arranged at a short distance from the collar, so as to form an annular space between this collar and ring. The lower portion of the collar h^2 adjacent to the slots h' is cut away, so as to form an opening through which the shorts or fine tobacco is discharged from the feed-cylinder into the casing of the picker-wheel.

j represents an annular row of pins secured to the inner end of the feed-cylinder B, and which project into the annular space or groove between the collar h^2 and ring h^3, and discharge the fine tobacco through the opening of the collar h^2. The plate H is inclined, as shown, so as to facilitate the discharge of the tobacco through the slots h'. The casing I′ is provided in its rear side with an opening, which is closed by the slotted plate H.

k represents an annular row of teeth arranged at the discharge end of the feed-cylinder B, and which prevent any accumulations of tobacco between the inner end of the cylinder and the plate H.

The teeth k are constructed with abrupt front sides and inclined backs and elevate the fine tobacco and mix it with the long tobacco passing through the slots h'.

The picker-wheel is rotated from the main driving-shaft of the machine by pulleys l l' and belts l^2 l^3, as shown in Fig. 2, or in any other suitable manner.

The filler-forming mechanism is constructed as follows:

M represents the receiving-wheel, which is arranged underneath the open lower end of the picker-wheel casing I′ and receives therefrom the loose tobacco which is delivered upon the top portion of the face of the wheel M. The face of this wheel has the form of a spherical segment, and is provided at its higher edge with a projecting flange m, which is preferably grooved adjacent to the spherical face of the wheel. The latter is secured to a horizontal shaft m' and rotated by a gear-wheel m^2, secured to said shaft, and which receives motion from the main driving-shaft by a suitable train of gear-wheels.

N represents the compressing-ring, which is mounted obliquely upon the spherical face of the wheel M, its inner surface being spherical to conform to the exterior face of the wheel M. The ring N is farthest from the flange m on the wheel M near the top of the latter and closest to the flange m at a point slightly in advance of the lowest point of said wheel, so that the tobacco which falls upon the face of the wheel M is gradually compressed into a rod or continuous filler as it travels toward the lower part of the wheel between the grooved flange m and the inner edge of the ring N, which is similarly grooved. The grooves in the opposing surfaces of the flange m and the edge of ring N serve to give the filler a cylindrical or nearly-cylindrical form; but it is obvious that any other preferred shape may be given the filler by altering the grooves or by omitting them entirely, in which latter case the filler will be square or nearly rectangular. The ring N is held in this oblique position by supporting-rollers n n'. The lower supporting-roller n' is mounted upon an adjustable arm n^2, so that it can be adjusted toward and from the flange m.

O represents the covering-ring, which is arranged obliquely upon the flange m of the wheel M in such manner that it uncovers the space between the flange m and the ring N below the casing I′, where the tobacco is received into this space and gradually covers this space toward the lower front part of the wheel and confines the tobacco in said gradually-narrowing space at the lower part of the wheel, where the compression is effected. This ring O again uncovers this space at the lower rear part of the wheel M, where the compressed filler issues from this space. The ring O is held in this oblique position by lower supporting-rollers o and an upper roller o'.

P represents an endless chain belt arranged to cover the space between the flange m and the ring N on the descending or front side of the wheel M below the feed-hopper and above the point where the covering-ring O begins to cover this space. This belt runs around an upper pulley p and a lower pulley p', the upper pulley being secured to an oblique shaft p^2, which is driven by a gear-wheel p^3. This belt prevents the tobacco from escaping from the space between the flange m and ring N before the ring O covers the same, and also serves to accelerate the downward movement of the tobacco on the face of the wheel M.

The continuous filler issuing from the filler-forming mechanism now passes to the grooved drawing-belt Q and the paper folding and pasting mechanism, which are not shown in the drawings, and form the subject-matter of a pending application for patent filed by me November 10, 1885, Serial No. 182,362.

The tobacco-feeding mechanism herein described is also embodied in the said pending application, Serial No. 182,362. It is obvious, however, that any other suitable mechanism for feeding the tobacco to the compressor, or for drawing the filler along and inclosing it within a paper wrapper, may be employed in connection with the improved compressor or filler-former herein described. The drawing-belt Q is made of any suitable flexible material, being provided on its outer surface with a longitudinal groove which is distended or opened to permit the introduction of the filler therein and the discharge of the finished cigarette therefrom by passing over crowned pulleys or other devices, as fully described in the said pending application, Serial No. 182,362.

No claim is made herein to the construction of the tobacco-feeding mechanism or the grooved drawing-belt and its operating mech-

anism, which constitute the subject-matter of the said pending application, Serial No. 182,362.

In my application, Serial No. 298,425, filed February 2, 1889, I have represented an improvement in the means for compressing the tobacco rod.

I claim as my invention—

1. The combination, with the receiving-wheel M, having a spherical or convex face and provided with a flange, *m*, of the compressing-ring N, mounted obliquely upon the face of the receiving-wheel, and the covering-ring O, arranged obliquely upon the flange *m* of the receiving-wheel, substantially as set forth.

2. The combination, with the receiving-wheel M, having a spherical face and provided with a flange *m*, of the compressing-ring N, mounted obliquely upon the face of the receiving-wheel, the covering-ring O, arranged obliquely upon the flange *m* of the receiving-wheel, and supporting or guide rollers, whereby the compressing and covering rings N O are held in position, substantially as set forth.

3. The combination, with the receiving-wheel M, having a spherical face and provided with a flange *m*, of the compressing-ring N, arranged obliquely upon the face of the receiving-wheel, supporting-rollers *n*, a supporting-roller *n'*, mounted in an adjustable arm or bracket, and the covering-ring O, mounted obliquely upon the flange *m* of the receiving-wheel, substantially as set forth.

4. The combination, with the receiving-wheel M, provided with a flange *m*, of the compressing-ring N, arranged obliquely upon the face of the receiving-wheel, the covering-ring O, mounted obliquely upon the flange of the receiving-wheel, and an endless belt P, arranged on the front or descending side of the receiving-wheel and adapted to cover the space between the flange *m* and the compressing-ring N, substantially as set forth.

5. The combination, with the continuously-revolving receiving-wheel M, having a spherical exterior surface and carrying an upwardly-projecting flange, of the obliquely-arranged revolving compressing-ring N, fitted upon wheel M and adapted to compress the tobacco against the flange projecting beyond the spherical surface of the wheel, and suitable mechanism for retaining the tobacco in the tapering space while being compressed, substantially as described.

Witness my hand this 23d day of August, 1888.

OSCAR W. ALLISON.

Witnesses:
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LYDIA S. BUCK.