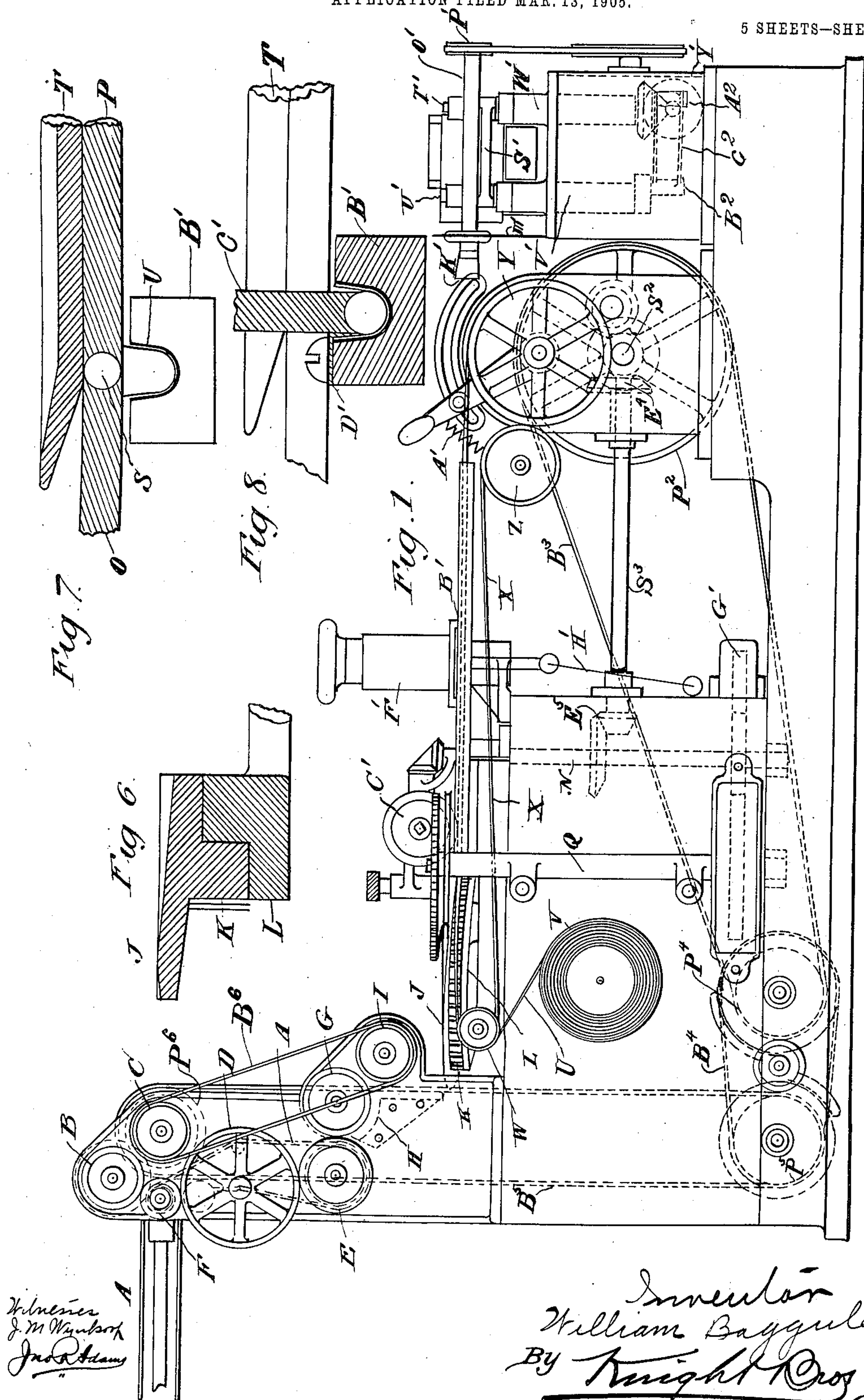


PATENTED JAN. 15, 1907.

MACHINE FOR MAKING CIGARETTES.

APPLICATION FILED MAR. 13, 1905.

5 SHEETS—SHEET 1.



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William Baggeley
By Knight Bros Attys.

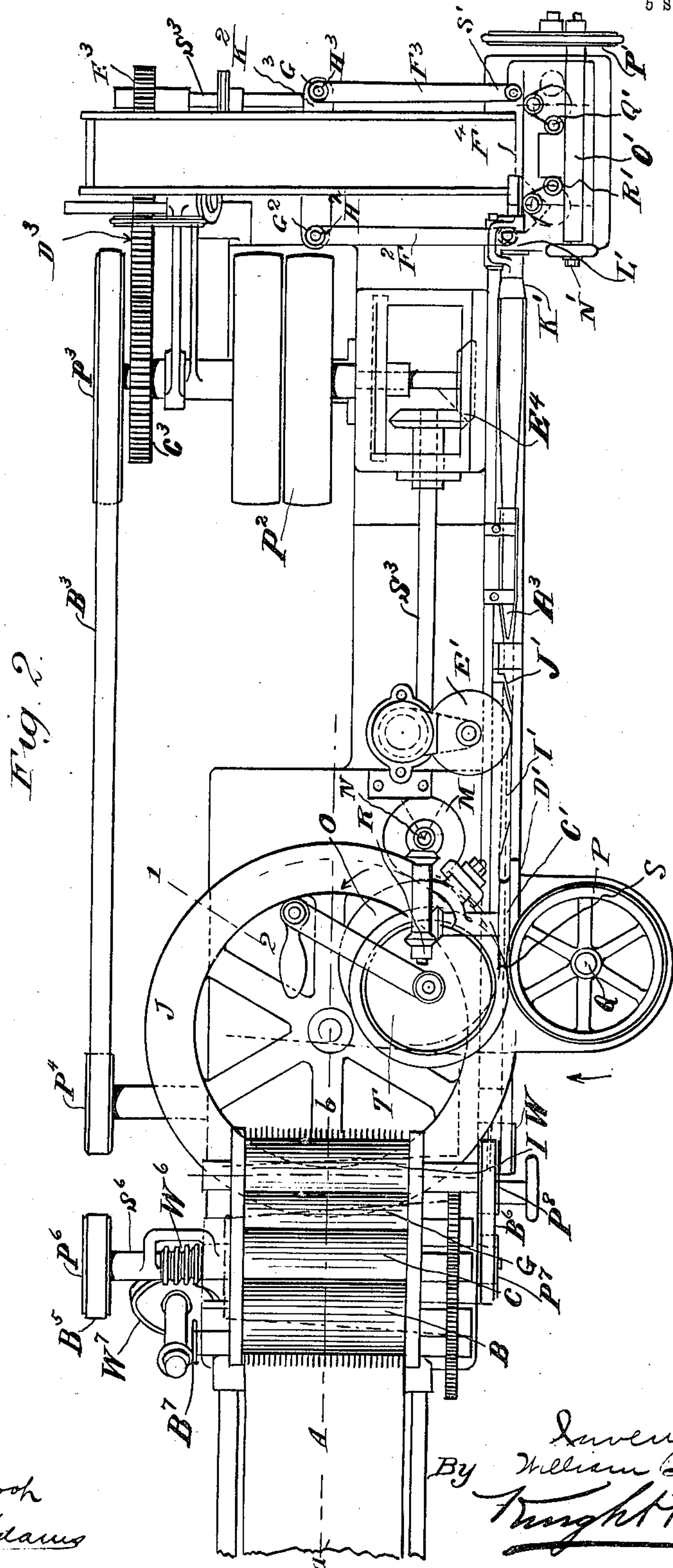
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5 SHEETS—SHEET 2.



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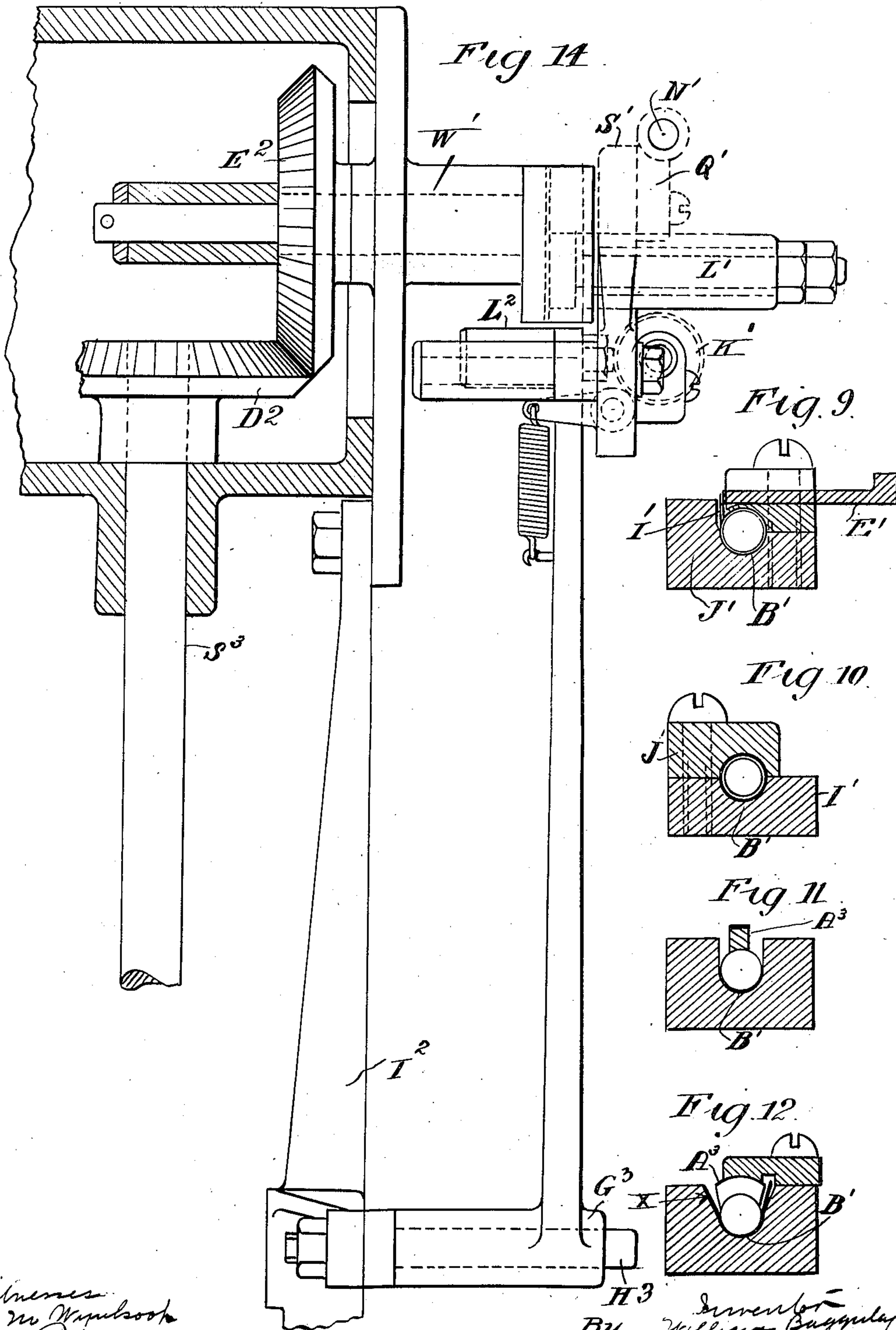
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

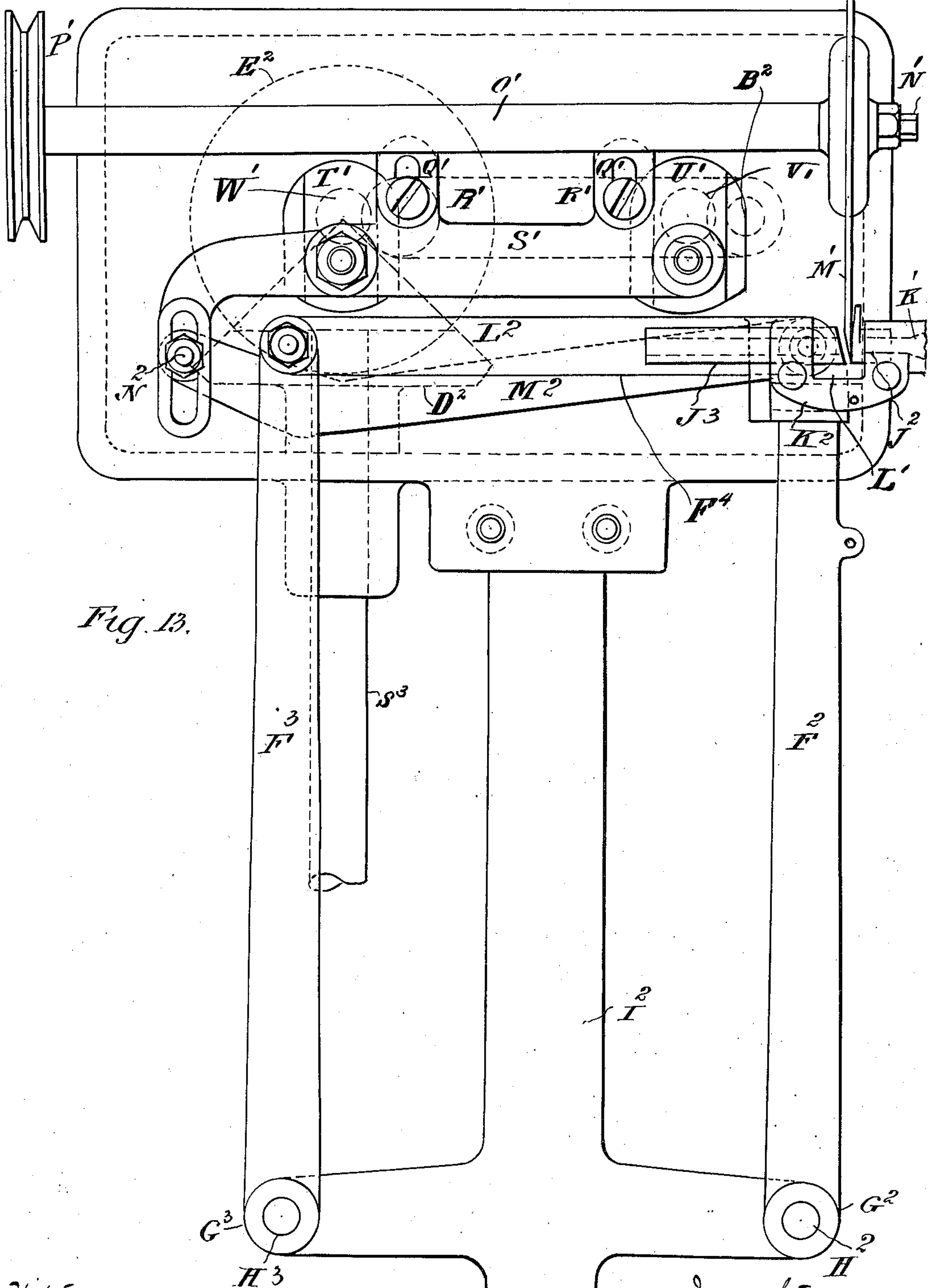


Fig. 13.

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UNITED STATES PATENT OFFICE.

WILLIAM BAGGULEY, OF WISHAW, SCOTLAND.

MACHINE FOR MAKING CIGARETTES.

No. 841,216.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed March 13, 1905. Serial No. 249,890.

To all whom it may concern:

Be it known that I, WILLIAM BAGGULEY, of Wishaw, Scotland, have invented certain new and useful Improvements in Machines for Making Cigarettes, of which the following is a specification.

This invention relates to improvements in cigarette-making machines in which the tobacco is fed in a continuous manner into the machine, formed into a continuous rod, and wrapped in a strip or ribbon of paper in such manner as to form a continuous cigarette, which is cut into sections of the desired length.

In the accompanying drawings, Figure 1 is a side elevation of the entire machine. Fig. 2 is a plan thereof. Fig. 3 is a section taken through the machine on the line *a b* of Fig. 3. Fig. 4 is an elevation showing the means for driving the feeding and carding mechanisms. Fig. 5 is an end elevation of the feeding and carding mechanisms, showing the means for operating the same. Figs. 6, 7, 8, 9, 10, 11, and 12 are vertical transverse sections taken at various places in the tobacco's course after its deposit upon the rotating disk and up to the issue of the completed cigarette rod from the wrapping-tube. Fig. 13 is a plan view, on a larger scale, of the mechanism for operating the knife which cuts the continuous cigarette in sections of desired length, and Fig. 14 is a side view of means for driving the knife mechanism.

The distribution of power to the several mechanisms embodied in the machine will be understood upon reference to Figs. 1, 2, 3, 4, and 5, in which is shown a main driving-pulley P^2 , carried by a transverse shaft S^2 . On the outer end of the transverse shaft S^2 is a pulley P^3 , by means of which the pulley P^4 is driven through belt B^3 . From pulley P^4 the power is transmitted to pulley P^6 by means of pulley P^5 and belts B^4 and B^5 . Mounted upon the other end of shaft S^6 , which carries pulley P^6 , is a pulley P^7 , by means of which the rollers C and I are made to rotate with the same velocity. In order to drive the rollers B and G at a speed relatively low to that of rollers C and I, the shaft S^6 has mounted upon it a worm W^6 , intermeshing with worm-wheel W^7 and so driving the roller B through intermeshing bevel-gears B^7 . From roller B power is transmitted to rollers F, E, and G, as shown in Fig. 4.

When it is desired to make cigarettes, the tobacco is placed upon the endless apron A,

which carries it under the compressing-roller B and then under the carding-roller C. The roller C coöperates with apron A to feed the tobacco into the hopper D, the said apron passing down and into the hopper and receiving its power from rollers E and F. (Seen more particularly in Figs. 3, 4, and 5.) Rollers B, C, G, and I are provided with radially-projecting combs or spikes. In order to compress the tobacco a second time before it is finally carded by the roller I, the bottom part of the hopper D is provided with an outer metallic wall H, which is rounded to conform to the compressing-roller G, which compresses the tobacco while conveying it to the final carding-roller I.

By means of this arrangement the feed of the tobacco is retarded at two points by the low-speed compressing-rollers B and G and again accelerated in each case by the relatively high-speed carding-rollers C and I, thus producing a uniform grade of tobacco, which is fed in a constant and evenly-distributed supply to the rod-forming mechanism. As the tobacco leaves the carding-roller I it falls upon an annular disk J, which disk is provided with annular toothed portion K, by means of which it is caused to rotate on a central stationary wheel L, the said stationary wheel having annular raised portion to hold the said disk in turning relation therewith. Intermeshing with toothed portion K of the annular disk J is a spur-gear M on vertical shaft N, which in turn is driven from below through bevel-gears E^5 (see Fig. 1) by the longitudinal shaft S^3 , which is driven from the main driving-shaft S^2 through bevel-gears E^4 , Figs. 1 and 2.

By the rotation of the annular disk J the tobacco is carried to the horizontal wheels O and P, Figs. 1 and 2, mounted on vertical shafts Q and R, whereby said plates are caused to rotate in opposite directions, as indicated by the arrows in Fig. 2. The wheel O slides over the annular disk J, while revolving on its own axis R, (hidden by Q in Fig. 1,) which projects upward through the said annular disk. The shafts Q and R are fixed in such relative position as to bring the peripheries of the wheels O and P into tangential relation at a point on the extreme edge of the annular disk and over the belt-carried paper wrapper. The peripheries of these wheels are each formed with a semicircular groove, so that at their points of coincidence a circular aperture S, Fig. 7, is formed. The wheel C is surmount-

ed by a plate T, which is made of greater diameter than that of wheel O, so as to extend out over the wheel P at the place where the two wheels meet. The tobacco conveyed by the annular disk J passes first under the plate T and then comes into contact with the periphery of the wheels O and P, by the rotation of which in opposite directions the tobacco is caused to travel through the circular aperture S, Fig. 7, where it is compressed between the two wheels, so as to issue therefrom in an endless rod-like filler.

Mounted above and at one end of the main driving-shaft S², from which it derives its power, is a pulley Y, between which and another pulley W, mounted in the same plane therewith, is operated an endless band X, maintained in taut driving relation with said pulley Y by means of tightening-pulley Z. Below the guide-pulley W is a reel V, from which the wrapping-paper U is drawn onto the endless band X over the pulley W and carried into wrapping relation with the continuous-cigarette rod (see Figs. 1, 2, and 7) as it issues from the grooved wheels O and P. By means of pulley C', which, as shown in Figs. 1, 2, and 8, is mounted close to wheels O and P, the tobacco rod is pressed lightly on the wrapper-paper, after which the continuous cigarette is completed within the folding-tube.

Figs. 7 to 12 illustrate the different stages of the operation from the formation of the tobacco rod or strip between the wheels O and P up to the issue of the finished continuous cigarette from the folding-tube B'. On issuing from the circular aperture S the tobacco strip passes into the groove of the mold B', wherein it is guided through a small partition D', Figs. 2 and 8, as far as the vertical grooved wheel C', after which one edge of the paper wrapper is folded down upon the tobacco rod by means of a folding-tube, which obviates the use of a needle, tongue, or other encumbrance in connection therewith, which is a very important feature of the invention. The free edge of the paper then meets a wheel E', Figs. 2 and 9, whose periphery is continuously charged with paste or gum from the container F'. This wheel E', which receives its rotary motion from a suitable gear, is situated above the groove B' of the mold and comes in contact with the paper, upon the edge of which it deposits a slight layer of paste or gum. From this point the overhanging part I' of the mold gradually retreats, while the other part J' advances in a corresponding degree, so as to press the pasted edge of the paper down onto the tobacco strip and cause it to adhere to the opposite edge of the paper, Fig. 10. The side J' finally unites with the side I', so as to form a tube, Fig. 10, around the tobacco rod inclosed in its paper envelop, which is partly surrounded by the band X. As the paper strip U is wider than

the band X, the gummed or pasted edge of the paper does not come in contact with the band when turned down onto the other edge of the paper.

Figs. 11 and 12 show the needle A³, which is designed to remove a source of much difficulty in existing machines by insuring the pasting or gumming, the removal of all excess paste or gum from the same, and the maintenance of the tube firmly secured from opening out after being pasted or gummed. To accomplish these results, the tapered needle A³ is suspended centrally above the latter or open end of the folding-tube in such manner as to bring the approaching cigarette rod first into contact with the said needle at the pointed end thereof in order to first apply a pressure at the center of the pasted seam of the cigarette rod and then gradually to distribute the pressure over the entire width of seam in such manner as to expel therefrom all excess of paste and to maintain the same under a uniform pressure until the paste therein has set.

On passing from the folding-tube B' the continuous cigarette is conveyed by the band X to the top of wheel Y, whence it passes into the flared opening K' of the oscillating tubular shield or support L', (see Figs. 1, 2, and 8,) comprising the flared tubular portion J², the straight tubular portion J³, and an intermediate connecting-block K², which also serves as a means for support of the entire device upon the rocking framework. Referring now to Figs. 13 and 14, I² is a transverse member bolted in rigid connection with the main framework of the machine. Swinging upon the transverse member I² is the rocking framework comprising levers F² and F³, pivoted, respectively, at G² and G³, and the end connecting-link L², which forms the closing side of a rocking parallelogram, as shown in Fig. 13. The tubular shield L' is mounted upon the connecting-link L² to maintain its axis in parallel with that of the folding-tube, while to avoid any considerable discrepancy in the coincidence of the two parts the side members F² and F³ of the rocking framework are made of considerable length. At the intersection of the frame members L² and F² is also attached a connecting-lever M² for transmitting power to the rocking frame from the connecting tie member S', which is furnished at one end with a slotted hook, by means of which the said connecting-lever M² receives its power from tie member S' through the bolt N², which slides in the said slotted hook. Referring now to Fig. 2, C³ is a driving spur-gear carried by the main driving-shaft S². Driven from this driving-gear C³ through an idler D₂ is a spur-gear E³, carried by the transverse shaft S³. The shaft S³ extends nearly the full width of the machine and carries on

its other end a bevel-gear D^2 , (see Figs. 13 and 14,) intermeshing with a second bevel-gear E^2 . Gear E^2 is fixed on a vertical shaft W' , which it drives, and carries a crank-pin A^2 , (see Fig. 1,) by means of which a second parallel shaft V' is driven through connecting-link C^2 and crank-pin B^2 . On the upper ends of the said parallel vertical shafts W' and V' are keyed the parallel set driving-
 10 cranks T' and U' , by means of which is driven the connecting tie member S' . R' R' , which are side projections of the connecting tie member S' , form supporting means for the knife mechanism, which comprises a rotary knife M' and driving-pulley P' , a spindle N' , carrying the said pulley and knife, and a sleeve in which the said spindle rotates, which is held in adjustable relation on the tie member S' through the slotted
 20 foot projections $Q' Q'$. To avoid the possibility of dead centers in the operation of the knife-operating cranks, those at the top of the upright shafts are set at right angles to those at the bottom. From an inspection
 25 of Fig. 13 it will be seen that while the rotary knife M' and shield L' are made to travel backward and forward together in a direction parallel to the feed of the continuous cigarette the knife is oscillated into and out
 30 of cutting relation with the continuous-cigarette rod in such a way as to sever cigarettes of the desired length.

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

1. In a cigarette-machine, the combination of a feed-roller, a hopper and an endless feed-belt which feeds the tobacco to the said feed-roller and passes down and into the said
 40 hopper.

2. In a cigarette-machine, the combination of a hopper, an endless feed-belt passing down and into said hopper, and a spiked compression-roller cooperating with the said
 45 endless feed-belt to feed the tobacco into the hopper.

3. In a cigarette-machine, the combination of an annular plate for feeding the tobacco in a continuous stream, a pair of cooperating grooved rolls for continuously forming the tobacco thus fed, into a filler-rod, a tubular device for wrapping the filler thus formed and a tapered needle device for expelling the excess paste from the cigarette
 55 seam before the setting of the paste.

4. In a cigarette-machine, the combina-

tion of a paste-wheel, a feed-tube having a circular cross-section, and a tapered tongue device whereby pressure is first applied at the center of the pasted seam and gradually
 60 extended over the entire seam so as to remove all excess paste therefrom while maintaining the edges of the wrapper in close contact after pasting.

5. In a cigarette-machine, the combination of a shield or oscillating portion of the feed-tube, means for supporting both ends thereof in such manner as to allow an end-wise oscillation while maintaining its axis in substantial coincidence with that of the
 70 major stationary portion of the feed-tube, and a rotary knife whose axis is revolved in a horizontal plane into and out of cutting relation with the cigarette rod.

6. In a cigarette-machine, the combination of a shield forming a separate portion of the feed-tube, a bar on which this portion is mounted, two relatively long levers carrying the bar and pivoted to the main frame of the machine and a crank-driven pitman for oscillating the whole.
 80

7. In a cigarette-machine, the combination of a circular cutting-blade mounted so as to pass into and out of cutting relation with a continuous cigarette and having a
 85 movement along with the said cigarette rod while in cutting relation therewith, an oscillatory portion of the feed-tube mounted in such manner as to be oscillated longitudinally along the axis thereof while its axis is
 90 maintained in substantial coincidence with that of the stationary portion and a pitman joining in working relation, the aforesaid parts of the cigarette-cutting mechanism.

8. In a cigarette-machine, the combination of a hopper into which the tobacco is fed, an endless feed-belt passing down and into said hopper, a tubular wrapping device for inclosing the cigarette rod with paper, a needle-retaining device for holding the
 100 pasted edges of a continuous cigarette in close juxtaposition, a rotary cutting-knife whose axis is revolved in the horizontal plane of the feed-tube axis and a longitudinally-oscillatory portion of the feed-tube.
 105

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

WILLIAM BAGGULEY.

Witnesses:

JOHN LIDDLE,

CATHERINE HAMILTON.