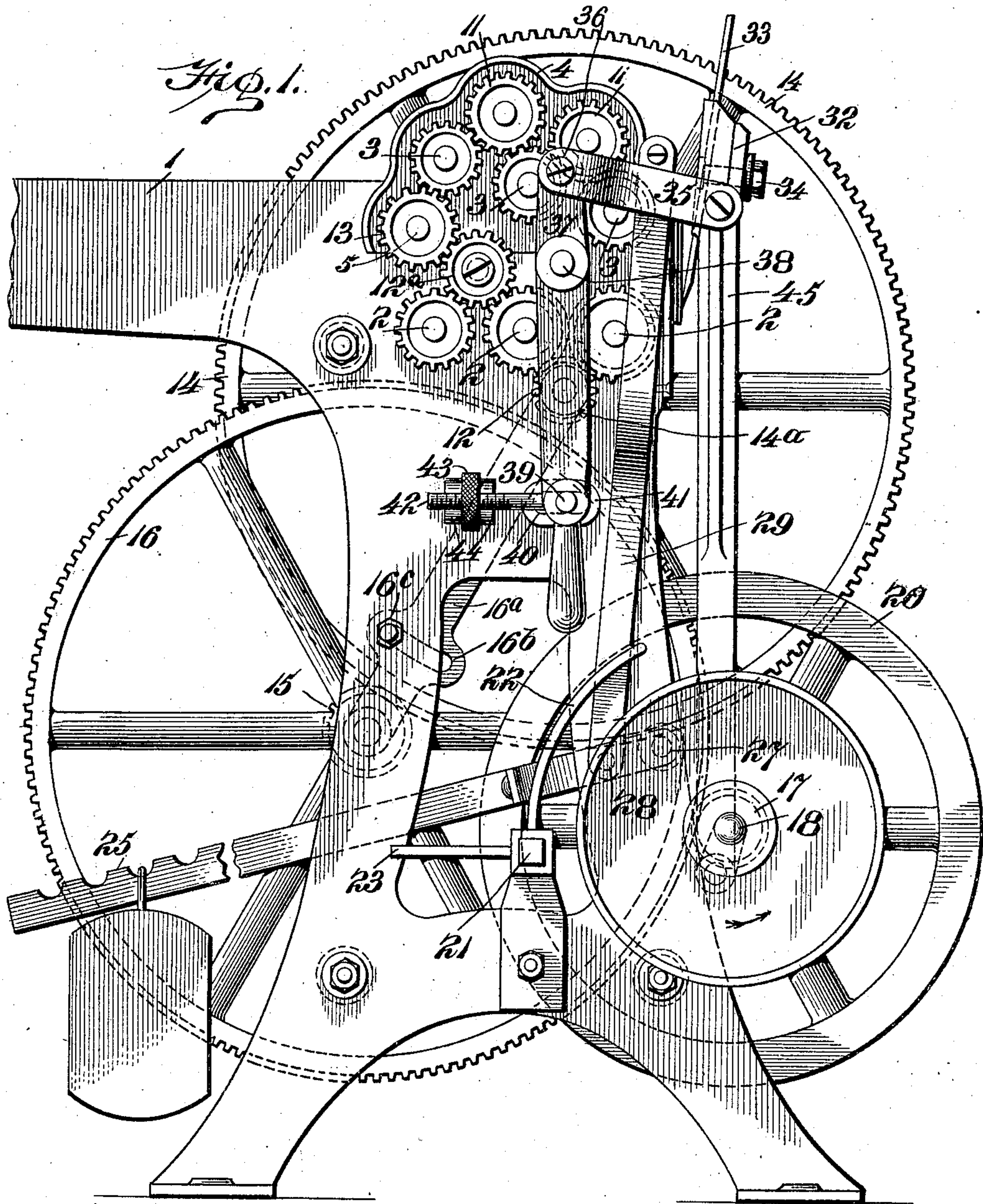


No. 846,734.

PATENTED MAR. 12, 1907.

N. DU BRUL.  
TOBACCO CUTTER,  
APPLICATION FILED OCT. 15, 1904.

4 SHEETS—SHEET 1.



WITNESSES:

*G. F. Dieterich*  
*J. M. Nynkoop,*

INVENTOR

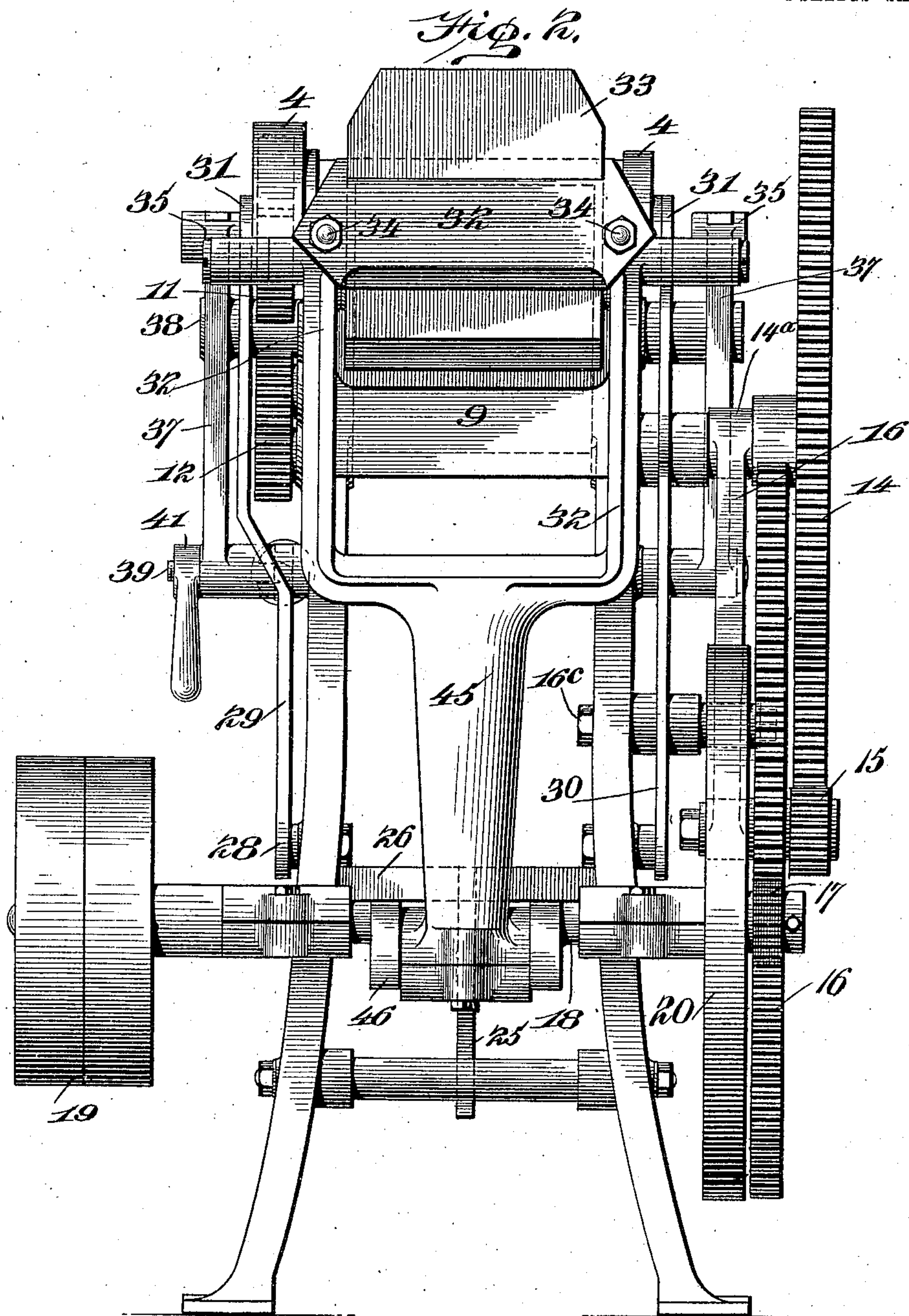
*Napoleon Du Brul*  
BY *Knight Bros*  
Attorneys

No. 846,734.

PATENTED MAR. 12, 1907.

N. DU BRUL.  
TOBACCO CUTTER.  
APPLICATION FILED OCT. 15, 1904.

4 SHEETS—SHEET 2.



Inventor

Witnesses  
*H. G. Dieterich*  
*J. M. Kynkoop.*

*Napoleon DuBrul*  
By *Knight Bros*  
Attorneys





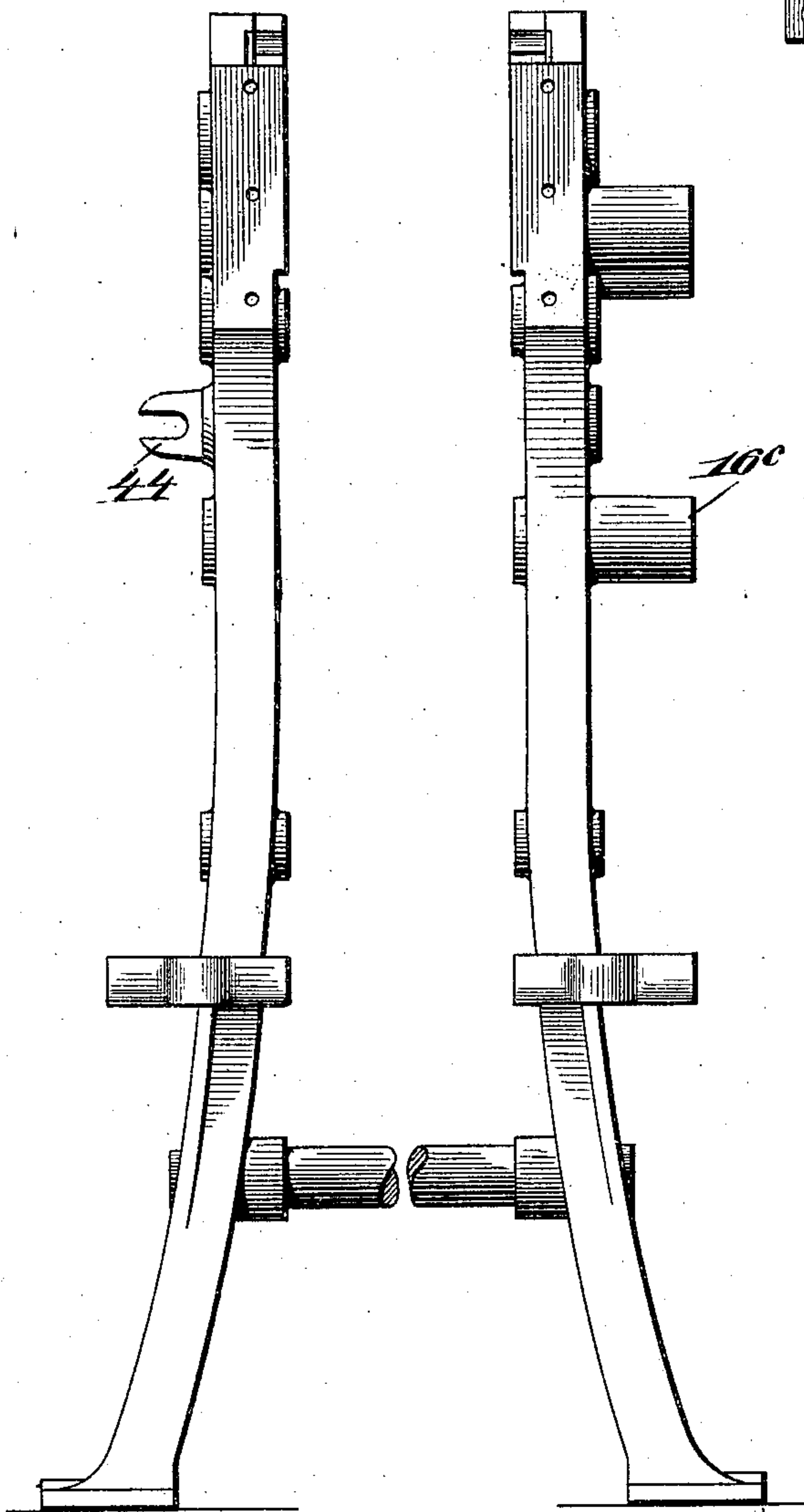
No. 846,734.

PATENTED MAR. 12, 1907.

N. DU BRUL.  
TOBACCO CUTTER.  
APPLICATION FILED OCT. 15, 1904.

4 SHEETS—SHEET 4.

*Fig. 10.*



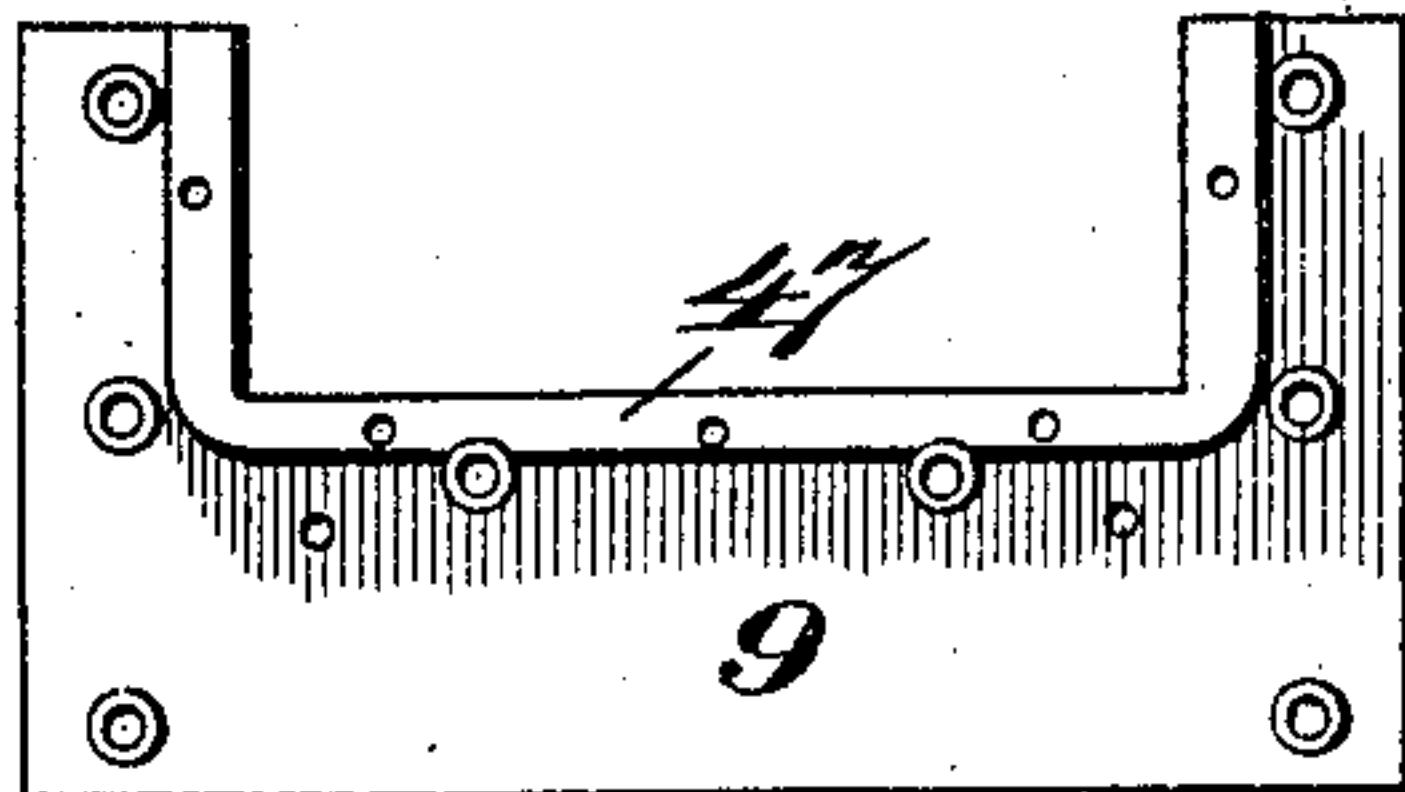
*Fig. 11.*



*Fig. 13. Fig. 14.*



*Fig. 12.*



Witnesses

*H. G. Dieterich*  
*J. M. Kynkoop*

Inventor

*Napoleon DuBoul*  
By *Knight Bros* Attorneys



# UNITED STATES PATENT OFFICE.

NAPOLEON DU BRUL, OF CINCINNATI, OHIO.

## TOBACCO-CUTTER.

No. 846,734.

Specification of Letters Patent.

Patented March 12, 1907.

Application filed October 15, 1904. Serial No. 228,543.

*To all whom it may concern:*

Be it known that I, NAPOLEON DU BRUL, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Tobacco-Cutters, of which the following is a specification.

My invention relates to improvements in machines for cutting tobacco, and consists of certain novel features of construction, hereinafter fully described, and particularly pointed out in the claims, the embodiment of which in a machine of this type brings the machine to a higher state of perfection with respect to its cutting capacity, the fineness of cut, the facility for adjusting the machine whereby the fineness of its cut is changed at will, the uniformity of the product whatever degree of fineness selected, and the steadiness of operation and simplicity of construction, whereby the durability of the machine as well as its uniformity of product is increased.

My invention will be fully understood upon reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the complete machine, excepting a portion of the feed-trough, which is broken away. Fig. 2 is a front elevation of the machine. Fig. 3 is a vertical section from front to rear through the feed-rolls and contiguous parts of the machine. Fig. 4 is a rear view of the cutter member with blade removed. Figs. 5, 6, and 7 show, respectively, side views of the two links and a plan view of the fulcrum-yoke which connects the weighted lever with the upper movable series of feed-rolls. Figs. 8 and 9 are top views of the links which guide the upper end of the cutting member. Fig. 10 is a front view of the two sides of the main frame of the machine. Figs. 11 and 12 are front views of the two stripper-supporting plates. Figs. 13 and 14 are a front and an end view of one of the strippers.

As a very low rate of motion must be imparted to the feed-rolls of tobacco-cutting machines, varying according to size of cut desired, and as this motion is usually transmitted through speed-reducing mechanism from the crank-shaft, which usually revolves at a high rate of speed, it is of the utmost importance to have this gearing of the most simple and yet powerful nature. In some machines of this type the feed motion to the rolls is imparted by pawl-and-ratchet mech-

anism. The obvious objection to this method is the uncertainty of the width of cut tobacco produced, due to the rolls slipping over the tobacco-block being fed forward in consequence of the inertia of the tobacco and its friction in the trough having to be overcome at every cut. Moreover, the machine is subjected to successive shocks at every recurrence of the stroke, which impairs the stability of the machine and necessitates reduction of speed. In other machines the feed is driven by means of work and work-gears which are recognized consumers of power and require a complicated and extensive system of bevel-gearing to connect to the feed-rolls and change-gears for varying the cut which are difficult of application.

In this machine constant power is transmitted from the shaft directly and continuously to the feed-rolls through a train of simple reducing spur-gears embodying a change-pinion.

On one end of the driving or crank shaft 18 is shown a balance-wheel 20 and tight and loose pulleys 19, a shifter 21 22 23 being employed for moving the driving-belt across their faces.

Instead of having the crank-shaft 18 mounted upon the upper part of the machine, with consequent loss of stability and pushing the knife to its work with consequent chattering of the cutting edge, I locate the shaft low upon the machine that I am enabled to attain higher speed without shocks and vibration and so connect the knife that it is pulled to its work from a point sufficiently remote to effectually overcome chattering tendency and render insignificant the effect of the curve in that path of the crank-pin's travel which imparts the cut and leave ample room for the simple and direct train of spur-gears through which a constant and continuous drive is imparted to the feed, which will now be described.

The end of the crank-shaft 18 opposite the pulley 19 is constructed to receive any of a plurality of interchangeable drive or leader pinions 17, varying in size according to the fineness of tobacco to be cut. Pinion 17 engages with the large wheel of a lower or intermediate reducing-gear 15 16, adjustably fastened to the frame by a means hereinafter described and readily brought to mesh with any change-gear 17 that may be fitted to the end of the crank-shaft. The small pinion of



this lower reducing-gear in turn engages with a large gear-wheel 14, journaled in the main frame and carrying at the other end of its shaft a pinion 12, engaging directly the pinions on the front two lower feed-rolls 2, from which motion is imparted to the lower rolls 2 in the feeder-head, more fully hereinafter described. As a refinement of construction to enable a more ready adjustment of the lower reducing-gear to change the gear the lower reducing-gear may be journaled on a stud carried by an arm 16<sup>a</sup>, swinging on a turned portion of the hub of the upper reducing-gear and adjustably attached to the frame by a bolt 16<sup>c</sup>, passing through the middle slotted portion 16<sup>b</sup>.

Tobacco in suitable condition is supplied to a feed-trough 1, comprising rearward side extensions of the frame, whence it passes to the feed-rolls (shown best in Fig. 3) comprising a lower series of fixed rolls 2 and an upper series of rolls 3, mounted in vertically movable or swinging side frames 4, fulcrumed on pins 5. The foremost rolls in the respective upper and lower series have strippers 6 7, which direct the tobacco in compressed form outward, the upper stripper being supported by the stripper-plate 8, secured at its ends to the movable side plates 4, and the lower stripper being supported by the stripper-plate 9, which also carries a shear-plate 10 for coöperation with the cutter. The upper rolls are geared together by idlers 11 and the lower rolls by pinion 12 and idler 12<sup>a</sup> in a manner to cause the rolls in each series to rotate with their opposed faces moving in the same relative (forward) direction, the two series being geared together by an idler 13 upon one of the pins 5, on which the side frames 4 are fulcrumed.

25 represents a weighted arm connected at one end to the center of a yoke 26 and forming therewith a bifurcated lever, which is fulcrumed at 27 on the frame of the machine and connected at 28 with two links 29 and 30, which extend upward to and are connected at 31 with the forward free ends of the swinging side frames 4, whereby the weighted lever exerts through the upper rolls a pressure upon the tobacco being fed through the machine.

33 indicates the knife for shaving the tobacco from the compressed cake that is fed forward by the feed-rolls. This knife is fastened by clamps 34 to the holder 32, which is connected at its upper part to the ends of two vibrating links 35, fulcrumed at 36 on the upper parts of movable arms 37, adjustably secured to the frames by pivots 38.

The adjustment of the arms 37, and consequently the knife 33, to and from the shear-plate 10 is accomplished by means of the hand-nut 43, confined between lugs 44 on the frame, the operation of the nut causing an eyebolt 42, connected to a rod 39, that ties

both the lower portions of arm 37 together to swing both movable arms in unison until the proper angular position of knife is obtained. The tie-rod extends through slots 40 in opposite sides of the frame (one only being shown) and one end is threaded for the attachment of a nut 41, which locks the arm 37 in any desired position.

The lower half of knife-holder 32 is connected to the crank-pin of crank-shaft 18. The positions, arrangement, and relations of the knife-holder 32, the links 35, and crank-shaft 18 are such that as the crank rotates in the direction of the arrow the knife will descend in a substantially straight line across the mouth of the trough, the links controlling the head of the knife-holder 32 operating in a reverse arc to that of the cutting portion of the stroke of the crank 46, which carries the lower part 45 of knife-holder 32. As the crank movement continues this compensating relation is overcome and the knife 33 moves outwardly from the shear-plate 10 to a path described for the remainder of the stroke and until it resumes the above-described relation to the mouth at beginning of the next cutting-stroke. The path described is approximately of a semi-elliptical orbit, so that contact between the knife and the protruding tobacco is avoided after the completion of the cutting-stroke.

It is obvious that if in continuous-feed machines the knife is disposed in close vertical parallel to the cut face of tobacco-cake there will be obstruction of the tobacco due to its working out against the face of the knife. This is easily overcome by giving the cutting-knife 33 a slight outward inclination, thereby allowing freedom for the tobacco to protrude above the cutting edge of knife.

Having thus described my invention, what I claim as my invention is—

1. A continuous-feed reciprocating tobacco-cutter comprising continuously-revolving feed-rolls, a mouth to which tobacco is delivered by said rolls to be cut, a knife mounted at an angle to the plane of said mouth, moving downward in suitable relation to cut tobacco protruding therefrom and mounted to rock upon an axis in a horizontal plane passing through the knife, a crank-shaft suitably mounted upon the lower portion of the machine beneath the knife parallel to the rocking axis of the knife, and a connection between the crank of said shaft and the knife, for imparting the downward cutting movement to the knife during the downward rotation of the crank, an outward rocking movement to remove the blade from the mouth and an upward movement to said blade during the upward movement of the crank.

2. In a continuous-feed reciprocating tobacco-cutter, the combination of upper and lower feed-rolls, a cutting-mouth to which



the tobacco to be cut is fed by said rolls, a knife reciprocating in cutting relation to said mouth during its downward stroke and held at an angle to the plane of the mouth during its cut, means whereby said knife is mounted to rock upon an axis in a horizontal plane passing through the knife whereby it may rock to bring its cutting edge away from the mouth during its upper movement, a connection rigid with the knife in the direction of its rocking movement, extending downwardly to the lower portion of the machine, a crank-shaft upon which said connection has bearing, imparting the downward movement to the knife-blade and holding said blade in cutting relation to the mouth during the downward movement of the crank and rocking the blade outward from the mouth and moving it upward during the upward movement of the crank, and a direct train of reducing spur-gears extending from the crank-shaft to and in driving relation with the feed-rolls and imparting continuous rotation thereto in definite relation to the cutting-stroke of the knife.

3. The combination with the frame and the continuous-feeding mechanism mounted thereon, of a knife-holder, a crank-shaft in driving relation with one end of the knife-holder, a pair of vibratory links each connected to the other end of the knife-holder, a pair of adjustable levers upon which the vibratory links swing, a transverse tie-rod for connecting the adjustable levers, a threaded eyebolt for setting the adjustable levers and a nut for locking the adjustable levers in any desired position.

4. The combination with the cranked drive-shaft, of the feed mechanism, reducing-gearing connecting the cranked drive-shaft and the feed mechanism, constructed to cause the continuous operation of the feeding mechanism, and a knife-holder connected at one end to the crank-shaft and at its other end moving in an eccentric orbit.

5. The combination with the drive-shaft, of a feeding mechanism, reducing-gear connecting the drive-shaft and the feed mechanism, constructed to cause the continuous operation of the feed mechanism, a reciprocating knife and means for causing it to oscillate about an axis in a horizontal plane intersecting the knife, while it is reciprocated by the crank-shaft.

6. The combination with the continuous-feeding mechanism, of a knife-holder, vibratory links connected to said knife-holder pivoted means for shifting the fulcrums of the vibratory links, and means for causing the other end of the knife-holder to travel in a circular path.

7. The combination with the continuous-feeding mechanism, of a knife-holder, vibratory links connected to one end of the knife-holder, pivoted means for shifting the ful-

crums of the vibratory links and a crank-shaft connected to the other end of the knife-holder.

8. The combination with the continuous-feeding mechanism, of a knife, a knife-holder, vibratory links connected to one end of the knife-holder in a horizontal plane cutting the knife means for shifting the fulcrums of the vibratory links, and means for causing the other end of the knife-holder to travel in a circular path.

9. The combination with the continuous-feeding mechanism, of a knife-holder, a pair of adjustable levers, a pair of vibratory links each connected at one end to an adjustable lever and at its other end to the knife-holder near one end, and a crank-shaft connected to the knife-holder near the other end.

10. The combination with the continuous-feeding mechanism, of a knife, a knife-holder, vibratory links connected to one end of the knife-holder in a horizontal plane intersecting the knife, means for shifting the fulcrums of the vibratory links, and a crank-shaft connected to the other end of the knife-holder.

11. In a machine for cutting tobacco, the combination with the drive-shaft carrying a gear, of feeding-rolls, a second shaft parallel to the first for operating the feeding-rolls, a gear carried thereby a swinging arm journaled on said second shaft, and a reducing-gear carried by the swinging end of the arm and geared to the drive-shaft and the feed-roll-operating shaft.

12. In a machine for cutting tobacco, the combination with the drive-shaft, carrying a gear, of feeding-rolls, a shaft for operating the feeding-rolls, a gear carried thereby, a swinging arm journaled on said shaft, and a reducing-gear carried by the swinging end of the arm and geared to the drive-shaft and the feed-roll-operating shaft, and a pitman-driven knife operated continuously from the drive-shaft.

13. In a machine for cutting tobacco the combination with the feeding-rolls, of a cranked drive-shaft, a reducing-gearing between the feeding-rolls and the cranked drive-shaft constructed to continuously operate the rolls, a knife-holder connected at one end to the cranked drive-shaft, and means for causing the other end of the knife-holder to travel in an arcuate path.

14. In a machine for cutting tobacco having continuously-rotating feed-rolls, the tobacco-feeding rolls, a drive-shaft a reciprocating cutter operated through an arcuate path by the drive-shaft, a pinion secured to drive-shaft, an intermediate reducing-gear driven by said pinion, a reducing-gear leading to feed-rolls driven by the intermediate reducing-gear.

15. In a machine for cutting tobacco having continuously-rotating feed-rolls, the to-



5 bacco-feeding rolls, a drive-shaft, a pinion secured to drive-shaft, an intermediate reducing-gear driven by said pinion, a reducing-gear leading to feed-rolls driven by the intermediate reducing-gear, vibratory levers connected to the frame and a knife-holder pivoted at one end to the vibratory links and at the other end connected to the crank-shaft, the coöperating relation between the vibra-

tory levers and the crank-shaft being such so that the knife moves in an eccentric path.

The foregoing specification signed this 12th day of September, 1904.

NAPOLEON DU BRUL.

In presence of—

F. BROERMAN,  
E. H. FISHER.