

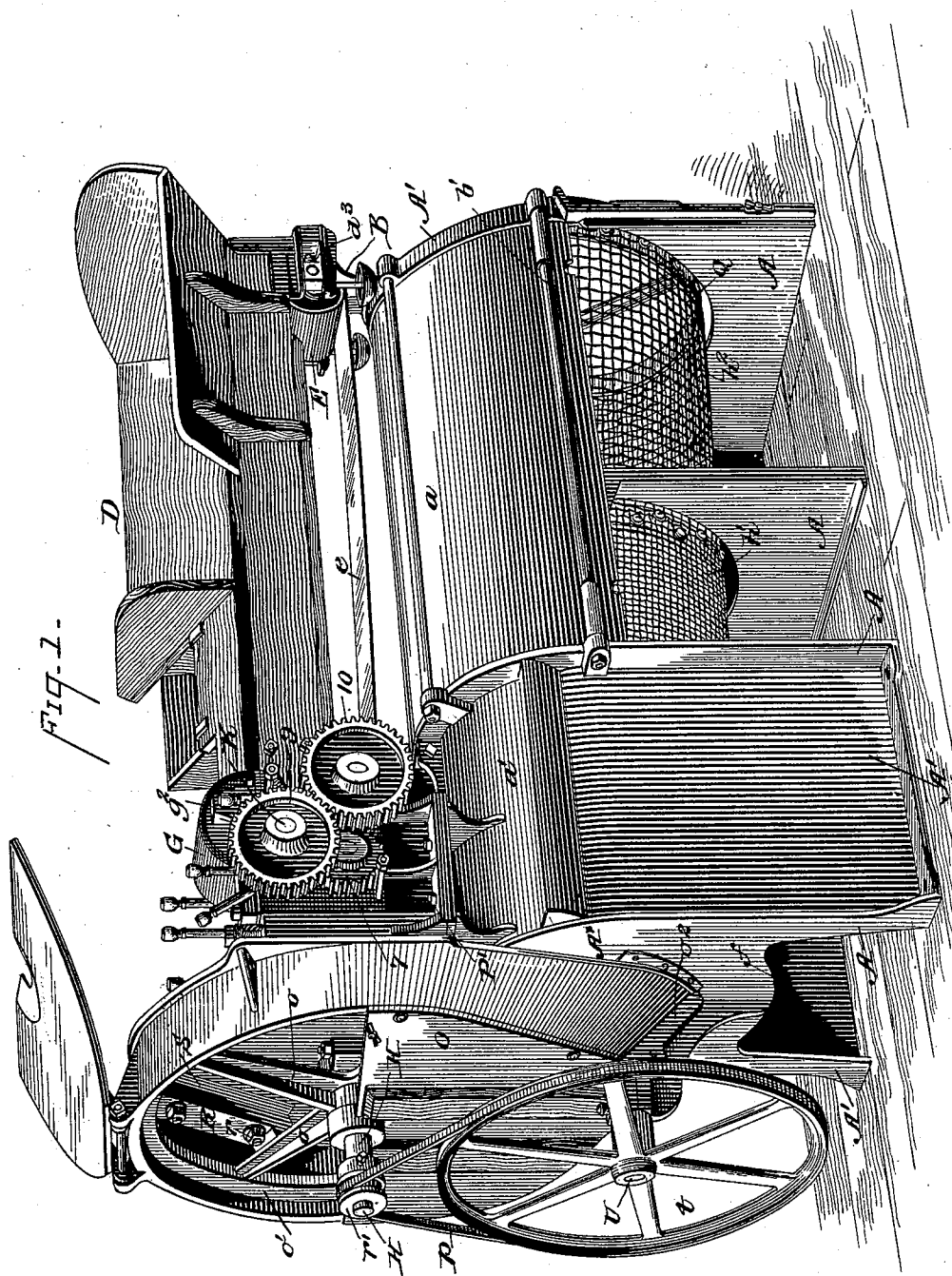
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8 Sheets—Sheet 1.

N. DU BRUL.
TOBACCO CUTTING MACHINE.

No. 560,483.

Patented May 19, 1896.



WITNESSES:

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Walter & Allen

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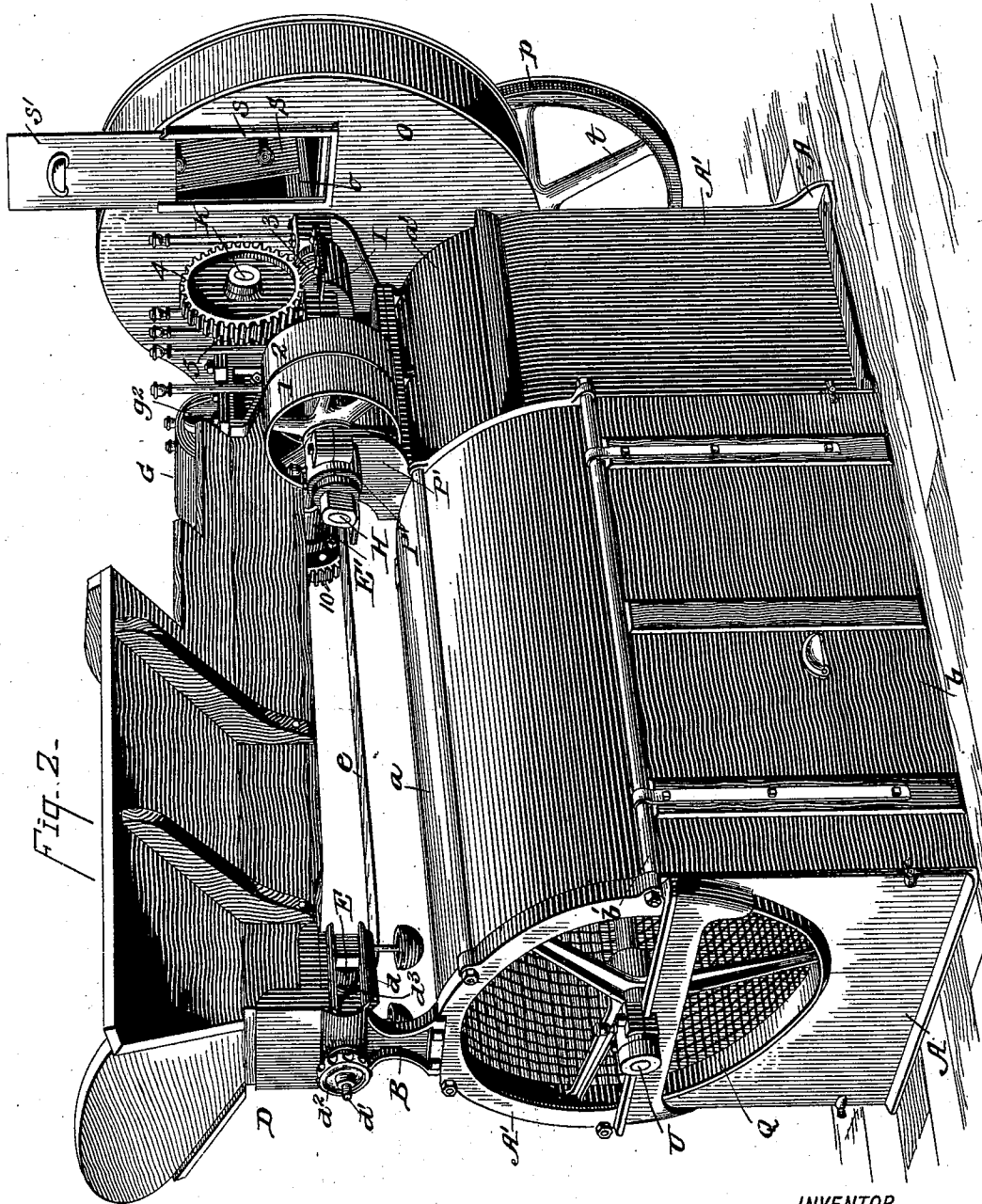
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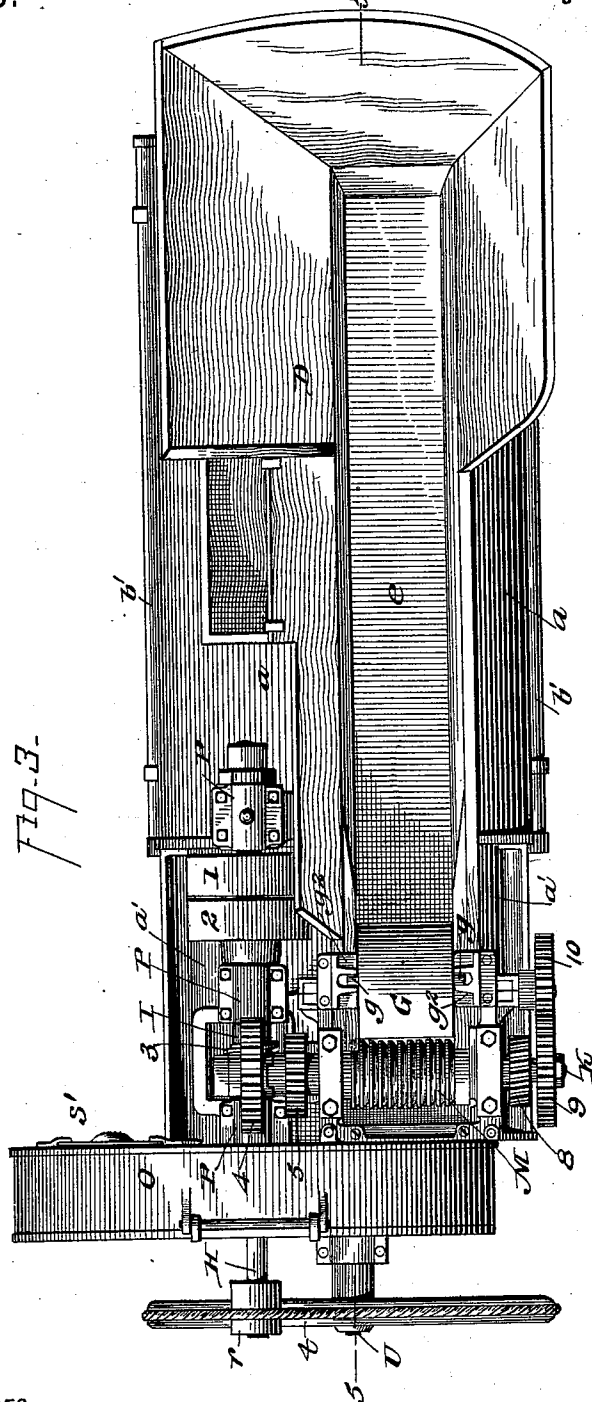
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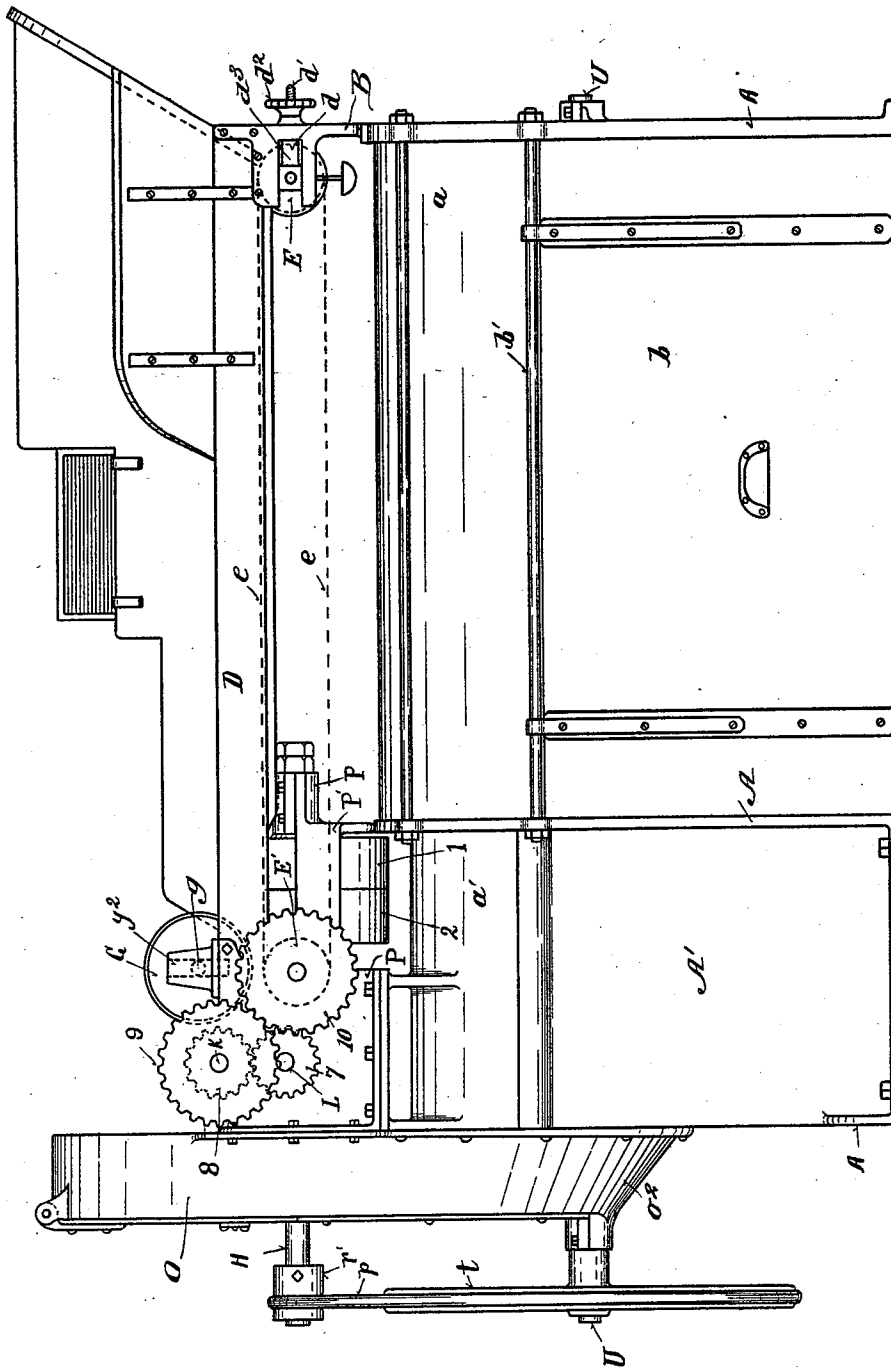


Fig. 4-

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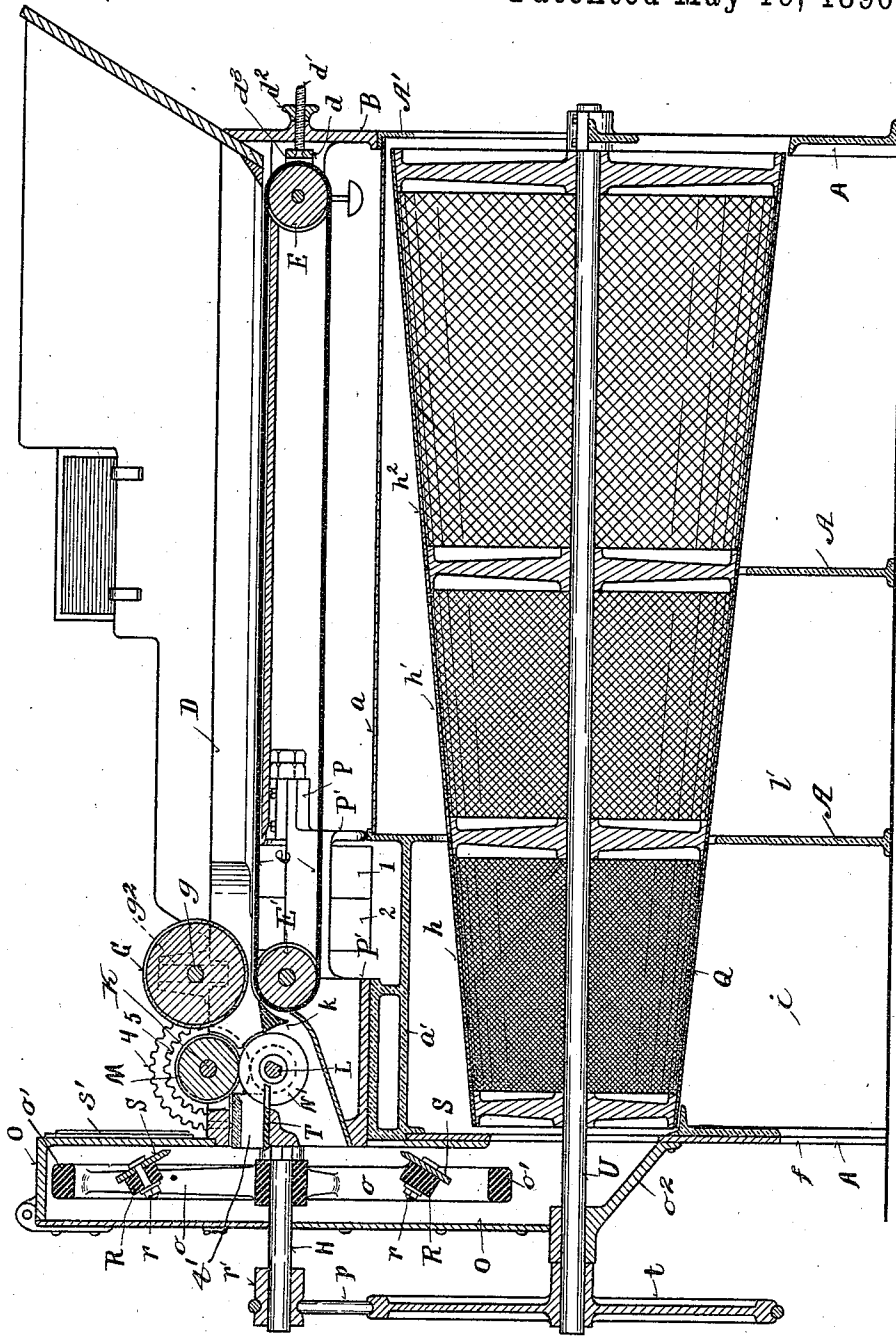


Fig. 5.

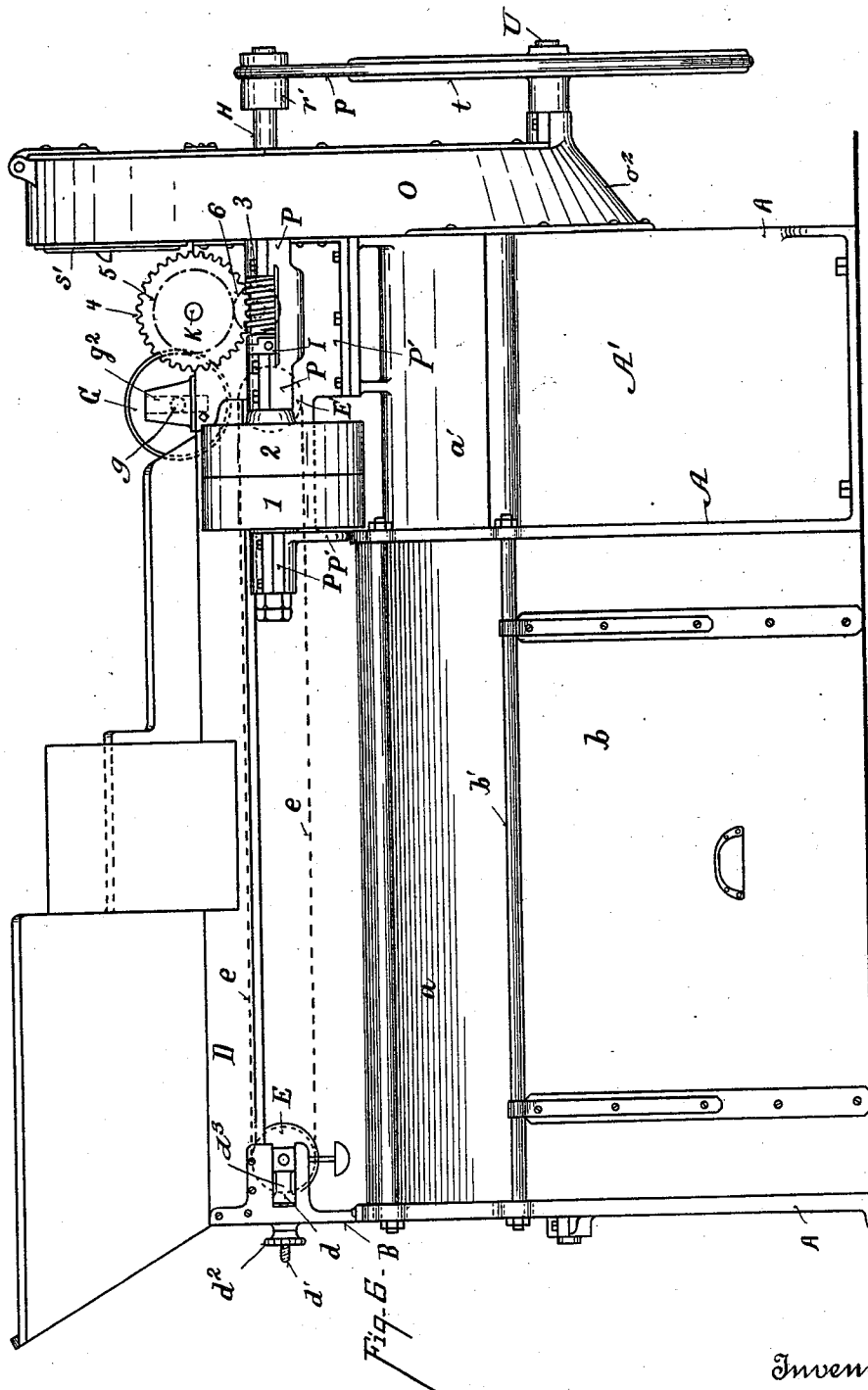
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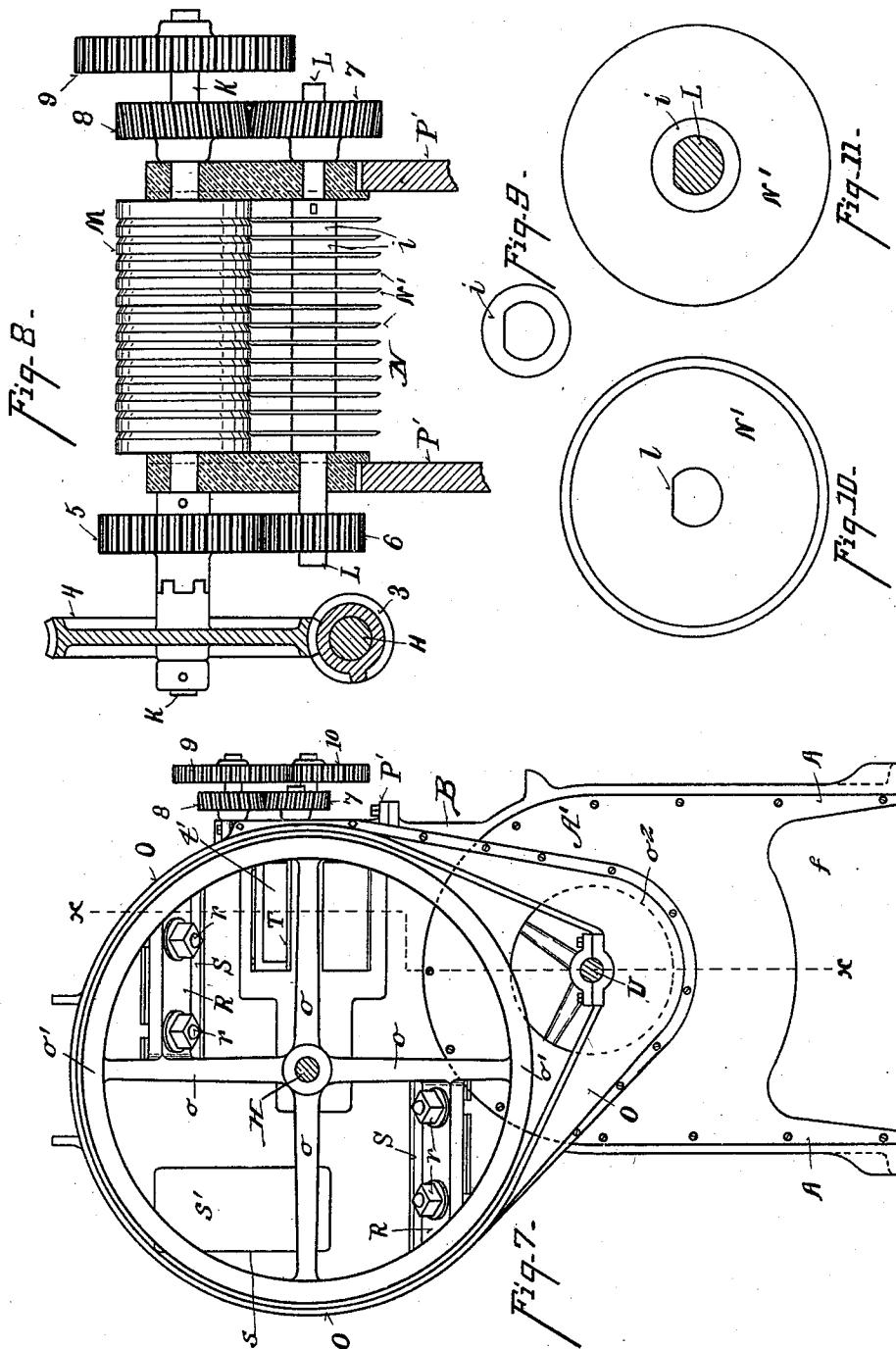
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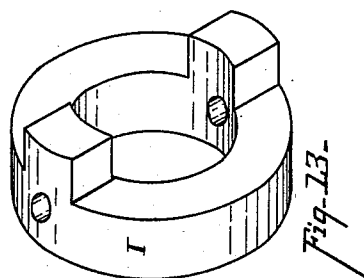
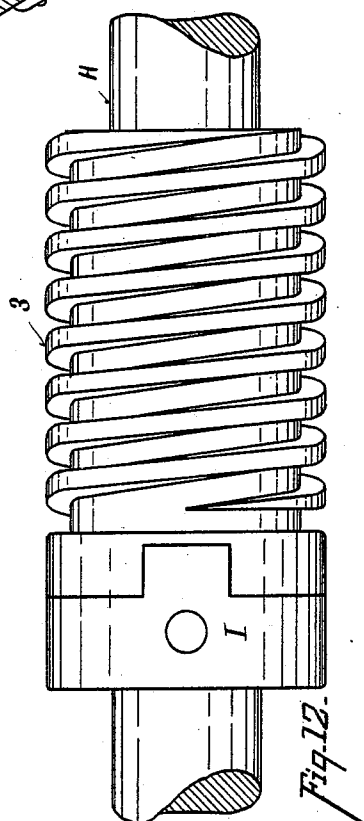
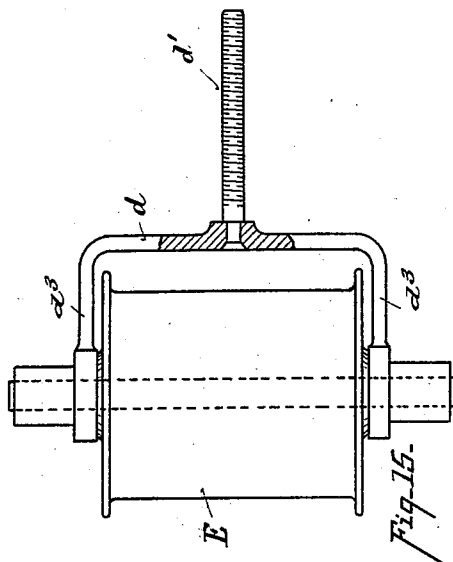
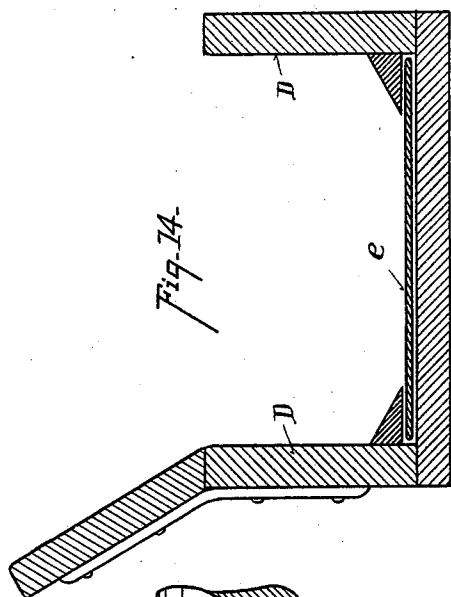
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UNITED STATES PATENT OFFICE.

NAPOLEON DU BRUL, OF CINCINNATI, OHIO.

TOBACCO-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,483, dated May 19, 1896.

Application filed March 22, 1895. Serial No. 542,817. (No model.)

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 and State of Ohio, have invented certain new and useful Improvements in Tobacco-Cutting Machines, of which the following is a specification.

My invention is designed to provide a machine for cutting tobacco-leaves into scrap adapted to be used for smoking, chewing, and also for cigar-fillers.

One of the objects of my invention is to provide an improved and more-rapidly-cutting machine than has heretofore been produced.

Another object of my invention is to provide the machine with cutting mechanism which will evenly feed and deliver the leaf-tobacco to the knives.

Another object of my invention is to provide means for carrying the reduced tobacco into a grading-machine, where the different grades of tobacco are assorted and the coarser produce delivered out of the tail of the reel, where it can be passed over again through the machine, if desired.

Another object of my invention is to provide a hood for the cutter-head of the machine having an opening from which the knives can be readily removed for sharpening and through which they can be replaced.

The construction of the machine herein described is such that only one operator is required to run it.

The novel features of my invention will be fully set forth in the description of the machine shown in the accompanying drawings, in which—

Figure 1 is a front perspective view of my improved tobacco-cutting machine. Fig. 2 is a rear perspective view. Fig. 3 is a top view. Fig. 4 is a front elevation. Fig. 5 is a vertical longitudinal section on the line x x , Fig. 7. Fig. 6 is a rear elevation. Fig. 7 is an end elevation, the end door being omitted. Fig. 8 is a detail view of the cutting-rolls and driving-gear. Fig. 9 is a side view of one of the collars interposed between the disk knives of the lower cutting-roll. Fig. 10 is a side view of one of the disk knives. Fig. 11 is a view of the reverse side of one of

the disk knives and its collar affixed to the shaft. Fig. 12 is a detail side view of the worm-gear and clutch. Fig. 13 is a detail perspective view of one member of the clutch. Fig. 14 is a central vertical transverse section through the hopper. Fig. 15 is a plan view of an adjustable belt-pulley.

A represents the legs of the base-frame A' of the machine. Surmounting and secured to the base-frame is a detachable bracket B, which forms a support for a hopper D.

a a' are semicircular housings or covers for the base-frame, forming in connection with the latter a chamber for a grading-cylinder hereinafter described. The sides of a portion of the grading-chamber are closed by doors b , hanging pendent from the rods b' , and thus provide access to a portion of the grading-chamber. Beneath the hopper is an endless apron or belt e , on which the tobacco is deposited for transfer to the cutters. This apron or belt is supported on rollers E E' . The outer roller E is journaled in the forks or arms d^3 of a yoke d , which is provided with a screw-rod d' , extending through the bracket B.

d^2 is a nut working on the screw-rod and bearing against the bracket for regulating the tension of the endless apron or belt.

The cutters comprise a grooved upper roll M and a lower roll N, having a series of disk knives N' for performing the first operation in cutting. In order to deliver the tobacco to the cutting-rolls, I provide a pressure-roller G, which works as an idler coacting with an apron-roller E' . This pressure-roller is arranged above the belt to deliver the tobacco to the cutting-rolls. The pressure-roller is loosely supported by its journals g in the standards g^2 , so that the roller may rise and fall in its bearings according to the amount of tobacco carried forward by the endless apron, and it serves the function of compressing the leaves of the tobacco together upon the endless apron and properly delivering them to the cutting-rolls.

H is the main driving-shaft, journaled in boxes P, located on the frame-piece P' , supported on the base-frame of the machine.

1 is a pulley loosely mounted on the driving-shaft, and 2 is a fixed pulley keyed to the driving-shaft.

3 is a worm-sleeve surrounding and con-

nected with the shaft by means of a clutch I. The worm transmits motion to a worm-wheel 4, loosely mounted upon the shaft K of the upper roll M.

5 5 is a gear-wheel loosely mounted on the shaft K and connected with the worm-wheel for transmitting motion to a gear-wheel 6, located beneath and keyed to one end of a counter-shaft L, which carries the cutter-roll
10 bearing the disk-knives.

7 is a gear-wheel located on the opposite end of the counter-shaft L, transmitting motion to a gear-wheel 8, located on the shaft K of the grooved upper roll M. The worm-wheel 4 has clutch connection with the sleeve of the gear-wheel 5; but these two wheels revolve loosely on the shaft K and only transmit motion to the gear-wheel 6, counter-shaft L, and gear-wheels 7 and 8 to the opposite
15 end of the shaft K, which carries the grooved upper roll M. The series of disk knives N', mounted on the shaft L, are separated from each other by means of collars *z*. The disk knives are formed with segmental openings
20 *z*, which fit upon the flattened shaft to hold the knives in position. The grooves of the upper roll M are of bevel shape and the cutting edges of the disk knives are beveled, so as to coact with the grooves in the upper roll,
25 thus insuring a clean cut through the leaves of the tobacco.

9 is a gear-wheel keyed to the roll-shaft K and meshing with the gear-wheel 10, which is keyed to the apron-roller E', and thus drives
35 the endless apron or belt *e*.

O is a housing or hood secured to the end of the machine and projecting toward the rear side of the machine. Within this housing or hood is located the transverse or rotary cutter-head. This head is keyed upon
40 the main driving-shaft H and is composed of a fly-wheel, having radial arms *o*, a rim *o'*, and knife-supports R cast integral therewith. The knife-supports are inclined with relation
45 to the plane of the fly-wheel and extend transversely of the arms from the arms to the rim and form a rigid support for the knives S, which are secured to the knife-supports by screws *r*. These knives are set so as to make
50 a draw cut, thus lessening the wear and tear of the machine. The housing or hood has an opening *s* on the inner side of its rearwardly-extending portion, through which the knives are removed for sharpening and through
55 which they are replaced. The opening is closed by a shutter *s'*. The fly-wheel being driven, the knives by their arrangement thereon cut transversely across the tobacco, which is advanced between the cutting-rolls
60 over the table T, which forms the bottom of the spout *t'*, leading from the rolls to the transverse cutter-head. *k* is a bridge between the endless apron and the disk knives.

The knives S are secured to the knife-blocks
65 at an angle inclined to the table, so as to clear themselves quickly. The bottom *o''* of the housing is inclined and communicates with

the grading-reel Q. The reel is provided with any desired number of grading-screens *h h' h''*, through which the graded material drops into
70 the compartments beneath. The reel is supported upon the shaft U. The dust or finer portion of the reduced tobacco is sifted out by the first grading-screen *h* into a compartment *i*. The second grading-screen allows
75 the next size larger to escape, and it is dropped into a separate compartment *l'*. Additional grades and compartments may be provided as desired.

f represents an opening provided for removing the dust from the front end of the grading-reel compartment. The doors *b* afford access to the remaining portion of the compartments beneath the reel.

The operation of the machine is as follows:
85 Tobacco is thrown into the hopper and the operator distributes it over the endless apron *e*, which carries the tobacco forward to the idler-roller G, delivering it to the cutting-rolls M N just beyond the bridge *k*. The tobacco is cut
90 lengthwise of the machine as it passes between the cutter-rolls M N and is forced forward to the table T, where it is presented to the action of the transverse cutters S. As the tobacco is cut in two transversely it drops
95 down onto the inclined bottom of the housing and from this place passes into the reel, as before described. This reel, it will be observed, is conical or tapering, increasing from the point where the tobacco is received rear-
100 ward to the tail, where the coarser tobacco is delivered. This conical form enables the tobacco to pass readily forward and out of the reel. The shaft, being horizontal, thus forms
105 a compact machine with a positive delivery. The inclination and the enlargement of the reel materially assist the free delivery of the tobacco and provide a larger screening or sifting capacity, as well as increased centrifugal action upon the tobacco revolved within
110 the screen. I thus provide a close, compact, lengthwise and transverse cutting device and a grading-machine which can be operated by a single attendant with ease and rapidity. It
115 will be observed also that the transverse cutting-knives are supported upon a main driving-shaft which employs the worm-gear. This worm-gear consequently holds the knives firmly up to their line of work.

Having thus described my invention, the
120 following is what I claim as new therein and desire to secure by Letters Patent:

1. A tobacco-cutting machine comprising a fly-wheel having radial arms, and a rim, a knife-support extending from one side of a
125 radial arm to the rim, and having its surface inclined with relation to the plane of the fly-wheel, and a knife secured to the knife-support and adapted to cut obliquely and shear-
130 wise to the table, the housing for the fly-wheel having an inclined bottom, the upper cutter-roll, the lower cutter-roll, the spout having a bottom providing a table between the cutter-rolls and the fly-wheel, the casing, and the

sifter within the casing and connected with the inclined bottom of the housing; substantially as described.

2. A tobacco-cutting machine comprising
5 an upper cutter-roll M, having a shaft K, the main shaft H, the worm-sleeve 3 located on the main shaft, a lower cutter-roll N, having a counter-shaft L, and a series of disk knives N', the worm-wheel 4 and gear-wheel 5 loosely
10 mounted on the shaft of the upper cutter-roll, the gear-wheels 6 and 7 fixed on the counter-shaft and the gear-wheel 8 fixed to the shaft of the upper cutter-roll; substantially as specified.

15 3. A tobacco-cutting machine comprising a

feeding apparatus consisting of an endless apron, driving-rollers on which the apron is mounted and an idler-roller G coacting with the endless apron, the cutter-rolls, the bridge between the apron and the cutter-rolls, the 20 spout, the fly-wheel having knives arranged to cut obliquely and shearwise across the spout, the housing and a sifter connected with the housing; substantially as described.

In testimony whereof I have hereunto set 25 my hand.

NAPOLEON DU BRUL.

Witnesses:

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A. F. WENZEL.