(No Model.)

4 Sheets—Sheet 1.

N. P. PERKINS & J. O. B. PALMER.

TOBACCO CUTTING MACHINE.

No. 592,064. Patented Oct. 19, 1897.

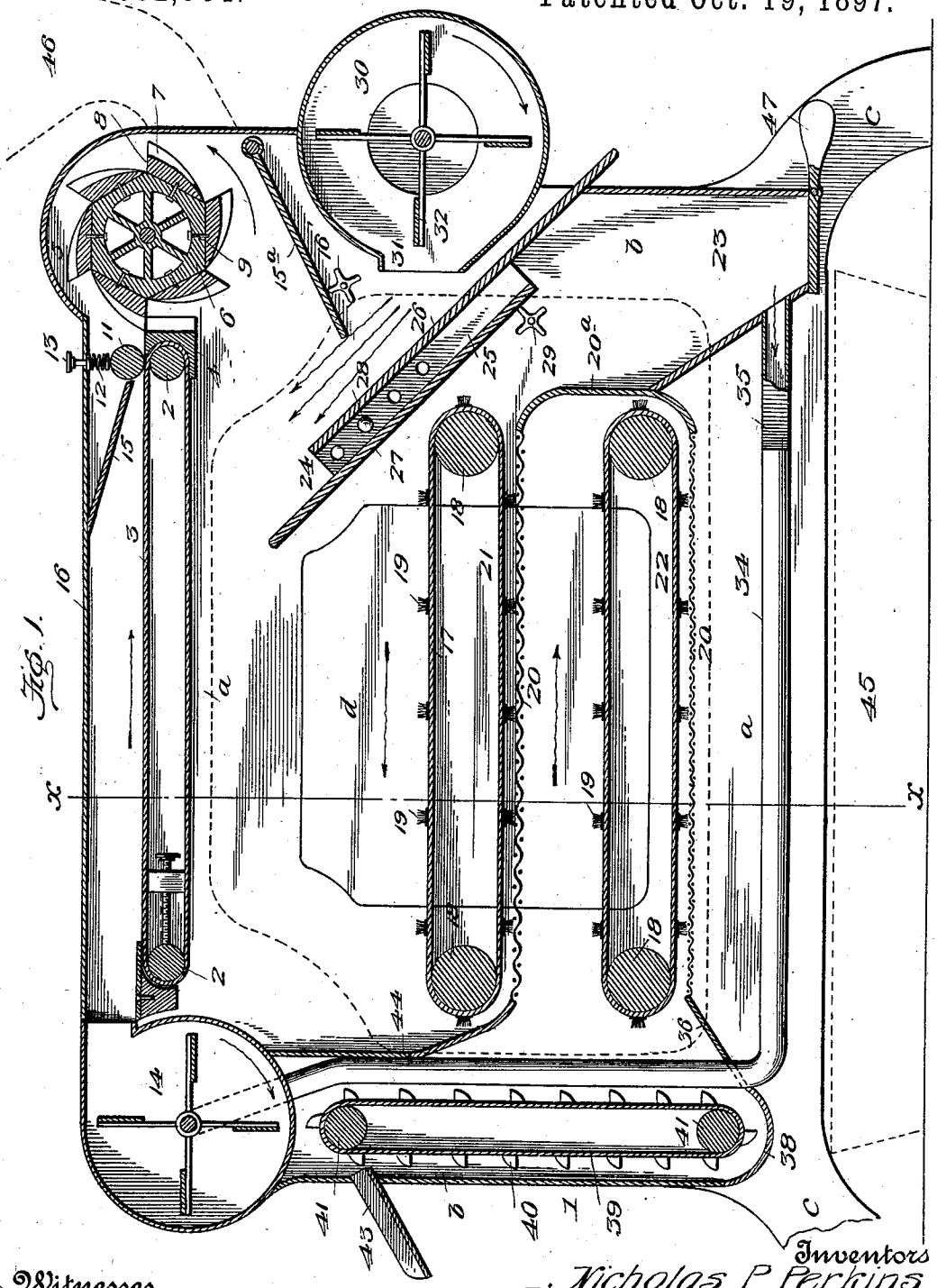


Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

N. P. PERKINS & J. O. B. PALMER.

TOBACCO CUTTING MACHINE.

No. 592,064. Patented Oct. 19, 1897.

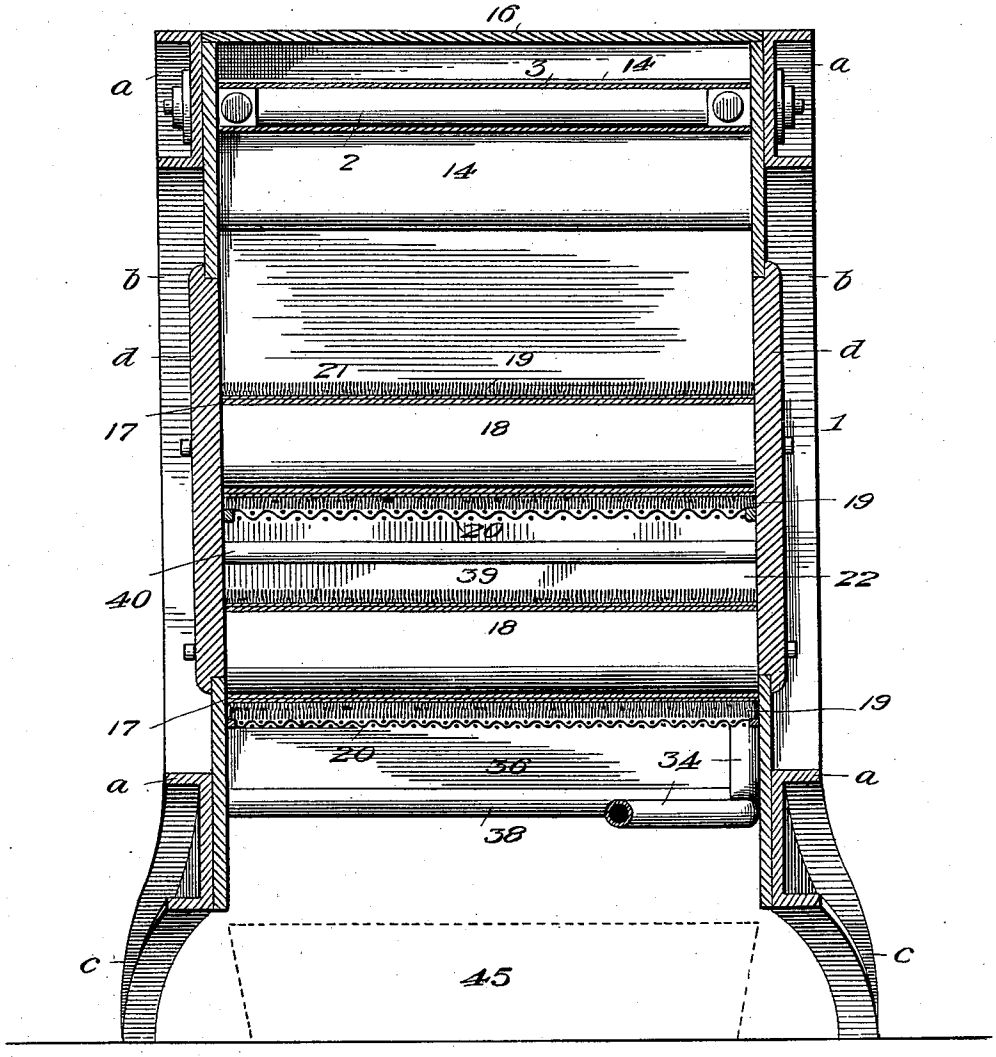


Fig. 2.

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N. P. PERKINS & J. O. B. PALMER.

TOBACCO CUTTING MACHINE.

No. 592,064. Patented Oct. 19, 1897.

Fig. 3.

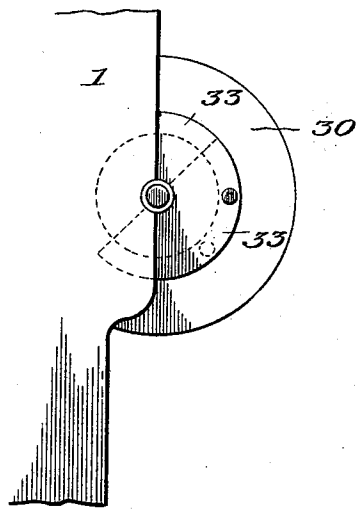
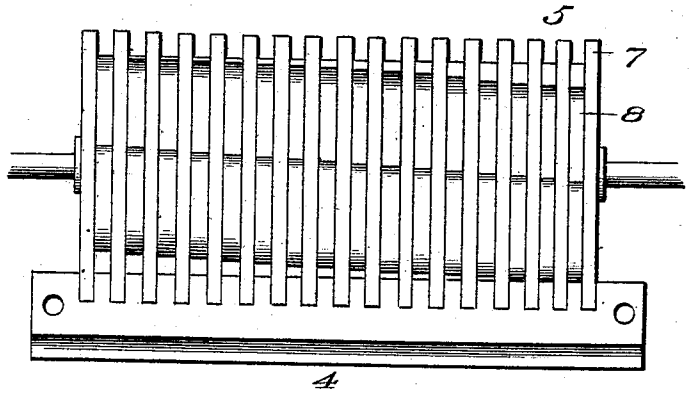


Fig. 4.



Witnesses
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TOBACCO CUTTING MACHINE.

No. 592,064. Patented Oct. 19, 1897.

Fig. 5.

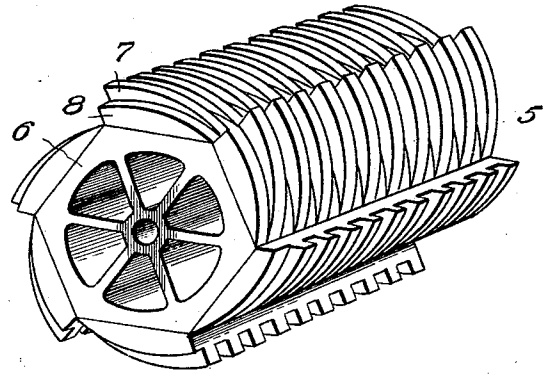


Fig. 6.

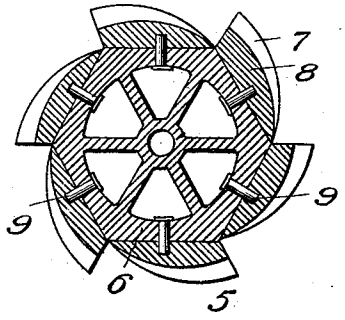
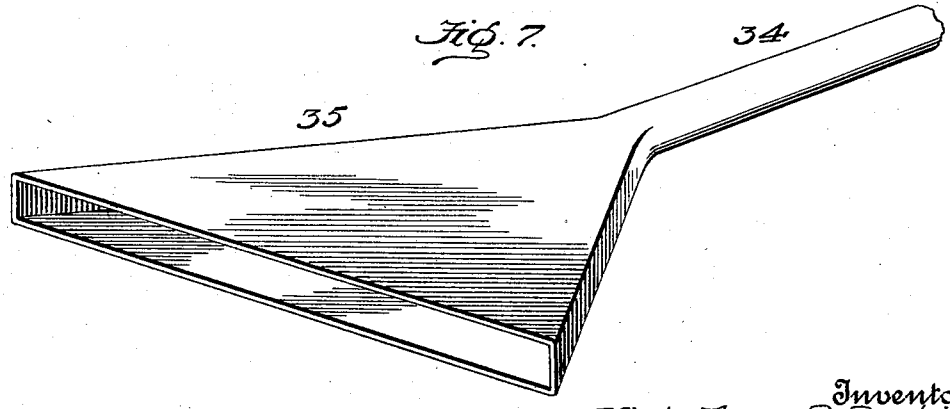


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

NICHOLAS P. PERKINS AND JAMES O. B. PALMER, OF ROANOKE, VIRGINIA, ASSIGNORS OF ONE-HALF TO JOEL A. JAMISON AND THOMAS E. JAMISON, OF SAME PLACE.

TOBACCO-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 592,064, dated October 19, 1897.

Application filed April 5, 1897. Serial No. 630,851. (No model.)

To all whom it may concern:

Be it known that we, NICHOLAS P. PERKINS and JAMES O. B. PALMER, citizens of the United States, residing at Roanoke, in the county of Roanoke and State of Virginia, have invented certain new and useful Improvements in Tobacco-Cutting Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a tobacco-cutting machine, and more particularly to that class of inventions designed for preparing granulated smoking-tobacco.

The objects of our invention are, first, to provide a machine of this character for separating the completely-granulated tobacco from the coarser tobacco and stems and then separating the coarser tobacco and stems one from the other and feeding the coarser tobacco back to the cutter for final and complete granulation; secondly, to provide a machine that will effectively separate scrap-tobacco from its associated foreign matter and the coarser scrap-tobacco from the finer and then convey the coarser tobacco to the cutter for granulation; thirdly, to provide a cutter-head with removable longitudinal strips having rows of teeth which may be easily and quickly removed, when one or more of the teeth become damaged, without disturbing the other sets; and, finally, to provide a tobacco-cutter which shall be simple of construction, durable in use, and comparatively inexpensive of production.

With these objects in view the invention consists of certain features of construction and combination of parts, which will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of our improved tobacco-cutter. Fig. 2 is a vertical cross-section on line *x x* of Fig. 1. Fig. 3 is a side elevation of a fragment of the frame of the machine, showing the separator-fan and its associate mechanism for controlling the force of the blast. Fig. 4 is a top plan view of the cutter-head and cutter-plate. Fig. 5 is a detail perspective view of the cutter-head. Fig. 6 is a vertical cross-section of the same, and Fig. 7 is a detail perspective view of the mouth of the exhaust-tube.

In the drawings, 1 denotes the two metallic supporting-standards preferably rectangular in construction and each comprising the two horizontal pieces *a a*, the two vertical pieces *b b*, and legs *c c*, all integral and cast in one piece. The front and rear of the standards are boarded up and the sides are also boarded up and are provided with removable panels *d d* to afford convenient access to the interior of the frame. In the upper portion of the box-like frame thus constructed are journaled two shafts 2, that support an endless conveyer or apron 3, and at the rear of the apron is a cutter-bar 4, constructed for coöperation with a cutter-head 5, which we will now proceed to describe. In the construction of cutter-heads heretofore employed in this art the head is composed of a series of disks mounted on a shaft or cylinder. This construction or arrangement has been found to be objectionable, for the reason that, should the tooth of one of the disks become injured by any foreign matter fed to the machine with the tobacco, it was necessary, in order to remove the disk having the damaged tooth, to also remove all the disks upon the shaft between the injured disk and one end of the shaft, thus requiring the unmounting of the shaft from its bearings, all of which is very difficult and requires considerable time. To overcome these objections is one of the objects of our invention, and to this end we provide a cutter-head which consists of a polygonal drum 6, having upon each flat side thereof a metallic strip having rows of alternating long and short chopping-teeth 7 and 8, respectively arranged in alinement longitudinally of the strip. The strips are secured to the drum in any suitable manner, preferably by bolts 9, as shown in Fig. 6. By providing a cutter-head of this construction it is evident that, should one or more of the teeth of one of the strips become injured, the strip may be quickly removed without unmounting the shaft and dismantling it, and a new strip substituted.

In operation, as the tobacco is fed to the

cutter, it is first chopped by the teeth 7 and then chopped into small square flakes by the chopper-teeth 8, immediately at the rear of the advance set of teeth 7. To insure the delivery of the tobacco to the roller in a flat, smooth, even mass, we mount a roller 11 immediately above the roller supporting the rear portion of the conveyer and provide a spring 12 for each end of the roller to press the same down against the tobacco with a yielding pressure. A set-screw 13 has swiveled to its lower end a washer which bears against the upper end of the spring, and by means of this set-screw the tension of the spring may be varied. At the forward end of the machine is a blower 14, the discharge end of which is arranged over the conveyer and is designed to force or expel the tobacco and dust along with the conveyer to the cutter-head and prevent the dust rising upward into the face of the operator or attendant, who stands at this end of the machine and feeds it. To prevent the blower forcing the dust and tobacco-leaves upward and from the machine, we may provide an inclined shield 15, or, if desired, we may place a cover 16 over a portion of the top of the machine, leaving a sufficient space between its forward end and the forward end of the machine to permit of the tobacco being fed to the endless conveyer.

15ª denotes an inclined shaker located beneath the cutter-head and having its rear end pivoted to the frame of the machine and its lower end extending downwardly and supported by a rotary tumbler 16'.

17 denotes a belt supported by rotary drums 18, and provided with transverse rows of brush-tufts 19, which are adapted to act upon a screen 20. These parts constitute a separator 21, and below this separator is a second separator 22 of substantially the same construction, only that the mesh of the screen is much finer than the mesh of the screen 20, for reasons hereinafter stated. A stationary chute 20ª leads from the rear end of the separator 21 to a hopper 23 at the rear lower end of the frame of the machine, so that the grains of tobacco which are too large to pass through the screen 20 will be swept from the rear end thereof into the chute and be conveyed to the hopper.

24 denotes a deflecting shaker, which preferably consists of an open-ended box composed of the sides 25 and top and bottom boards 26 and 27, respectively. This box is secured in an inclined position at the rear end of the frame in advance of the shaker 15ª by a bolt 28, passing through apertures in the sides of the shaker. There is a row of these apertures in each side of the shaker, so that the shaker may be adjusted longitudinally. The bottom board of the shaker projects forwardly in advance of the top board, and is supported on a rotary tumbler 29, which imparts to the shaker a vibratory movement, while the top board of the shaker has its rear end projecting a distance beyond the rear end of the bottom board and preferably on the outside of the frame of the machine. Located beneath the shaker 15ª and at the rear of the deflecting shaker is a fan-casing 30, the discharge end 31 of which projects forwardly adjacent to the top board of the deflecting shaker. A fan 32 is journaled in this casing and with the casing constitutes the separator-blower. This blower may be provided with a pivoted plate 33 to control the admission of air to the blower and thus regulate the blast.

34 denotes an exhaust-tube, the mouth 35 of which is tapered laterally the full length of the hopper 23, and communicates therewith. This exhaust-tube extends along under the lower separator in an oblique direction to the forward end of the machine, thence upwardly and enters one of the air-inlets of the blower 14, so as to exhaust the hopper 23 of its lighter contents and expel them upon the feed-conveyer.

36 denotes a chute at the front end of the machine, one end of which is secured below the forward end of the screen of the lower separator and the other end immediately above a pan or box 38.

39 denotes an endless belt equipped with a plurality of buckets 40. This belt is supported upon and receives its motion from two suitably driven drums 41, and its lower portion projects into the pan or box 38, while its upper portion discharges into an inclined chute 43, the forward end of which is on the outside of the frame and is sufficiently high from the floor to permit of a barrel or large receptacle being placed under the chute to receive the "finished" tobacco.

44 denotes a stationary inclined chute arranged below the blower 14, with its rear end leading to the screen of the upper separator.

45 denotes a pan or receptacle located under the bottom of lower separator and is designed to receive the tobacco-dust from said separator.

46 denotes a hopper arranged at the rear of the cutter-head and having its discharge end leading to the shaker 15ª. This hopper is adapted to receive the scrap-tobacco and feed it to said shaker, and for convenience of reference, and in order to avoid confusion, we will term it the "scrap feed-hopper."

The directions of movement of the several parts are illustrated by arrows, and any well-known or approved system of gearing may be employed for transmitting movement from any suitable source of power to said parts, but as the same forms no part of our invention we do not deem it necessary either to illustrate or describe it.

In granulating leaf-tobacco and separating it from its stems and all foreign matter, such as nails and the like, which are so often found in hogsheads of tobacco, the operation is as follows: The tobacco is fed at the forward part of the machine to the conveyer, which

carries it along to the cutter-head, which chops it into little grains or flakes, as hereinbefore described. The granulated mass now drops upon the shaker 15ª, and as it falls from said shaker it meets the air-blast, which is so regulated that the lighter grains are blown forwardly upon the top run of the endless belt of the upper separator and upon the incline chute at the forward end of said separator, while the heavier particles, such as the stems and foreign matter, fall upon the top board of the deflecting shaker and are conducted to and dropped on the outside of the machine. The granulated mass of tobacco deposited upon the belt and chute of the upper separator is now swept against the screen of said separator and the smaller or finer grains pass through said screen upon the belt of the lower conveyer and are swept against the lower screen, to remove all dust from the mass which is then discharged upon the chute 36 into the pan 38, from which it is elevated by the conveyer-buckets and emptied into a discharge-chute, from which it falls into a receiving vessel or barrel. The coarser grains of tobacco failing to pass through the screen 20 are swept by the brushes into the chute 20ª, from whence they drop into the hopper 23. The coarser grains of the leaf are now drawn from said hopper through the exhaust-pipe into the fan-casing of the blower 14, and are blown out upon the conveyer and carried once more to the cutter-head, while the stems will remain in said hopper until they are removed by tilting open the bottom of the hopper, which is normally held closed by the weighted handle 47.

In damp weather, or when the tobacco is damp, the deflecting shaker is adjusted to lower its upper end so that the blast will force the granulated mass of tobacco forwardly over the upper separator.

In separating "scrap-tobacco" the scraps are deposited in the scrap feed-hopper, which feeds the scrap to the shaker 15ª, and as it falls from the lower end thereof and meets the air-blast stems, nails, sand, stones, and like heavier matter fall upon the top board of the deflecting separator and pass off the rear end thereof out of the way, while the coarser particles of tobacco fall upon the upper end of the bottom board of the deflecting shaker and are conducted to the hopper 23, from whence they are withdrawn by the exhaust-pipe and fed to the cutter-head. The finer grains of the scrap mass are blown over the upper end of the bottom board of said deflecting separator and are separated by the two separators in the manner hereinbefore described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a tobacco-cutter, the combination of the cutting means comprising a rotating drum, and a series of longitudinal strips removably secured to said drum, and each provided with a row of alternating long and short teeth which are in alinement longitudinally of the strip, and an opposing slotted cutter-bar, substantially as and for the purpose set forth.

2. In a tobacco-cutter, the combination with the main frame, of a cutting mechanism, a shaker arranged below the cutting mechanism, a deflecting shaker arranged below the first-named shaker, separators arranged in advance of said shakers, and a blower, the discharge end of which is below the lower end of the first-named shaker, whereby the lighter grains of tobacco will be blown upon the separators and the stems and foreign matter fall upon the deflecting shaker and be led away from the machine.

3. In a tobacco-cutter, the combination with the main frame, of a cutting mechanism, a shaker arranged below the cutting mechanism, a deflecting shaker arranged below the first-named shaker, separators arranged in advance of the shakers, a hopper, a chute leading from one of the separators to the hopper, and a blower, the discharge end of which is below the lower end of the first-named shaker.

4. In a tobacco-cutter, the combination with the main frame, of a cutting mechanism, a shaker arranged below the cutting mechanism, a deflecting shaker arranged below the first-named shaker, separators arranged in advance of the shakers, a hopper, a chute leading from one of the separators to the hopper, an exhaust-pipe leading from said hopper, and a blower, the discharge end of which is below the lower end of the first-named shaker, substantially as set forth.

5. In a tobacco-cutter, the combination with the main frame, of a cutting mechanism, a shaker arranged below the cutting mechanism, a deflecting shaker arranged below the first-named shaker, separators arranged in advance of the shakers, a hopper, a chute leading from one of the separators to the hopper, an exhaust-pipe leading from said hopper, a blower, the discharge end of which is below the lower end of the first-named shaker, a conveyer adjacent to the cutting mechanism, and a second blower connected to the exhaust-pipe, substantially as set forth.

6. In a tobacco-cutter, the combination with the main frame, of the cutting mechanism, separators, a shaker arranged under the cutting mechanism, a scrap feed-hopper arranged above said shaker at the rear of the cutting mechanism, a deflecting shaker comprising two boards, one arranged above the other and to the rear thereof and spaced apart, and a blower, the discharge end of which is at the rear and between the first-named shaker and the deflecting shaker.

7. In a tobacco-cutter, the combination with the main frame, of a cutting mechanism, separators, a shaker arranged under the cutting mechanism, a scrap feed-hopper arranged above said shaker at the rear of the cutting

mechanism, a longitudinally-adjustable deflecting shaker comprising two boards, one arranged above the other and to the rear thereof and spaced apart, and a blower, the discharge end of which is at the rear and between the first-named shaker and the deflecting shaker, substantially as set forth.

8. In a tobacco-cutting machine, the combination with the main frame, a cutting mechanism secured at one end thereof, means for feeding the tobacco to the cutting mechanism, an inclined shaker arranged beneath the cutting mechanism, a deflecting shaker arranged below the first-named shaker and inclined in the opposite direction, a hopper beneath the deflecting shaker, a blower arranged to discharge a blast through the space between the two shakers, separators arranged below and in advance of the blower-discharge, a second blower at the front upper end of the machine to discharge over the feeding means, an exhaust-tube leading from the said hopper to the last-named blower, a pan into which the finished tobacco is delivered, and an endless belt provided with elevator-buckets for elevating the tobacco from the pan and discharging it at the front end of the machine, substantially as set forth.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

NICHOLAS P. PERKINS.
JAMES O. B. PALMER.

Witnesses:
E. M. CRUTCHFIELD,
M. A. WOODELL.