No. 650,071. Patented May 22, 1900.

E. BECKER.

SHEEP SHEARING MACHINE.

(Application filed June 27, 1899.)

(No Model.) 5 Sheets—Sheet 1.

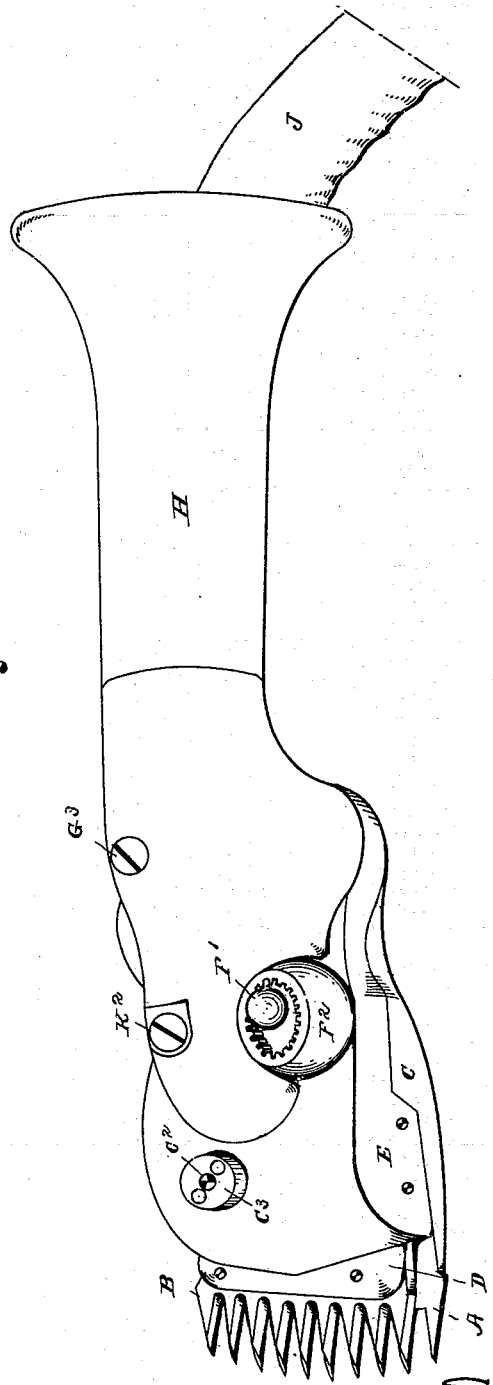

Fig. 1.

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E. BECKER.

SHEEP SHEARING MACHINE.

(Application filed June 27, 1899.)

(No Model.) 5 Sheets—Sheet 2.

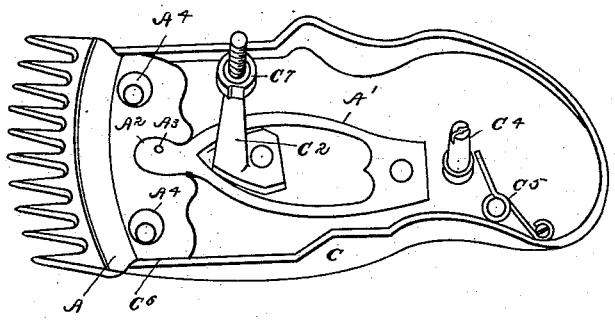

Fig. 2.

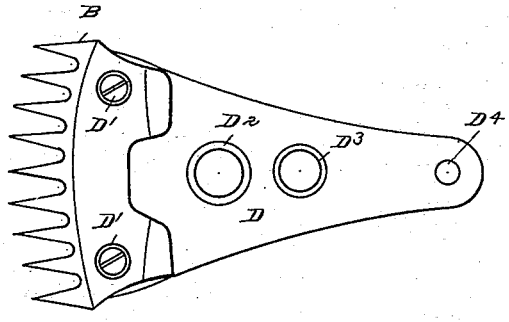

Fig. 3.

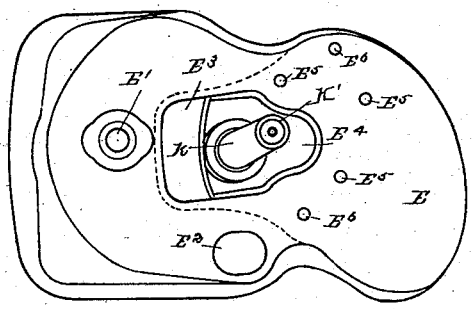

Fig. 4.

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(No Model.) 5 Sheets—Sheet 3.

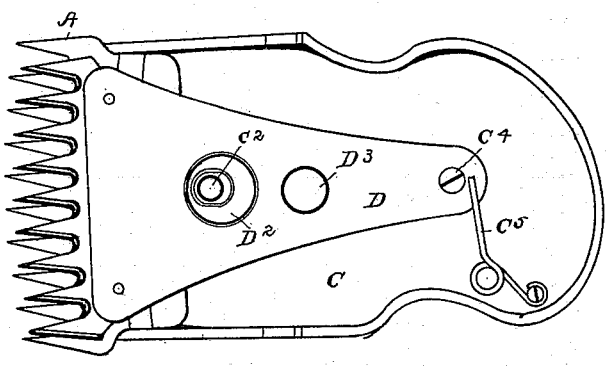

Fig. 5.

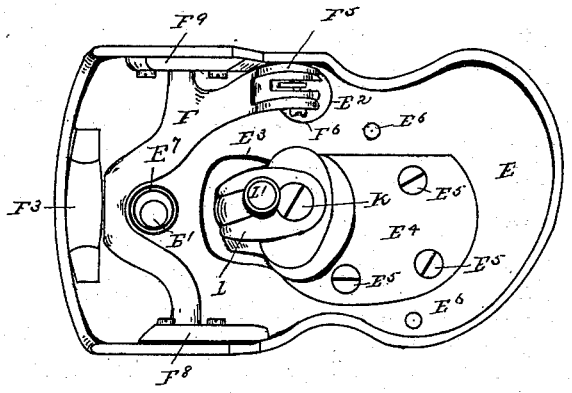

Fig. 6.

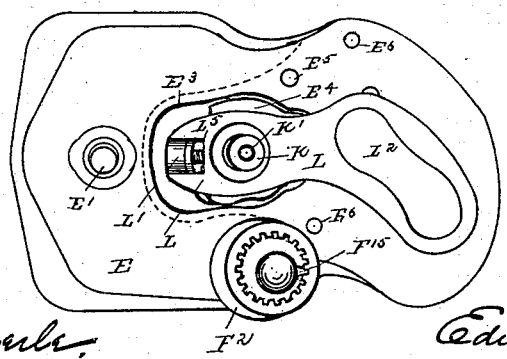

Fig. 7.

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SHEEP SHEARING MACHINE.

(Application filed June 27, 1899.)

(No Model.) 5 Sheets—Sheet 4.

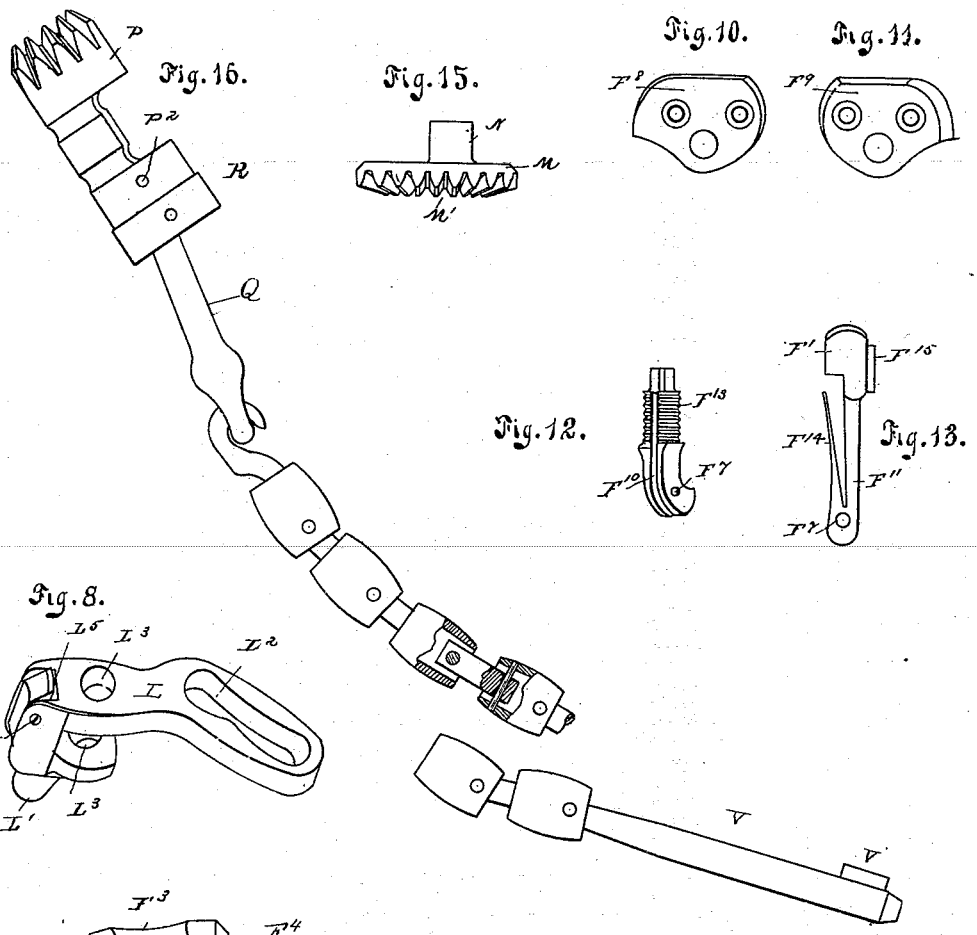

Fig. 16.

Fig. 15.

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 8.

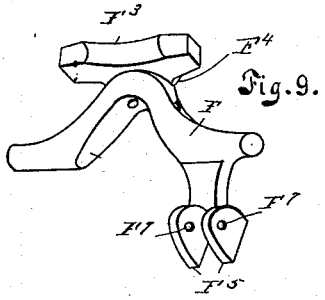

Fig. 9.

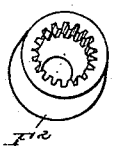

Fig. 14.

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SHEEP SHEARING MACHINE.

(Application filed June 27, 1899.)

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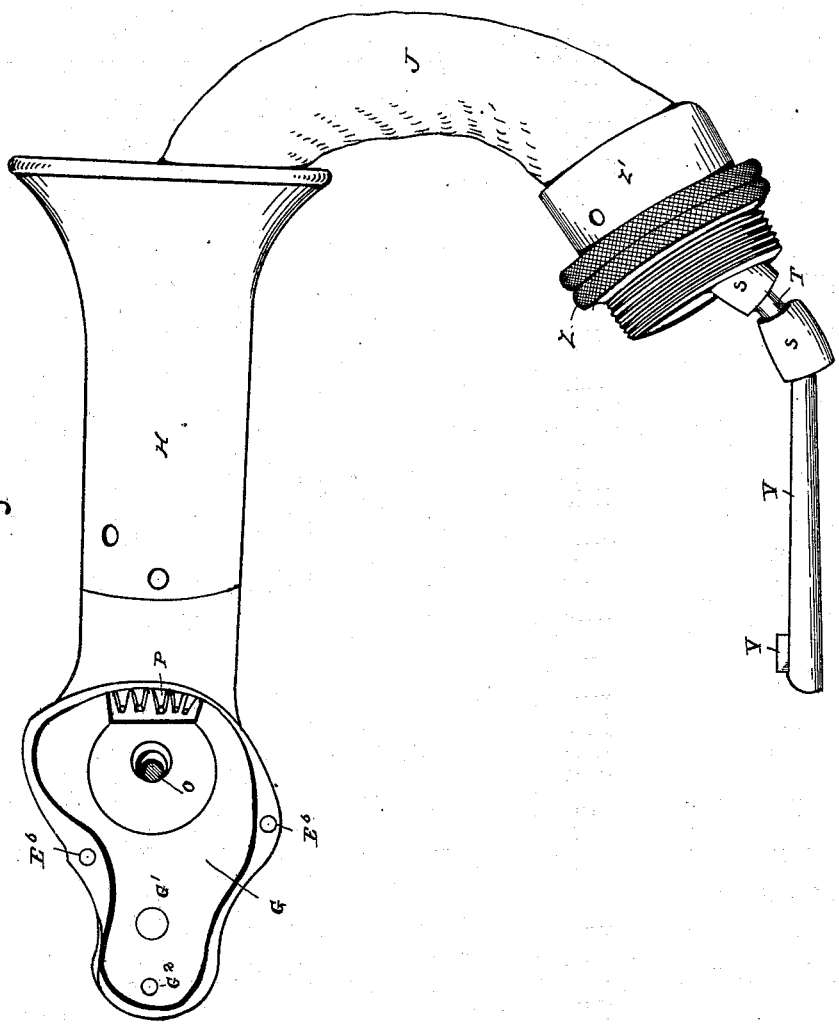

Fig. 17.

WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD BECKER, OF TEMORA, NEW SOUTH WALES.

SHEEP-SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 650,071, dated May 22, 1900.

Application filed June 27, 1899. Serial No. 722,096. (No model.)

To all whom it may concern:

Be it known that I, EDWARD BECKER, of Temora, in the Colony of New South Wales, have invented certain new and useful Improvements in Sheep-Shearing Machines; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in sheep-shearing machines and the operating mechanism therefor.

The objects of this invention are, first, to provide a machine the friction and vibration of whose working parts are each reduced to a minimum; second, to substitute a slow scissors cutting movement for the high-speed "chewing" movement which has heretofore been a universal defect in all sheep-shearing machines, and, third, to provide an improved tension-gear and an easy method of removing and replacing the blades.

In the accompanying drawings, Figure 1 is a view in perspective of the cutting-head. Fig. 2 is a similar view with parts removed. Fig. 3 is a plan view of the reciprocating cutter. Fig. 4 is a similar view illustrating the upper face of the body of the cutting-head. Fig. 5 is a plan view of the lower section thereof with cutting mechanism in operative position. Fig. 6 is a bottom plan view of the upper section of the cutting-head. Fig. 7 is a top plan view thereof. Fig. 8 is a detail view of the reciprocating lever. Figs. 9, 10, 11, 12, 13, and 14 are detail views of the tension appliance. Fig. 15 is a detail. Fig. 16 is a detail view of the drive-pinion and its flexible shafting. Fig. 17 is a plan view of the cutter-head.

Referring to the drawings, A is the lower cutting-blade.

B is the oscillating cutting-blade.

C is the lower section of the body of the machine, to which the blade A is secured.

D is the oscillating plate, to which is attached upper blade B.

E is an upper section of body of machine.

C^2 is top of fixed pillar connecting the upper and lower sections of the body of the machine.

C^3 is a nut screwing upper and lower body of machine together.

F′ is the head of tension-screw.

F^2 is a tension-nut.

K^2 is a screw securing mechanical chamber to body of machine.

G^3 is the screw-head of spindle on which gear-wheel revolves, as hereinafter described.

H is the handle of machine.

J is a covering of flexible shaft.

A′ is a spring attachment which consists of a light steel spring, as shown, having a cone-shaped head A^2 fitting into a suitable recess in blade A and secured by a screw A^3. The blade A is held rigidly in position by the raised sides C^6 C^6 of the body.

A^4 A^4 are lubricating-oil reservoirs.

The fixed pillar C^2 is secured to the inner face of the lower section of body C, over which the upper body E fits and to which it is secured by means of the nut C^3, Fig. 1.

C^7 is an adjustable collar screwed to the pillar, as shown, provided for the purpose of forming a connection which will not work loose by reason of vibration. The upper face of this collar is cupped to correspond to a raised cone-shaped ring or fixed washer E^7, surrounding the aperture E′ in the upper section of body E, Fig. 6, through which the pillar passes, so that when the nut C^3, Fig. 1, is screwed tight the said ring or washer E^7 is securely embedded in the cupped recess of the collar C^7, thus forming a rigid and locked joint.

C^4 is a fixed pivot on which the plate D, carrying the cutting-blade B, oscillates.

D′ D′ are studs fixed in plate D, securing the blade B thereto. These studs are made so that the blade can be lifted off and replaced at will.

D^2 is an aperture in plate D, through which pillar C^2 passes. (See Fig. 5.)

D^3 is an aperture to receive thumb of reciprocating lever by which plate D is oscillated.

D^4 is an aperture to receive pivot C^4.

E′ is an aperture through which pillar C^2 passes.

E^2 is an aperture through which tension-screw passes.

E^3 is an opening partially covered by plate

E^4, to which is attached spindle K, on which the reciprocating lever L rotates.

K′ is a tapped hole in spindle K, into which screw K^2, Fig. 1, fits.

E^5 E^5 are screws securing the plate E^4 to body E.

E^6 E^6 are screw-holes through which pass the screws securing the mechanical chamber G to the body of machine. The dotted line, Fig. 4, shows the position taken up by the mechanical chamber G.

As will be seen from the drawings, particularly Fig. 5, the points of the lower blade A project beyond those of the upper blade B, and thus prevent the oscillating blade from coming into cutting contact with the pelt of the sheep. By this means the need for a comb is obviated.

The spring C^5 is provided for the purpose of facilitating the removal and replacing of the blade B by holding the oscillating plate D in position.

The reciprocating lever L is mounted on spindle K and is provided with a slot L^2, by means of which the rotary motion of the revolving shaft is changed into an intermittent oscillating movement, which in turn is transmitted to the plate D by means of the thumb L′, as shown in Fig. 6.

L^3 L^3 are the apertures through which the spindle K passes, on which the reciprocating lever oscillates. The transmitttng thumb L′ consists of a detachable angle-piece, the upper portion of which fits into a recess in one end of the lever, as shown, and is secured therein by means of pivot L^4. The recess is so constructed as to allow the thumb L′ a certain amount of play to enable it to accommodate itself to the differences in radius between the reciprocating lever and the oscillating plate, a small spiral spring L^5 being provided for the purpose of retaining the thumb L′ in its normal position.

F is a bent shaft mounted in bearings F^8 F^9 and to which is pivoted a tension-block F^3, retained in position by a spring F^4. At one end of shaft F and at right angles thereto is formed a pair of jaws F^5 F^5, between which the tension-screw is secured by means of a pin F^6. Said screw is formed in two parts or members F^{13} F^{11}, the member F^{13} being provided with a longitudinal groove or recess F^{10}, designed to receive the lower portion of member F^{11}. The parts of said screw are also held together by means of a pin F^6, which passes through coincident openings F^7 in the said jaws and the members of said screw. The upper portion F′ of member F^{11} receives the tension-nut F^2, the latter engaging the screw-thread F^{13}. The spring-tongue F^{14} presses against the interior of the slot F^{10} and serves to keep the key F^{15} in contact with the inner periphery of the nut F^2, which is constructed with a series of recesses to act as stops for the purpose of locking the tension. When it is desired to alter the tension, the head F′ is pressed to the center of the aperture in the nut F^2, thus releasing the key F^{15} from contact with the aforesaid stops and allowing the nut to be revolved as desired. The whole of these parts constituting the tension appliance are shown in position in Figs. 6 and 7.

M is a beveled gear-wheel.

N is a crank-pin which may be provided with a roller for the purpose of reducing the friction.

M′ is an aperture in wheel M, through which spindle O passes and on which the said gear-wheel revolves. An elongated beveled pinion-wheel P is mounted on a flexible shaft and arranged to engage the gear-wheel M. A portion of the body of the beveled wheel P is cut away, as shown, for purpose of forming a balance-weight or fly-wheel.

Q is a connecting-rod pivoted to pinion-wheel P by pin P^2.

R is a bearing in which one end of pinion-wheel P revolves, forming a collar within the handle H, as hereinafter described.

The parts of the machine are so constructed and adjusted that the teeth of the movable blade B pass over those of the fixed blade A sufficiently far to allow of the wool to interpose.

The lower blade A is constructed slightly wider than the upper blade B, having one more tooth. Fig. 5 shows the movable blade in the position taken up about the middle of its stroke—*i. e.*, with its teeth lying opposite the interstices of the teeth of the fixed blade. Fig. 1 shows, approximately, the position when the movable blade has reached the end of its stroke toward the right—that is, when the teeth of the movable blade overlap those of the under, excepting only that on the extreme left. When the movable blade reaches the end of its stroke toward the left, the teeth will again overlap, but this time the tooth on the extreme right of the lower blade will be uncovered. It will thus be seen that every tooth of both blades cuts on both sides, (excepting those on the extreme right and left of the lower blade.) Consequently the number of revolutions necessary to effectively operate this machine is much less than in those hitherto in use which have only one cutting-blade.

It will be seen from the foregoing that my machine differs not only in construction, but in the essential principle of movement, from all those now in use, as in place of one blade moving on a comb at an enormous velocity and chewing the wool the principle on which my machine works is a comparatively-slow movement, by which the wool is cut between two sharp edges exactly as if shorn by a pair of shears or scissors.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar removably held by

said lower section, an oscillating plate pivoted in said lower section and also carrying a cutter-bar, means carried by said upper section for oscillating said plate, and means for uniting said sections; substantially as set forth.

2. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar secured to said lower section, an oscillating cutter-bar, means for operating the same, a threaded stud projecting from said lower section and having a cupped flange, said upper section having a hole or opening designed to receive said stud, a flange surrounding said opening and adapted to engage said former flange, and a nut worked on said stud; substantially as set forth.

3. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar fitting between the sides of said lower section, a spring-plate bearing thereagainst, an oscillating cutter-bar pivoted to said lower section, and means carried by said upper section for operating said oscillating cutter-bar; substantially as set forth.

4. In an animal-shearing machine, a cutting head or chamber, a stationary cutter-bar having a rearward extension provided with a recess, a spring member having a cone-shaped head designed to engage said recess, an oscillating cutter-blade, and means for operating the same; substantially as set forth.

5. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by said lower section, an oscillating plate pivoted to said lower section and also carrying a cutter-bar, means for preventing the displacement of said plate, means carried by the upper section for operating said oscillating plate, a threaded stud secured to said lower section and passed through coincident openings in said oscillating plate and said upper section, and a nut working on said threaded stud; substantially as set forth.

6. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by the latter, an oscillating cutter-bar pivoted to said lower section, a reciprocating lever pivoted to said upper section and engaging said oscillating cutter-bar, and means for reciprocating said lever; substantially as set forth.

7. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by the latter, an oscillating cutter-bar pivoted to said lower section, a spindle carried by said upper section, a reciprocating lever pivotally mounted thereon and having a thumb engaging said oscillating bar, and means for reciprocating said lever; substantially as set forth.

8. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by the latter, an oscillating cutter-bar pivoted to said lower section, a plate secured to the under side of said upper section, a spindle secured thereto and projecting through a hole or opening in said upper section, a reciprocating lever pivotally mounted on said spindle, and in engagement with said oscillating plate, and means for reciprocating said lever; substantially as set forth.

9. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by the latter, an oscillating cutter-bar pivoted to said lower section, a reciprocating lever pivoted to said upper section and having a recess in one end, an angular thumb-piece pivoted in said recess and engaging said oscillating plate, and means for reciprocating said lever; substantially as set forth.

10. In an animal-shearing machine, a cutting-head formed of upper and lower sections, a stationary cutter-bar carried by the latter, an oscillating cutter-bar pivoted to said lower section, a reciprocating lever pivoted to said upper section and provided with an elongated slot, a thumb-piece carried by said lever and engaging said oscillating plate, a rotatable pinion mounted upon said upper section and having a crank-pin engaging said slot, and means for rotating said pinion; substantially as set forth.

11. In an animal-shearing machine, a cutter-head, a stationary cutter-blade secured thereto, an oscillating cutter-blade pivotally mounted above said stationary cutter-blade, means for operating said oscillating blade, a cranked shaft mounted in said head and carrying a tension-block designed to normally engage said oscillating blade, and means for regulating the tension of said block; substantially as set forth.

12. In an animal-shearing machine, a cutter-head, a stationary cutter-blade secured thereto, an oscillating cutter-blade pivotally mounted above said stationary cutter-blade, means for operating said oscillating blade, a cranked shaft mounted in said head and provided with a forked extension, a tension-screw pivoted to said forked extension, a nut engaging the same, and a spring-pressed tension-block carried by said shaft; substantially as set forth.

13. In an animal-shearing machine, a cutter-head, a stationary cutter-blade secured thereto, an oscillating cutter-blade pivotally mounted above said stationary cutter-blade, means for operating said oscillating blade, a cranked shaft mounted in said head and provided with a forked extension, a tension-screw formed of two parts or members pivoted to said forked extension, one of said members being threaded and the other provided with a spring-tongue, a nut engaging both members of said tension-screw, and a tension-block carried by said shaft; substantially as set forth.

14. In an animal-shearing machine, a cutter-head, a stationary cutter-blade secured

thereto, an oscillating cutter-blade pivotally mounted above said stationary cutter-blade, means for operating said oscillating blade, a cranked shaft mounted in said head, a tension-screw pivoted thereto and having a longitudinal groove, a spring member also pivoted to said shaft and fitting in said groove, a nut engaging said screw, and a tension-block carried by said shaft; substantially as set forth.

15. In an animal-shearing machine, a cutter-head, a stationary cutter-blade secured thereto, an oscillating cutter-blade pivotally mounted above said stationary cutter-blade, means for operating said oscillating blade, a cranked shaft mounted in said head, a tension-screw pivotally connected thereto and having a longitudinal groove, a member also pivoted to said shaft and having a spring-tongue fitting within the groove of said screw, said member having a lug projecting from its upper end, a nut working on said screw and having a recessed opening designed to receive said lug, and a tension-block carried by said shaft; substantially as set forth.

In testimony whereof I have hereunto set my hand this 6th day of April, 1899.

EDWARD BECKER.

Witnesses:
WALTER SIGMONT,
T. C. ALLEN.