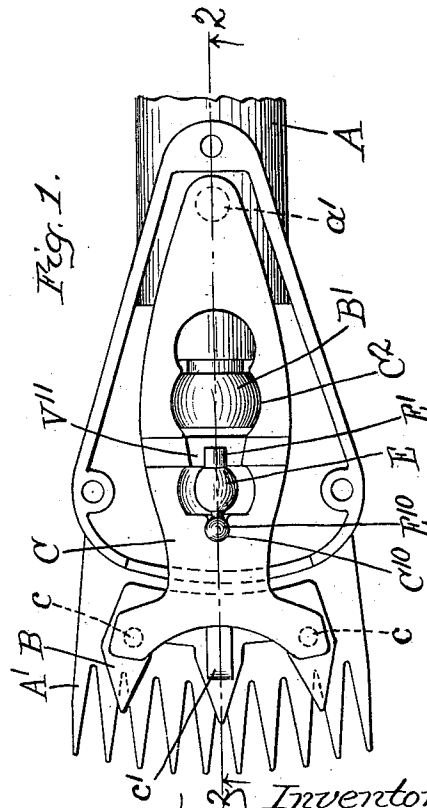
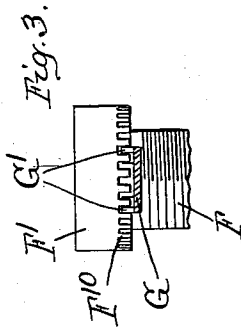
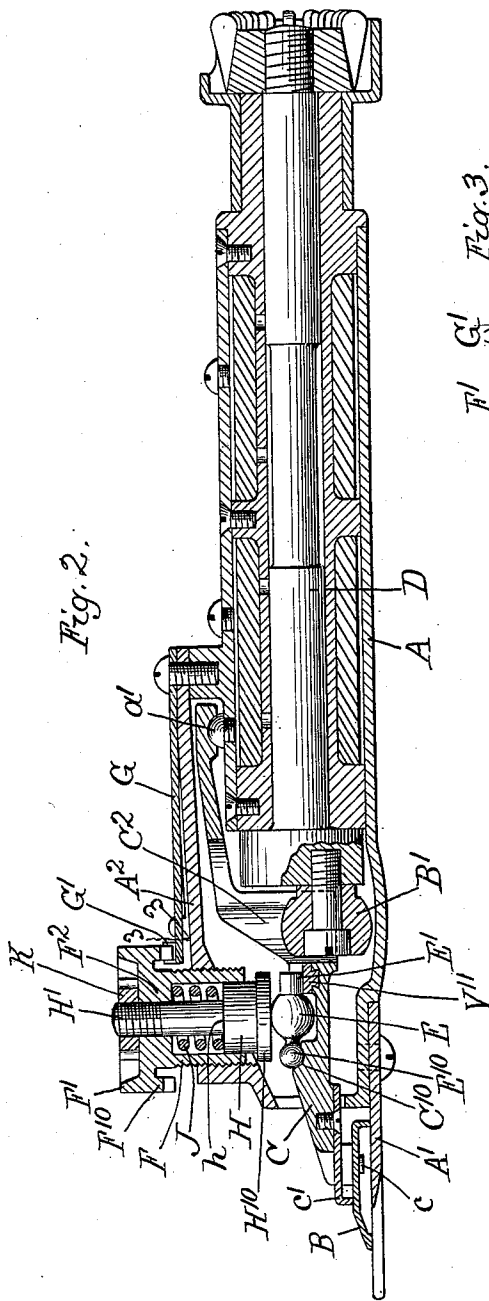


(No Model.)

J. K. STEWART.
ANIMAL SHEARS.

No. 579,811.

Patented Mar. 30, 1897.



Witnesses.
E. T. Wray.
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UNITED STATES PATENT OFFICE.

JOHN K. STEWART, OF CHICAGO, ILLINOIS.

ANIMAL-SHEARS.

SPECIFICATION forming part of Letters Patent No. 579,811, dated March 30, 1897.

Application filed August 7, 1896. Serial No. 602,095. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. STEWART, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Animal-Shears, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

Figure 1 is a plan of my improved shears with a portion of the case broken away to show the interior details. Fig. 2 is a section at the line 2 2 on Fig. 1. Fig. 3 is a detail section at the line 3 3 on Fig. 2.

A is the case, having rigid with it the comb or fixed cutter A'.

B is the oscillating cutter.

C is the cutter lever-arm, which engages the oscillating cutter B by means of the projections *c c* in the customary manner and has the pressure-finger *c'*, bearing upon the cutter at the middle point of the latter. The cutter lever-arm is pivoted at *a'* in a semi ball-and-socket joint, permitting both oscillation and slight rocking movement.

D is the operating-shaft, having the ball-crank wrist B', which engages the cutter lever-arm C at the vertically-elongated opening C² in the latter.

The construction as thus far described is in general a familiar one. In all such shears the oscillating cutter is necessarily held in close contact with the fixed cutter, and in order that the cutting edges may coöperate properly in performing their function the contacting faces of the two cutters are each slightly hollowed, the concavity being too slight to be indicated in the drawings, but sufficient to limit the contact to the cutting edges at the point of their intersection or crossing, so that the accidental intrusion of slight foreign substance, especially a hair or fiber of wool which is being cut, between the cutters shall not prevent the contact of the cutters at the point and instant of cutting. In order to permit such concavity without causing the cutters to be interlocked to such a degree as to prevent their action, the oscillating cutter must be held in contact with the fixed cutter yieldingly. This has been customarily done by making the finger C' a spring-finger and leaving to the ends of the

yoke at which the pins *c* engage the cutter only the function of engaging the latter without pressing upon it. One defect of such a structure is that the cutter will spring somewhat between the point of contact of the finger *c'* and the ends of the cutter, so that the middle cutting-point is depressed too much or else the outer cutting-points bear upon each other with too little pressure, and in practice the necessary elasticity can be obtained in this manner constantly with sufficient firmness of contact between the two cutters.

One feature of my invention consists, therefore, in providing a yielding-pressure device upon the cutter lever-arm C at a point sufficiently remote from the bearing of the arm upon the cutter to cause the pressure to be distributed equally to all the fingers of the latter and at a point at which sufficient space can be allowed for the pressure device to permit the use of a proper spring for the purpose.

The second feature of my invention consists in providing, as a means of transmitting the pressure of such pressure device to the cutter-arm and relieving the friction of oscillation at that point, an antifriction-roller having its bearings on the upper side of the cutter lever-arm, such roller being adapted to swing about one end as the arm oscillates in the arc of a circle about the fulcrum, whereby the friction of such roller is reduced to rolling friction both at its contact with the pressure device and at one side of its bearings, the other being a ball-and-socket pivot. E is such antifriction-roller. It has an axle E', the forward end of which constitutes the ball E¹⁰, lodged in a suitable socket C¹⁰ on the lever C. The rear end of said axle is cylindrical and rests upon a horizontal track V¹¹ on the lever-arm C, on which said axle rolls as the roller rotates and thereby swings about the ball-and-socket joint at the forward end of its axle. For the pressure device I provide a sleeve F, which is screwed through the top plate A³ of the case and is provided with a curtain F¹⁰, depending from its flange or head F', said curtain being notched at its lower edge and adapted to be locked against rotation by engagement of the two features G' G' of the spring G, which is secured to said

top plate with its said fingers projecting upward and overhung by said curtain.

H is a plunger having its stem H' extending within the sleeve and its broad head H¹⁰ covering the end of the sleeve.

J is a tempered-steel spring lodged in the sleeve F about the stem of the plunger H, stopped at the lower end in the shoulder h on the plunger and at the upper end against the lower side of the interior annular boss F², formed on the sleeve. The stem H' of the plunger projects up through the annular boss, and above the latter is provided with a nut K, by which the plunger may be drawn upon, more or less, against the spring J and the latter more or less compressed. It will be seen that by screwing the sleeve F down through the cap-plate A² the plunger, whose head bears upon the antifriction-roller E, is forced against the same with the yielding pressure and that the initial or minimum pressure may be regulated by means of the nut K, putting the spring under more or less initial tension.

The roller E, in addition to its other characteristics above stated, is made crowning, so that its path of contact with the head is produced merely to a line, and the severe rubbing friction which would result from its rolling in a curved path against the plunger if it were cylindrical instead of crowning is prevented.

I claim—

1. In an animal-shears, in combination with the case and the cutter lever-arm, a roller having an axle journaled at one end and rolling at the other end on a track provided on the lever-arm; and an upper bearing or path for the roller mounted on the case.

2. In an animal-shears, in combination with the case and the cutter lever-arm pivoted thereto and vibrating therein, an antifriction-roller journaled on the upper side of the cutter-arm at a point remote from and forward of the pivot, and a spring-actuated upper bearing for the roller mounted on the case.

3. In an animal-shears, in combination with the case and the cutter lever-arm, an antifriction-roller journaled on the upper side of the cutter-arm at a point remote from and forward of the pivot, and an upper bearing for the roller comprising a plunger and a spring

which tends to force the plunger against the roller, and a housing for the plunger and spring serving as the upper stop for the latter and adapted to be screwed through the case to advance the plunger yieldingly against the roller.

4. In an animal-shears, in combination with the case and the vibrating cutter lever-arm pivoted therein, an antifriction-roller journaled on the upper side of the arm at a point remote from and forward of the pivot, and an upper bearing for the roller comprising the sleeve screwed into the case, the plunger having a broad head which forms a track for the roller and a stem which is guided in the sleeve, and a spring coiled around the stem within the sleeve and reacting between stops on the sleeve and plunger to force the latter downward: substantially as set forth.

5. In combination with the case and the vibrating cutter-arm and the antifriction-roller on the upper side of the latter at a point remote from and forward of the pivot, the sleeve H and the spring-actuated plunger therein, said sleeve having a notched curtain depending from its head, and the double-toothed spring G adapted to engage the notches of said curtain and to be depressed out of engagement at will.

6. In combination with the case, the vibrating cutter-arm therein and the antifriction-roller journaled upon the upper side of the arm; the sleeve H, the plunger J having a head at its lower end which affords the track for the rollers, and its stem extending through the sleeve; a spring coiled about said stem and reacting between the stops on the plunger and sleeve respectively with a tendency to force the plunger downward relatively to the sleeve, said stem extending upward beyond the stop on the sleeve, and an adjusting-nut whereon to vary the initial pressure exerted by the spring upon contact of the plunger-head with the roller.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 1st day of August, 1896.

JOHN K. STEWART.

Witnesses:

T. J. CLARK,
J. P. BUTLER.