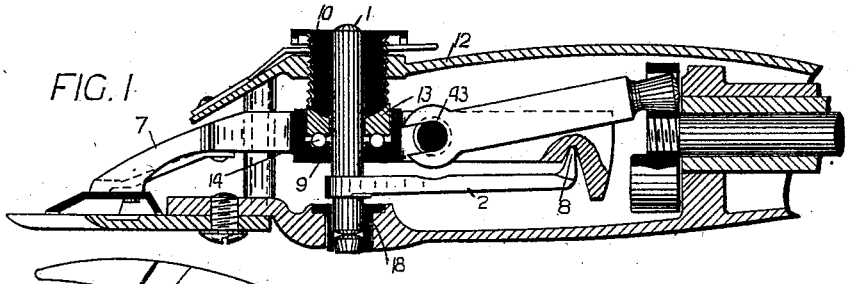
(No Model.) 2 Sheets—Sheet 1.

W. SILVER.

ANIMAL SHEARS.

No. 494,034. Patented Mar. 21, 1893.

FIG. 1



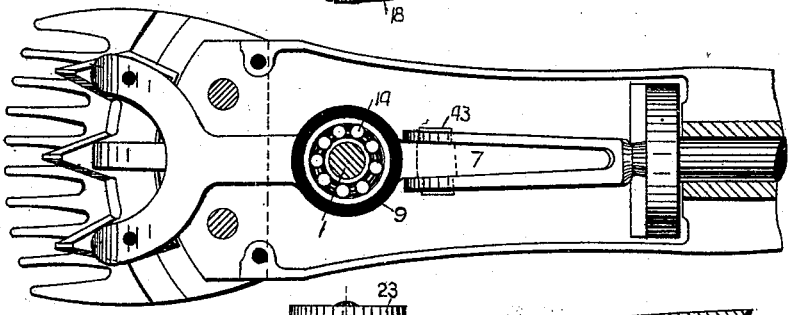
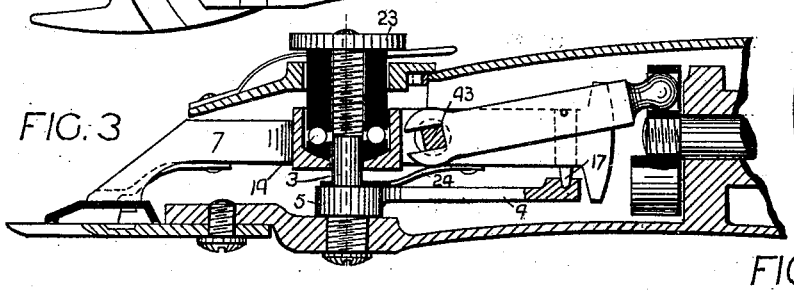


FIG. 2

FIG. 3



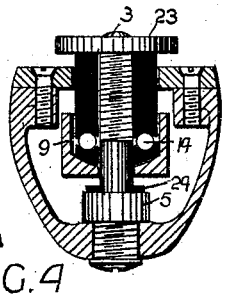


FIG. 4

Witnesses:
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Thos. H. LaPorte

Inventor:
William Silver
By Butterworth & Dowell
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(No Model.) 2 Sheets—Sheet 2.

W. SILVER.

ANIMAL SHEARS.

No. 494,034. Patented Mar. 21, 1893.

FIG. 5

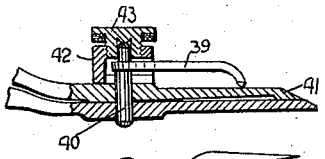
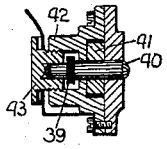


FIG. 6



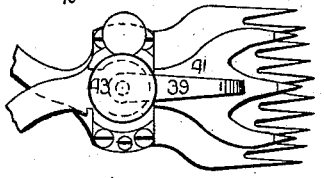


FIG. 7

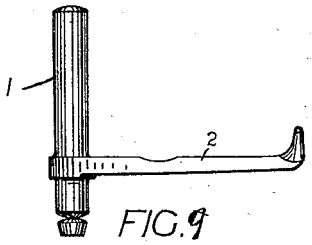


FIG. 9

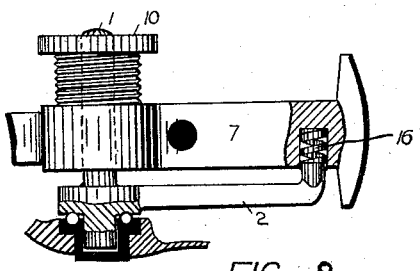


FIG. 8

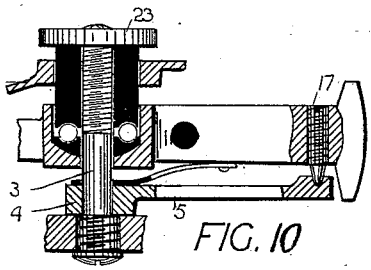


FIG. 10

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM SILVER, OF TAMWORTH, NEW SOUTH WALES.

ANIMAL-SHEARS.

SPECIFICATION forming part of Letters Patent No. 494,034, dated March 21, 1893.

Application filed September 10, 1892. Serial No. 445,548. (No model.) Patented in England February 4, 1891, No. 2,036; in New South Wales April 2, 1891, No. 2,897, and in Queensland July 8, 1891, No. 1,358.

To all whom it may concern:

Be it known that I, WILLIAM SILVER, engineer, a subject of the Queen of Great Britain, residing at Tamworth, in the Colony of New South Wales, have invented new and useful Improvements in Machines for Shearing and Clipping Wool and Cutting Hair, (for which I have obtained Letters Patent in Great Britain, No. 2,036, dated February 4, 1891; in New South Wales, No. 2,897, dated April 2, 1891, and in Queensland, No. 1,358, dated July 8, 1891,) of which the following is a specification.

These improvements in machines for shearing and clipping wool and cutting hair from sheep, horses, and other animals, and from dead skins, consist in a device for sustaining the vibrating bar in its working position with a minimum of friction, and in the application of such device to and the combination of the same with known machine shears wherein the vibrating lever is either, (*a*) of the first class, or (*b*) of the third class, and also in the application of such device to and the combination of the same with an ordinary hand clipper.

The objects of the invention are mainly to improve the mechanism whereby tensional pressure is applied and to lessen the friction incidental to the motion of the vibrating bar, the cutter and other moving parts, and the heating consequent upon that motion.

In the accompanying drawings, Figures 1 and 2 are respectively a longitudinal section and a plan illustrating the application of the invention to a machine shear wherein the vibrating bar is a lever of the first class; Figs. 3 and 4 a similar longitudinal section and transverse section respectively relating to a modified construction of machine of the same class. Figs. 5, 6, and 7 are illustrative of the application of the invention to an ordinary hand clipper. Fig. 8 (fragment) shows a modification of the construction shown in Figs. 1 and 2; and Figs. 9, 10 (fragment) are details relating to Figs. 1 and 3 respectively. Fig. 5 is a longitudinal section, Fig. 6 a transverse section, and Fig. 7 a top plan.

Similar figures refer to similar parts throughout the several corresponding figures, except when the context otherwise requires.

There is no novelty in the construction or combination of the main shaft, disk-crank thereon, vibrating lever, forked connecting rod, and central spindle as shown in Figs. 1 to 4.

The construction above mentioned with reference to Figs. 1 to 4 is comprised in United States Letters Patent granted to me, No. 440,902, dated November 18, 1890. The design of the crosshead pin shown in Figs. 1, 2, and 3 is, however, novel.

There may be substituted for the connecting link motion for vibrating the knife-bar lever as shown in Figs. 1, 2, and 3 any other known mechanical movement by which the same result can be produced.

Rotary motion is communicated to the main shaft of the machines shown in the first sheet of drawings by any suitable form of flexible shafting, or by a self-contained motor driven by air or other fluid or electricity.

The device aforesaid in which and in the application of which the invention consists is shown in its modifications as applied to machine shears in Figs. 9 and 10, as in Fig. 9 it consists of a turned spindle 1 capable of rotation in bearings, upon which spindle or bracket an arm 2 is formed, and as in Fig. 10 it consists of a fixed spindle 3 turned so that the hub 4 of the bracket arm 5 may rotate about it.

Referring to Figs. 1, 2, and 9: The vibrating bar 7 moves about the axis of the spindle 1 as a center, and at its rear end is supported on the pointed end 8 of the bracket arm 2. The spindle 1 and the bracket-arm 2 are immovable except as to a vibratory motion about the axis of the spindle and the vibrating bar 7 is adjustable in a vertical direction relatively to the parts 1 and 2 about the point 8 as a center, the hole in the bottom of the cup 9 through which the spindle passes being made sufficiently large to allow of this adjustment. Tensional pressure is applied to the vibrating bar 7 by the cap 10 screwing through a tapped collar in the case 12, which cap is spherical on the bottom end and takes its seating in a saucer piece 13 whence the pressure is transmitted to the vibrating lever through a ball race 14. In some cases a spring such as 16 Fig. 12 is inserted between

the end of the bracket arm 2 and the vibrating bar; and in other cases the end of the bracket arm may be formed to receive the end of a screw such as 17 Figs. 3 and 10 by working which the position of the vibrating lever may be adjusted. The spindle 1 vibrates in bearings which have an immovable axial line. The lower bearing 18 is set in the machine case; it terminates at the foot in a shoe on which the lower end of the spindle 1 moves. The upper bearing is bored right through the cap 10 or sufficiently far to allow maximum variation of tension. It will be seen that the vibrating lever is for the purposes of power transmission a lever of the first class and for purposes of tension application a lever of the third class.

Referring to Figs. 3, 4, and 10: The essential characteristics of the design are similar to those before described. The spindle 3 is however, fixed in the case, and the bracket arm 4 is formed with a hub 5 which rotates about the turned portion of the spindle 3. The tension cap 23 may screw either onto the top end of the spindle as shown or through a collar in the case as already described. 24 is a spring in compression tending to lift the vibrating bar off the bracket arm. The crosshead pin 43 is turned to two diameters, and the extremities of the connecting bar fork pieces are cut out like spanner jaws, (Figs. 1 and 3,) which grasp the ends of the smaller portions, the larger portion being cylindrical and fitting with working freedom a hole in the vibrating lever. In Figs. 1 and 2 the crosshead pin is shown turned all over, while in Fig. 3 it is shown turned in the central portion but squared at the ends. Heads may be formed on the pin if desired, but they are unnecessary.

The advantages obtained by the use of such a crosshead pin in lieu of a machine screw or a common headed pin are apparent; it is equally as efficient for maintaining the position of the parts, and it is such that they may be readily taken apart and reset.

Referring to Figs. 5, 6 and 7: The bracket arm 39 which is on the spindle 40 bears on the top or movable cutter-plate 41 for which the spindle 40 forms the pivot, there being a strap 42 whereby the movable plate is connected to the lower or fixed plate. In an alternative arrangement, a separate pivot is used and the spindle 40 passes through a slot in the cutting plate or in the lever by which the latter is actuated. The tension cap 43 screws through a tapped hole in the part 42 and forms a bearing for and acts on the top end of the spindle. If preferred, there may be provided at the point of contact between the nut and the spindle a ball-race and a series of antifriction balls. The lower extremity of the spindle fits in a hole forming a bearing (which may be in a steel bush) in the lower plate 44 or in the casing, the hole being either bored right through or sufficiently deep to allow for the depression of the spindle (and consequently of the bracket arm) by the tension cap.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In a shearing and clipping machine, the combination with the shell or casing, of a spindle mounted in bearings formed in said casing, the vertically adjustable cutter-bar vibrating about said spindle as a center and pivotally supported at its rear end upon a bracket arm extending from said spindle, substantially as described.

2. In a shearing and clipping machine, the combination with the shell or casing, of a spindle mounted in bearings formed in said casing, the vertically adjustable cutter-bar vibrating about said spindle as a center and pivotally supported at its rear end upon a bracket arm extending from said spindle, and a tension cap tapped into the upper bearing and acting to depress the cutter-bar, substantially as described.

3. In a shearing and clipping machine, the combination with the shell or casing, of a spindle mounted in bearings formed in said casing, the vertically adjustable cutter-bar vibrating about said spindle as a center and pivotally supported at its rear end upon an upwardly turned pivot point formed at the rear end of a bracket arm extending from the spindle, and a tension cap tapped into the upper bearing and acting to depress the forward end of the cutter-bar, substantially as described.

4. In a shearing and clipping machine, the combination with the shell or casing of a spindle mounted in bearings formed in said casing and provided with a fixed rearwardly extending bracket arm rotating with said spindle and provided at its extremity with an upwardly turned pivot point, the cutter-bar pivotally supported near its center upon the spindle and at its rear end pivotally supported upon the said pivot point, and a screw threaded cap tapped in the upper bearing and acting to depress the forward end of the cutter-bar, substantially as described.

W. SILVER.

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C. L. CHAMPION,
Artd. Clerk to Jno. Patterson, Solr., Tamworth.