P. HARLOW.

Sheep-Shears.

No. 166,772. Patented Aug. 17, 1875.

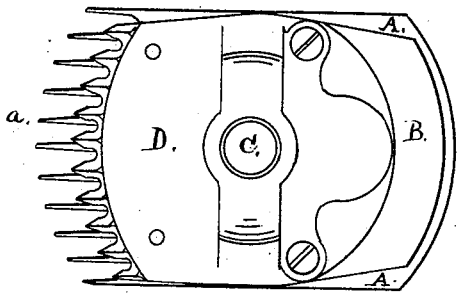

Fig. 1.

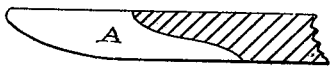

Fig. 4.

Fig. 5

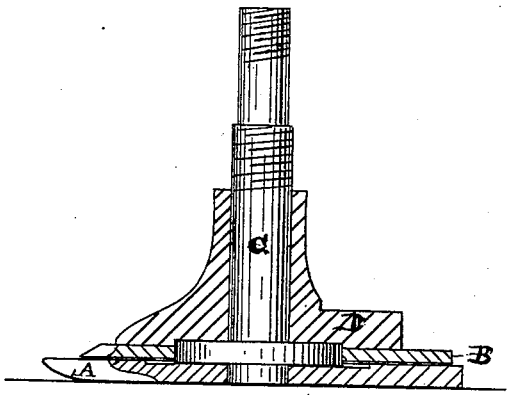

Fig. 2.

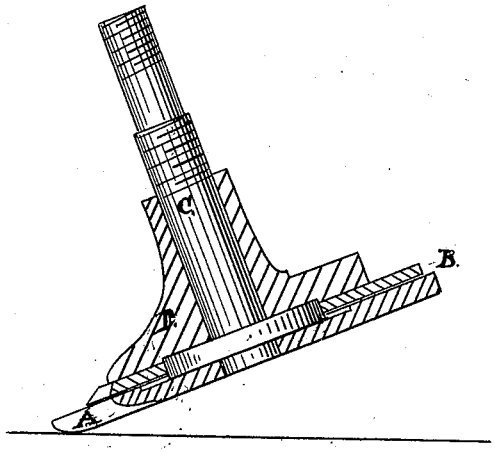

Fig. 3.

Witnesses.

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PHILANDER HARLOW, OF HYDE PARK, MASSACHUSETTS.

IMPROVEMENT IN SHEEP-SHEARS.

Specification forming part of Letters Patent No. **166,772**, dated August 17, 1875; application filed May 4, 1875.

To all whom it may concern:

Be it known that I, PHILANDER HARLOW, of Hyde Park, Norfolk county, State of Massachusetts, have invented certain new and useful Improvements in Sheep-Shears, of which the following is a specification:

The nature of my invention consists in making shears with the upper and lower plates or arms having the requisite number of teeth of the proper form to penetrate and cut the wool from live sheep, and to do so without cutting the sheep at the same time that the wool is cut, of even length over the body of the sheep by the operation of the shears.

These shears are intended to be attached to any suitable device for obtaining rapid reciprocating motion and imparting it to the upper cutter—in other words, to be used as power-shears, in order that the utmost rapidity of action and result may be obtained; but the cutters are equally applicable to hand-shears.

The drawings, in connection with the following description, are intended to explain the nature of my invention.

Similar letters in the different figures represent the same parts.

Figure 1 is a top view of the shears, which consist of a lower plate, A, having teeth or shear-arms cut in one end, and is attached firmly to the rod and plate C; also an upper plate, B, having teeth or shear-arms cut in the same end with the teeth in the under plate A. This plate B is firmly fastened to a holder, D, which oscillates upon the stationary shaft C as a center. Fig. 2 is a vertical sectional view of the shears, held flat upon the sheep, and in this position giving in operation the closest cut of the wool. Fig. 3 is also a vertical sectional view of the shears, held with the points of the lower plate on the sheep, and the heel of the cutter raised, by which the length of the wool left on the sheep is increased. Fig. 4 is an enlarged longitudinal sectional view of the form of the tooth or shear-arm in the lower plate A; and Fig. 5 is a vertical transverse sectional view of the tooth or shear-arm in the lower plate A, at the first point of contact between the lower plate A and the upper plate B.

The vital part of my invention consists in the form of the tooth or shear-arm in the lower plate A, together with the distance apart of the said teeth, and the distance of their points from the points of the vibrating upper cutter-plate B. It is to be understood that the cutting is produced by vibrating the teeth of the upper cutter-plate B across the teeth of the lower cutter-plate A, they being held firmly together at the point of contact, and also that all the impinging edges are sharpened, the operation being the same as multi-pointed scissors or shears.

In order that the object I accomplish may be more fully understood I desire to recite the peculiarities of shearing wool from live sheep. First, the skin of the live sheep is to the utmost degree tender, the slightest pressure of a rough or sharp point penetrating it. Second, the wool grows so thickly and closely together as to render it difficult of penetration by more than one point at a time. Third, the skin of the live sheep lies loosely upon the body, and the slightest strain upon the wool made by forcing in improperly constructed or shaped cutters will draw the skin into and between the arms of the shears. Fourth, the large percentage of sheep have large wrinkles of skin, not only on the neck, but all over the body, from which the wool must be sheared, and which are liable to be cut by any device now known for shearing.

The under plate of the shears by which I overcome these difficulties is constructed as follows: A piece of sheet-steel from one-tenth to one-eighth of an inch in thickness and two inches wide, has at one end a series of teeth or shear-arms cut in a suitable manner. These teeth may vary in number from ten to thirteen, equally distributed, said variation in number depending upon the closeness of the wool to be sheared. Loosely-growing wool can be sheared with more teeth in the plate than close-growing wool; but varying the number of teeth either less or more than the above will be a disadvantage on any wool. These teeth are formed as in Fig. 4, being straight, or nearly so, on the top out to the extreme point, and rounding from the point back to the heel of the cutter on the bottom. They are to bound the openings between them at their top edges with parallel sides, so that when they enter the wool there will be no

continued lateral pressure on the wool by wedging it farther between the teeth, the first resistance of entering being all there is to overcome, that being confined to the forcing apart of the wool at the points of the cutter. A slight variation in the shape of the tooth, as shown at letter *a*, Fig. 1, will not prevent the operation; but teeth giving parallel spaces between them are better. The teeth of the lower cutter-plate A should be as thin as they can be made so as to not spring when in operation. A thirty-second part of an inch in thickness will be found to be the best; but slightly thicker when used on loosely-growing wool will operate perfectly well. The ends of these teeth should be rounded, and no sharp edge should be left that can scratch the skin under any ordinary pressure used. From the top edge of the teeth to the bottom resting on the sheep, they should be reduced by converging sides to as thin an edge as possible and not cut the skin, as shown in Fig. 5; and this shape should be carried all the way along the lower edge of the tooth until it meets the rounded ends. Every part of the tooth, where it comes in contact with either the wool or the skin, should be polished. To act as a guard or fender to prevent the wrinkles of the skin coming in contact with the vibrating upper cutter B, the teeth of the lower cutter A should be carried out beyond the points of the upper cutter B at least one-fourth of an inch. The skin will then roll over the top of the lower cutter-points, but will yield and roll on before the slanting lower edges of the lower cutter-points before reaching the upper cutter-points. The shape of the teeth in the upper cutter-plate B is not material to the operation of my invention. They will operate better to have the same number of teeth as the lower plate A, and it is easier to make them saw-tooth shape; but they will operate with little perceptible difference if they are of any other shape, and in greater or less number than those in the lower plate B.

Relating to the shape of the teeth in the upper cutter-plate B, as they may vary from the shape herein described of the teeth in the lower cutter-plate A, I make no claim as my invention.

The advantage of my invention consists in being able to shear wool from any live sheep, closely to the skin, with rapidity, and without cutting the sheep, which cannot be done with any other multi-pointed shears.

I claim—

In multi-pointed sheep-shears, a lower cutter-plate having thin blades projecting as a guard beyond the upper cutter-plate, said blades being formed sled-runner shape on the under side toward the ends, each blade narrowing vertically to a knife-edge from the cutting-edge downward, and forming spaces, parallel, or nearly so, between the blades from the ends to the point of impact with the points of the upper cutter-plate.

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Witnesses:

W. L. GROUT,

GEO. L. HARLOW.