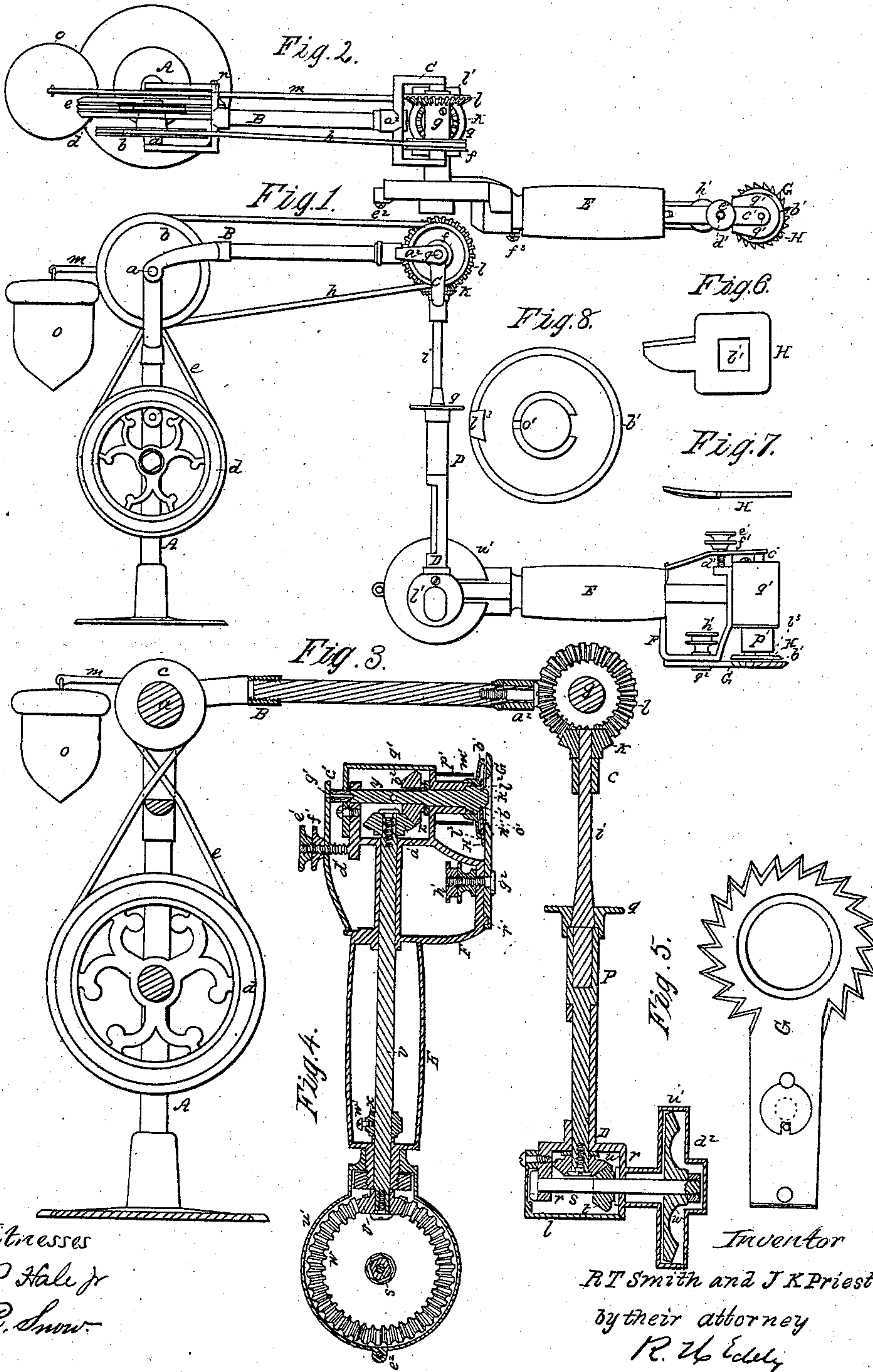


Smith & Priest,
Animal Shearing Machine,
No 88,340, *Patented Mar.30, 1869.*



Witnesses
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ROSWELL T. SMITH AND JOSEPH K. PRIEST, OF NASHUA, NEW HAMPSHIRE, ASSIGNORS
TO THEMSELVES, WILLIAM EARLE, JR., AND J. G. BLUNT, OF SAME PLACE.

Letters Patent No. 88,340, dated March 30, 1869.

IMPROVEMENT IN ANIMAL-SHEARING MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that we, ROSWELL T. SMITH and JOSEPH K. PRIEST, of Nashua, in the county of Hillsborough, and State of New Hampshire, have invented an Improved Animal-Shearing Machine; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 denotes a side elevation of our said machine.

Figure 2 is a top view of it.

Such other figures as may be necessary to a full and clear representation of our improvements will be hereinafter referred to and explained.

The machine, while embodying many of the characteristics of the mechanism shown in the United States patents numbered 59,089, 66,052, and 72,013, involves others of value and importance.

The purpose of the said machine is to shear, or clip the hair or wool of an animal while on the body of such animal, and it is highly useful for shearing the wool of a sheep or the hair of a horse.

In the drawings—

A denotes a standard, which is forked at its upper part, and is there pivoted, or jointed to a furcated arm B.

A shaft, *a*, at the junction of the two, carries two grooved wheels, or pulleys *b* *c*, around the lesser of which, and a driving-pulley, *d*, arranged on an axle projecting from the standard, is an endless crossed band, *e*.

Around the larger pulley, *b*, and another pulley *f*, fixed on a shaft, *g*, which is sustained within a swivel, *a*², applied to the arm B, an endless band, *h*, travels.

A stirrup, C, suspended from the shaft *g*, so as to be capable of turning thereon, supports a shaft, *i*, which depends from a bevelled pinion, *k*, that engages with a bevelled gear, *l*, fixed on the shaft *g*, the whole being so that when the driving-wheel *d* is put in revolution, rotary motion on or about its axis shall be imparted to the shaft *i*.

A rod, *m*, extending through a hole in the arm B, and held to the arm by a set-screw, *n*, rests on the top of the standard A.

A weight, *o*, is hung upon the outer end of the said rod, and serves to balance the weight of the arm B, and the mechanism connected with it. By sliding the weight-rod more or less longitudinally, we can adjust the weight so as to obtain the necessary circular balance of the arm B, and the parts to be described.

The shaft *i* connects with an auxiliary shaft, *p*, by a coupling, *q*, which will cause the two shafts, when so connected, to revolve together, when the shaft *i* may be in revolution.

Figure 3 is a vertical and transverse section of the machine, such section being taken through the shaft *i*.

Figure 4 is a vertical section, taken through the cutter-carrier handle.

The shaft *p* is supported by, and so as to be capable of revolving within a furcated arm, D, which, at its lower part, supports, in suitable bearings *r* *r*, a shaft, *s*, which is arranged at right angles with the shaft *p*, and connected with it by bevelled gears *t* *u*, the same being so as to cause the shaft *s* to derive rotary motion from the shaft *i*.

A shield, or cap, *l*¹, fastened to the arm D, covers the said gears, and protects them from dirt or injury, or filaments of hair or wool.

The shaft *s* is also supported within a case, *u*¹, projecting from one end of a tubular handle, E, but separate therefrom. The said case *u*¹ is provided with a cover, *d*², secured in place by screws *e*² *f*³. The case fully surrounds the gear within it on both sides, as well as the periphery thereof, and protects such from dust, and in other respects.

A shaft, *v*, duly supported, runs through the handle axially, and has on one end a bevelled gear, *v*¹, to engage with a larger bevel-gear *w*, fixed on the shaft *s*, and arranged within the case *u*¹.

The said shaft *v* is supported within and projects from the case *u*¹.

The handle should be capable of being freely revolved on the shaft, it being kept in place thereon by means of a collar, *z*, and a set-screw, *w*¹, going through the collar, and being screwed against the shaft.

The handle constitutes part of a carrier, or frame, F, by which a cutter-shaft, *y*, is supported, such shaft being arranged and connected with the shaft *v*, by bevelled gears *z* *a*¹, arranged as represented.

The shaft *y* is placed at right angles with the shaft *v*.

At and fixed to the lower end of the shaft *y* is a cutter-head, *b*¹.

The upper end of the shaft *y* is pivoted against a presser, *c*¹, formed and arranged as shown in the drawings, and made adjustable in position by a screw, *d*¹, and two nuts, *e*¹ *f*¹, one of which is a check to the other, arranged on such screw, the screw being projected from the carrier F.

A passage, *g*¹, made through the presser to its shaft-pivot, serves to enable the latter to be supplied with oil, which may be introduced to it through such passage.

The object of the presser and its adjustments is to cause the knife H to be forced against, and kept in due relation to a serrated cutter-plate, G, formed as represented in under-side view in fig. 5.

The said plate is held to the carrier F by means of a clamp-screw, *g*², and a nut, *h*¹, arranged as shown in the drawings. The cutter-plate is further supported in position by a stud, *r*¹, which extends from the carrier F, and goes into a hole in the shank, or rear part of the plate.

Figure 6 is a top view, and

Figure 7, an edge view of the cutter, or knife H, which is curved, as shown in the latter figure, and is made of spring-steel. It is formed with a polygonal

eye, *i'*, to fit on a corresponding projection, *k'*, made on the end of the shaft *y*, and from a shoulder *l'*, formed on the shaft, the same being so as to enable the shaft to revolve the knife, and press it against the cutter-plate *G*.

The cutter-shaft should be so applied to its driving-gear, viz, by a spline-and-feather connection, shown at *b'*, as to be capable of being moved by the presser endwise through such gear, in order that the knife *H* may be pressed into contact with the cutter-plate *G*.

The knife rests in a notch, or recess, *l'*, made in the cutter-head *b'*, which slips on the shaft *y*, and encompasses its lower bearing, *m'*, and is connected to the shaft by a feather-connection, or a stud, *n'*, projected from the shaft and into a groove, *o'*, formed in the head. (See Figure 8, which is an under-side view of the said head *b'*.)

The object of making the knife *H* curved, and to spring as described, is, to keep it in proper contact with the cutter-plate, so that the two may operate like the blades of a pair of shears. They will not do this to so good advantage when the knife is a straight one, as it will not spring and adapt or adjust its edge to that of each tooth of the cutter-plate while passing it, as it does when made in our improved manner, and pressed up to the plate by the action of a presser applied to the cutter-shaft, as described.

A cylindrical guard, *p'*, extended from the carrier *F*, goes around the bearing *m'*, so as to protect the joint between such and the head *b'* from fibres of wool or hair, which otherwise might get into and pack in such joint while the machine may be in operation.

A cap, or case, *q'*, fixed on the carrier *F*, covers the bevel-gears *z* *a'*, by which the shaft *y* is revolved.

The shield, or cutter-head *b'* revolves with the rotary cutter, and supports the material when being cut, and also prevents it from clogging the cutters.

In using the machine, an operative seizes the handle of the carrier *F*, and presses the cutter-plate flat against the surface from which the hair or wool is to be cut, or sheared, and as the shearing progresses, he should move the carrier so as to advance the cutter-plate along the path in which it is to travel. He can turn the cut-

ter-plate in any direction with great facility, and the cutter will continue to revolve in the mean time, provided the driving-wheel be put in revolution.

We herein make no claim to the shearing-machine described and represented in Letters Patent, No. 59,089, granted to one of the undersigned, viz, R. T. SMITH. Nor do we herein claim the improved joint which constitutes the subject of Letters Patent, No. 66,052, granted to one of us, viz, the said SMITH. Nor do we herein claim the subject or subjects of Letters Patent, No. 72,103, granted to both of us.

What we claim as our present invention or improvements with reference thereto, may be stated as follows:

1. In a shearing-machine, of the kind described, we claim the combination of the presser *c'*, and its adjusting, or presser-screw or screws, or the equivalent therefor, with the cutter-shaft *y*, the cutter *H*, and the cutter-plate *G*, as described.
2. We also claim the presser, as made with the oiling-passage arranged within its head, or point, substantially as set forth.
3. We also claim the combination of the gear-case, or box *u'*, with the carrier *F*, the same being to swivel, with respect to the handle of the carrier, and extend about, and entirely cover the gears contained in such case *u'*, as specified.
4. We also claim the combination and arrangement of the cap, or case *l'*, with the bevel-gears therein, and the shaft-supporter, or swivel-arm *D*.
5. We also claim the application of the cutter-shaft to its bevel-gear, so as to be capable of being moved endwise through it, and of being revolved by it, as and for the purpose specified.
6. We also claim the combination and arrangement of the guard *p'* with the shaft-bearing *m'*, and the cutter-head, or shield *b'*.

R. T. SMITH,
J. K. PRIEST.

Witnesses:

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C. M. ROBINSON.