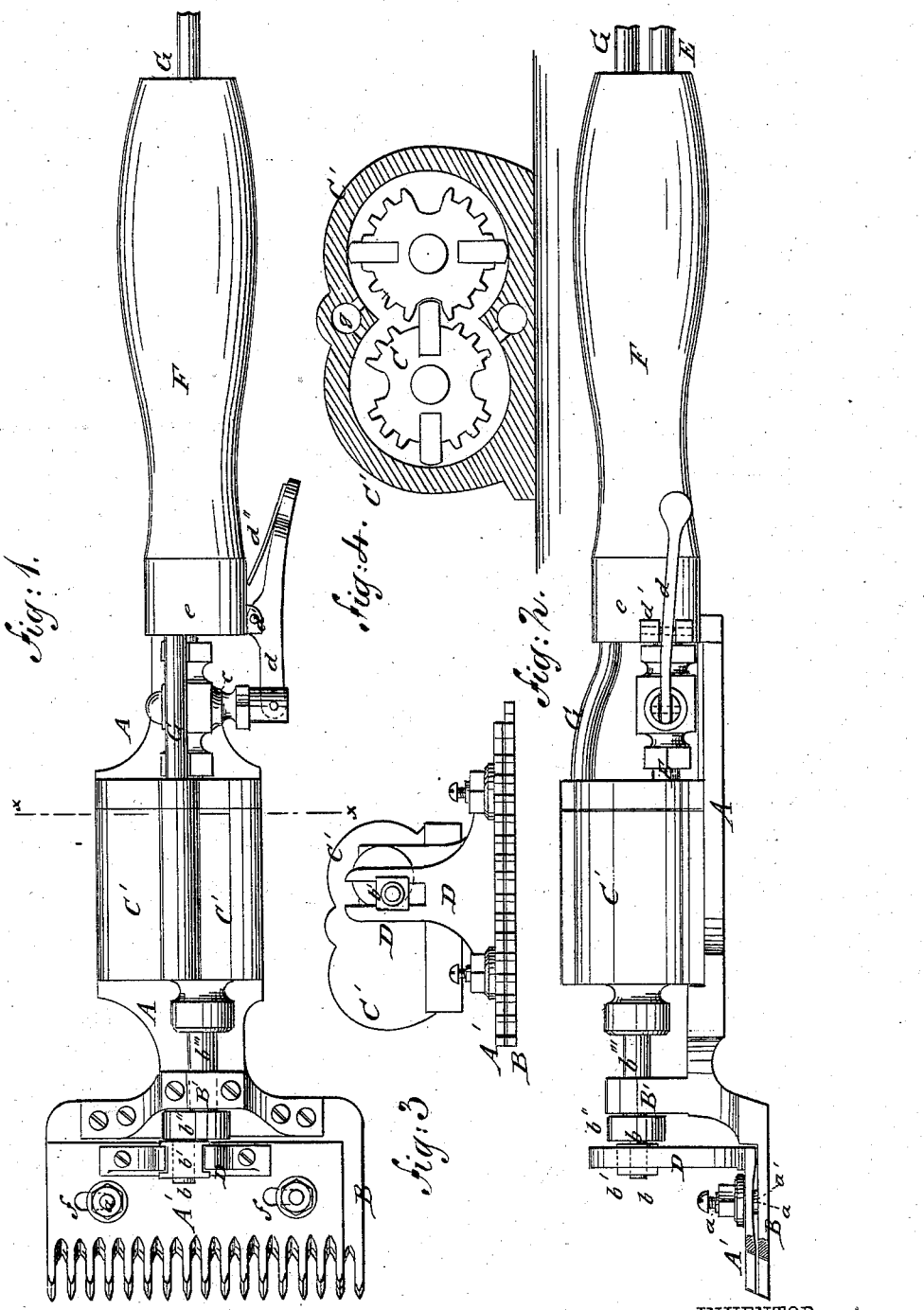
E. W. NOYES.

Horse-Clipper and Sheep-Shearer.

No. 216,882. Patented June 24, 1879.



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ERNEST W. NOYES, OF BAY CITY, MICHIGAN.

IMPROVEMENT IN HORSE-CLIPPER AND SHEEP-SHEARER.

Specification forming part of Letters Patent No. **216,882**, dated June 24, 1879; application filed March 5, 1879.

To all whom it may concern:

Be it known that I, ERNEST WILLIAM NOYES, of Bay City, in the county of Bay and State of Michigan, have invented a new and Improved Horse-Clipper and Sheep-Shearer, of which the following is a specification.

The object of this invention is to provide a device for clipping horses and shearing sheep, to be operated by steam or compressed air; also to arrange the several parts so that the speed of the clipping-knife will be fully under the control of the hand holding the implement, and the exhaust steam or air will be carried away from the animal, and at the same time the hand will be fully protected against the heat, if steam be used.

In the accompanying drawings, Figure 1 is a top view or plan of the improved clipper and shearer. Fig. 2 is a side view of the same. Fig. 3 is an end view, and Fig. 4 is a cross-section, of the rotary engine on line *x x* of Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the base-plate of the implement, to one end whereof is attached a ferrule, *e*, in which the handle F is socketed, while the opposite end is bent down so as to be below the level of the main part of the plate, and formed into a comb, B.

A′ is the knife-blade, with short toothed or serrated blades over the teeth of the comb. This knife is attached to the comb by studs *a* projecting up from the comb-plate through slots *f* in the blade. These studs are threaded, and washers are placed over them to rest on the blade, and then nuts are screwed down, and then these are prevented from coming off by small screws entered into the studs from the top.

The slots permit the knife-blade to reciprocate over the comb in the direction of its length or sidewise, so that the serrated knives pass back and forth over the teeth of the comb, and thus the hair and wool projecting through the comb-teeth are sheared off by the action of the knife-blades against the edges of the teeth.

To decrease the friction between the blade and comb, the former is hollow ground on its under side, as shown at *a′*, thus decreasing its bearing-surface.

From the center of the knife-blade, at its back edge, rises at right angles a yoke, D, and in this yoke is a cross-head, *b′*, through which passes the crank-pin *b*, projecting from the face of wheel *b″* on shaft *b‴*, journaled in the pillow-block B′, rising from base-plate A.

Shaft *b‴* is fixed to the axis of one of the pistons of the double-piston rotary engine C, of which C′ are the cylinders, attached to the base-plate A midway between the pillow-block B′ and handle F. By means of this rotary engine the shaft *b‴* is turned, and the crank-wheel *b″*, engaging the cross-head *b′*, sliding up and down in yoke D, converts the rotary motion of the engine into the reciprocating motion of the knife A′.

E is the steam-pipe, passed through the handle from the rear, thence into a cavity in the lower part of the cylinder C′, from whence ports open up into the cylinder. Between the cylinder and handle the steam-pipe is supplied with a valve, *c*, the outer end whereof is pivoted to the end of lever *d*, which is fulcrumed at *d′* on the handle, and extends back far enough to be easily operated by the hand grasping the handle F. A spring, *d″*, keeps this valve closed; but by pressing on the end of the lever next the handle the valve is partially or entirely opened, as may be desired, and thus the speed of the knife may be regulated at the same time and by the same hand that manipulates the implement.

G represents the exhaust-pipe, extending from the cavity *g*, in the upper part of the cylinder between the two pistons, and is then carried back through handle F, and projects from the rear end of the same.

The end of the supply-pipe E projecting from the handle is connected by means of a flexible tube with the boiler or compressed-air reservoir, and the steam or air passes through the same, when valve *c* is open, to the rotary engine, and from there it passes through ports into the cavity *g*, thence into pipe G, and is exhausted at the end of the handle, thus avoiding contact with the animal or with the person of the operator.

The handle F is preferably made of wood,

so that when steam is used as a motor the hand will be protected from the heat radiating from the steam and exhaust pipe; but any other non-conductor may be employed.

By this arrangement it will be seen that steam or compressed air can be employed as a motor for the clipper or shearer, thus enabling the work to be done much more rapidly and efficiently than by any means now employed.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The rotary engine C, operated by steam or air, in combination with the reciprocating knife A′, with which it is connected by a crank on the piston shaft engaging a sliding cross-head confined in a yoke rising from the knife, whereby a reciprocating motion is communicated to the said knife, substantially as described.

2. The yoke D, connected to the reciprocating knife A′, in combination with the cross-head *b′*, sliding therein, crank *b* on the rotary engine-shaft engaging said cross-head, and the rotary engine C, substantially as described.

3. The steam-pipe E, carried through the handle F to the rotary engine C, in combination with the engine and handle, substantially as described.

4. The valve *c* in steam-pipe E, pivoted to spring-lever *d*, fulcrumed on handle F, whereby the hand of the operator holding and guiding the implement is enabled at the same time to regulate the supply of steam and the speed of the knife, substantially as described.

5. The exhaust-pipe G, leading from the cylinder of the engine back through the handle F, so as to deliver the exhaust-steam at the end of the handle, to avoid contact with the horse, substantially as described.

6. The handle F, made of wood, in combination with the engine, knife, and pipes E and G, passed through the said handle, whereby the hand holding the implement is protected from the heat of the steam passing through the said pipes to and from the engines, substantially as described.

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Witnesses:
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