

May 18, 1937.

W. H. WILCOX

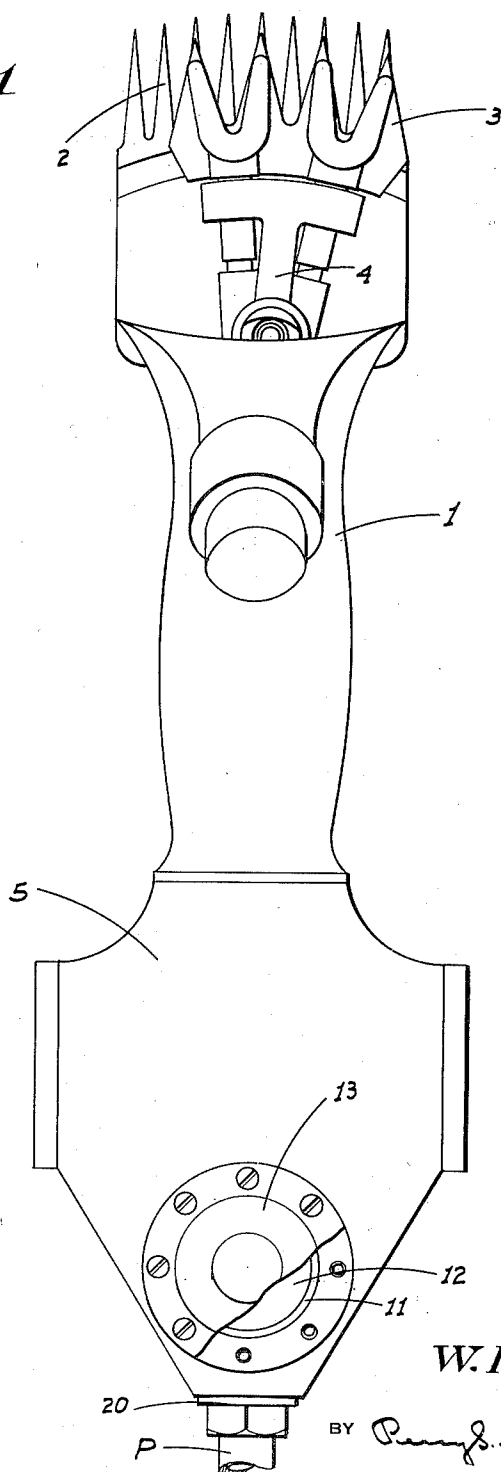
2,080,451

SHEEP SHEARS

Filed Jan. 21, 1936

2 Sheets-Sheet 1

Fig. 1



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Fig. 2

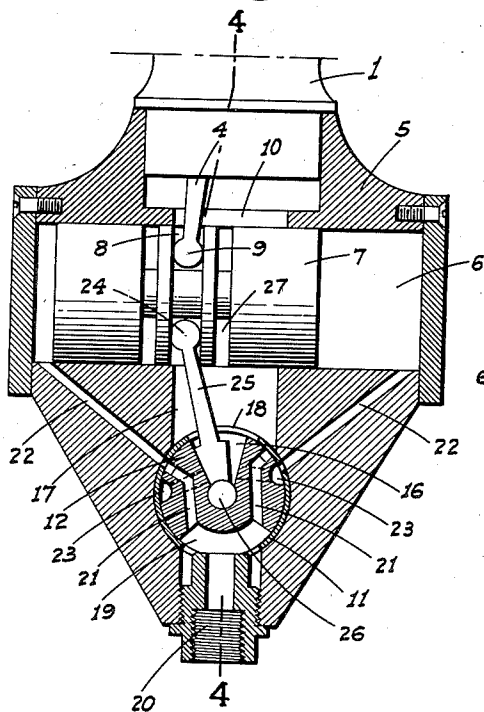


Fig. 3

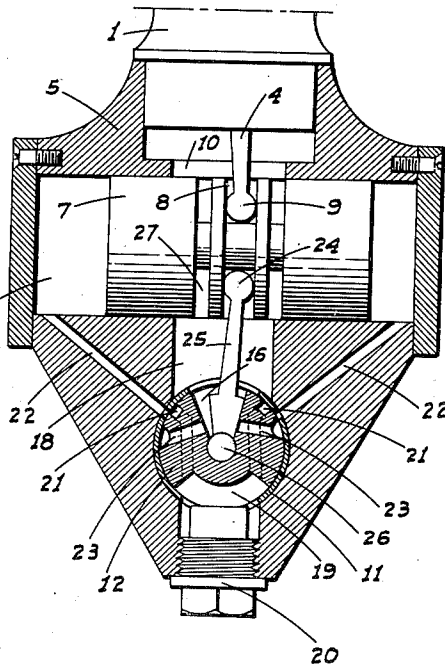
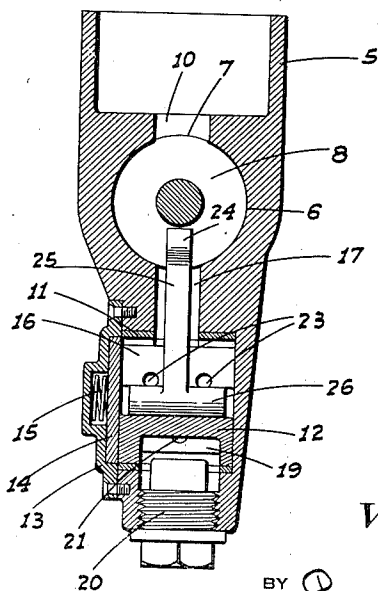


Fig. 4



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SHEEP SHEARS

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5 Claims. (Cl. 30—1)

This invention relates to sheep shearing tools, my principal object being to provide a pneumatically operated mechanism for reciprocating the cutter bar of the shears and which is arranged so that vibration and wear are reduced to a minimum, there is no danger of the operating parts running hot, and in which the exhaust air blows past the cutter bar and comb to keep the wool as shorn clear of the cutting elements and maintain the same in a clean condition, so that there is no danger of them clogging.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings similar characters of reference indicate corresponding parts in the several views:

Figure 1 is a front elevation of a sheep shearing tool, equipped with my improved cutter operating mechanism.

Figure 2 is a sectional elevation of the housing in which the operating mechanism is mounted showing the position of the control valve and associated parts just after the valve has been shifted or reversed to cause the return movement of the piston.

Figure 3 is a similar view showing the position of the piston on said stroke just as the valve is being again shifted to the opposite position; the valve in this view being sectioned in a transverse plane different from that shown in Figure 2.

Figure 4 is a transverse section on the line 4—4 of Figure 2.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 denotes the tubular shank of the shearing tool, which also serves as a handle, and on the outer end of which is mounted the flat comb 2 or stationary cutter. A reciprocating cutter bar 3 co-operates with the teeth of the comb and is connected to an oscillating lever 4 pivoted intermediate its ends in the shank and projecting through the opposite end of the same. The parts thus far described are standard, the invention residing in the mechanism for oscillating the lever.

The mechanism includes a housing 5 into which the inner end of the shank projects and to which it is rigidly secured. Formed in the housing is a cylinder 6 closed on both ends and disposed with its axis at right angles to the shank and parallel

to the comb. A piston 7 is slidable in the cylinder and has a circumferential groove 8 centrally of its ends into which the head 9 on the adjacent end of the lever projects radially. The lever extends through a slot 10 in the housing which communicates with the interior of the shank.

Mounted in the housing below the cylinder is a cylindrical valve casing 11 whose axis is at right angles to that of the cylinder. An oscillating valve member 12 is turnable in the casing. Said casing is initially open to one side of the housing, the opening being covered by a cap 13 having a gasket 14 engaging the adjacent face of the valve; there being a spring 15 behind the gasket pressing the latter against the valve. In this manner undue freedom of rotation of the valve is prevented.

The valve has a segmental portion removed, forming a substantially V-shaped slot 16 extending to the center of the valve as shown and facing the cylinder; communication between the slot and the interior of the cylinder being extended by a passage 17 in the housing and a slot 18 in the adjacent portion of the valve casing. The valve opposite the slot 16 is recessed as at 19 to provide constant communication with an air intake coupling member 20 mounted in the bottom of the housing and adapted for connection to a flexible compressed air pipe P. Passages 21, spaced on opposite sides of the slot 16 lead from the recess 19 to the periphery of the valve and are adapted to alternately register with the adjacent ends of passages 22 which lead from the periphery of the valve casing to the cylinder 6 adjacent its opposite ends.

Other passages 23 are formed in the valve in transversely offset relation to the passages 1 and extend from opposite sides of the slot 16 to the periphery of the valve; these passages 23 being adapted to alternately register with the passages 22 in opposed relation to the registration of the passages 21 therewith.

Engaging the piston slot 8 on the opposite side from the lever 4 is the head 24 of a finger 25. This projects radially from the cylinder and piston through the passage 18 and into the slot 16, terminating in a relatively long cylindrical hub turnable in the valve axially thereof. The width of the finger within the slot 16 is less than the arcuate width of the slot, for the purpose which will be seen.

As shown in Figure 2, when the piston is at one end of its stroke the valve has been turned by the finger so that the passage 21 on the cor-

its axis at right angles to the shank and parallel

responding side registers with the adjacent passage 22 while the outlet passage 23 on the opposite side then registers with the other passage 22. Air from the intake then enters the cylinder at one end, forcing the piston towards the opposite end, and swinging the lever 4 and the piston 5 in the corresponding direction, as will be evident. The outlet passage from the opposite end of the cylinder being open the air rushes from the said end of the cylinder into the valve slot 16, thence through the passage 17 and past the piston and into the shank 1 through the slot 10. The passage of the air past the piston is facilitated by the provision of additional circumferential grooves 27 cut therein to the sides of the groove 8. The air rushing through the shank sweeps the cuttings away from the comb and reciprocating cutter and keeps the teeth of the same clean.

As the finger 25 swings on its axial hub with the above movement of the piston, it leaves the valve stationary for the time being on account of the greater width of the slot 16 as compared with that of the finger. As the piston approaches the opposite end of its stroke however the finger engages the opposite side of the slot 16, as shown in Figure 3, and suddenly turns the valve to an opposite position. The position of the valve passages is thus reversed, causing the air to enter the opposite end of the cylinder and allowing the air to exhaust from that end of the cylinder into which it has been previously fed; and of course causing a reverse movement of the piston, as will be evident. This arrangement has been found to be extremely efficient in practice, the piston reciprocating back and forth with great rapidity without the need of any very high air pressure.

The expansion of the compressed air leaving the valve mechanism of course tends to keep the same at a low temperature and hence to maintain all the working parts of the engine and shears from overheating.

Oil from a suitable reservoir may be carried with the air to all the working parts of the engine and shears, thus keeping them properly and continuously lubricated.

A pneumatic machine of the type here described does not, of course, have the torque of a gear-driven machine and is therefore much easier to hold and manipulate.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters Patent is:

1. A sheep shears comprising a stationary cutter and a movable cutter cooperating therewith, means to reciprocate the movable cutter including a lever connected at one end thereto, a cylinder fixed with the stationary cutter and disposed substantially at right angles to the lever,

the latter at one end projecting into the cylinder intermediate its ends, a piston slidable in the cylinder and having operative engagement with said end of the lever to swing the same with the reciprocation of the piston, air passages leading to the opposite ends of the cylinder, an air supply intake member, an oscillating valve interposed between the member and passages, said valve having passages to constantly register with the member and with the passages alternately, and means actuated by the reciprocation of the piston to oscillate the same from one passage registering position to the other.

2. A structure as in claim 1, in which said means comprises a finger extending radially from the piston and operatively connected at one end thereto, a hub on the opposite end of the finger turnably mounted in the valve axially thereof, the axis of the valve being in a plane at right angles to that of the piston; said valve having a segmental slot cut therein from its periphery to the hub on opposite sides of the finger, the arcuate width of said slot being greater than that of the finger.

3. A sheep shears comprising a stationary cutter and a movable cutter cooperating therewith, means to reciprocate the movable cutter including a lever connected at one end thereto, a cylinder fixed with the stationary cutter and disposed substantially at right angles to the lever, the latter at one end projecting into the cylinder intermediate its ends, a piston slidable in the cylinder and having operative engagement with said end of the lever to swing the same with the reciprocation of the piston, air passages leading to the opposite ends of the cylinder, an air supply intake member, an oscillating valve interposed between the member and passages, said valve having passages to constantly register with the member and with the passages alternately, a finger extending radially from the piston and operatively connected at one end thereto, means turnably supporting the finger at its opposite end for oscillating movement about an axis at right angles to that of the piston, the axis of the valve being also disposed at right angles to the axis of the piston, and means between the finger and valve to turn the latter from one position to the other with the oscillation of the finger and only after said finger has been swung a certain arcuate distance.

4. A sheep shears comprising a stationary cutter and a movable cutter cooperating therewith, means to reciprocate the movable cutter including a lever connected at one end thereto, a piston connected to the other end of the lever to operate the same with the reciprocation of the piston, and air means to reciprocate the piston.

5. A structure as in claim 1, in which said means comprises a finger mounted for oscillatory movement and operatively engaged at one end with the piston to be oscillated thereby with the reciprocating movement of said piston, and a loose play connection between the finger and valve to cause the finger to move the valve from one position to the other only as the piston approaches the end of its stroke in either direction.

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