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HAIR CUTTER FOR DOMESTIC ANIMALS

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1 Claim. (Cl. 121—30)

The invention relates to a fluid actuated motor especially adapted to the operation of hair cutters and especially to those types of cutters which are adapted to the clipping and shearing of domestic animals, particularly sheep, horses and cows. Such cutters are operable by hand, or by an electric motor or by a pneumatic motor.

Motor-operated cutters are highly preferable for obvious reasons. However, cutters equipped with electric motors are objectionable in that, due to the necessary weight of the motor, they are quite heavy and hence tiring to the operator. Cutters actuated by a pneumatic motor are preferable in that they need not be so heavy but they are usually quite large and therefore difficult to handle, especially when operating upon small animals.

The object of the present invention is to provide an improved pneumatically-operated cutters which is compact and easy to handle, the improvement comprising a novel arrangement and construction of cylinder, piston, air passages, valve slide and lock mechanism, as hereinafter fully described and claimed.

The accompanying drawing illustrates a preferred embodiment of the invention. Figure 1 is a longitudinal section through the machine. Figure 2 is a general view.

The housing 1 of the motor is adapted for use as a handle during the cutting. 2 is the fixed knife and 3 the movable one, which is given a reciprocating transverse movement by the piston, which has a reciprocating oscillating linear movement. The means operated by the piston rod 5 for reciprocating the movable knife need not be described, as such means forms no part of the present invention.

The piston consists of two parts, 4 and 32, which are connected together by a relatively narrow neck. The cylinder also consists of two parts having different diameters which correspond to the diameters of the two parts of the piston. The movement of the piston is regulated by a slide 13 surrounding the neck-shaped portion of the piston and having the same diameter as the smaller part of the piston. The slide 13 is influenced by a lock mechanism 14 consisting of a spring-loaded ball, which alternately engages with two annular grooves in the slide. The reversing of the slide is effected by the springs 15, when one of the pistons hits the slide and thereby brings the lock mechanism 14 out of engagement with one of the grooves in the slide. The slide 13 is provided, midway of its length, with a larger annular groove 16, in the bottom of

which the smaller grooves for the said lock mechanism are provided. The main object of the groove 16 is, however, to put certain air channels into communication as hereinafter described. Groove 16 always communicates with a channel 17, which opens into the cylinder immediately outside the larger piston. In the wall of the cylinder is a channel 18 which communicates with the conduit 22, 21 for the driving medium. For example, this conduit may connect with a source of vacuum. Another channel 19 extends under the housing of the cylinder to the cylinder cover 20, where it opens into a chamber 23, which communicates with the chamber outside the machine (and thus, for example, with the atmosphere) through a strainer 24 and a number of holes 25.

There are thus two positions in which the slide 13 can be fixed by means of the ball lock 14. In one position the slide puts the chamber 26 above the larger piston 4 into communication with the outer atmosphere through the channels 17, 16, 19, 23 and 25. In the other position the said chamber 26 is put into communication with the conduit 21, 22 through the channels 17, 16 and 18. It will be observed that chamber 26 communicates with a groove 30 at the upper end of piston 4 through a number of openings 31. The cover 20 is fixed to the cylinder housing by an outer threaded cover 27.

Between piston 4 and piston 32 is a chamber 28 in the large diameter of the cylinder which always communicates with channel 18 through an opening 29. If, for instance, the machine is operated by vacuum, the vacuum continuously acts on the system of pistons 4, 32 in a direction towards the knife. But if chamber 26 also communicates with vacuum the system of pistons will be influenced by a still greater force in a direction away from the knife, as will hereinafter be described.

As shown in Fig. 1, the two pistons and the neck between them are hollow. As the housing is also made of light metal the driving motor, and thus also the weight of the machine, will be very small.

In the case of a vacuum operated machine the operation is as follows: When the regulating slide 13 occupies the position illustrated in Fig. 1, channel 17 communicates with channel 19 through groove 16 and consequently with the outside air. Atmospheric pressure thus prevails in the chamber 26, and the piston is therefore pushed in direction towards the knife. After the slide 13 has been reversed by the action of the

piston, channel 17 comes into communication with the channel 18 and thence with channel 21, which communicates with the vacuum pump. A vacuum then prevails in chamber 26, and the piston moves in direction away from the knife. At the end of this movement the piston acts on the slide so that it is again reversed, thus completing the cycle.

The purpose of the springs 15 is to push slide 13 into the opposite locked position after it has been released from its other locked position by the impact of the piston. By this spring-device the slide is prevented from being retained in an intermediate position, where it would either put vacuum channel 18 into communication with channel 19 or shut off simultaneously these two channels from communication with channel 17, it depending on the dimensions and the location of the channels 18 and 19 which of these effects would take place.

By using an operating cylinder, the two halves of which have different diameters, a further advantage in the handling of the machine is obtained, if the larger diameter is located, as described, farthest away from the knife. As the

housing of the motor is used as a handle, it is advantageous if its smaller diameter end is close to the machine, since this facilitates convenient handling.

What I claim and desire to protect by Letters Patent is:

A fluid actuated motor for reciprocating the movable knife of a hair cutter, comprising a motor piston having end heads of different diameters, a cylinder in which the piston reciprocates, a slide between said heads and operable alternately thereby in opposite directions, a passage adapted to communicate with air under relatively high pressure, a passage adapted to communicate with air under relatively low pressure, means adapted in the movement of the slide to connect the space back of the larger piston head alternately with said passages, means adapted to maintain the space in front of the larger piston head at all times in communication with said air under relatively low pressure, and a lock mechanism cooperating with the slide to hold it in one of two predetermined positions after actuation in opposite directions.

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