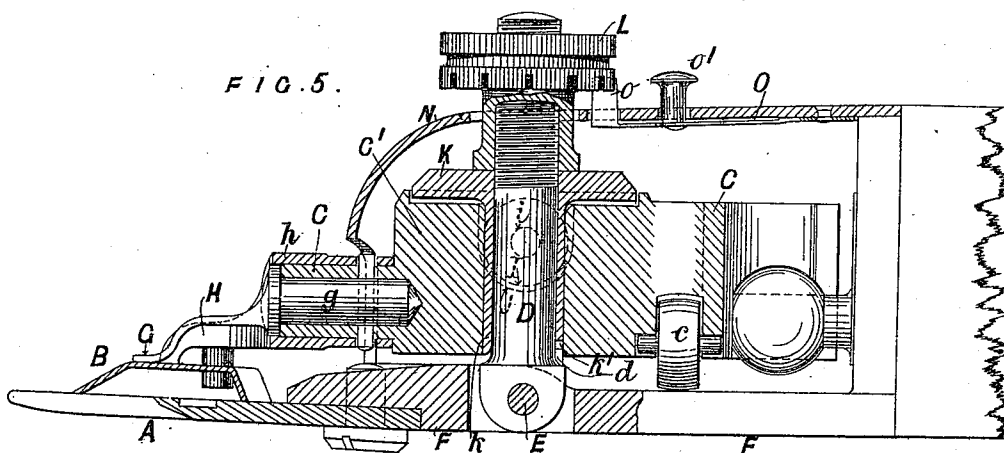
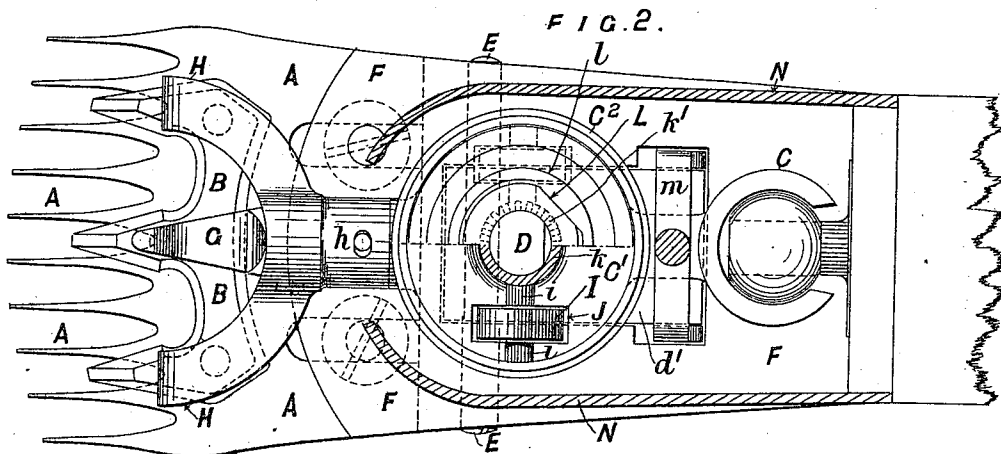
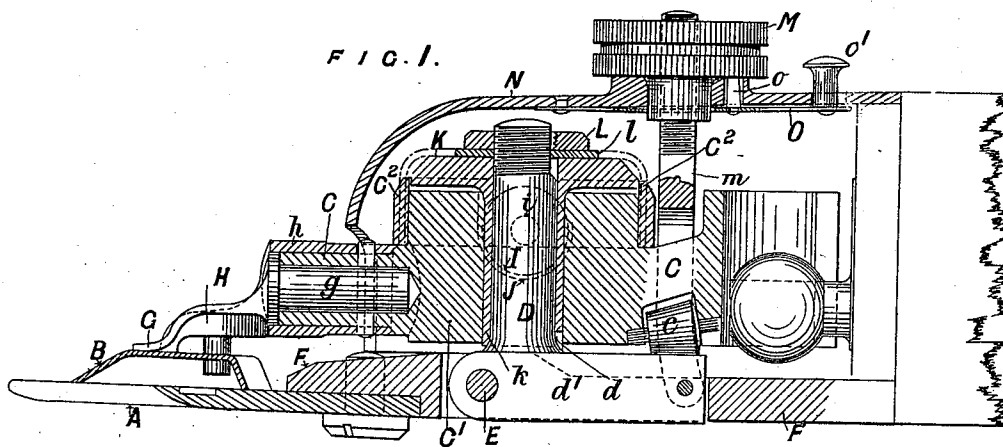


2 Sheets—Sheet 1.

No. 501,324.

Patented July 11, 1893.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

C. & H. BURGON.
ANIMAL SHEARS.

No. 501,324.

Patented July 11, 1893.

FIG. 3.

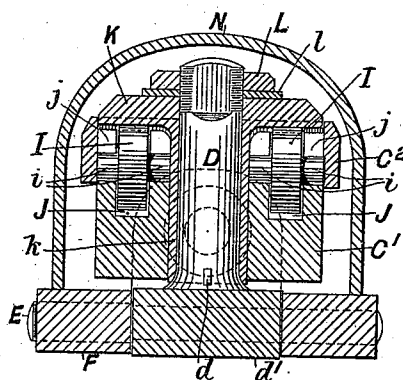
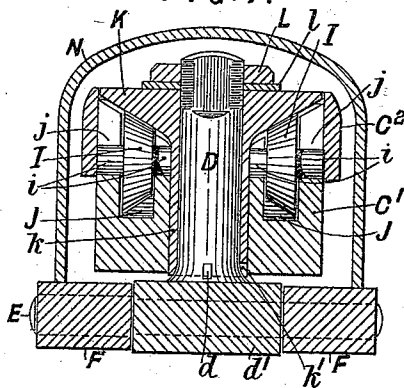


FIG. 4.



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UNITED STATES PATENT OFFICE.

CHARLES BURGON AND HARRY BURGON, OF SHEFFIELD, ENGLAND.

ANIMAL-SHEARS.

SPECIFICATION forming part of Letters Patent No. 501,324, dated July 11, 1893.

Application filed December 9, 1892. Serial No. 454,622. (No model.)

To all whom it may concern:

Be it known that we, CHARLES BURGON and HARRY BURGON, sheep-shears manufacturers, of Malin Bridge, near Sheffield, in the county of York, England, have invented new and useful Improvements in Apparatus for Shearing or Clipping Sheep and other Animals, of which the following is a full, clear, and exact description.

This invention relates to improvements in sheep shearing machines and particularly those of the kind forming the subject of previous Letters Patent granted to us, dated respectively February 2, 1892, No. 468,217, August 16, 1892, No. 480,997, and August 30, 1892, No. 481,844, and the improvements have for their object, first, to provide a more efficient and durable anti-friction bearing as a substitute for the ball bearings heretofore used about the main pivotal axis of the cutter driving lever, and, secondly, to provide a means for adjusting the pressure of the top cutters upon the comb, applied to act directly upon the cutter-driving lever through the medium of the anti-friction bearing above referred to.

It has been found in practice that in consequence of insufficient bearing surface afforded by anti-friction balls and of the difficulty of insuring equal distribution of the pressure on all the balls, such inequality being due to slight variations of diameter of the balls and to the different positions which they occupy with regard to the points of application of pressure, that the bearing surfaces are liable to wear rapidly, and the object of the first improvement is to overcome this defect and provide a more durable and efficient form of anti-friction bearing in which the pressure will be equally divided and distributed over a sufficient area of surface to avoid rapid wear and to provide means for adjustment of the bearing surface when worn so that fresh portions of the surface may be brought into wear as required.

The improvements are illustrated in the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a longitudinal vertical section of the machine provided with the improved form of bearing for the cutter driving lever, the pressure adjusting devices being the same

as before described. Fig. 2 is a plan of the same with the cover and one half of the roller path removed. Fig. 3 is a cross section on the pivotal axis. Fig. 4 is a similar view showing the rollers and roller path of conical form. Fig. 5 is a longitudinal vertical section of the machine having the improved form of pressure adjustment combined with the improved anti-friction bearing.

The same letters of reference denote like parts in all the figures.

A is the lower stationary cutter plate or comb having the usual comb-teeth acting as cutters in conjunction with the cutters formed on the upper cutter plate B which is reciprocated over the lower comb plate A by the cutter driving lever C pivoted on an axis D which is itself pivoted upon a horizontal transverse axis E in the main frame F. The lever C is driven in the manner usual in such machines and terminates in a spring G carried by a stem g received in a socket in the lever C, the spring bearing centrally on the cutter plate B, and the lever is also provided with a two-pronged cross-head H pivoted about the longitudinal axis of the lever by a collar h, the prongs of the cross-head engaging with the ends of the cutter plate B, all as described in the specification of our last previous patent aforesaid. In lieu however of a circle of balls to resist the upward pressure of the cutter driving lever we provide two antifriction rollers I placed symmetrically at either side of the main pivotal axis D with their axes radial thereto, so that the whole pressure on the lever will under all circumstances be equally divided between them, said rollers being mounted in recesses J in the boss C' of the lever C their pivots i turning in bearings j therein, while the peripheries of the rollers I which present a broad bearing surface, project sufficiently from the boss C' to work in contact with the under side of the disk head K of a sleeve k slipped on to the pivotal axis D and secured by a nut L and washer l, the head K being prevented from turning, preferably, by the engagement of one of a series of notches k' in the lower end of the sleeve k with a nib d at the base of the pivot D. The notches k' are so spaced with regard to the range of motion of lever C that by successive adjustments fresh portions of the surface on which the

rollers run may be brought into use until the whole circle of said surface has been worn out. The washer *l* may be extended and downwardly flanged as shown in dotted lines in Fig. 1 so as to act as a dust cap if the ring *C*² is not used. Instead however of the notches and nib other equivalent means of enabling the definite adjustment of the roller path in the circular direction may be adopted and the sleeve *k* (which is preferably used because it affords a long bearing surface for the head *K* on the pivot *D*) might be dispensed with, the head *K* alone being retained and being secured in position for circular adjustment by a nib on its upper face engaging in notches in the edge of the washer *l* which is prevented from turning by fitting on a flat surface near the upper end of the pivot *D*.

The rollers *I* are represented in Figs. 1, 2, 3, as being cylindrical and the surface on which they run as being flat, but they might be made conical as shown in Fig. 4 in which case the boss *C'* of lever *C* would be strengthened by a ring *C*² fitted and shrunk on it, against which ring the outer pivots *i* of the rollers would bear to resist the end thrust due to the conical form of the rollers and prevent the rollers coming in contact with the sides of the recesses *J*. The same ring *C*², although not absolutely necessary, is also shown applied in Figs. 1, 2, 3, for the last mentioned purpose and also to prevent the entry of dirt by making as close a joint as possible without actual contact with the edge of the head *K*. The head *K* and rollers *I* would be made of hardened steel to enable them to withstand the pressure and friction to which they are subjected and the lever *C* and the ring *C*² would also be hardened to form durable bearing surfaces for the roller pivots.

The lever *C* is provided with an anti-friction roller *c* at its rear end which runs upon the base plate *d'* of the pivot *D*, the means by which the pressure is applied to the lever *C* to cause the upper cutter plate *B* to bear upon comb plate *A* being similar to that described in our previous Patent No. 480,997, of 1892, and consisting of a fork *m* whose limbs bridge over the lever *C* and are pivoted to the plate *d'*, the stem of the fork being screw-threaded and receiving a nut *M* which works in a socket in the top of the casing *N* and is locked in position by a spring detent *o* engaging in holes in the nut.

Our second improvement has for its object to enable the adjustment of the pressure to be made by means of the nut *L* by which the lever *C* is secured upon its pivot *D* thereby dispensing with the forked connection *m* and the tail portion of the base plate *d'* the roller *c* running in contact with the main frame *F*. This improvement is illustrated in Fig. 5, in which the nut *L* is in the form of a milled knob which projects through the casing *N* so as to be readily accessible for adjustment.

This knob has a circle of notches in its shoulder into which engages a detent *o* carried by a spring *O* fixed within the top of the casing and provided with a presser knob *o'*, the anti-friction rollers *I*, contact surface *K*, and sleeve *k*, being the same as before described except that the sleeve must not come quite down to the base of the pivot *D* and there must be sufficient vertical play for the nib *d* in the notches *k'* to admit of the vertical adjustment of the part *K* by means of the milled nut *L* to enable the necessary compensation for wear of the cutters to be made and the pressure to be regulated.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In a sheep shearing machine, the combination, with the cutter driving lever and its pivot mounted in the frame as described, of a pair of anti-friction rollers mounted symmetrically in the boss of the lever and revolving on an axis or axes at right angles to the length of the lever and a contact or bearing surface for said rollers consisting of a disk or head secured upon the pivot, substantially as specified.

2. In a sheep shearing machine, the combination, with the cutter driving lever and its pivot mounted in the frame as described, of a pair of anti friction rollers mounted symmetrically in the boss of the lever and revolving on an axis or axes at right angles to the length of the lever and a contact or bearing surface for said rollers consisting of a disk or head provided with means whereby the rollers are adjustable in the radial direction to a definite extent, substantially as specified.

3. In a sheep shearing machine, the combination, with the cutter-driving lever and its pivot mounted on a transverse axis in the frame, as described, of a pair of anti-friction rollers mounted in the boss of the lever at either side of the pivot, situated in a plane perpendicular to the length of the lever a path for said rollers formed by a disk or head secured adjustably on the pivot, a down-bearing anti-friction roller at the rear end of the lever running on the main frame, and a nut screwing on the pivot so as to apply downward pressure on the rollers, the nut which is adapted to be turned by hand, passing through the casing and notched to engage with a spring detent thereon, as specified.

Dated this 19th day of November, 1892.

CHARLES BURGON.
HARRY BURGON.

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