April 28, 1931. L. ORUSSA 1,802,571

ELECTRIC SCISSORS

Filed Feb. 6, 1928

Fig. 1.

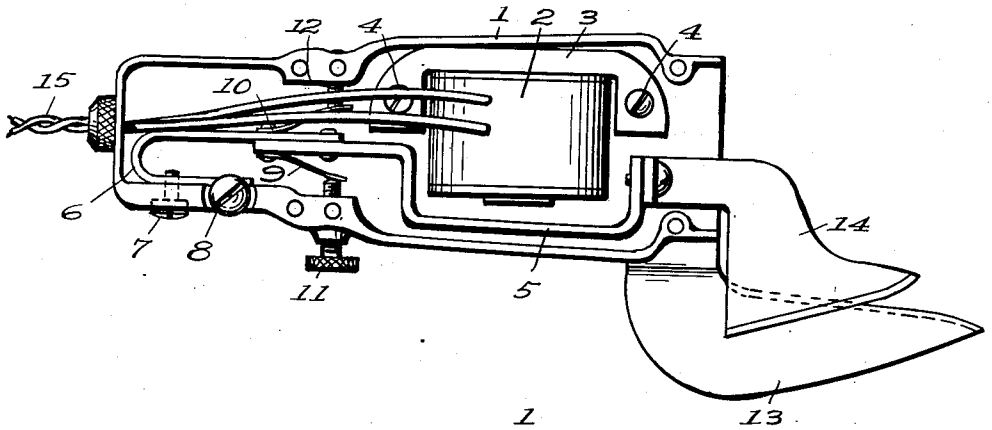
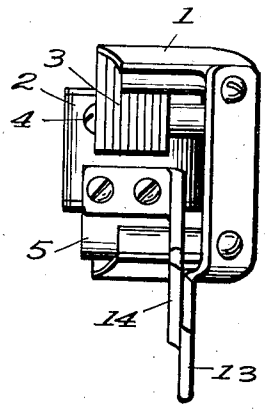


Fig. 2.



Inventor.
Lorence Orussa.
W. J. Peck
Atty.

Patented Apr. 28, 1931 1,802,571

UNITED STATES PATENT OFFICE

LORENCE ORUSSA, OF ROANOKE, ILLINOIS

ELECTRIC SCISSORS

Application filed February 6, 1928. Serial No. 252,168.

My invention relates more particularly to devices for operation on alternating current, though it is not limited to alternating current but may be operated on direct current where proper provision is made for interrupting the current flow, the cutting blades projecting from the handle to a convenient point so that the various cutting operations which have heretofore been performed with the ordinary scissors or shears, may be more easily and quickly performed with my present device.

One object of my invention is the provision of a device which is electro-magnetically operated, the operation being performed by the movement of an armature which is moved in one direction by the magnetic force of the electro-magnet and which moves in the opposite direction preferably by a spring, and in which the cutting operation is performed while the armature is moving away from the electro-magnet.

The advantage of this arrangement is that under conditions where the cutting load increases, the increased load prevents the movable blade from moving to the point from which it originally started with the result that the armature comes to rest in a position closer to the pole pieces so that when the next flow of magnetism occurs, the field through the armature is of greater strength due to lessened distance between it and the pole pieces and consequently the movement of the movable blade is increased and thus the spring is subjected to a greater tension and the cutting power increased. By this arrangement I provide a shear that is, to a large extent, automatic in action and delivers its greatest cutting power under the heaviest load conditions. It is to be remembered that in the operation of devices of this kind the periods of magnetism are very short with the result that the combined time element and spring resistance do not afford sufficient time for the magnet to draw the armature into contact with the pole pieces from its normal starting position, nor from any working position within the capacity of the device.

Other objects of my invention will appear and be described in the specification.

The novelty of my invention will be hereinafter more fully set forth and specifically pointed out in the claim.

In the accompanying drawing:

Fig. 1 is a side elevation of a device embodying my invention, the cover of the handle portion being removed to show the interior construction and arrangement.

Fig. 2 is a front end view of Fig. 1.

The same numerals of reference are used to indicate identical parts in both figures.

For purposes of illustration, and to show one form of device embodying my invention, though without limiting myself to the precise details of construction and arrangement of parts shown, but availing myself of all changes and modifications which may be made within the scope of the appended claim, I have shown a device composed of a handle portion 1 which is preferably of hollow construction and which contains all of the operating mechanism which consists essentially of an electro-magnet comprising a coil 2 and pole pieces 3 which may be laminated as shown in Fig. 2, the pole pieces being mounted in the handle by means of screws 4. An armature 5 is riveted or otherwise suitably attached to a mounting spring 6 which is held in place in the handle by a screw 7, the spring 6 and the armature being adjusted in a line vertical to Fig. 1 by means of a second screw 8 which bears against the free end of the spring 6. A pair of adjusting springs 9 and 10 are mounted on the armature, and these springs are adjusted by screws 11 and 12, this portion of the mechanism serving as a means for setting the normal operating position of the armature.

A stationary blade 13 is mounted on the handle portion and a cooperating blade 14 is mounted on the free end of the armature 5 and the tension between these two blades is adjusted by means of the screw 8, thus bringing the cutting edges into proper operating relation. Current is supplied to the coil 2 by means of the leads 15 which extend through the end of the handle portion and

which are connected to any suitable source of current supply.

It is to be noted that when the coil 2 is energized the armature 5 is drawn toward the pole pieces and that the arrangement of the cutting edges is such that this portion of the movement merely opens the scissors so that the material being operated upon may be advanced between the blades and that the cutting operation is performed during the periods when the armature moves away from the pole pieces. The result of this arrangement is that under those conditions where the load is greater than the scissors will cut normally, the armature is moved upward by the resistance to its cutting action to a closer position with relation to the pole pieces, into a stronger magnetic field where the action produced by magnetism is more powerful to increase the energy stored in the spring, and consequently to increase the cutting power.

From the above it will be seen that the device adapts itself automatically to varying load conditions and that it is not necessary to set the parts so that the armature is always operating in the strongest magnetic field with the result that the wear on the blades is distributed over a greater length of cutting edges.

The blades are shown as being made to be attached to the various parts of the device so that they may be readily removed for sharpening or replacement should occasion require.

Having thus fully described my invention, I claim:

In an electric scissors the combination of a handle, an electromagnet carried by the handle, an armature for the electromagnet, a spring mounted in the handle and carrying the armature and for moving the latter away from the electromagnet, a scissors blade carried by the handle, a co-operating blade carried by the armature, the cutting edge of the latter blade being moved through the cutting stroke by the action of the spring and through the idle stroke by the electromagnet.

LORENCE ORUSSA.