(No Model.)

W. DECKER.

METHOD OF GRINDING AND SHARPENING FINE WIRE CARDS.

No. 263,123. Patented Aug. 22, 1882.

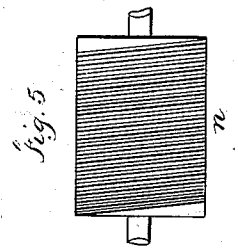


Fig. 5.

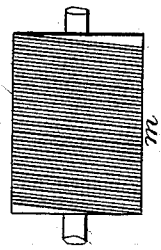


Fig. 4.



Fig. 2.



Fig. 1.

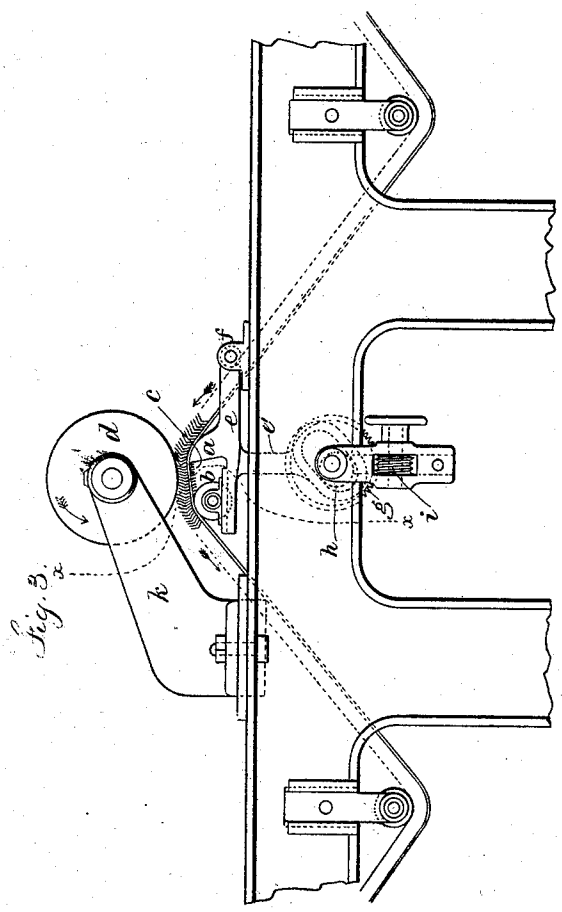


Fig. 3.

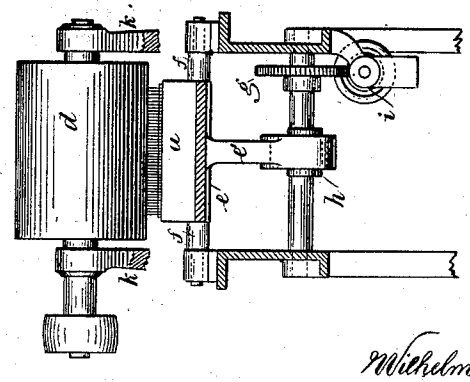


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

WILHELM DECKER, OF MITTWEIDA, SAXONY, GERMANY.

METHOD OF GRINDING AND SHARPENING FINE WIRE CARDS.

SPECIFICATION forming part of Letters Patent No. 263,123, dated August 22, 1882.

Application filed March 27, 1882. (No model.) Patented in Italy December 24, 1881, XXVI, 199.

To all whom it may concern:

Be it known that I, WILHELM DECKER, of Mittweida, in the Kingdom of Saxony, German Empire, have invented an Improvement in the Method of Grinding and Sharpening Fine Wire Cards for Carding Engines, and in machinery employed therein, (for which Letters Patent were granted to me in Italy, No. 199, December 24, 1881,) of which the following is a specification.

In order to provide for a more perfect grinding of ready-made wire cards or strips, so as to form the end of each wire or tooth into a long and sharp point, the following method and machinery are employed:

In order to illustrate the effect of my former method, I refer to Figure 1, which shows a wire or tooth provided with a somewhat blunt point, whereas by my improved method and machinery I obtain a long and sharp-pointed form of the wire or tooth, as illustrated by Fig. 2. Both figures show the teeth on a larger scale than in Fig. 3. Fig. 3 is a side view of part of the machinery employed for the aforesaid purpose. Figs. 4 and 5 represent the grinding-cylinders with helical corrugations or grooves, and Fig. 6 is a cross-section at *x x*.

d is an emery-roller, of suitable width and diameter, revolving at the proper speed in the direction of the arrow. The strip is drawn in any suitable manner underneath this roller *d* in the direction of the arrows. In passing underneath the roller *d* the strip suddenly and at the proper moment loses its support in consequence of the abrupt form of the support *a* and receives or attains support only by arriving at the roller *b*. This arrangement is made to allow the wires or teeth, after having passed the first grinding operation at their back, by means of roller *d*, to be pushed by the pressure of this roller *d* a certain distance through the strip, as seen at *c*, so that the following row of teeth or wires presents its upper part to the grinding action of roller *d* in a manner which could not have been attained if the preceding row had remained in its normal position. The rows thus ground at their back surfaces and pushed in a downward direction are restored to their normal position by the roller *b*, which, by its revolving motion, presses the rows upward in the strip. This roller *b* may revolve by mere friction with the strip, or may be turned by a suitable arrangement of gearing from a revolving part of the machinery.

I do not limit myself to the exact position of roller *b* as shown in the drawings; but I reserve to myself to lower the position of this roller at will in order to sharpen the angle at which the band or strip passes from the support *a*.

The roller *d* may be provided with fine grooves in its surface, running parallel to a plane at right angles to its axis.

In order to regulate the position of the wires or teeth while passing over the support *a* and underneath the wheel *d*, the support *a* is mounted upon or forms part of a lever, *e e'*, which has its pivot at *f*. The vertical portion *e'* of the bent lever is formed at its lower part into a loop or slot in a diagonal position. Within this slot an eccentric, *h*, is placed, which may be turned by the endless screw *i* taking into the wheel *g*, the latter being keyed on the same axis or shaft with the eccentric *h*. This device allows of regulating the exact height of position of support *a*, and consequently of the strip of card-clothing running over it. The part *e* of the bent lever carries the bearings of the roller *b*, which may be made adjustable in its position either in a vertical or in a horizontal direction.

It being necessary to provide means for adjusting the roller *d* horizontally, so as to bring the working part of its surface in proper position to the angle of the support *a*, the support or arm *k*, which carries the bearings of roller *d*, is made adjustable on the frame of the machinery in a horizontal direction.

In grinding the wire or teeth of card-strips it may be found advantageous to pass the strip first underneath a grinding roller or disk with a smooth surface, having a rotary and endwise motion, in order to grind all the wires or teeth down to one uniform length, after which the strips are passed under the roller *d* in order to grind the teeth or wires at their back surfaces, in the manner above described.

In order to complete the points of the wire or teeth by grinding them on their two sides, so that the grinding of the back and of the two sides may result in a long and sharp point, (whereas the front side is not ground,) the

roller *d* may be replaced or exchanged by or with other grinding-rollers, hereinafter to be described; or I prefer to employ two separate machines, or, in other words, to repeat the entire arrangement shown in Fig. 3 twice, with this only difference, that other grinding-rollers, (shown in Figs. 4 and 5,) *m* and *n*, are substituted for the one shown at *d*. These grinding-rollers *m* and *n* are provided with grooves running in a spiral form around their curved surfaces, the grooves of the one roller running from right to left, the others running from left to right, as shown in Figs. 4 and 5. It is preferred to give revolving motion only to these rollers and no axial motion. The effect of these rollers on the wires or teeth while the strip is passing underneath these rollers will be to spring the wires or teeth somewhat sidewise by means of the spiral form of the grooves, and at the same time to grind the teeth; the one roller will grind the one side of the teeth, the other roller the other side of the teeth, thereby sharpening or completing the points of the teeth.

In order to more perfectly expose each row of teeth to the grinding action of the rollers *m* and *n*, the preceding rows of teeth are pressed partly through the strip after having undergone the grinding action, as explained above. These long pointed wires or teeth in the strip of card-clothing, as shown on an enlarged scale at Fig. 2, will prove to be highly advantageous in carding cotton. They will enter more perfectly into the mass of fibers and will lay the fibers more nearly parallel to each other. Again, the fibrous material will not be injured, because it will slip more readily over the pointed ends of the teeth than over the blunt ends of the previously-used card-clothing.

In using the card-teeth which are blunt and oval, instead of sharp, the fibers are liable to be cut or shortened. This is entirely avoided by the use of the teeth illustrated in Fig. 2.

The spiral grooves in the rollers *m* and *n*, Figs. 4 and 5, may be produced in any desired way. In manufacturing wire strips for carding-engines I prefer to produce these grooves by pressing or cutting them into the solid surface of the emery or other grinding material of the rollers. If these rollers are used to regrind the strips already in use on a carding-engine, I propose to make these rollers in the following manner: I make a roller of the proper size of any suitable material, and I cover this roller with a band the one face of which is covered with emery. Into this emery surface I press or cut the fine grooves prior to winding the same round the roller in lines parallel to the edges of the band. By now winding the band in a spiral form upon the surface of the roller the parallel grooves will also run in spiral direction and parallel to each other; but the rollers manufactured in the one way or the other may be used for both purposes, whether for manufacturing card-strips or for regrinding them after use.

I claim as my invention—

1. The method of grinding into points the teeth of card-strips, which consists in subjecting the teeth to the grinding action of rollers, and then pressing by the rollers the rows of teeth which have been ground partly through the strip, in order to better expose the following row of teeth to the grinding action, substantially as and for the purposes set forth.

2. The method of grinding card-teeth, consisting in subjecting the card-teeth to the grinding action of a smooth-faced grinding-roller to bring all teeth or wires down to uniform length, then to the grinding action of a revolving roller with fine parallel circumferential grooves to grind the back of the teeth or wires, and then to two grinding-rollers with spiral grooves in opposite directions to grind the two sides of the wires or teeth, thereby completing a long and sharp-pointed end of the said wires or teeth, substantially as specified.

3. The combination, with the grinding-roller *d*, of the support *a*, over which the strip of card-clothing is passed and by which the wires are supported, and the roller *b*, to restore the wires to position after they have been pressed through the strip by the action of the grinder *d*, substantially as specified.

This specification signed by me this 24th day of February, 1882.

WILH. DECKER.

Witnesses:

WILHELM WIESENHÜTTER,

MARTIN KÖRNER.