

C. A. KIRSCHNER.

SUPPORT FOR WORK PIECES FOR GRINDING HELICAL CONCAVE SURFACES IN BLADES.

APPLICATION FILED JAN. 30, 1911.

1,039,294.

Patented Sept. 24, 1912.

Fig. 1.

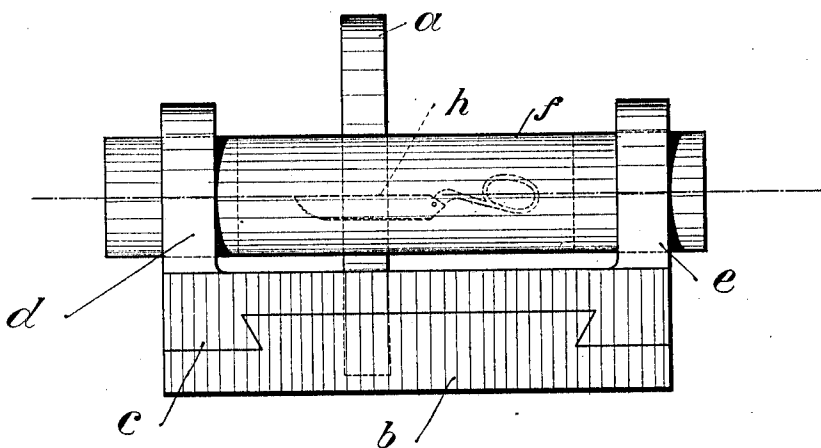
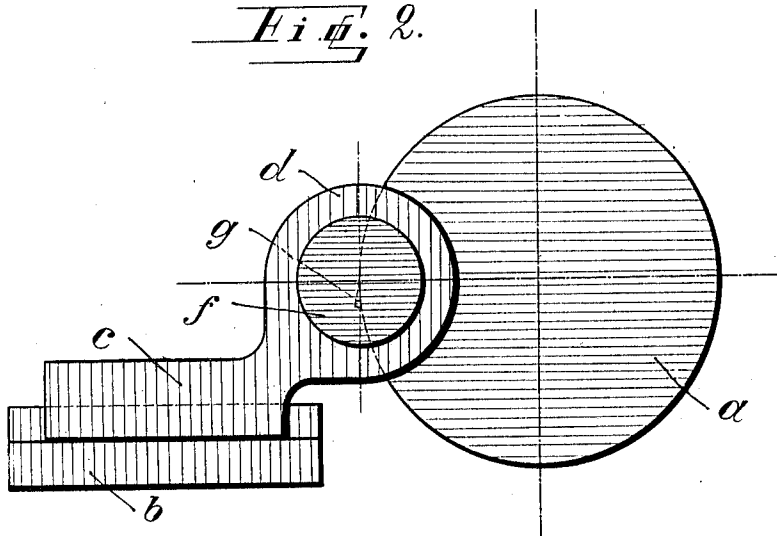


Fig. 2.



Witnesses:
Katherine Koch.
Daniel Holmgren

Inventor:
Carl August Kirschner
by his attorneys
Biesse & Grunps

UNITED STATES PATENT OFFICE.

CARL AUGUST KIRSCHNER, OF SOLINGEN, GERMANY.

SUPPORT FOR WORK-PIECES FOR GRINDING HELICAL CONCAVE SURFACES IN BLADES.

1,039,294.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed January 30, 1911. Serial No. 605,394.

To all whom it may concern:

Be it known that I, CARL AUGUST KIRSCHNER, engineer, a citizen of Germany, residing in Solingen, in the Province of Rhineland and State of Prussia, Germany, have invented new and useful Improvements in Supports for Work-Pieces for Grinding Helical Concave Surfaces in Blades, of which the following is a specification.

The present invention contemplates a support for work-pieces for grinding helical concave surfaces in blades with which the blade-holder is swung while moving crosswise to the grinding disk around an axis parallel to the sense of the cross-movement. Thus in grinding the cutting surface of scissors blades an edge wound around a straight line is obtained in such a way that the grinding surface is placed as nearly as possible into the axis of oscillation of the blade-holder.

Blade-holders, swinging around an axis parallel to the grinding surface are known already. These, however, are either blade-holders which, at a traverse movement in front of the grind-stone, perform several oscillations, the so-called beating movement, in such a manner that the face to be ground turns out to become curved; or, for obtaining helical concave surfaces the grinding face of the blade-holders performs during the cross-movement in front of the grinding stone a vibrating movement around the axis of oscillation; this means that in blade-holders of the latter description the grinding face is located in front of the axis of oscillation. These known contrivances are not suitable for grinding the blades of scissors. The sinuosity of the concave face at a scissors-blade has the purpose of grinding independently the two cutting edges moving toward each other so as to give to the cutting edges all over the whole length of the blades the required utmost precision in cutting. When the axis of rotation of the workpiece-holder and consequently that of the workpiece itself has its position outside of the grinding disk and of the grinding face, the following points must be considered for obtaining a concavity of the piece under operation curved in one sense only: The workpiece must have its position outside of the line of junction of the axis of the grinding disk and the axis of oscillation and its edge, directed toward such line of junction must be positioned by such an amount above this

line as corresponds to the extent of swing. Otherwise the sinuosity becomes incongruous and this edge is the more distant from the line of junction the farther, in grinding the cutting edge of scissors, the axis of rotation of the workpiece is away from the grinding face. In the same proportion the curvature of this edge of the blade increases, whereas, when the axis of oscillation lies in the grinding face, viz. in its point of intersection with the mentioned line of junction, this edge remains quite straight. The more curved, however, are the blade-edges of scissors moving toward each other, the more the blade-points move asunder on closing same; this means that the operation of the scissors is the rougher toward the point, in proportion as the points are exposed to a shearing stress. Thus scissors will cut the smoother the straighter a blade is ground.

With a view now to obtain a maximum of evenness in scissor-blades, the present invention provides for the axis of rotation of the blade-holder being placed as exactly as possible into the grinding surface; thus in this axis of oscillation the edge of the scissors-blade must remain a straight one, as exposed in the foregoing.

In the accompanying drawing, in which similar letters refer to similar parts throughout the several views, the invention is represented in one form of embodiment.

Figure 1 is a front view and Fig. 2 a side-view of a grinding contrivance.

a is a grindstone and *b* a bed on which a sledge *c* can be guided by means of a prismatic guide toward the grindstone.

d and *e* are bearings connected with the sledge *c* and carrying the grind-support *f*.

g is the scissors-blade to be ground and its cutting edge is marked by *h*.

The working principle of the invention is as follows:—The axis of oscillation of the grinding support is, as results from the drawing, in the grinding face itself, so that, when the grinding-support *f* changes its position, the scissors-blade to be ground performs a rotation around its axle. The displacement of the grinding support takes place during a movement in front of the grindstone invariably in the same sense, *i. e.* on the whole length of blade by a slight fraction of the whole rotation. By a proper turning device the blade is always given the proper position in front of the grindstone; thus, by displacing the grinding sup-

port in its axis of rotation in front of the grindstone, a slightly sinuated concave face must be formed, the generatrix of which is at a straight line extending within the
5 ground face, *i. e.* along the cutting edge.

I claim:—

10 A device of the character described, comprising a grinding wheel, a support arranged in proximity thereto, a slide movable along said support and having a pair of bearings the center of which extends parallel to the axis of the grinding wheel and is adapted

to be alined with the periphery of said wheel, and a work holder rotatably mounted within said bearings and adapted for so sup- 15
porting a scissor-blade that the cutting edge of the blade extends substantially along the axis of the holder, whereby said blade is ground hollow with a straight cutting edge.

CARL AUGUST KIRSCHNER. [L. S.]

Witnesses:

CHAS. J. WRIGHT,

ALFRED HENKEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."