

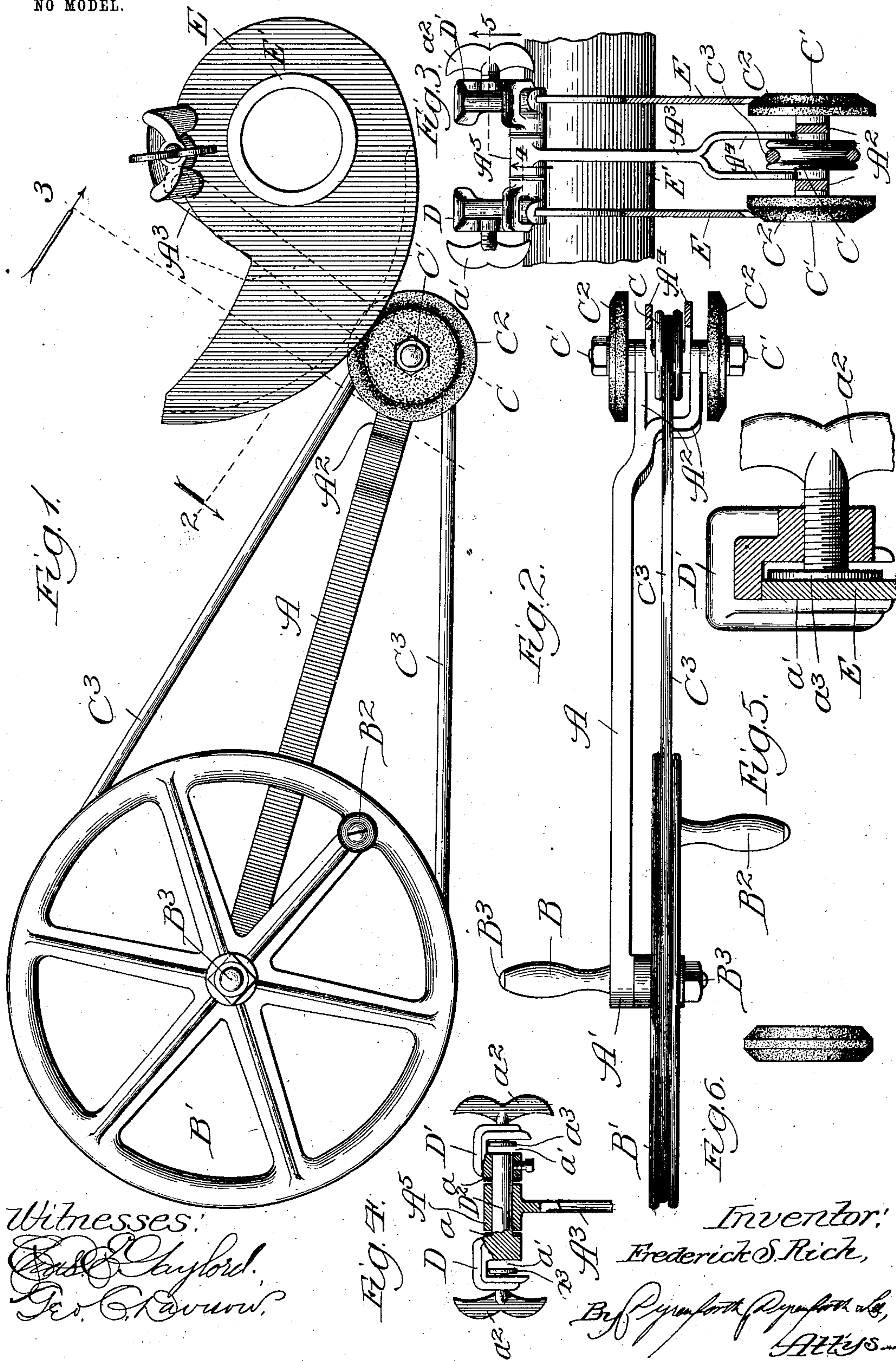
No. 753,630.

PATENTED MAR. 1, 1904.

F. S. RICH.  
SHARPENING DEVICE.

APPLICATION FILED AUG. 28, 1903.

NO MODEL.





## UNITED STATES PATENT OFFICE.

FREDERICK S. RICH, OF CANTON, OHIO.

## SHARPENING DEVICE.

SPECIFICATION forming part of Letters Patent No. 753,630, dated March 1, 1904.

Application filed August 28, 1903. Serial No. 171,077. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK S. RICH, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Sharpening Device, of which the following is a specification.

My invention relates particularly to devices for sharpening rotary band-knives; and my primary object is to provide a light, portable, and cheap device of this character which may be applied to a band-cutter while the latter remains in the machine of which it forms a part.

The invention is illustrated in its preferred embodiment in the accompanying drawings, in which—

Figure 1 is a side view of the device in connection with a band-cutter to which it is applied; Fig. 2, a plan section taken, as indicated, at line 2 of Fig. 1; Fig. 3, a section taken, as indicated, at line 3 of Fig. 1; Figs. 4 and 5, enlarged sections taken, as indicated, at the corresponding lines of Fig. 3; and Fig. 6, a view of a modified form of grinding-wheel.

A represents a bar-shaped main frame member having a perforated head  $A^1$  at one end and a bifurcated head  $A^2$  at the other end, which is offset from the plane of the member;  $A^3$ , a short frame member having at one end a bifurcated head  $A^4$  fitting between the bifurcations of the head  $A^2$  and at its other end a perforated head  $A^5$ ; B, a handle for the frame;  $B^1$ , a crank-wheel provided with a crank-handle  $B^2$ ;  $B^3$ , a bolt connecting the crank-wheel and main handle B with the head  $A^1$ ; C, a grooved wheel fixed to the central portion of a shaft  $C^1$ , which passes through the adjacent ends of the frame members and has fixed on its ends grinding-wheels  $C^2$ ;  $C^3$ , a belt joining the wheels C and  $B^1$ , and  $D D^1$  clamping members carried by a pivot  $D^2$ , journaled in the head  $A^5$ .

The sharpener is shown applied to cutters E on the shaft  $E^1$  of a rotary band-cutter.

The connection at the bolt  $B^3$  is such that while the frame may be supported by the handle B the wheel  $B^1$  may turn freely on the bolt as a shaft. The connection at the bolt  $C^1$  is such that the frame members may swing freely with relation to each other, while the

bolt may rotate as a grinding-wheel shaft. Fig. 4 shows a detail of the connection between the clamping members  $D D^1$  and the frame member  $A^3$ . The pivot  $D^2$  is formed integrally with the member D, and the member  $D^1$  is fastened on the free end of the pivot by a set-screw. Removable washers  $a$  permit of lateral adjustment of the clamping members by shifting the pivot to which they are attached. This permits adjustment to compensate for wear at the emery-wheels. Each clamping member has a channel  $a^1$ , parallel with the frame, and a set-screw  $a^2$ , having a circular bearing  $a^3$  at its inner end. Either clamp in use serves as a support or attaching member for the frame of the grinding device.

Rotary band-cutters are commonly provided with knives arranged a few inches apart on the cutter-shaft. Each knife has a hub portion and a blade projecting therefrom and having a curved cutting edge, the curvature being for practical purposes as though struck from a center located at the pivot connecting the clamps to the frame member  $A^3$ , assuming one of the clamps to be secured to a knife, as shown in Fig. 1. When the device is clamped to a knife, therefore, the jointed frame permits the grinding-wheel to be moved along the edge of the blade. By turning the crank-wheel as the grinding-wheel is thus moved rotary motion is imparted to the grinding-wheel, thereby grinding the blade. Obviously either side of a blade may be ground, depending upon which clamp is connected with the particular knife. I have shown a pair of knives of a band-cutter with the individuals separated just far enough to accommodate the grinder between them, a clamp being secured at each knife. Enough play is allowed at the pivot  $D^2$  to permit sufficient racking of the frame sidewise in either direction to bring the appropriate grinding-wheel into grinding-contact with the adjacent blade. In case of knives having a double bevel a grinding device having a single emery-wheel with a double bevel, as shown in Fig. 6, may be employed, and the wheel may be shifted from one side to the other of the knife by raising the wheel above the point of the blade,



the play at the pivot D<sup>2</sup> being sufficient to permit this action.

Changes in details of construction within the scope of my invention are contemplated.

5 Hence no undue limitation should be understood from the foregoing detailed description.

What I regard as my invention, and desire to secure by Letters Patent, is—

1. A grinding device, comprising an attaching member, a jointed frame connected therewith, a grinding-wheel journaled at the joint in said frame, a wheel journaled at a distance from said grinding-wheel and serving to communicate motion thereto, and means 15 for supporting the frame.

2. A grinding device, comprising an attaching member, a frame member pivotally connected therewith, a frame member pivotally connected with said first-named frame member, a grinding-wheel journaled at the joint between said frame members, a driving-wheel connected with said grinding-wheel, a crank-wheel connected with the free end portion of said second-named frame member and geared to said driving-wheel, and a handle for supporting said frame. 25

3. A grinding device, comprising a clamp, a frame member pivotally connected therewith, a second frame member, a grinding-wheel having a shaft serving as a pivot connecting said frame members and equipped with a driving-wheel, and a crank-wheel journaled at the free end of the second-named frame member, and connected with said driving-wheel. 30

4. A grinding device, comprising a clamp adapted to be applied to a blade, a swinging frame member connected therewith, a grinding-wheel at either side of the free end of said swinging member, means for turning said 35

grinding-wheel, and means for moving said swinging frame member. 40

5. A grinding device, comprising a clamp, a jointed frame adjustable laterally with relation to said clamp, a grinding-wheel journaled at a joint of said frame, driving means for said grinding-wheel, and a handle for said frame. 45

6. A grinding device, comprising a clamp having a laterally-projecting pivot, a frame member journaled at one end upon said pivot, a second frame member jointed to said first-named frame member, a grinding-wheel having a shaft journaled at the joint between said frame members and equipped with a driving-wheel, a wheel journaled at the free end of said second-named frame member, a belt connecting said wheels, means for turning the second-named wheel, and means for moving said frame, for the purpose set forth. 55

7. A grinding device, comprising two clamping members, a frame member having one end located between and pivotally connected with said clamping members, grinding-wheels journaled at the free end of said frame member, a driving-wheel for said grinding-wheels located between the grinding-wheels, a second frame member pivotally connected with the first-named frame member coaxially with the grinding-wheels, a crank-wheel, a frame-handle at the free end of said second-named frame member, and a bolt connecting said crank-wheel and frame-handle to said second-named frame member, for the purpose set forth. 65 70

FREDERICK S. RICH.

In presence of—

WALTER N. WINBERG,  
L. HEISLAR.