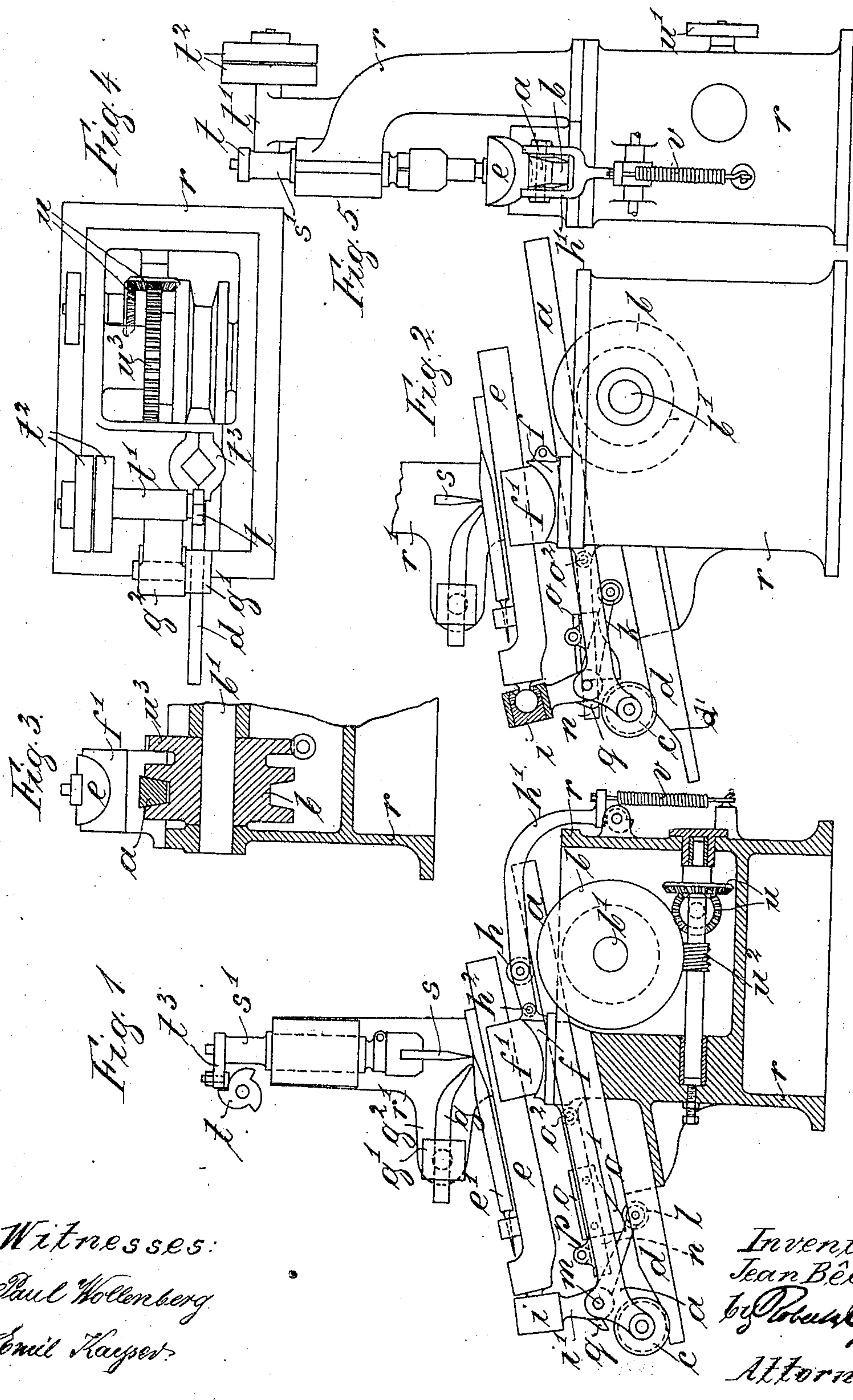


No. 849,361.

PATENTED APR. 9, 1907.

J. BÉCHÉ.
FILE CUTTING MACHINE.
APPLICATION FILED SEPT. 23, 1904.



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UNITED STATES PATENT OFFICE.

JEAN BÈCHÉ, OF HÜCKESWAGEN, GERMANY.

FILE-CUTTING MACHINE.

No. 849,361.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed September 23, 1904. Serial No. 225,648.

To all whom it may concern:

Be it known that I, JEAN BÈCHÉ, a subject of the King of Prussia, German Emperor, and resident of Hückeswagen, in the Province of the Rhine, German Empire, have invented certain new and useful Improvements in File-Cutting Machines, of which the following is an exact specification.

My invention relates to a file-cutting machine, and has for its object to support the file-carrier in every position in such a manner as to produce an excellent cut. This is obtained by using a movable rail, to which the file-carrier is so fastened as to be able to turn and swing with regard to this rail, the file-carrier being supported by a base swinging in a stationary anvil.

Furthermore, means are provided for conveniently producing a uniform cut or a different cut upon the file.

In order to make my invention clear, I refer to the accompanying drawings, in which—

Figure 1 is partly a side view and partly a vertical section through a convenient form of my cutting-machine. Fig. 2 is a side view showing the file-carrier in another position, as Fig. 1. Fig. 3 is a section on line A B of Fig. 2 through the friction-rail and the friction-wheel of the cutting-machine. Fig. 4 is a plan view of the file-cutting machine. Fig. 5 is a front view taken from the right hand of the Fig. 1.

In the drawings *a* is a wedge-shaped friction-rail resting in the correspondingly-shaped friction-wheel *b*, carried by the axle *b'*.

c is a roller fastened to the lower end of the rail *a*.

d is a stationary arm secured to the machine-standard *r* and having an inclined part *d'*.

i is a socket member fastened to rail *a*.

e is a file-carrier which forms with its left-hand end, together with the upper end of the socket member *i*, a swivel connection, so that the carrier *e* can easily turn and swing in relation to the rail *a*. The file-carrier has a convex under surface.

f is a stationary anvil-base cast on the standard *r* and provided with a concave supporting-face. *f'* is an anvil constructed to fit in the said base and freely swinging therein. The anvil has a convex upper surface adapted to cooperate with the convex under surface of the file-carrier. *h* is a roller fastened to the arm *h'*, which is journaled at

*h*² to the anvil *f'*. By means of a spring *v* this arm is kept down, thereby yieldingly resisting the upward movement of the rail *a*, as the roller *h* rests upon the upper face of this rail. The carrier *e* rests upon the anvil-base *f*.

g is a holder fastened to the socket *g'*, pivotally secured to the arm *g*² of the upper part *r'* of the standard *r*. *g* exerts a pressure upon the file and the carrier *e* for the purpose as will hereinafter be described.

s is a reciprocatory cutter and *t* is a cam-disk carried by a shaft, mounted in the sleeve *t'* and driven by a belt-disk *t*². The cam-disk *t* operates with the plate *t*³, fixed to the rod *s'*, carrying that cutter *s*. By rotating the cam-disk *t* the cutter *s* is reciprocated up and down.

The socket member *i* is pivoted at *m* to the friction-rail *a*. It is provided with an arm *k*, rigidly connected therewith, so as to form an angle-lever *i' k*, journaling around *m*. The lower end of the lever *k* is provided with a roller *l*, and *q* is a stop arranged at the arm *i'* and adapted to interfere with the rear end of the rail *a*, as to be seen from Fig. 2.

n is a movable arm, pivoted at *o*² to the machine-standard. *o* is the guidance-piece, detachably and adjustably jointed to the arm *n* and having a curved lower edge *o'* for the purpose as will hereinafter be described.

p is the roller, fixedly mounted on the friction-rail *a* and traveling on the upper edge of the arm *n*, so that the latter can be guided by the roller *p* and the roller *l*. At distinct positions of the rail *a* and for particular purposes the roller *l* runs over the curved face *o'*. Furthermore, convenient means *u* and a driving-disk *u'* are provided for revolving the friction-roller *b* around the axle *b'*. The machine, as before described, works in the following manner: Assuming that a straight file is to be acted upon, the rail *n* and the guiding-piece *o* do not come into consideration and also the inclined part *d'* of the stationary arm *d*. By rotating the friction-roller *b* around the axle *b'* and owing to the action of the roller *h* being depressed resiliently on the rail *a* the latter is advanced and the roller *c* runs on the inclined arm *d*. In order to obtain a uniform cutting all over the surfaces of the file, the file-carrier *e* must occupy a position parallel to that of the arm *d*. Due to the provision of the swivel connection the carrier is permitted to occupy this position, and for insuring this position

during the time the file is acted upon the roller *l* travels on the under edge of the rail *a*. In order to insure the proper adjustment of the carrier *e*, the arm *g* is arranged to exert a pressure on the file *e'*.

For operating upon a curved file the arrangement of the arm *n*, the guiding-piece *o*, and the inclined part *d'* is provided. Also a finer cutting can be attained by means of the aforementioned arrangement at single parts of the file. For cutting, in example, the curved front end of the file and for insuring a uniform cut, the carrier *e* must be enabled to occupy a position corresponding to the curvature of the front part of the file—that is to say, the rear end of the file-carrier must be raised. This is accomplished by leading the roller *c* along the curved part *d'* of the arm *d*. The contour or inclination of this curve must be in accordance with that of the file.

For producing at single spots of the file a finer cutting than at other spots the rail *n* and the guiding-piece *o'* are fitted. Assuming that the rail *a* is moved to the right-hand side, the carrier *e* will be at rest so far as the arm *k* or its roller *l* does not interfere with an obstacle—such, for instance, as the guiding-piece *o*. Then the carrier *e*, together with the rail *a*, move commonly with the same speed to the right-hand side. If the roller *l* is permitted to run along the inclination *o'*, obviously the carrier *e* will go farther with a lower speed than the rail *a*, thus causing the file to receive a greater number of cuts at a certain spot. After having left the part *o'* the roller *l* interferes with the lower straight edge of the friction-rail *a*, and now the latter and the carrier *e* move jointly with equal velocity.

By employing the base *f* for guiding the file-carrier the inconvenient regulation of this carrier is avoided. This latter can easily be moved as required and cannot accidentally be prevented from being advanced in the right manner. When the cutting of the file is finished, the holder *g* and the pressure-roller *h* are lifted up, whereby the friction-rail and the file-carrier are allowed to return to their starting position.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

1. In a file-cutting machine, the combination with a vertically-arranged reciprocatory cutting device, of a stationary concave anvil-base below the cutter, an anvil constructed to fit in the base and to freely swing therein, and having a concave upper surface curved at right angles to the curve of the anvil-base, a file-carrier having a convex under surface fitting in the concavity of the anvil and

longitudinally movable thereon, a friction-roller, a friction-rail, in engagement with said roller to be moved thereby and adapted to be tilted on said roller in a plane at right angles to the roller-axis, a universal swivel connection between the rail and carrier, and means for rotating the friction-roller.

2. In a file-cutting machine, the combination with a vertically-arranged reciprocatory cutting device, of a stationary concave anvil-base below the cutter, an anvil constructed to fit in the base and to freely swing therein, and having a concave upper surface, a file-carrier having a convex under surface fitting in the concavity of the anvil and longitudinally movable thereon, a friction-roller, a friction-rail in engagement with the roller to be moved thereby, a universal swivel connection between the rail and carrier, an angular lever pivoted to the friction-rail and forming at its one end a socket member of the swivel connection and having at its other end a roller for guiding the carrier, a guide member for engaging the roller on the angular lever, an arm *d* carrying the rear end of the friction-rail, and means for rotating the friction-roller.

3. In a file-cutting machine the combination with a vertically-arranged reciprocatory cutting device, of a stationary concave anvil-base below the cutter, an anvil constructed to fit in the base and to freely swing therein and having a concave upper surface, a file-carrier having a convex under surface fitting in the concavity of the anvil and longitudinally movable thereon, a friction-roller, a friction-rail in engagement with that roller to be moved thereby, a universal swivel connection between the rail and carrier, an angular lever pivoted to the friction-rail forming at its one end a socket member of the swivel connection and having at its other end a roller, a movable arm pivoted to the machine-standard, a guiding-piece having a curved edge and adjustably carried by that movable arm and adapted to cooperate with the roller of the angular lever, an arm for carrying the rear end of the friction-rail, and having a curved part guiding the rail in its movement to adapt the machine for acting upon curved files, and a roller fixedly mounted on the friction-rail adapted to cooperate with that movable arm and means for rotating the friction-roller.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JEAN BÊCHÉ.

Witnesses:

OTTO KÖNIG,

J. A. RITTERSHAUS.