

971,066.

J. NEILL.
MACHINE FOR CUTTING FILES AND THE LIKE.
APPLICATION FILED MAR. 3, 1910.

Patented Sept. 27, 1910.
2 SHEETS—SHEET 1.

Fig. 1.

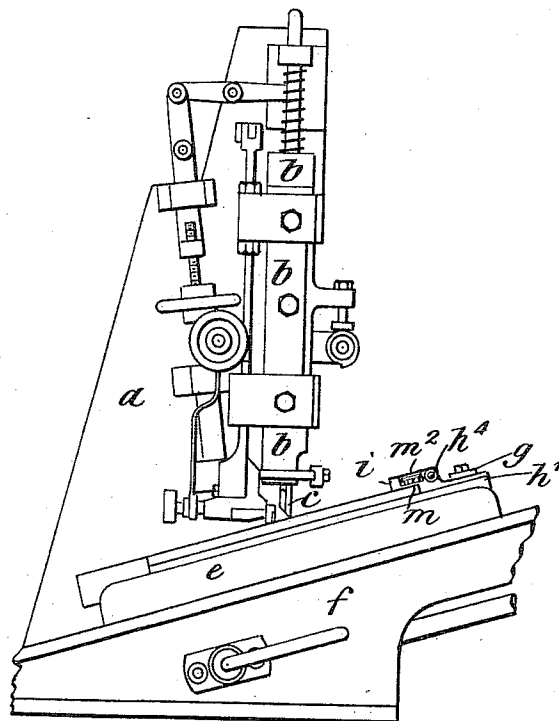
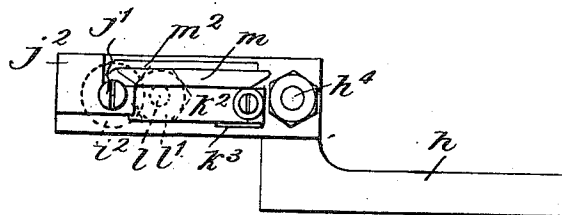


Fig. 2.



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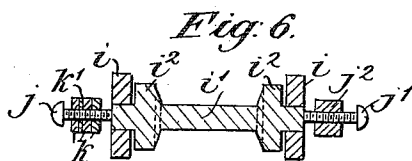
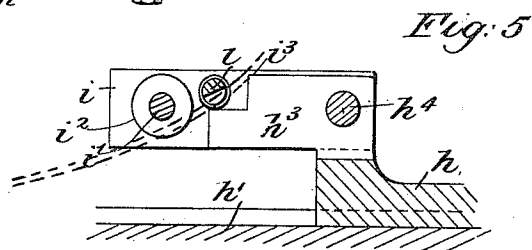
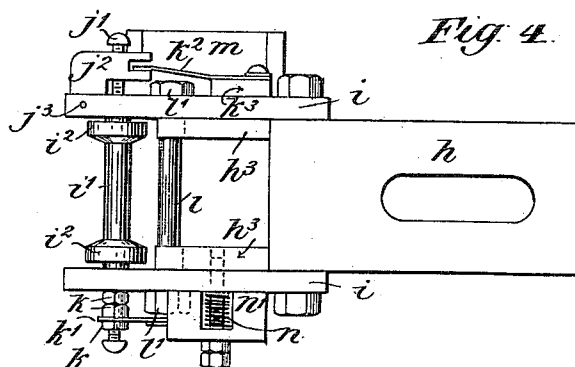
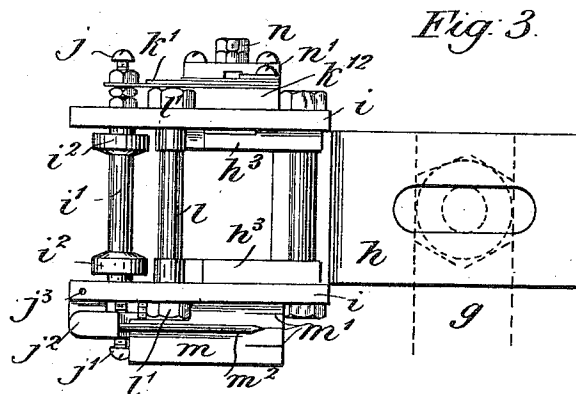
Inventor:
James Neill,
By his Attorney, J. H. Richards.

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L. B. Gadeau.
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UNITED STATES PATENT OFFICE.

JAMES NEILL, OF SHEFFIELD, ENGLAND.

MACHINE FOR CUTTING FILES AND THE LIKE.

971,066.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed March 3, 1910. Serial No. 547,031.

To all whom it may concern:

Be it known that I, JAMES NEILL, a subject of the King of Great Britain, residing in Sheffield, England, have invented certain new and useful Improvements in and Relating to Machines for Cutting Files and the Like, of which the following is a specification.

This invention relates to improvements in and relating to file cutting machines adapted for cutting abrasive files and the like, having widely spaced teeth such as have hitherto been formed by means of a milling cutter or other similar rotary tool.

When forming teeth such as those just referred to, it is found that there is a tendency for the tool to cut the teeth upon one side of the file slightly deeper than upon the other. Under these circumstances the blank is caused to bend or turn in one or other direction out of the straight line. The deflection upon the other hand may be caused through inequalities in the thickness or toughness of the metal itself.

It is the object of the present invention to provide a device whereby the deflection of the blank to one side or the other may be indicated so that steps may be taken to correct this as soon as it occurs.

The invention consists essentially of a roller or bobbin arranged in the path of the blank and having collars or flanges thereon, the distance between which is equal to the width of the blank. The roller is freely mounted so that as the blank, which passes thereunder, elongates during the formation of the teeth, the roller may turn and so offer no impediment to the movement of the said blank. The roller is mounted in a suitable carriage designed to be bolted or otherwise secured to the bed upon which the blank is supported during the cutting operation. The blank passes between the ends of the bobbin which is capable of longitudinal movement in either direction, being kept in its central or normal position by means of springs having a stop to limit inward movement of one of the said springs, and which springs press upon the ends of the bobbin spindle. The longitudinal movement of the spindle is transmitted to a pointer moving over a scale so that should the blank exert more pressure upon one end of the bobbin than the other, the said bobbin will be moved longitudinally and its movement be

at once visible to the operator who can immediately take steps to correct the cutting so that the bending aforesaid is stopped.

In order that the invention may be the better understood, drawings are appended in which:—

Figure 1 is a side elevation of a file cutting machine showing the invention applied thereto. Fig. 2 is a side view of the device to an enlarged scale. Fig. 3 is a plan of the top of said device. Fig. 4 is a plan of the underside thereof. Fig. 5 is a sectional elevation. Fig. 6 is a longitudinal section of the roller.

Referring to the accompanying drawings, in Fig. 1, *a* indicates generally the frame of a file cutting machine, *b* the hammer carrying the cutting tool or chisel *c* at its lower end. The carriage *e* is supported upon the inclined bed *f* and its longitudinal advancement is effected by means of gearing in the usual manner. The cradle *h*¹ of semicircular section has bolted or otherwise secured to it an angle plate *h*. The bolt for securing the plate *h* to the cradle may also serve to connect the handle *g* thereto as shown in dotted lines in Fig. 3, and by means of which handle the cradle may be rocked to correct the inequality in the depth of the cut. The plate *h* is provided with lugs or projections *h*³ upon each side, and passing through said projections is a pin *h*⁴ forming a pivot for the side plates *i* carrying at their outer ends a spring governed roller *i*¹ having at each end collars *i*² between which the blank passes as indicated by the dotted lines *i*³ in Fig. 5. The ends of the roller *i*¹ are supported in the plates *i* as shown in Fig. 6, a sufficient space being left between the outer faces of the collars on the roller and the inner surface of the plates *i* to permit the said roller to move longitudinally in its bearings. Normally pressing against the respective ends of the roller are set studs *j* *j*¹ of which the stud *j* is clamped by means of locknuts *k* to the free end of a spring *k*¹ while the opposite stud *j*¹ is tapped into the block *j*² pivotally mounted at *j*³ upon one of the plates *i*. The nuts *k* also serve as a stop as the innermost nut abuts against the outer face of the plate *i* and limits the inward movement of the spring as shown in Figs. 3 and 4. The block *j*² is slotted at *j*⁴ and engaging the slot is one end of a spring *k*² which spring is supported at its opposite end by means of a

block or projection k^3 upon the outside of the plate i . The spring k^1 before referred to is similarly supported by a block k^{12} upon the outer face of the plate i upon the other side. The spring k^1 is stronger than the spring k^2 but as its inward movement is limited by the nuts k in the manner just above described, it is only effective to return the roller to its normal position after it has been moved toward said spring. Upon the other hand the spring k^2 can follow the movement of the roller in either direction, and as will be presently more fully described, advantage is taken of this fact to indicate the direction of the bending or turning of the blank.

l indicates a distance piece or stud for keeping the plates i apart, and which distance piece may be secured by means of the nuts l^1 .

Secured in any convenient manner to the plate i carrying block j^2 is a plate m having its upper surface scaled or otherwise marked as shown at m^1 and over the surface of which plate moves a pointer m^2 attached to the block j^2 , pivotally mounted on plate i at j^3 . Consequently as the roller i^1 is moved to the right or left the pointer m^2 under the action of spring k^2 acting on block j^2 will move over the surface of plate m thus giving a visible indication that there is a tendency for the file to bend in one or other direction and that the cut is deeper on one side of the file than the other and enabling the operator to incline the bed to the required extent so as to correct the error.

In order that the plates i may be raised when required, I provide a spring actuated plunger or bolt n carried in the guide n^1 secured to the outside of one of the plates i and which bolt at its inner end engages a recess formed in one of the side members or projections h^3 of plate h . When it is required to raise the roller for any purpose the bolt is pulled outward to free the plate when the plates i may be turned backward out of the way.

Claims—

1. In a file cutting machine means for indicating the lateral curvature of the blank, comprising a spring controlled roller having collars adapted to engage the sides of the

blank, and a pointer actuated by the longitudinal movement of the said roller.

2. In a file cutting machine means for indicating the lateral curvature of the blank, comprising a roller having collars adapted to engage the sides of the blank, and having at one end a spring acting to press the roller inwardly a stop for limiting the action of the spring, a second weaker spring acting upon the opposite end of the roller, and opposed to the first spring and pointer, actuated by the longitudinal movement of the roller.

3. In a file cutting machine means for indicating the lateral curvature of the blank comprising a roller having collars thereon adapted to engage the sides of the blank a spring acting upon one end of the roller, to push the same inwardly a stop to limit the action of the spring, a pivotally mounted body carrying a stud bearing upon the opposite end of the roller a spring acting upon the body weaker than and opposed to the first spring and a pointer attached to the pivotally mounted body.

4. In a file cutting machine means for indicating the lateral curvature of the blank, comprising a roller mounted so as to be capable of longitudinal movement, a frame comprising two plates connected together by means of cross stays one of which forms a pivot whereby the frame is revolvably mounted upon the side plates formed upon an angle plate adapted to be secured to the body carrying the blank, a spring catch for maintaining the frame in the operative position, collars upon the roller engaging the sides of the blank, a spring carrying a stud bearing upon one end of said roller to push the same inwardly a stop to limit the action of the spring, a pivotally mounted body carrying a stud bearing upon the opposite end of the roller, a spring acting upon said body weaker than and opposed to the first spring, and a pointer attached to said pivotally mounted body and moving over a scale.

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

JAMES NEILL.

Witnesses:

ERNEST HUGHES,
ROBERT A. NEILL.