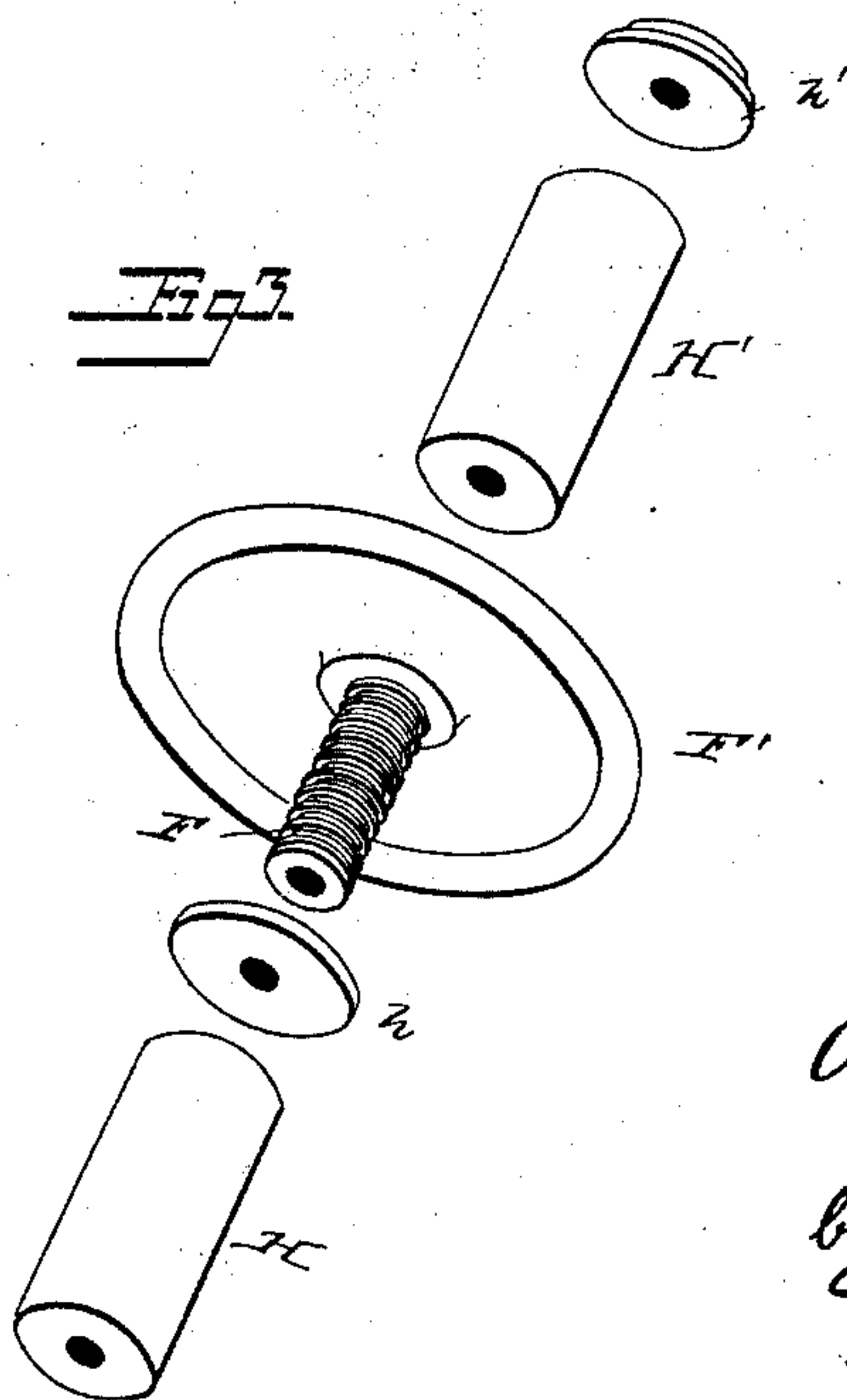
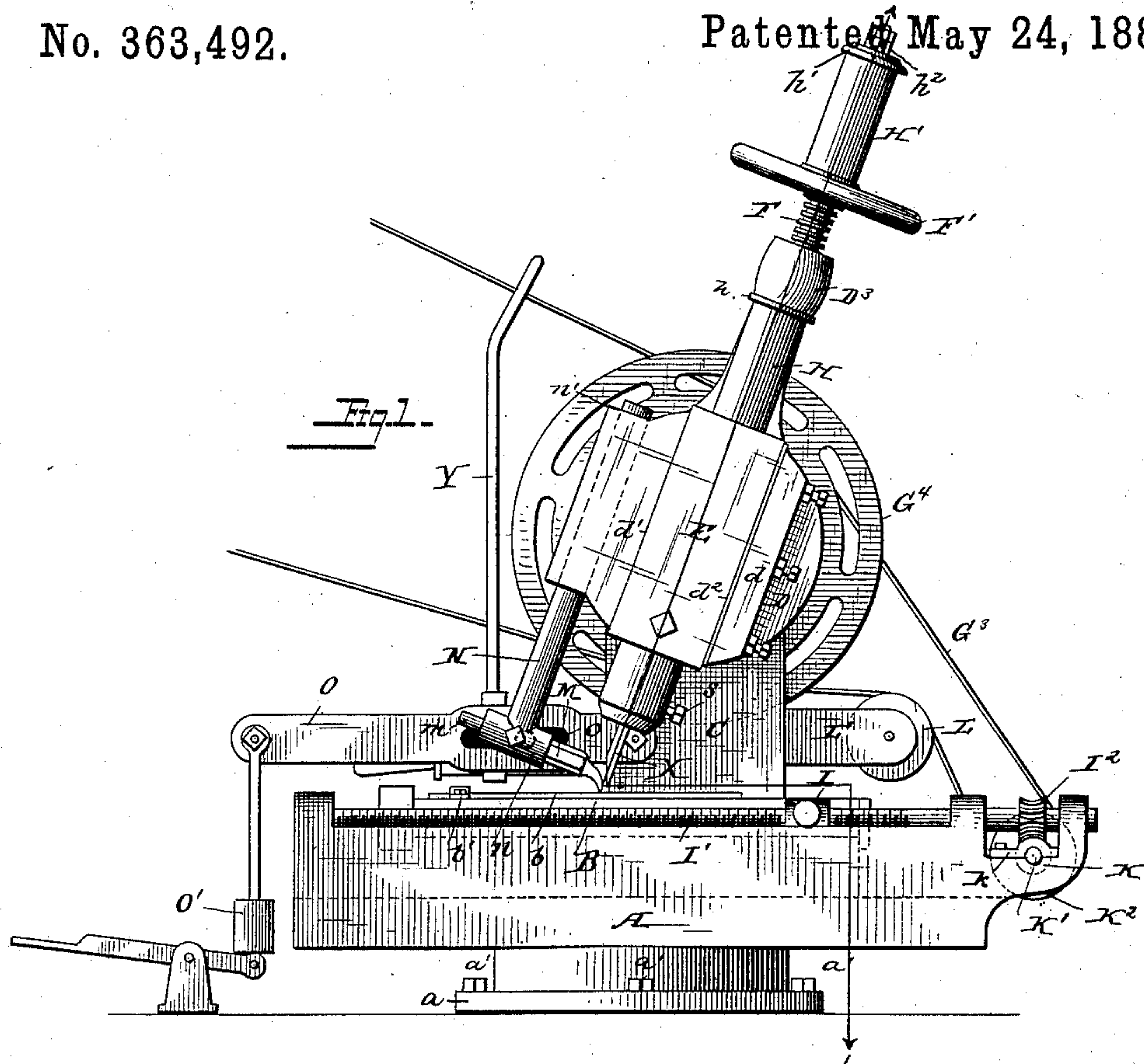


(No Model.)

2 Sheets—Sheet 1.

A. WEED.  
FILE CUTTING MACHINE.

No. 363,492.

Patented <sup>4</sup> May 24, 1887.

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Wm A Harries  
W. H. A. Knight

Alfred Weed  
Inventor:  
by: Foster & Freeman,  
Attys

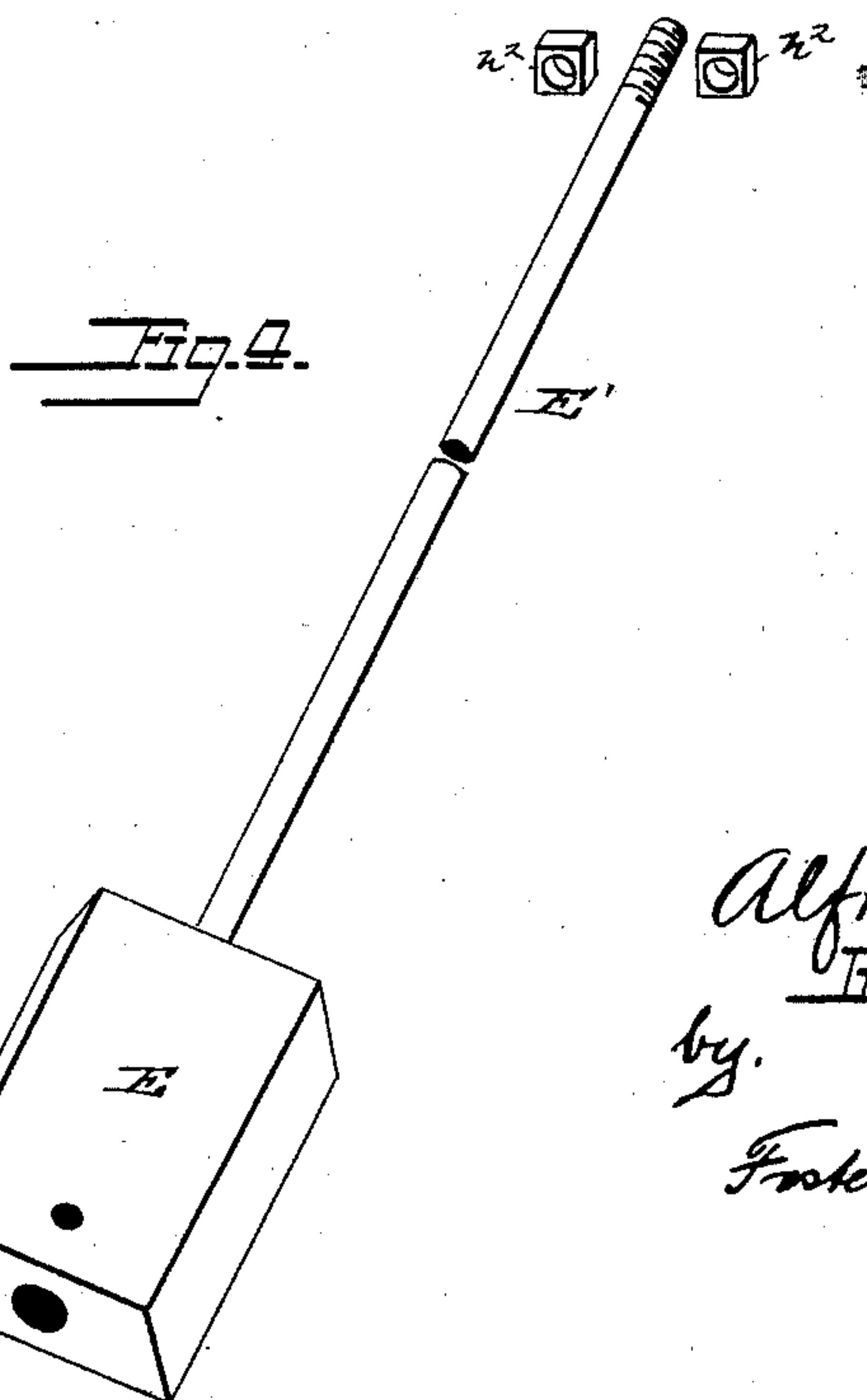
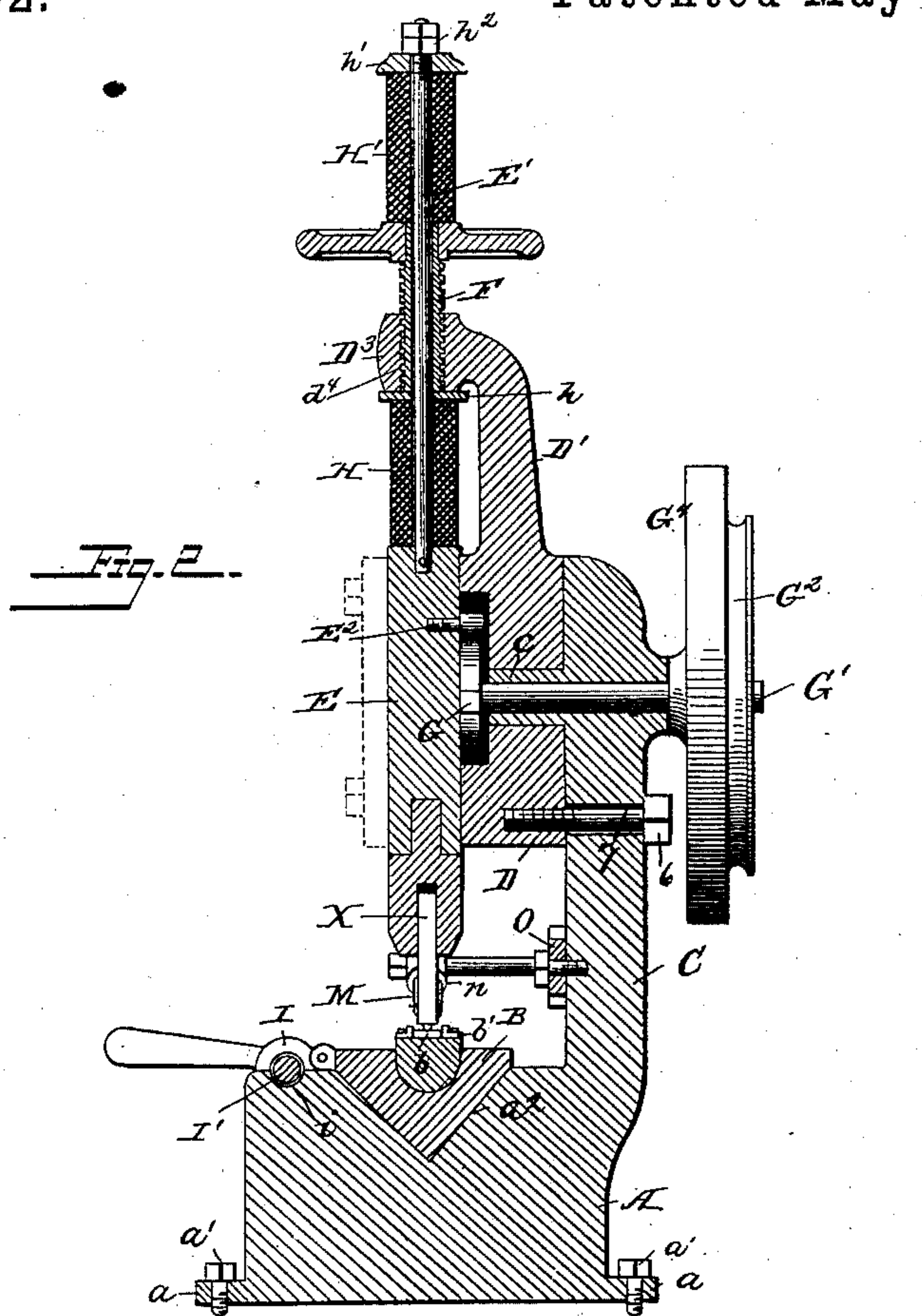
(No Model.)

2 Sheets—Sheet 2.

A. WEED.  
FILE CUTTING MACHINE.

No. 363,492.

Patented May 24, 1887.



Witness:  
Wm A. Harris  
N. H. H. Knight

Alfred Weed,  
Inventor:  
by  
Foster & Freeman,  
Attys



# UNITED STATES PATENT OFFICE.

ALFRED WEED, OF TARRYTOWN, NEW YORK.

## FILE-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 363,492, dated May 24, 1887.

Application filed October 25, 1883. Serial No. 217,160. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED WEED, of the village of Tarrytown, in the county of Westchester and State of New York, have made  
5 certain new and useful Improvements in File-Cutters, of which the following is a specification.

My invention relates to improvements in file-cutting machines of that class wherein  
10 the cutting-tool is secured to a reciprocating tool-carrier; and it consists, primarily, in the provision in a machine of the class named of means whereby the tool may be caused to deliver either light or heavy blows, as desired,  
15 and whereby the character of such blows may be changed from light to heavy, or vice versa, while the machine is in operation.

The invention further consists in means for holding the file-blank in position to be operated upon by the cutting-tool, and in means  
20 to prevent the jumping or displacement of the blank-receiving bed when the machine is in operation; and, finally, the invention consists in the construction, arrangement, and  
25 combination of the several parts for service, substantially as hereinafter specifically described.

In the drawings, Figure 1 represents in side elevation a file-cutting machine embodying  
30 my invention. Fig. 2 is a sectional view taken on the line *x x* of Fig. 1. Figs. 3 and 4 represent in detail perspective views of the several parts of the mechanism to govern the force of the blow delivered by the cutting-  
35 tool.

Referring to the drawings, in which similar letters of reference denote similar parts, A designates the base, which may have any desired configuration of outline, and is provided  
40 near its bottom with projecting perforate lugs *a* to receive bolts *a'*, by which it is secured to a suitable foundation. I provide the upper surface of the base with a groove or way, *a''*, to receive a movable bed, B, upon which the  
45 file-blank *b* is secured by a clamp, *b'*, or other suitable means.

C is a standard, which projects upward from the base, and is provided near its top upon one side thereof with a projecting hollow stud, *c*,  
50 upon which is mounted a swinging or oscillating head, D, the outer surface of which—at

equal distances from the middle thereof—is provided with guides *d d'*, having each its inner edge beveled to form a dovetailed way, *d''*, by and in which a tool-carrier, E, is held and  
55 operates. The side edges of the tool-carrier E are beveled to correspond with the guides *d d'*, as will be understood. If desired, the body of the carrier may be rectangular in cross-section and be held between the guides  
60 *d d'* by a plate which is secured to the outer faces of said guides, as indicated by dotted lines, Fig. 2.

D' designates an arm which is formed integral with and projects upwardly from the head  
65 D, and which at its top is turned to one side and provided with an enlargement, D<sup>3</sup>, having a screw-threaded aperture, *d'*, formed therethrough in alignment with the dovetailed way *d''* of the head D, to receive a screw-  
70 threaded tube, F, through which extends a rod, E', from the carrier E, as shown.

F' designates a hand-wheel, which is secured to the upper end of the screw-tube F, to turn  
75 said tube and move it up or down in its bearings D<sup>3</sup>, for a purpose presently to be explained.

The tool-carrier E is moved in one direction by a rotating cam, G, secured within a recess formed in the head D upon a shaft, G', that  
80 extends through the hollow stud *c*, and is provided upon its outer end with a pulley, G<sup>2</sup>, to receive the driving-belt G<sup>3</sup> and a balance or fly wheel, G<sup>4</sup>.

E<sup>2</sup> designates a stud, which projects from the  
85 carrier E and operates in conjunction with the cam G to operate the carrier.

From the foregoing description it will be observed that the rotation of the cam G operates to move the carrier E in its guideway *d''*,  
90 said carrier being operated in one direction, upward, by the positive action of the cam G upon the stud E<sup>2</sup>, and in the opposite direction, downward, or toward the file-blank, by gravity, whereby successive blows delivered  
95 by a cutter held by said carrier upon a file-blank will be of equal force, and would, if all blanks had the same degree of hardness, fully meet and serve the end sought—i. e., the production of a file having its cuts regular in  
100 depth and size. As, however, no two file-blanks have the same degree of hardness, and



as in some instances a single blank is harder at one end than at the other, it is necessary to provide the machine whereby said blanks are cut with means for regulating the force of the blows delivered by the cutter; and, further, that such adjustment be made while the machine is in operation. To this end I provide the following mechanism, viz:

H and H' designate springs—in the present instance shown as formed of rubber—which are placed upon the rod E', the one H between the carrier E and a washer, h, placed upon said rod E', and bearing against the lower end of the screw-threaded rod F, the other, H', upon said rod E', between the upper surface of the hand-wheel F' and a washer, h', placed upon the screw-threaded upper end of the rod E' and held in position by jam-nuts h<sup>2</sup>.

It will be apparent that as the carrier is by its stud E<sup>2</sup> and operating-cam G forced to move within certain predetermined limits the force of the blows delivered by the cutter held by said carrier will be determined by the extent to which either of the springs H or H' is compressed by the upward or downward movement of the tube F, and also that either of said springs may be compressed while the machine is in operation—the lower spring to impart an increased force to the blow, the upper spring to reduce the force of such blow and to impart to the cutter an action closely approaching one action imparted by the human hand—viz., an elastic resistance to the force of the blow.

It will be observed that the axis of oscillation of the carrier E coincides with the axis of the carrier-actuating cam G, and that consequently said carrier and its contained cutter will operate at any desired angle as regards the file-blank, the head D being held at the desired adjustment by any required means—as, for instance, by a set-screw, 6, which projects from said head D through a curved slot, 7, in the standard C.

The bed B may be moved back and forth upon the base A by any suitable mechanism—as, for instance, by a half-nut, I, hinged to the bed and engaging a screw-threaded rod, I', placed within a groove, i, formed in the base A, parallel with said bed B. The screw-threaded rod I' is provided at one end with a worm-gear pinion, I<sup>2</sup>, which is engaged and rotated by a worm-screw, K, mounted upon a shaft, K', journaled transversely of the base A in bearings k, projecting therefrom and rotated through a pulley, K<sup>2</sup>, from the belt G<sup>3</sup>.

L designates a tension or belt-tightening pulley, which is mounted upon the end of a lever, L', pivoted to the standard C, to impart tension to the belt G<sup>3</sup>.

The file-blank b may be held steady upon the bed B by any desired means—as, for instance, by the following-described mechanism, viz:

M designates a pressure-foot, the downward-curved end of which bears upon the file-blank in advance of the cutter X, and is provided

with a shank, m, which is held within the perforate head n of a rod, N, held and adjusted within a bore, n', formed lengthwise through the guide d', or through a lateral projection therefrom. The degree of pressure exerted by the foot M is determined by a lever, O, which is hinged at one end to the standard C, and provided with a slot, o, to receive a pin which projects from the rod N, as shown by dotted lines.

O' designates a weight pendent from the outer end of the lever O, to impart force thereto.

G designates a foot-lever, which is fulcrumed to a support, G', and extends below the weight O' to raise said weight, and thereby relieve the blank b from the pressure of the foot M.

The cutter X may be held in position in the carrier E by any desired means—as, for instance, by a set-screw, s.

Y designates a belt-shipper of the ordinary description.

The operation of my improvement is obvious, and requires no further description, it being understood that one or the other of the springs H or H' is placed under compression by the action of the rod F, to impart a greater or less degree of force to the blows delivered by the cutter X. The springs H and H' may be of any suitable material and form—as, for instance, of rubber, as herein shown, or coiled or leaf springs of metal; also, said springs may be placed under compression by means other than that herein described without departing from the spirit and intent of my invention, which contemplates a machine wherein the force of the blows delivered by the cutter may be regulated and determined by the operator without necessitating the stoppage of the machine for that purpose, and whereby there is an elastic resistance opposed to the force of the blow of the cutter.

Without limiting myself to the exact construction herein described, I claim—

1. The combination of the reciprocating tool-carrier and means for moving the latter quickly downward, and a spring arranged to be struck by a shoulder carried by the carrier as it reaches its lowest limit of movement, and means for varying the resistance of said spring, substantially as described.

2. In a file-cutting machine, a tool-carrier positively moved in one direction, provided with means, substantially as described, to impart different degrees of elastic resistance to the blows of a cutter secured to said carrier, and other means to impart different degrees of elastic force to the downward movement of said cutter, substantially as and for the purpose set forth.

3. In a file-cutting machine, a base having an upwardly-projecting standard and a movable file-blank-receiving bed, an oscillating head pivoted to said standard above the top of the bed and provided with guides to receive a tool-carrier, mechanism to reciprocate said carrier, and means, substantially as described,



to secure said head in desired position, and means to impart an increased or decreased resistance to the downward movement of said carrier, as and for the purpose described.

5 4. A base, a standard projecting therefrom, an oscillating head pivoted to said standard above said base and provided with guides to receive a tool-carrier, a reciprocating tool-carrier, a rotating cam to positively move said  
10 carrier in upward direction, a spring to impart an increased or decreased force to the downward movement of said carrier, and a spring to impart different degrees of elastic resistance to said downward movement of the  
15 cutter, substantially as described.

5 5. A base, a standard projecting therefrom, an oscillating head pivoted to said standard, guides on said head, a reciprocating tool-carrier held by said guides and provided with a  
20 projecting rod, springs placed upon said rod to impart an increased or decreased resistance to the movement of said carrier, and means, substantially as described, to regulate the tension of said springs, as and for the purpose de-  
25 scribed.

6. A base, a standard projecting therefrom, an oscillating head pivoted to said standard and provided with an upwardly-projecting  
30 arm and guides to hold a tool-carrier, a reciprocating tool-carrier, a hollow adjusting-screw mounted in the upwardly-projecting arm of said oscillating head in alignment with the carrier, a rod projecting from said tool-carrier through said adjusting-screw, and  
35 springs placed on said rod at opposite ends of

said adjusting-screw to impart force and resistance to the movement of said tool-carrier, as and for the purpose described.

7. The combination of the adjusting-screw F and its operating-wheel F' with the oscillating head D, its arm D', and guides d d', carrier E, its rod E', and controlling-springs H and H', substantially as described. 40

8. The combination of the base A, having standard C, oscillating head D, having arm D' and guides d d', reciprocating tool-carrier E, having cutter X, and mechanism, substantially as described, to operate and control the movement of said carrier, with the reciprocating bed B, its feed-screw I', and shaft K', and  
50 mechanism, substantially as described, to receive and hold the file-blank upon said bed, as and for the purpose set forth.

9. The combination of a base having a standard, an oscillating head pivoted thereto and  
55 provided with a reciprocating tool-carrier, and mechanism, substantially as described, for operating and controlling the movement of said carrier, with a reciprocating bed to receive a file-blank, mechanism to reciprocate said bed, 60  
and the rod N, weighted lever O, and foot or releasing lever P, as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two  
65 scribing witnesses.

ALFRED WEED.

Witnesses:

DE B. WILMOT,  
DANIEL E. DELAVAN.