(No Model.) 3 Sheets—Sheet 1.

J. B. FLINT.

MACHINE FOR GRINDING CUTTERS.

No. 497,313. Patented May 16, 1893.

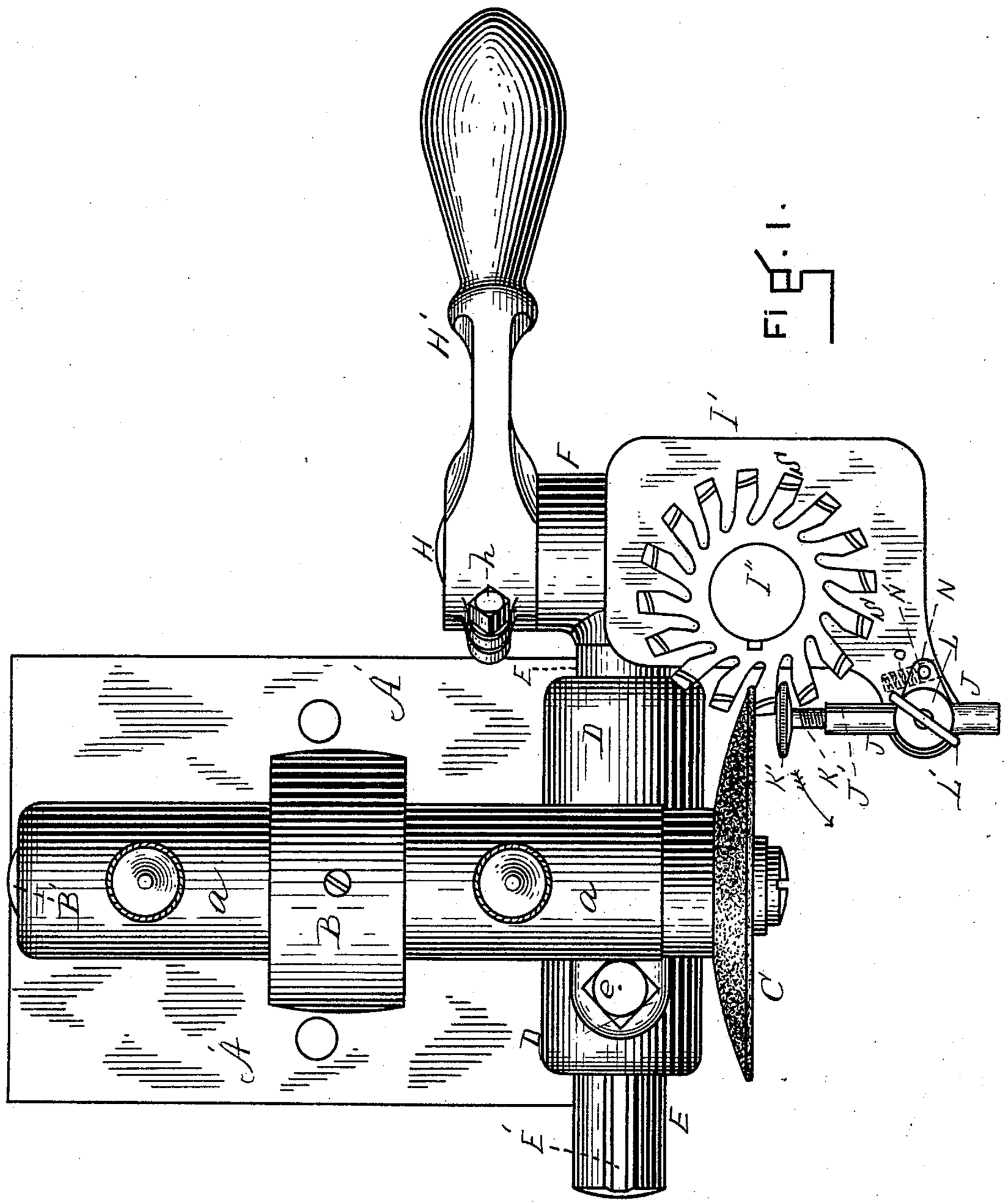

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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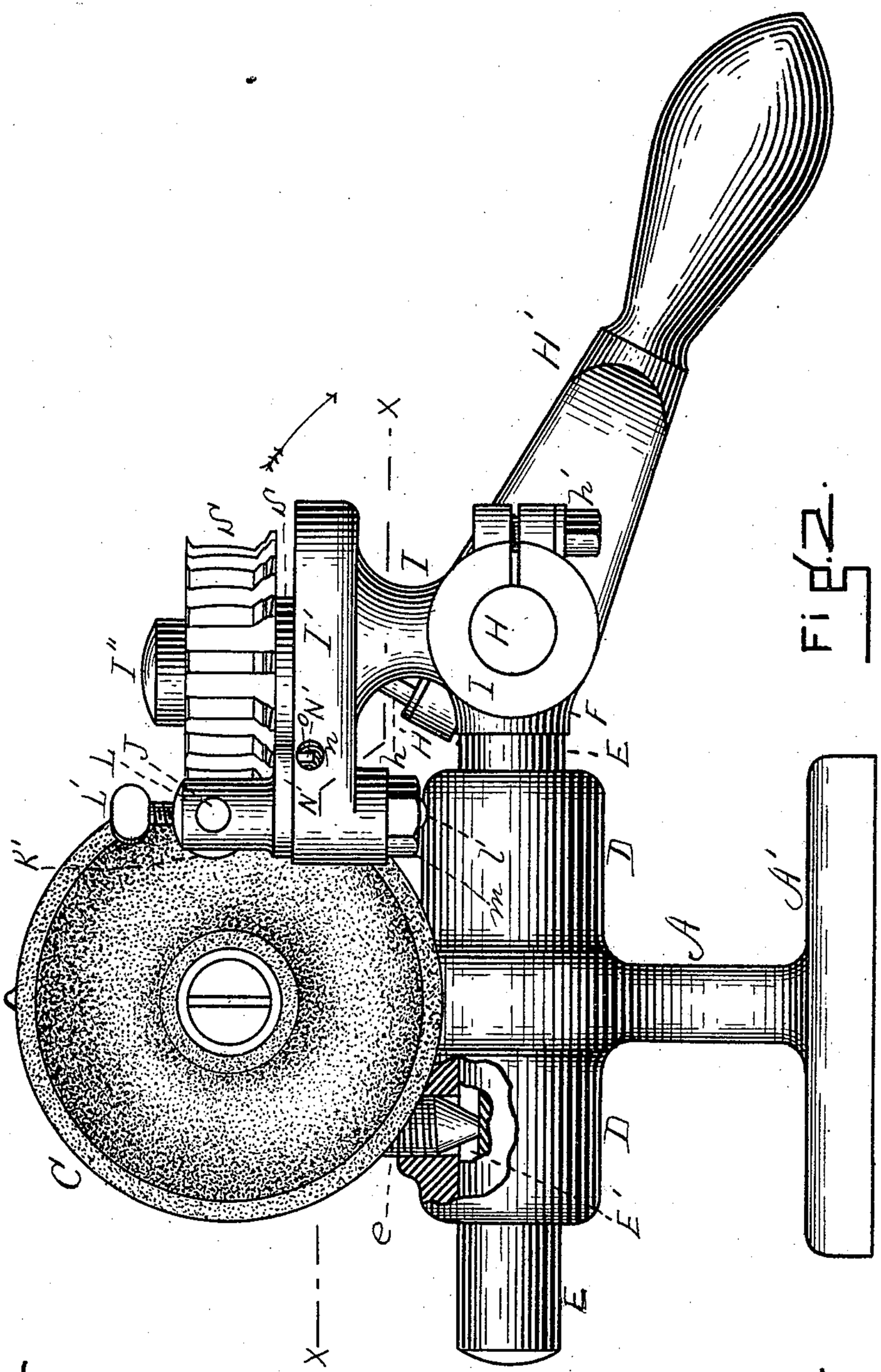

Fig. 2.

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(No Model.) 3 Sheets—Sheet 3.

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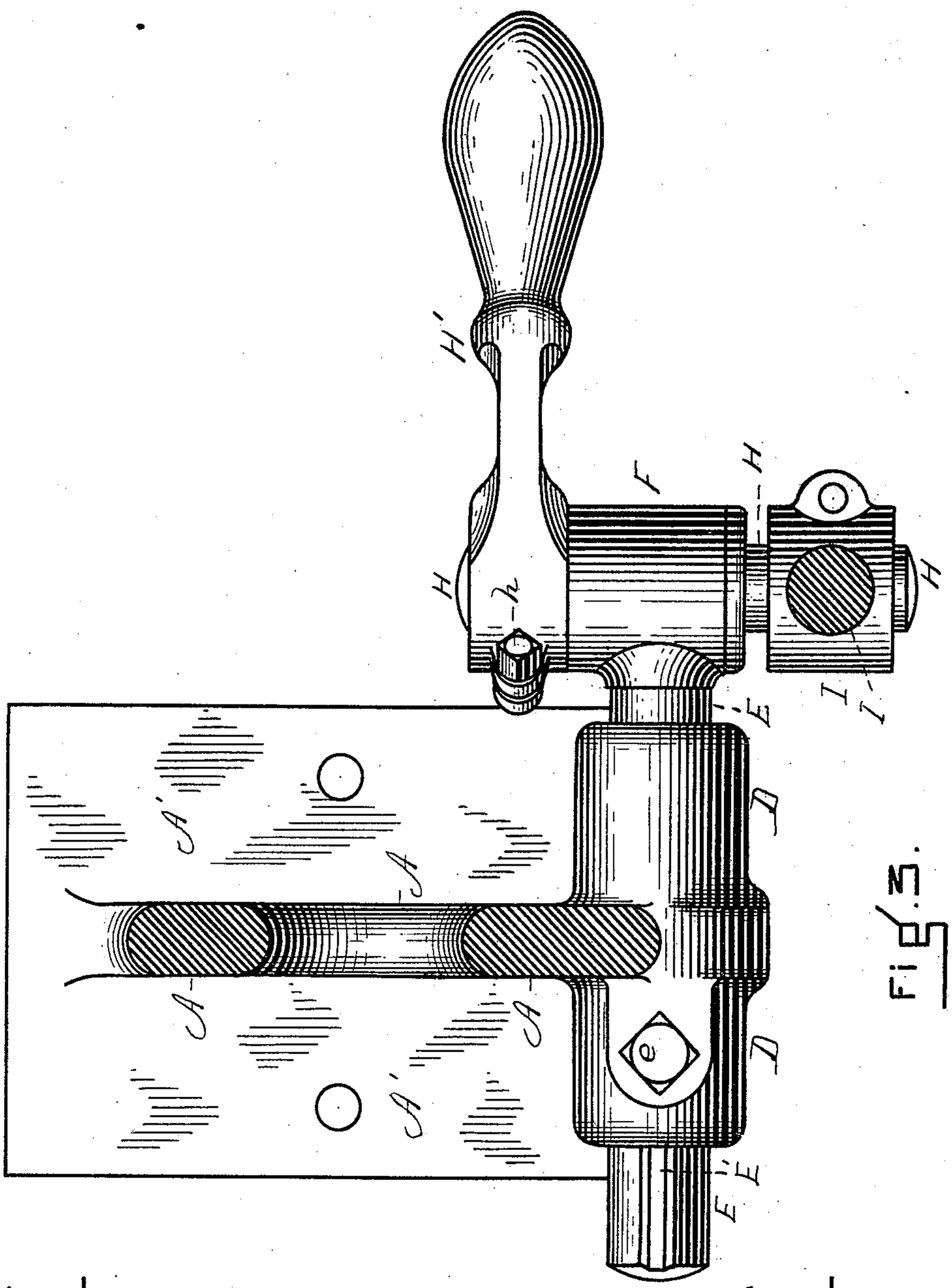

Fig. 3.

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UNITED STATES PATENT OFFICE.

JOHN B. FLINT, OF CHELSEA, MASSACHUSETTS.

MACHINE FOR GRINDING CUTTERS.

SPECIFICATION forming part of Letters Patent No. 497,313, dated May 16, 1893.

Application filed December 27, 1892. Serial No. 456,311. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. FLINT, a citizen of the United States, residing at Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machines for Grinding Cutters, of which the following is a specification.

This invention relates to machines for grinding cutters, more especially shoe cutters of the general style illustrated in the drawings, and it has for its principal object to provide exact adjustment in different directions with relation to the grinding wheel, so that the teeth of the cutter may be ground to exactly the degree desired and may be of precisely uniform thickness and hence (as their outer edges are beveled) of uniform height.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a plan view of the machine with the cutter in position for being ground. Fig. 2 is an elevation of the same. Fig. 3 is a horizontal section on line *x* Fig. 2, the grinding wheel having been removed.

A represents the frame integral with the base A′ which may be screwed to a bench or table. The upper portions *a* of the frame A constitute bearings for a shaft B′ on which the driving pulley B is fast, and rigidly secured to the front end of the same shaft is the emery wheel or grinding wheel C. Integral with the frame is a horizontal tubular support D in which slides longitudinally a bar E, said bar being provided with a longitudinal groove E′ on its upper side into which an adjusting screw or bolt *e* extends from the support D. This bar E has rigidly secured to its right end a tubular frame or support F which constitutes a bearing for the shaft H, which has rotative motion applied to it by the handle H′ clamped upon said shaft by the bolt *h*.

I is a bracket or support clamped adjustably upon the shaft H and held by the screw or bolt *h′*, and surmounting this bracket is an integral table I′ from which a vertical post I″ extends. This post is for accommodating the cutter S.

J is a tubular horizontal gage-rod-socket internally threaded to receive the gage-rod K which screws into it, and longitudinally slitted at J′ so as to hold the gage-rod friction-tight. This gage-rod is provided at its free end with a button or gage K′ adapted to lie between the teeth of the cutter S. The socket J extends through and is supported by the post L and is held adjustably therein by the set-screw L′. The post L is pivotally held on the table I′, it being provided with a pin *l* which extends down loosely through said table, to which it is screwed by the nut *m*. A horizontal projection N extends from the foot of the post L and a pin N′ extends from this projection down into a recess or chamber *n* in the table I′ and is acted on by a spring *o* in said recess. The pressure of the spring against the projection N′ forces it, and the arm N, back and swings the gage K′ in between the teeth of the cutter S.

To arrange the machine for work, slip the cutter, as S, over the post I″. Move the bar E in the tubular frame E′ until the table I′, when held in a horizontal position, will hold the cutter in just the right position to receive the surface of the wheel (as shown in the drawings). This will bring the center of the wheel C on a horizontal line which is exactly the height of the center of the tooth to be ground. Then secure the bar by means of the set screw *e*. The table I′ is moved horizontally at right angles with the face of the cutter by the frame I on the shaft H. The cutter is swung out of and into engagement with the grinding wheel, on an arc of a circle by the handle H′ fast on the shaft H. The face of the tooth to be ground is held against the wheel by the adjustable gage-rod-socket J, and the final exact adjustment is given by turning the gage-rod K. Thus it will be seen that there are five adjustments, the horizontal adjustment of the bar E, the horizontal adjustment of the frame or carriage I on the shaft H, the adjustment on an arc of a circle of the table on the shaft H, the adjustment of the socket J in the post L, and the adjustment of the gage-rod K in the socket J.

It will readily be seen that when the machine is adjusted to properly grind a tooth, the cutter is swung back and then forward so as to engage one tooth after another until all are ground alike with absolute exactness.

Various adjustments are possible to secure different results in grinding. For example, to grind the lower portion of a tooth, or the

lower portion of the end of the recess between two teeth, the bar E is moved so as to bring the table near the wheel, tipping its adjacent edge upward. To grind the upper portion of a tooth, or the upper portion of the end of the recess, the bar E is moved so as to take the table farther from the wheel and tip its adjacent edge down. Sliding the table in one direction on the shaft H lessens the angle on the inner face of the tooth, and in the other direction makes the tooth more hook-shaped, &c. I do not, of course, confine myself to the exact cutter shown in the drawings as there are many cutters of the same general style which can be ground on my machine.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character described, the combination of the frame provided with the tubular bracket or support D, the horizontally sliding bar E adjustably held in said support, the tubular support or frame F rigid on the end of said bar, the shaft H having its bearings in said frame F, the frame or carriage I adjustably secured to said shaft, said frame supporting the table I′ provided with the post I″ for holding the cutter, whereby the cutter when moved up to its work describes an arc of a circle of which said shaft is the center, and when in position to be ground said circle overlaps or intersects the circle produced by the circumference of the grinding wheel, substantially as set forth.

2. In a machine of the character described, the combination of the table I for supporting the cutter, said table being adapted to be moved horizontally toward and from and at right angles with the grinding wheel, and on an arc of a circle which intersects the circle described by the circumference of the grinding wheel, the tubular horizontal gage-rod-socket J into which screws the gage-rod K provided with the button or gage K′, the vertical post L supported by the table, and holding adjustably horizontally said gage-rod, the pin *l* extending loosely through said table from said post, the horizontal projection N extending from the foot of said post and provided with the pin N′ extending into the recess *n* in said table, and a spring *o* in said recess, substantially as described.

JOHN B. FLINT.

Witnesses:
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HENRY W. WILLIAMS.