

No. 641,469.

Patented Jan. 16, 1900.

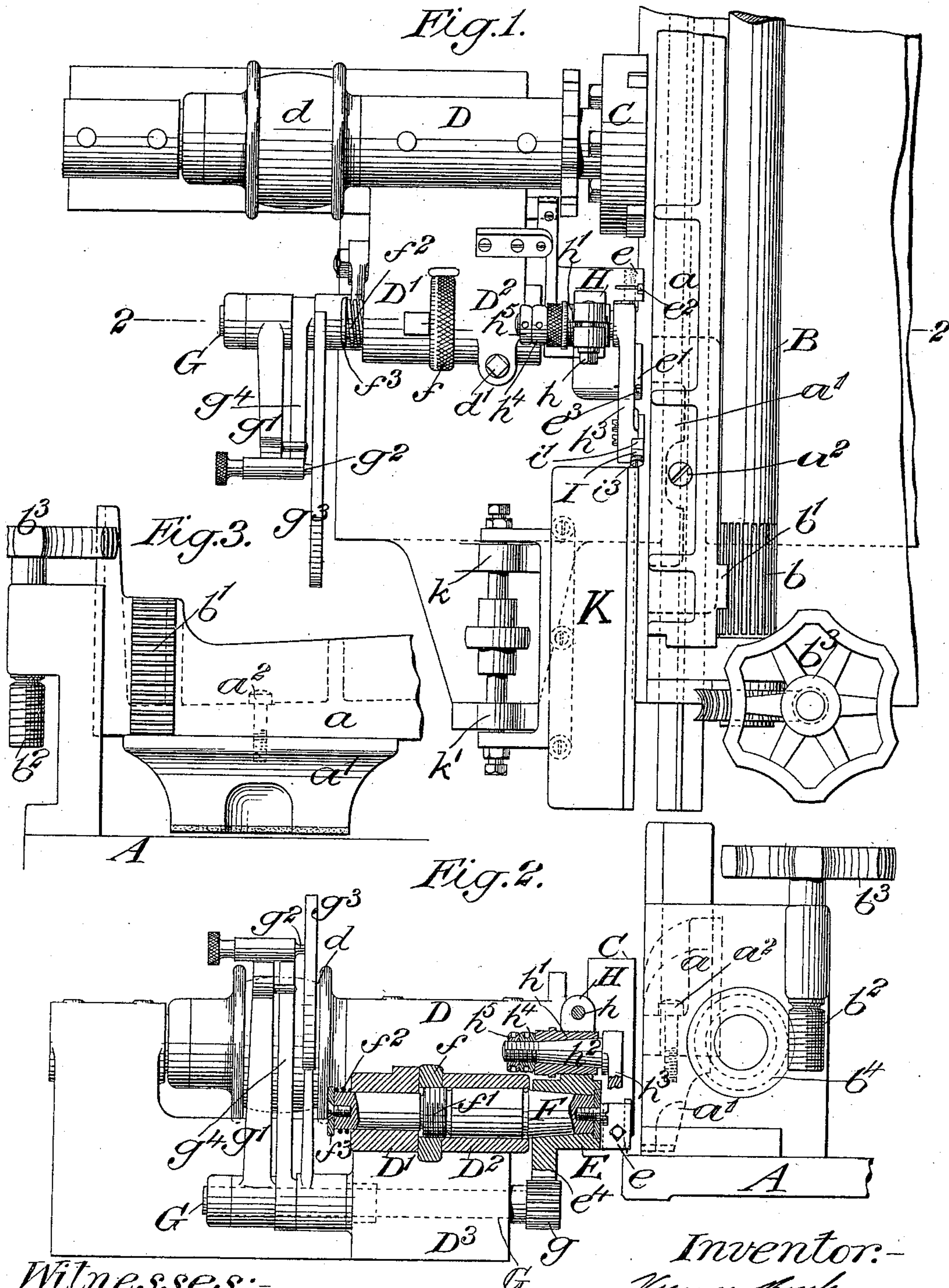
V. ROYLE.

LINE ATTACHMENT FOR BEVELING MACHINES.

(Application filed Dec. 18, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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Fig. 4.

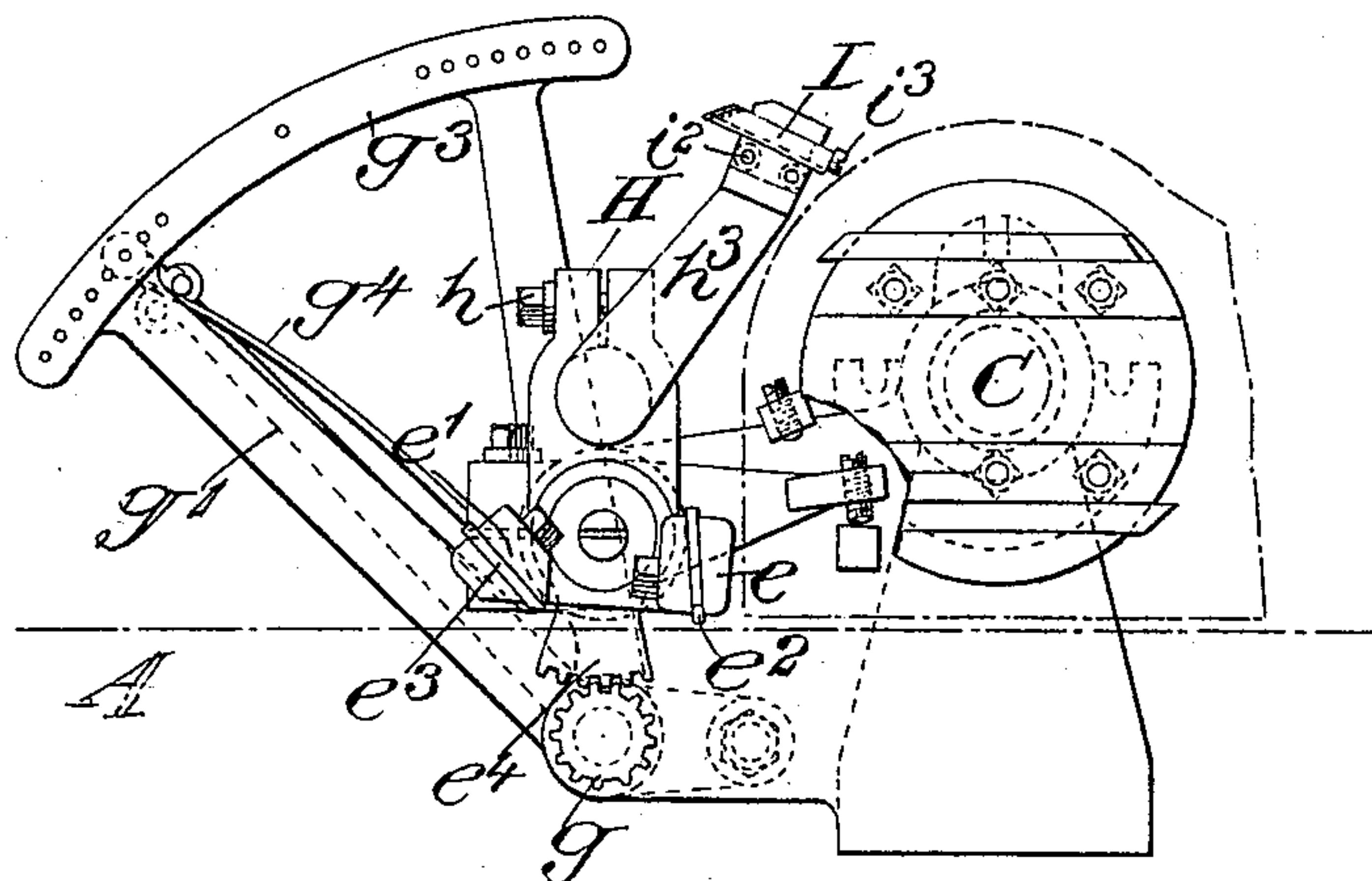


Fig. 5.

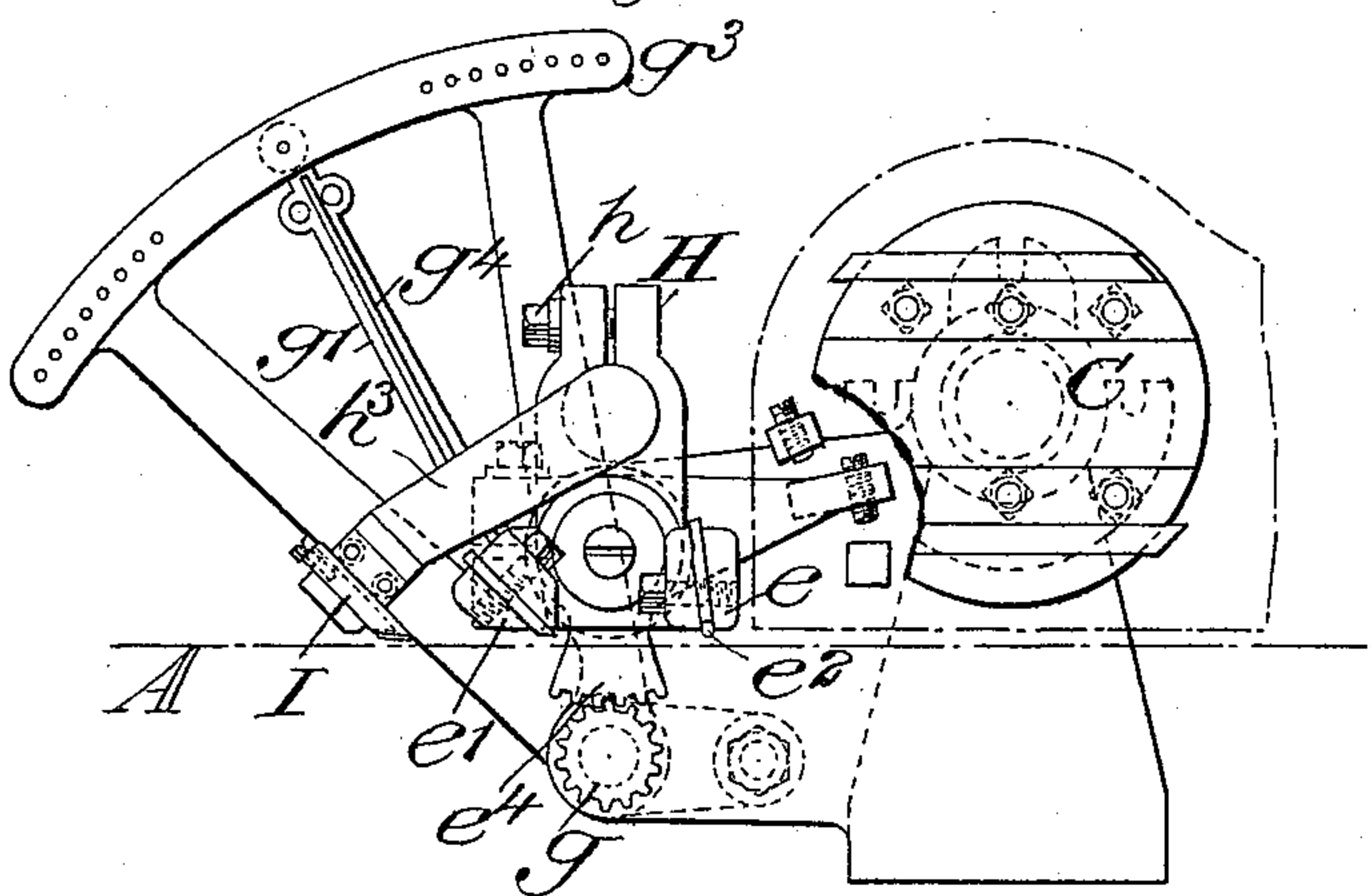


Fig. 6.

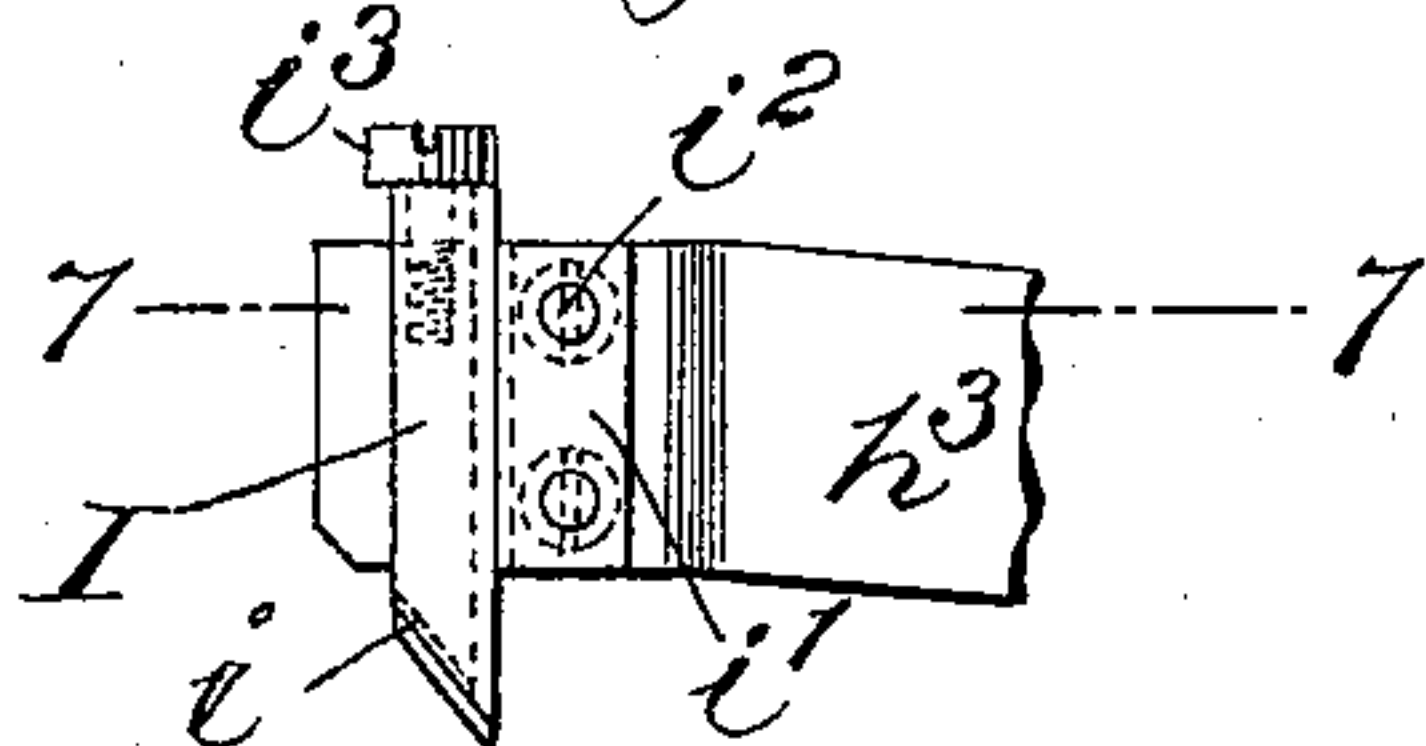


Fig. 8.

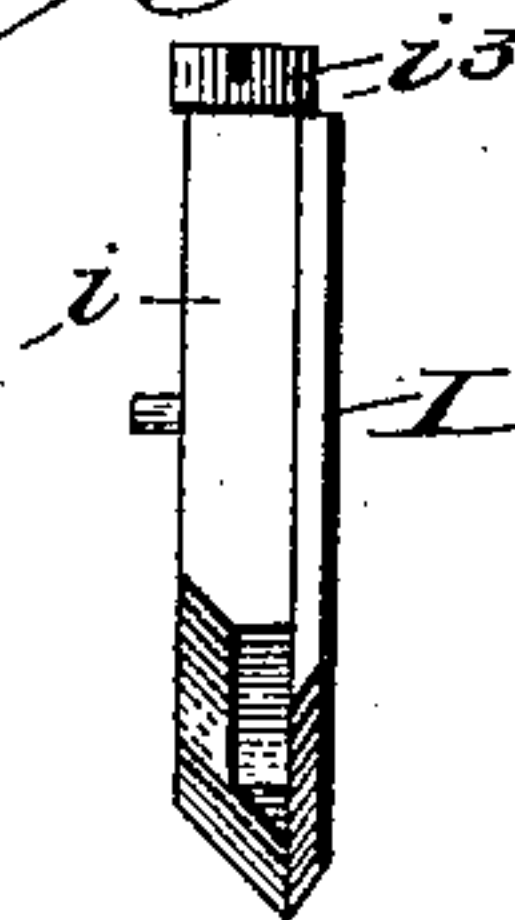
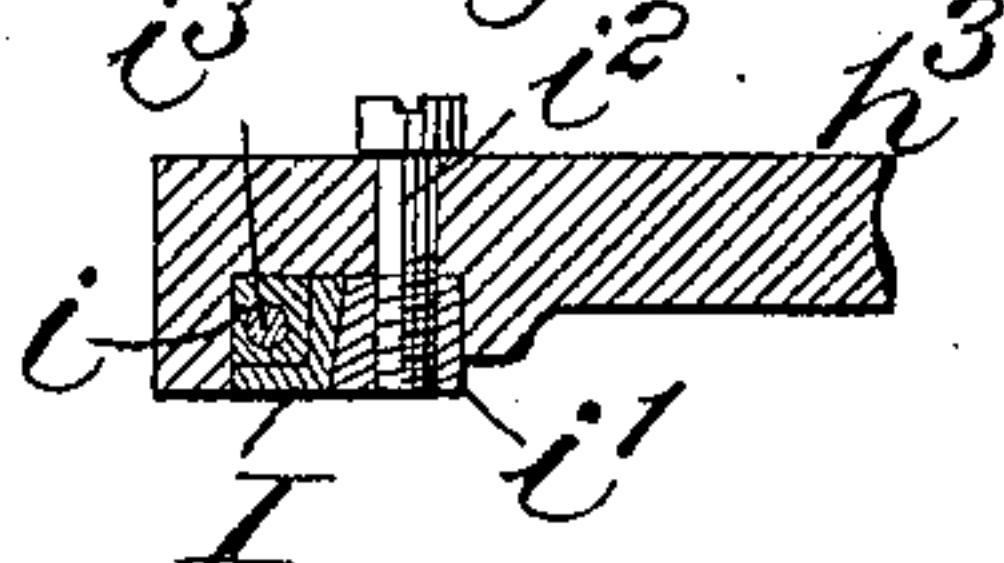


Fig. 7.



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LINE ATTACHMENT FOR BEVELING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 641,469, dated January 16, 1900.

Application filed December 18, 1897. Serial No. 662,388. (No model.)

To all whom it may concern:

Be it known that I, VERNON ROYLE, of Paterson, in the county of Passaic and State of New Jersey, have invented a new and useful
5 Improvement in Line Attachments for Beveling-Machines, of which the following is a specification.

My invention relates to a line attachment for beveling-machines by means of which provision is made for producing black and white border-lines surrounding half-tone or other engravings the same time the edge of the half-tone or other engraving-plate is beveled.

A practical embodiment of my invention is
15 represented in the accompanying drawings, in which—

Figure 1 is a top plan view of so much of a beveling-machine as is sufficient for illustrating a practical embodiment of my invention.
20 Fig. 2 is a view of the same in front elevation, partly in section, the section being taken along the line 2 2 of Fig. 1. Fig. 3 is a view in detail in side elevation, showing a removable clamp for holding small plates. Fig. 4 is a view in
25 side elevation of the mechanism for plowing, beveling, leveling, and channeling the edge of the plate, the table and clamping mechanism being removed and the line of the table being indicated by a hatch-line, the channeling, burnishing, and leveling tools being out
30 of working position and the furrowing-cutter in working position. Fig. 5 is a similar view showing the channeling, burnishing, and leveling tools in working position and the furrowing-cutter out of position. Fig. 6 is an enlarged view in detail of the channeling and
35 burnishing tools, showing the same in side elevation. Fig. 7 is a view of the same in horizontal section along the line 7 7 of Fig. 6, and Fig. 8 is a view of the said tools in rear elevation.
40

The table on which the plate to be operated upon is clamped and by which it is carried along to the cutters is denoted by A. The
45 clamp for holding the plate in position on the table A is denoted by a and is raised and lowered by means of teeth b on a shaft B, which teeth engage a rack b' on the plate A, the shaft B being operated by a worm b^2 , operated by a hand-wheel b^3 and engaged with a worm-wheel b^4 on the shaft B. When short
50 or small plates are to be held in position, I

utilize a removable clamping-piece, (denoted by a'), which is fitted to be screwed to the under side of the plate A. I have shown a detail view of this in Fig. 3 and indicated it in
55 Figs. 1 and 2. When larger or longer plates are to be operated upon, this auxiliary clamping piece a' may be removed by loosening the screw a^2 .
60

The beveling-cutters are fixed in a rotary cutter-head C, mounted in a suitable supporting-frame D and driven by a pulley d for receiving a drive-belt of any well-known or approved form (not shown) and leading to a
65 suitable source of power.

A short distance toward the front of the machine from the cutter-head C a rocking cutter-support E is located and provided at its end toward the table A with heads $e e'$, the one, e ,
70 being located on the rear side of the end of the support E, the latter, e' , being located at the front side of said end. The heads $e e'$ are provided with suitable mechanism for clamping therein cutters, as follows: In the head e
75 there is clamped a furrow-cutter e^2 for plowing a furrow at the edge of the plate to be beveled as the plate is advanced to the beveling-cutters. The head e' is provided with a leveling-cutter e^3 for cutting the bur formed by
80 the furrow-cutter e^2 smoothly from the ridge between the furrow formed by the cutter e^2 and the path of the beveling-cutters, the said cutter e^3 being arranged to perform its work during the return movement of the plate,
85 as will be hereinafter more particularly described.

The support E is mounted on the projecting end of a spindle F, which has a limited longitudinal movement within its bearings D' .
90 The longitudinal adjustment of the spindle F is effected by means of an adjusting-nut f , engaged with a screw-threaded portion f' of the spindle and held against movement lengthwise of the spindle by abutments on the spindle-support D' . Another portion of the spindle-bearing—viz., D^2 —is split and the parts are drawn together by a clamping-screw d' to lock the spindle in the desired longitudinal adjustment. The spindle F is drawn at all
95 times in a direction away from the table A to hold the adjusting-nut f in engagement with its abutments on the bearing D' by means of a spring f^2 , interposed between the end of the
100

bearing D' and a cap f^3 on the end of the spindle.

The rocking support E has a segmental rack e^4 depending therefrom into engagement with a pinion g on a shaft G, mounted in a support D^3 and operated by a hand-lever g' , carrying at its free end a catch g^2 for engaging some one of the perforations in a sector-bar g^3 . The lever g' is held normally in position to hold both of the cutters e^2 e^3 out of engagement with the plate or at the surface line of the plate by means of a spring-finger g^4 , the said finger having sufficient resiliency to bend as the lever g' is rocked in the one direction or the other from its central position. (Shown in Fig. 5.) The rocking support E is further provided with a split bearing H, extending upwardly therefrom, the branches of which are drawn together and released by means of a clamping-screw h . In the bearing H, which is interiorly screw-threaded, there is mounted an exteriorly-screw-threaded sleeve h' , and within the sleeve h' there is mounted a tapered rocking spindle h^2 , carrying at one end an arm h^3 and at the opposite end provided with a retaining-nut h^4 and jam-nut h^5 . The arm h^3 carries at its free end a channeling-cutter I, a heel-piece which serves as a guide and burnisher, (denoted by i), and a wedge-block i' for holding the cutter and combined heel-piece and burnisher in their position in the end of the arm. The wedge-piece i' is drawn into holding position by set-screws i^2 , and the combined heel-piece and burnisher i is adjusted longitudinally relative to the cutter I by means of an adjusting-screw i^3 , having a screw-threaded engagement with the piece i and having the under side of its head engaged with the end of the shank of the tool I.

The arm h^3 , with the tools fixed therein, may be swung out of and into operative engagement, as shown in Figs. 4 and 5, by the rotary movement of its spindle h^2 within the sleeve h' . The said arm h^3 may be bodily adjusted transversely of the line of feed by loosening the clamping-screw h and then turning the sleeve h' one or more turns or fractional part or parts of a turn and then again tightening the screw h to hold the sleeve and the arm h^3 , carried thereby, in the new adjustment.

The gage for determining the line of cut relatively to the beveling mechanism is denoted by K and is pivoted to bearings k k' to swing into and out of position on the edge of the plate when resting on the table adjacent to the several cutters.

The channeling-tool being thrown out of operative position, as shown in Fig. 4, and the lever g' rocked forwardly into the position shown in Fig. 4, thereby throwing the furrow-cutter e^2 into operative position, as shown in said Fig. 4, the plate clamped to the table may be pushed rearwardly from the operator, and during its rearward movement will have by the action of the cutter e^2 a furrow plowed near its edge and its edge beveled

by the beveling-cutters. In this movement of the plate the adjustment is such that the furrow formed by the cutter e^2 will mark the line along which the beveling-cutter is to operate, and the bur formed by the furrow-cutter will occupy a position adjacent to the beveled edge. After the plate has passed the beveling-cutters on its rearward movement the lever g' is swung back to its central point, (shown in Fig. 5,) thereby rocking the support E, so as to bring the leveling-cutter e^3 down to a position at or near the surface of the plate, and this cutter e^3 , being in the path of the bur formed by the furrow-cutter, will as the plate is returned toward the front shave a part or the whole of the bur cleanly off, leaving the margin of the plate adjacent to the beveled edge level and smooth. At the same time the arm h^3 , being thrown into operative position, as shown in Fig. 5, and pressed upon by the hand of the operator, will perform its work as follows: The heel-rest and burnisher i is intended to rest on the margin of the plate adjacent to the beveled edge and by its contact with said margin limit the depth to which the point of the cutter I shall enter the plate. This cutter I is a channeling-cutter and is intended to form a clean-cut channel in the face of the plate and spaced from the beveled edge in order that there may be, when the printing-plate is put in use, a well-defined white line formed between the body of the plate and the marginal black line formed by the portion of the plate between the channel and the beveled edge.

The movement of the heel-rest i along the marginal space will tend to burnish it and smooth any portion which the shaving and leveling cutter e^3 may have left, thereby insuring a highly-perfected printing-margin at the edge of the plate.

The time required for shifting the lever g' and throwing the arm h^3 into and out of operative adjustment is so slight that there is no need of any delay in starting the plate on its return movement the moment it has passed the beveling-cutters, as the operator may readily be returning the plate with one hand while adjusting the lever g' and the arm h^3 with the other hand.

It is obvious that changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein shown and described; but

What I claim is—

1. The combination with cutters arranged to operate upon the plate at its edge, a gage for determining the path of said cutters and means for supporting the plate during its movement back and forth in proximity to said cutters of a channeling-cutter mounted to move toward and away from the face of the plate at or near its margin and means arranged to coact with the channeling-cutter and adapted to rest upon the surface of the plate at or

near its margin to determine the depth of cut whereby the cut formed by the channeling-cutter may be a predetermined depth whether the margin of the plate be raised above or on a level with the central portion, substantially as set forth.

2. The combination with a furrow-cutter, means for leveling the bur formed by the furrow-cutter and means for feeding the plate, of a channeling-cutter arranged to travel along the margin of the furrow and an adjustable heel arranged to act in conjunction with the channeling-cutter to regulate the depth of cut, substantially as set forth.

3. The combination with a furrow-cutter and a beveling-cutter arranged to engage a plate and means for feeding the plate to the cutters, of a shaving-cutter for operating upon the bur raised by the furrow-cutter, a channeling-cutter arranged to travel along the margin of the furrow and an adjustable heel arranged to travel along the path of the shaving-cutter to regulate the depth of cut of the channeling-cutter, substantially as set forth.

4. The combination with a furrow-cutter and suitable means for feeding a plate to the cutter, of a beveling-cutter, a heel-piece in proximity to the channeling-cutter, an adjusting-screw for adjusting the heel-piece relatively to the cutter and means for throwing the heel-piece and channeling-cutter into and

out of engagement with the plate at pleasure, substantially as set forth.

5. The combination with the furrow-cutter and means for feeding the plate thereto, of the channeling-cutter arranged to follow the margin of the furrow and a swinging arm forming a support for the channeling-cutter, substantially as set forth.

6. The combination with the furrow-cutter, the shaving-cutter, their rocking support and means for feeding the plate into position to be operated upon by the cutters, of a channeling-cutter and a swinging arm forming a support for the channeling-cutter, the said swinging arm being supported in position to swing the channeling-cutter into and out of position at the margin of the furrow, substantially as set forth.

7. The combination with the beveling-cutters and the channeling-cutter, of a feed-table, a clamping-plate, means for adjusting the clamp-plate toward and from the table, an auxiliary clamping-piece and means for adjusting it to and removing it from the clamp-plate to accommodate plates of widely-different dimensions, substantially as set forth.

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Witnesses:

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