

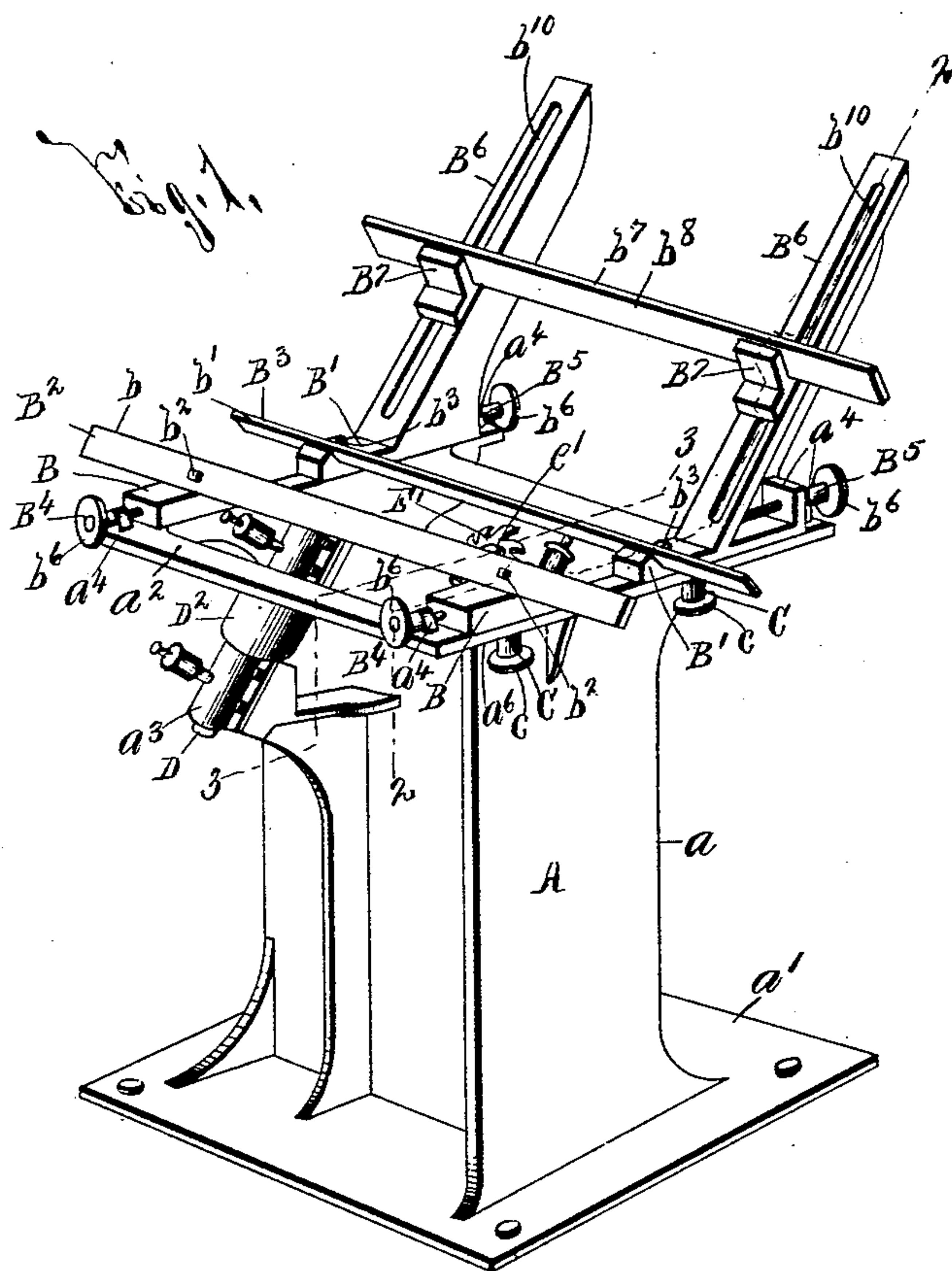
(No Model.)

3 Sheets—Sheet 1.

H. W. MORGAN.
BOX TRIMMING MACHINE.

No. 541,376.

Patented June 18, 1895.



WITNESSES:

H. C. Chase
C. Schoenbeck

INVENTOR

Henry W. Morgan
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ATTORNEYS.

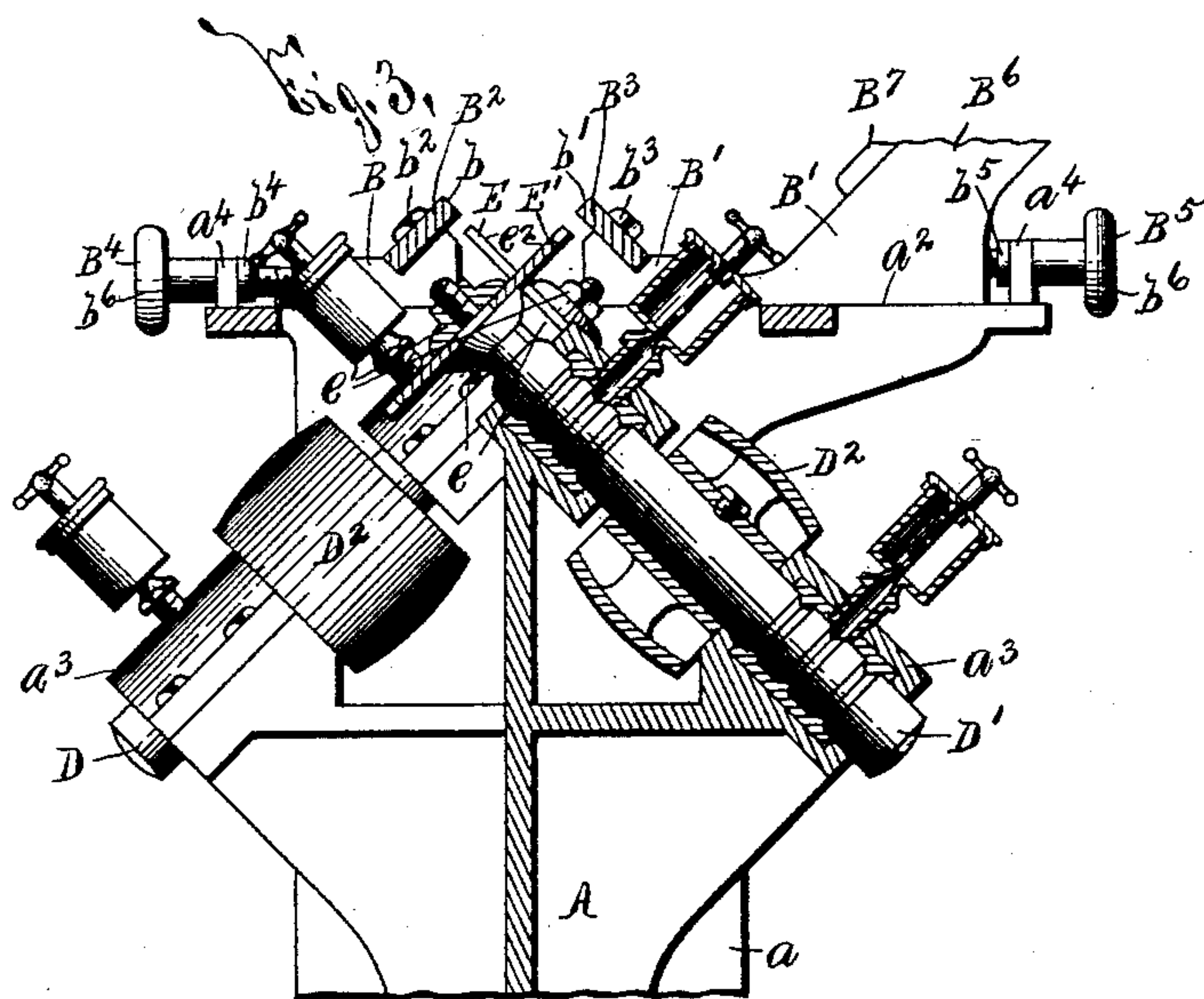
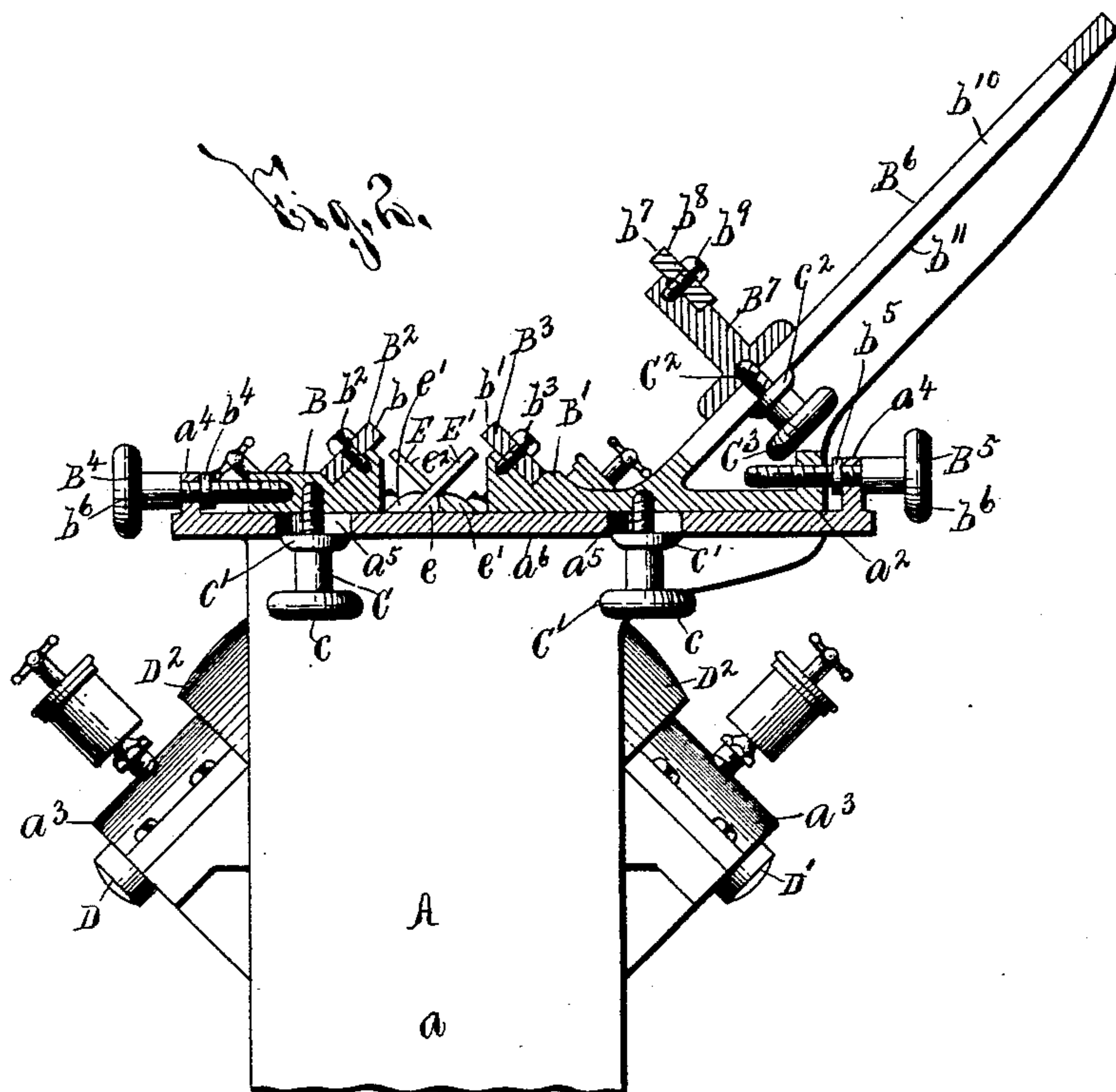
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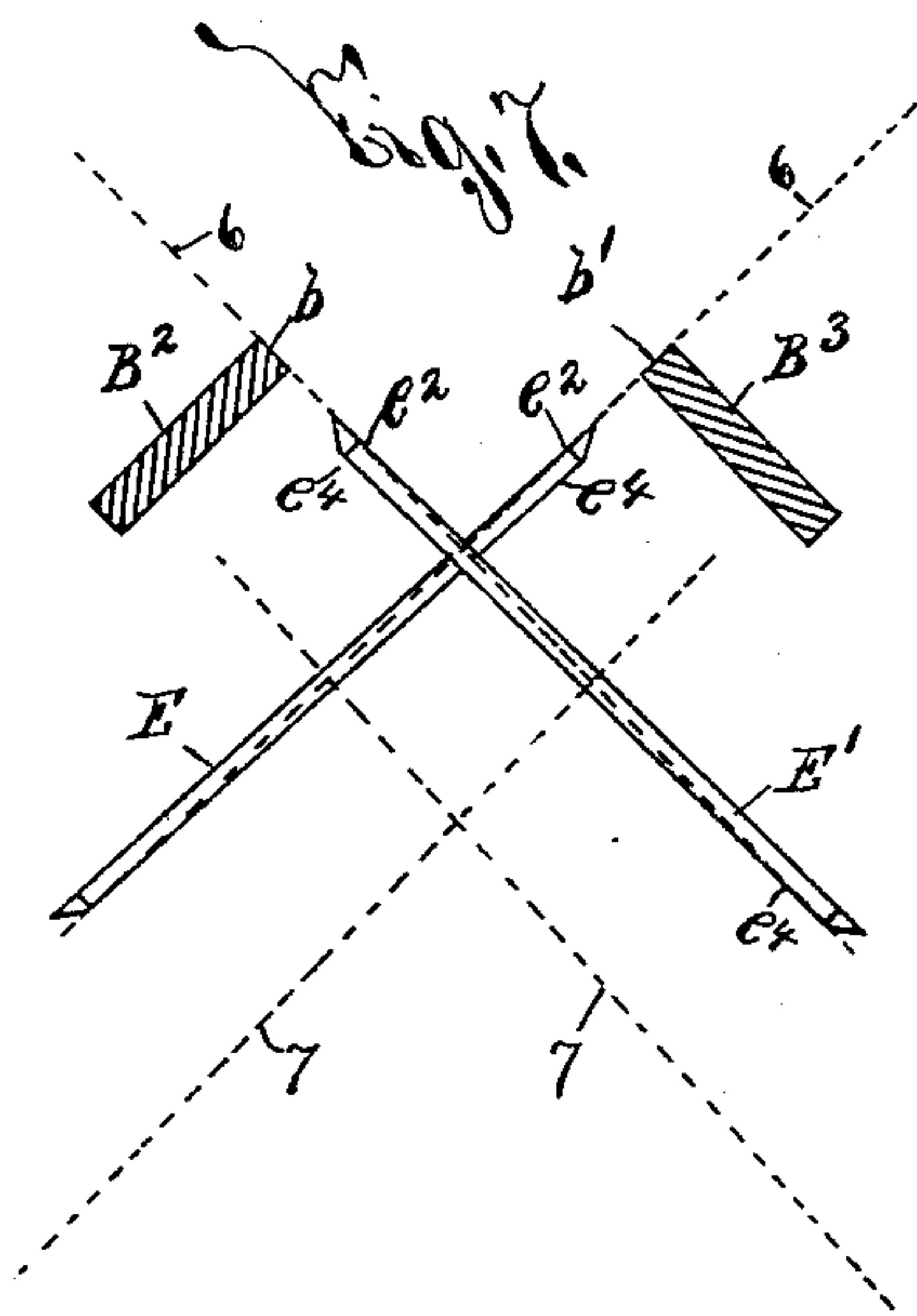
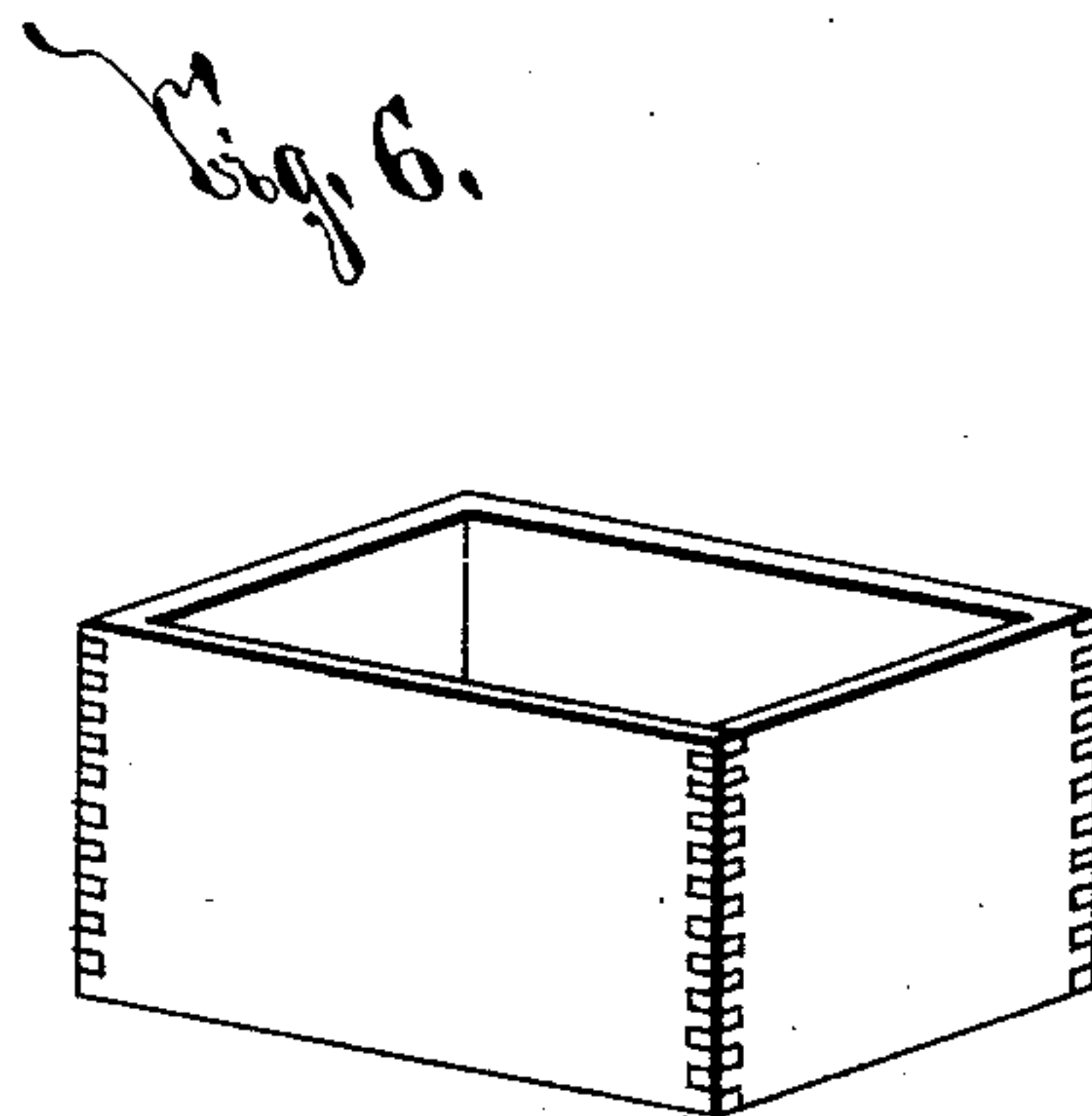
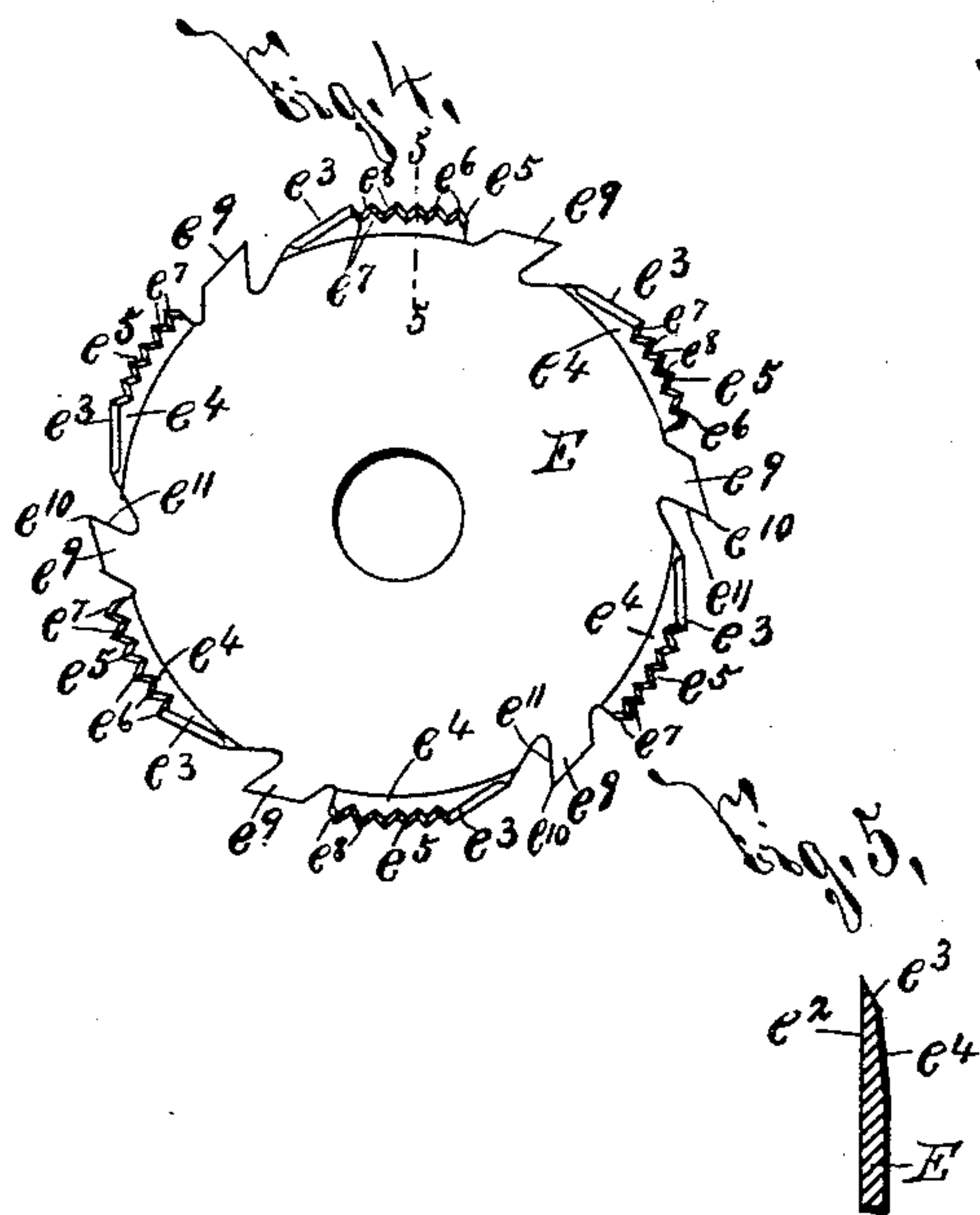
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UNITED STATES PATENT OFFICE.

HENRY W. MORGAN, OF ROCHESTER, NEW YORK.

BOX-TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,376, dated June 18, 1895.

Application filed April 4, 1894. Serial No. 506,277. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. MORGAN, of Rochester, in the county of Monroe, in the State of New York, have invented new and useful
5 Improvements in Box-Trimming Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in
10 machines for trimming boxes and similar articles, and has for its object the production of a practical, durable, and effective device, particularly applicable for trimming the sides of the edges or corners of boxes or similar ar-
15 ticles having the adjacent ends of their sides glued together and provided with interlocking tongues and grooves; and to this end it consists in the detail construction and arrangement of the parts, all as hereinafter
20 more particularly described and pointed out in the claims.

In describing this invention, reference is had to the accompanying drawings, forming a part of this specification, in which like let-
25 ters indicate corresponding parts in all the views.

Figure 1 is an isometric perspective of my improved trimming-machine, illustrating the general construction and arrangement of its
30 parts. Fig. 2 is a transverse vertical sectional view taken on line 2 2, Fig. 1. Fig. 3 is a transverse vertical sectional view taken on line 3 3, Fig. 1, a portion of the projecting arm of one of the movable supports on the frame being broken away. Fig. 4 is a face
35 view of one of the detached cutters. Fig. 5 is a detail sectional view taken on line 5 5, Fig. 4. Fig. 6 is an isometric perspective of a box which my machine is particularly designed to trim; and Fig. 7 is a detail sectional view of
40 a portion of the bearing-faces for engaging the box, a portion of a box shown as operatively engaged thereby, and the rotary cutters for trimming the opposite sides of the
45 edge or corner of the box, lines being drawn in the transverse planes of the bearing-faces and through the axes of the cutters for clearly indicating that the cutters are arranged at an angle with said bearing-faces and are arranged
50 at an angle with each other greater than a right angle.

In my Patent No. 517,705, dated April 3,

1894, I have set forth a machine for grooving box shooks, and in my Patent No. 496,431, of May 2, 1893, I have described and claimed a
55 machine for pressing together the corresponding end of the shooks after the adjacent faces of their tongues or tenons and grooves have been coated with glue or other cement. Boxes of this construction, although highly durable
60 and efficient, do not present as pleasing an appearance as is desirable, and are not readily stacked or arranged in piles, or provided with labels, stencil work, &c., owing to the unevenness of the adjacent sides of their edges or
65 corners composed of the interlocking tongues or tenons and grooves of the box shooks, and the presence of a greater or less amount of glue upon said edges or corners. I have, therefore, sought to produce a machine, which
70 would practically and effectively trim the opposite sides of the box edges or corners, and thereby add greatly to the attractive and pleasing appearance of the boxes and permit
75 them to be more readily stacked or arranged in piles and provided with labels, stencil work, &c. Considerable difficulty has, however, been experienced in producing this machine, as the glue tends greatly to clog a cutting or
80 trimming device, and destroys its edge, thus necessitating frequent sharpening thereof and tending to detract more or less from the efficiency of the machine.

In my present machine the box or other article to be trimmed is so supported that the
85 opposite sides of an edge or corner thereof are simultaneously subjected to the action of the trimming device, and said trimming device consists of rotary cutters of peculiar construction having their faces adjacent to the
90 sides of the box preferably arranged at an angle therewith, so that the trimmed portions of the sides incline from the untrimmed portions thereof.

My invention is also capable of ready ad-
95 justment to any size of box, and does not require any adjustment of its rotary cutters when boxes of different sizes are used.

The frame A of my trimming machine may be of any desirable form, size, and construc-
100 tion, and is here shown as consisting of an upright or standard α having one end α' adapted to be mounted upon a suitable floor or other support and its other end provided with a

flat supporting face a^2 having its central portion cut away or removed, and opposite journal bearings $a^3 a^3$ arranged one in advance of the other at an angle with each other and preferably at an angle slightly greater than a right angle.

Opposite supports B B' are mounted upon the face a^2 , and are provided with opposite bearing faces $b b'$ for engaging the opposite sides of the box or other article to be trimmed, as clearly seen at Fig. 2. The faces $b b'$ are arranged at an angle with each other, as clearly seen at Figs. 1, 2, 3, and 7, and are preferably formed upon rails $B^2 B^3$ removably secured to the supports B B' by screws $b^2 b^3$ or other suitable fastening means.

The supports B B' are preferably adjustable toward and away from each other for permitting corresponding adjustment of the faces $b b'$, and, as clearly seen at Fig. 1, opposite ends of the longitudinal sides of the face a^2 are provided with upwardly projecting ears $a^4 a^4$ in which are mounted suitable adjusters, here shown as revolving screws $B^4 B^5$ having their inner ends engaged with threaded sockets in the supports B B'. The screws $B^4 B^5$ are provided with separated shoulders $b^4 b^5$ arranged on opposite sides of the ears a^4 for preventing lengthwise movement thereof, and are also provided with hand pieces b^6 . It is, therefore, apparent that, as the screws $B^4 B^5$ are revolved, the supports B B' are moved toward and away from each other.

Suitable clamps, here shown as screws C C', operate to secure the supports B B' in their adjusted position, and it is evident that these clamps may be suitably constructed. I have here illustrated the opposite ends of each side of the face a^2 as provided with slots a^5 , and the screws C C' as formed with threaded ends passed through said slots and engaged with threaded sockets in the lower faces of the supports B B'. The opposite ends of the screws C C' are formed with hand engaging portions c , and their intermediate portions with shoulders c' bearing against an under face a^6 of the upper extremity of the frame A.

One of the supports, as B', is provided with an upwardly projecting arm or arms B^6 , and movable lengthwise thereof is a supplemental support B^7 provided with a bearing face b^7 aligned with the face b' of the support B'. The bearing face b^7 is preferably formed upon a strip b^8 removably secured to the supplemental support B^7 by screws or other clamps b^9 , and the supplemental support B^7 is held in its adjusted position by clamps consisting of screws C^2 of substantially the same construction as the screws C C' previously described.

Each arm B^6 is provided with a lengthwise slot b^{10} and the threaded end of the corresponding screw C^2 is passed through said slot and engaged with a threaded socket in the adjacent face of the supplemental support B^7 . The intermediate portion of the screw C^2 is

provided with a shoulder c^2 bearing against a face b^{11} of the arm B^6 and the outer end of said screw is provided with a hand engaging piece C^3 . I have here shown the support B' as provided with two arms B^6 , but it is evident that a single arm may be used, and that, if desired, this arm may be suitably bifurcated. It is also evident that the supplemental support B^7 may be dispensed with, although it firmly supports the outer edge of the side of the box engaged with the face b' , and enables the operator to hold the box or other article being trimmed with much greater rigidity than would otherwise be possible.

The journal bearings $a^3 a^3$, previously mentioned, are preferably arranged at an angle with each other greater than a right angle, and shafts D D' journaled therein, are consequently similarly arranged. The adjacent ends of the shafts D D' are crossed and are provided with rotary cutters E E', which preferably consist of revolving saws. Each shaft D D' is supported by two journal bearings a^3 arranged one above the other and having their adjacent faces separated, and the intermediate portion of each shaft is provided with a pulley or other power transmitting wheel D^2 for revolving the same. The adjacent ends of the shafts D D' project beyond the upper bearings $a^3 a^3$, and are provided with stationary shoulders e and adjustable shoulders e' between which the cutters E E' are clamped.

As previously stated, the bearing faces $b b'$ are arranged at substantially right angles with each other, as indicated by lines 6—6, Fig. 7, and the shafts D D' and consequently the axes of the cutters E E', indicated by lines 7—7, Fig. 7, are arranged at an angle with each other slightly greater than a right angle, and the trimmed portions of the sides of the boxes or other articles inclined slightly from the untrimmed portions thereof.

The upper faces e^2 of the cutters E E' adjacent to the side of the box being trimmed, as clearly seen at Fig. 7, are, therefore, preferably arranged at a slight angle with the faces $b b'$, and are here illustrated as formed flat.

The edges or peripheral faces of the cutters E E' are provided with suitable cutting edges for engaging and trimming the adjacent portions of the sides of the boxes or other articles to be trimmed. As preferably constructed these edges or peripheral faces are formed with major cutting teeth e^3 having their lower faces e^4 inclined from the base of the teeth toward the free extremities thereof, and their edges or extremities provided with minor cutting teeth e^5 having their cutting edges e^6 and opposite faces $e^7 e^8$ inclined downwardly from the bearing or upper faces e^2 of the teeth toward the axis of the cutter. The cutters E E' are also provided with additional major teeth e^9 having their cutting edges e^{10} and their front faces e^{11} formed of substantially the same width as the base of the teeth e^3 . This form of cutter is particularly appli-

cable for use with my improved trimming machine, but it is evident that other forms of cutters may be used if desired.

In the operation of my machine the edge or corner of the box to be trimmed is inserted between the bearing faces $b\ b'$, and is quickly moved along said bearing faces by the operator. As the opposite sides of the edge or corner of the box pass the cutters they are smoothly and effectively trimmed by said cutters, which, as previously stated, are preferably arranged at an angle with the faces $b\ b'$.

In order that only the front edges of the teeth of the rotary cutters may engage the portions of the box to be trimmed, I slightly move the rear adjusters $B^4\ B^5$, so as to force the corresponding ends of the faces $b\ b'$ somewhat nearer together than the opposite ends of said faces, and as the requisite movement of the rear ends of the faces $b\ b'$ is very slight, the adjusters $B^4\ B^5$ have sufficient play in the ears a^4 and the supports $B^2\ B^3$ to permit of this adjustment. The faces $b\ b'$, instead of slightly inclining longitudinally toward each other, may be arranged in substantially parallel lengthwise planes. After one edge or corner of a box or other article is trimmed, as described, its other edges or corners are subjected to the action of the cutters $E\ E'$, and the box then presents an extremely neat and finished appearance, and may be readily stacked or arranged in piles or provided with labels, stencil work, &c.

The operation of my invention will be readily perceived from the foregoing description and upon reference to the drawings, and it will be readily apparent that an operator can readily trim a great number of boxes or other articles by inserting their edges or corners between the faces $b\ b'$, and moving the same lengthwise thereof and across the rapidly revolving cutters.

My trimming machine is evidently simple in construction, and is highly practical and effective in operation. Its cutters are also readily removed when worn, and may be quickly and economically ground and replaced. It is evident, however, that one of the bearing faces for engaging the box or other article being trimmed, the supplemental support B^7 and one of the revolving cutters may be dispensed with; that other means for adjusting said bearing faces and securing the same in their adjusted position may be used; that, if desired, the cutters may be arranged at right angles with each other in planes substantially parallel with those of said bearing faces; and that other constructions of cutters may be used, and the exact detail construction and arrangement of the component parts of my trimming machine be more or less varied.

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

1. In a trimmer, the combination of a frame

having separate bearing faces for engaging the two contiguous sides of a corner of the box or other article to be trimmed, and separate rotary cutters arranged at an approximately right angle with each other, one in advance of the other and having cutting edges on their outer faces for simultaneously trimming adjacent sides of the box, substantially as specified.

2. In a trimmer, the combination with a frame having separate bearing faces for engaging two sides of a corner of the box or other article to be trimmed; of separate shafts arranged at substantially right angles with each other and crossed, and separate cutters mounted on the upper ends of said shafts each with its upper edge beneath the lower edge of the opposite bearing face, substantially as described.

3. In a trimmer, the combination with a frame having two bearing faces arranged oblique to a horizontal for engaging the two contiguous sides of a corner of the box or other article to be trimmed, said faces inclining toward each other from their front to their rear extremities; of separate shafts arranged at substantially right angles with each other and crossed, and separate cutters mounted on the upper ends of said shafts with their upper edges beneath the lower edges of said bearing faces, substantially as described.

4. In a trimmer, the combination with a frame, a pair of supports mounted thereon and adjustable toward and away from each other, and rails adjustably secured to said supports and having bearing faces inclining toward each other for engaging the two contiguous sides of a corner of the box or other article to be trimmed; of separate shafts arranged at substantially right angles with each other and crossed, and separate cutters mounted on the upper ends of said shafts with their upper edges beneath the lower edges of said bearing faces, substantially as described.

5. In a trimmer, the combination of a frame, two independent supports mounted thereon and having separate bearing faces oblique to a horizontal and arranged at substantially right angles with each other for engaging the two contiguous sides of a corner of the box or other article to be trimmed, means for adjusting the ends of the supports toward and away from each other independently, separate shafts arranged at an angle, one in advance of the other, and separate cutters mounted on the adjacent ends of said shafts, substantially as and for the purpose described.

6. In a trimmer, the combination of a frame, movable supports mounted on the frame and provided with bearing faces oblique to a horizontal for engaging the two contiguous sides of a corner of the box or other article to be trimmed, screws for moving said supports independently toward and away from each other, set screws for holding said supports in their adjusted position, and separate rotary

cutters arranged at an angle with each other, one in advance of the other, substantially as described.

7. In a trimmer, the combination of a frame, 5 supports mounted on the frame and adjustable toward and away from each other and provided with bearing faces oblique to a horizontal for engaging the corner of a box or other article to be trimmed, a supplemental 10 support rising obliquely from one of the former supports and provided with a bearing face aligned with the main bearing face of said support, and separate rotary cutters arranged at an angle with each other, one in ad- 15 vance of the other, substantially as specified.

8. In a trimmer, the combination of a frame, supports mounted on the frame and adjustable toward and away from each other and provided with bearing faces oblique to a hori- 20 zontal for engaging the corner of a box or other article to be trimmed, an arm rising from one of the supports, a supplemental support mounted on the arm and provided with a bearing face aligned with the bearing face 25 of said former support, means for adjusting said supplemental support on its arm and holding it in its adjusted position, and separate rotary cutters arranged at an angle with each other, one in advance of the other, for 30 trimming adjacent sides of the box or other article to be trimmed, substantially as and for the purpose specified.

9. The combination of a frame provided with a supporting face, supports movable rec- 35 tilinearly on said face and provided with bearing faces arranged at an angle with each other for engaging the box or other article to be trimmed, one of said supports being also provided with an upwardly projecting arm, ad- 40 justers for moving said supports toward and away from each other, clamps for holding the

supports in their adjusted position, a supple- mental support movable on said arm and pro- vided with a bearing face aligned with the bearing face of the support provided with the 45 arm, a clamp for securing the supplemental support in its adjusted position, and separate rotary cutters arranged at an angle with each other, one in advance of the other, for trim- 50 ming adjacent sides of the box or other article to be trimmed, substantially as and for the purpose set forth.

10. The combination of a frame provided with a supporting face, supports movable rec- tilinearly on said face and provided with re- 55 movable strips having bearing faces arranged at an angle with each other for engaging the box or other article to be trimmed, one of said supports being also provided with an up- wardly projecting arm, adjusters for moving 60 said supports toward and away from each other, clamps for holding the supports in their adjusted position, a supplemental support movable on said arm and provided with a re- movable strip having a bearing face aligned 65 with the bearing face of the support provided with the arm, a clamp for securing the supplemental support in its adjusted position, and separate rotary cutters arranged at an angle with each other, one in advance of the 70 other for trimming adjacent sides of the box or other article to be trimmed, substantially as and for the purpose described.

In testimony whereof I have hereunto signed my name, in the presence of two attest- 75 ing witnesses, at Rochester, in the county of Monroe, in the State of New York, this 29th day of March, 1894.

HENRY W. MORGAN.

Witnesses:

E. A. WEISBURG,
K. H. THEOBALD.