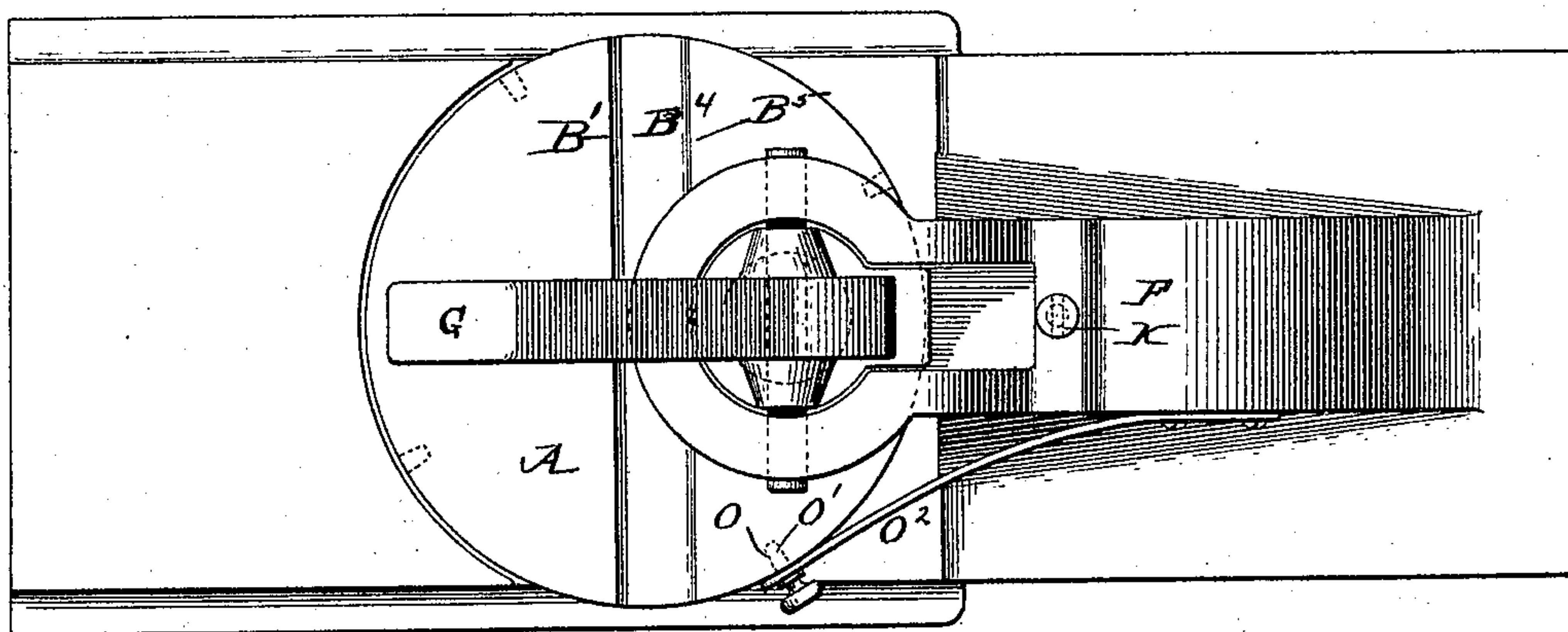


2 Sheets—Sheet 1.

Patented Apr. 20, 1897.

No. 581,245.



**WITNESSES:**

Mr. B. Shepherd.  
Fred C. Ewing

Fig. 2.

John Bowles INVENTOR

BY Clarence L. Buzan

ATTORNEY

(No Model.)

2 Sheets—Sheet 2.

J. BOWLES.  
SAW SET.

No. 581,245.

Patented Apr. 20, 1897.

Fig. 9.

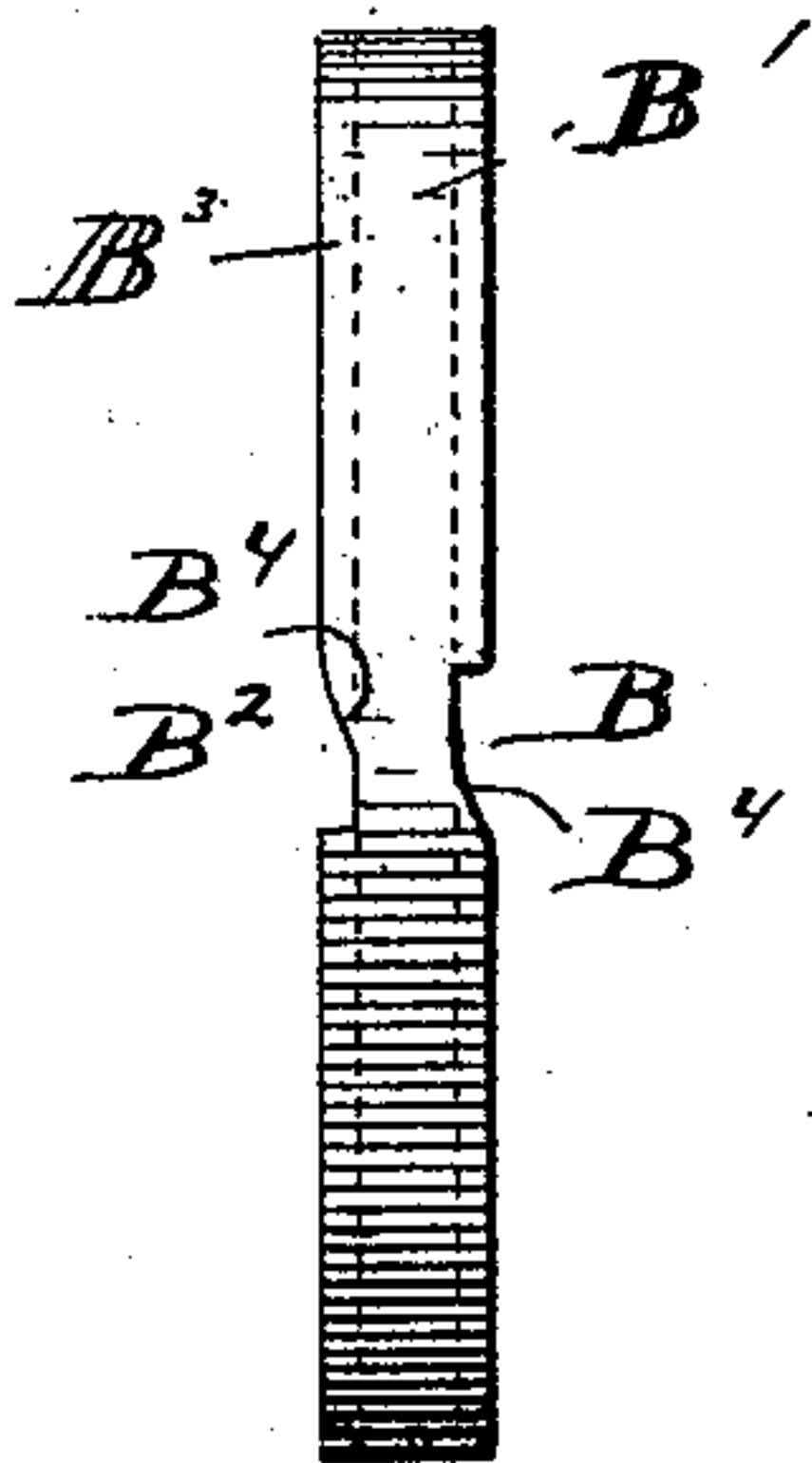


Fig. 8.

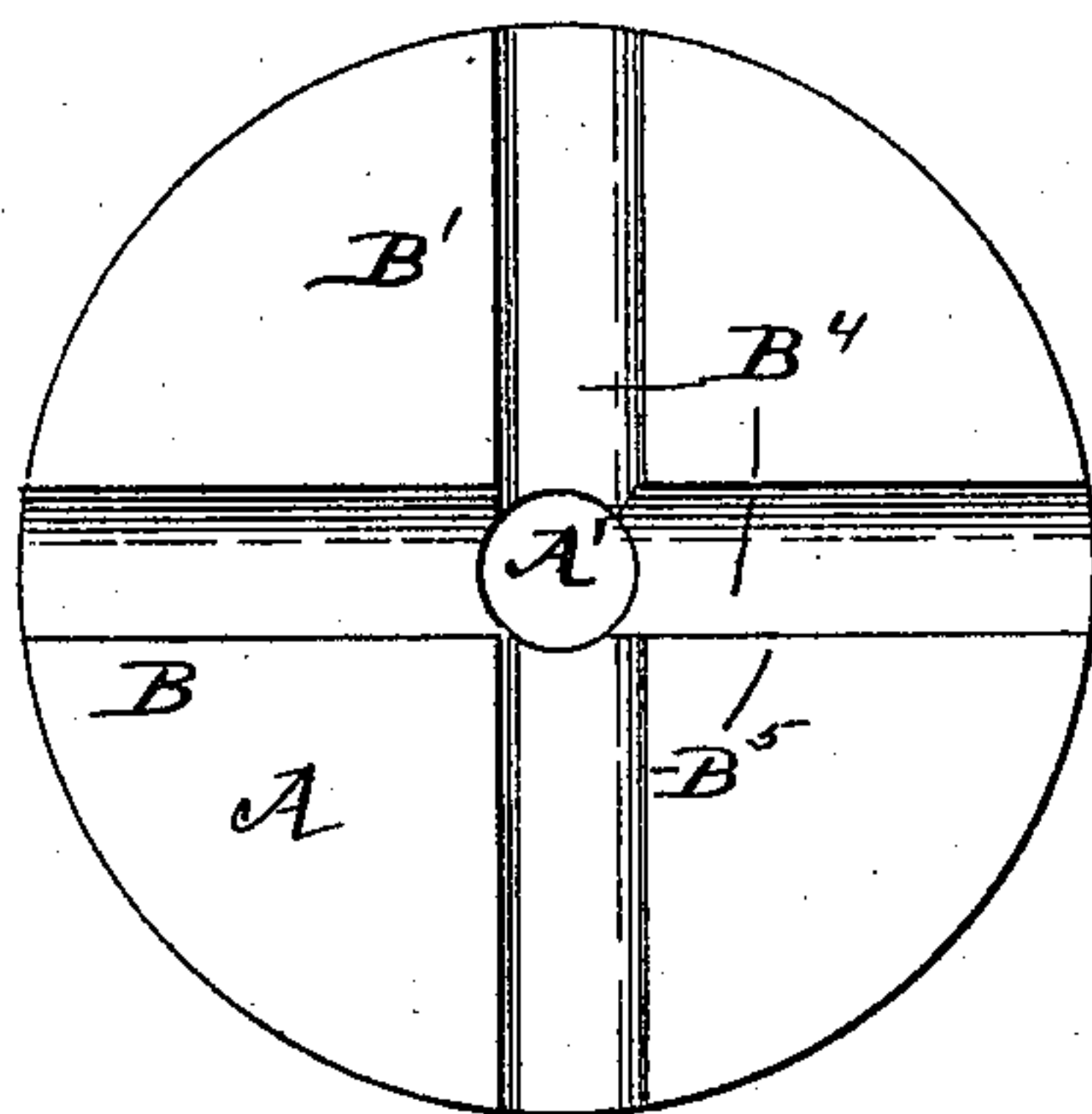


Fig. 6.



Fig. 7.

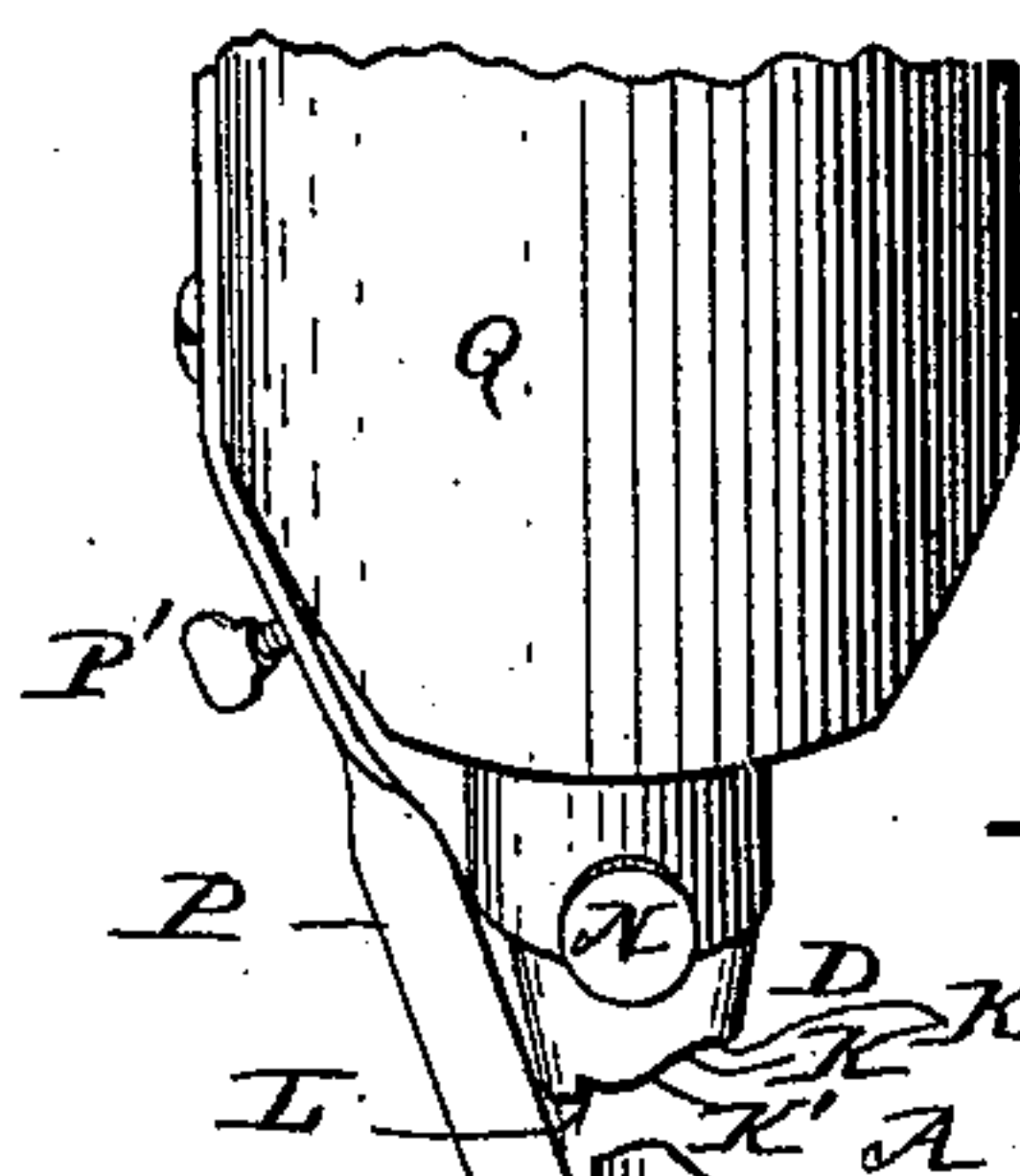


Fig. 4.



Fig. 10.

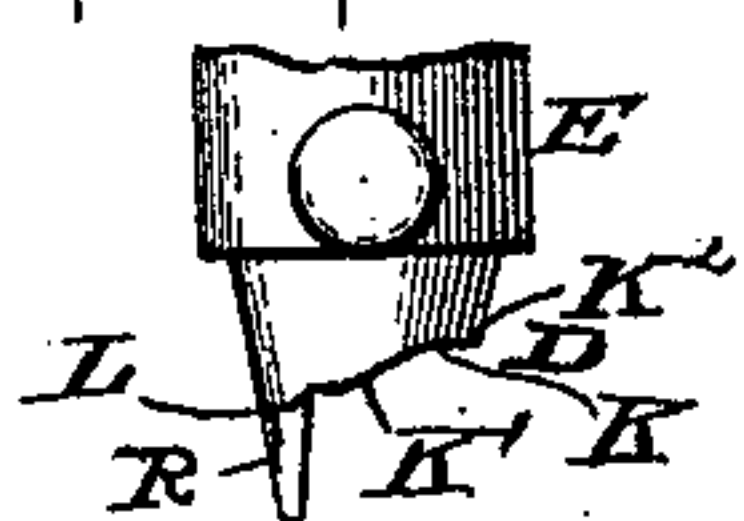


Fig. 11.

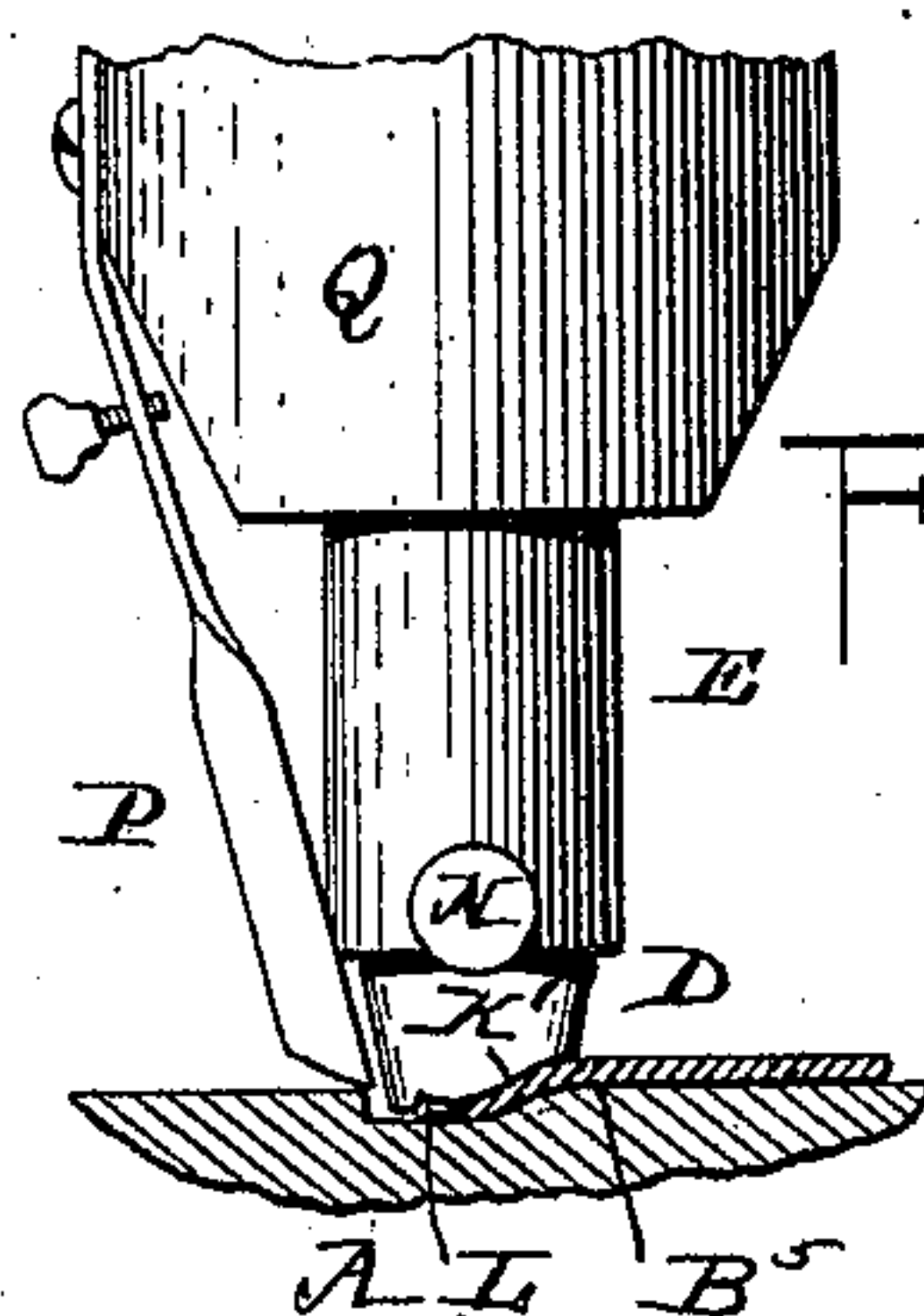
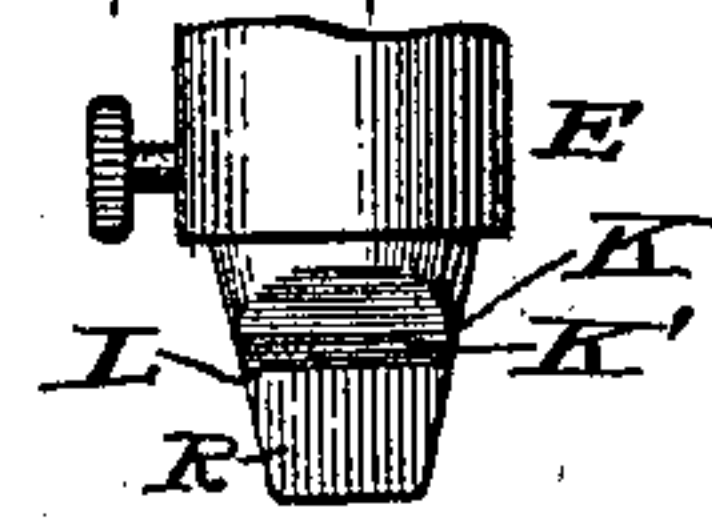


Fig. 5.

John Bowles  
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WITNESSES:  
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# UNITED STATES PATENT OFFICE.

JOHN BOWLES, OF NEW YORK, N. Y.

## SAW-SET.

SPECIFICATION forming part of Letters Patent No. 581,245, dated April 20, 1897.

Application filed February 26, 1895. Serial No. 539,942. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN BOWLES, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Saw-Sets; and I do hereby declare that the following is a full, clear, and exact description of the same.

The special object of my invention is to provide a simple and serviceable saw-set for setting the teeth of self-planing saws, such as exemplified in Letters Patent No. 445,239, issued to me January 27, 1891, and Letters Patent No. 503,552, issued August 15, 1893, wherein the forward edges of the saw-teeth are beveled or sharpened and set laterally beyond the plane of the saw, so as to plane the cut surfaces of the wood in the process of sawing.

To this end I have devised a saw-set combining various novel features of construction and arrangement; and in order that my invention may be clearly ascertained I shall first describe in detail the mode in which I practice my invention, and then point out its various features in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which the same parts are designated by like letters in all the figures.

Figure 1 is a side elevation, partly in section, of a saw-set embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 represents a part of the same in front elevation preparatory to setting a saw-tooth. Fig. 4 is a perspective view corresponding to Fig. 3. Fig. 5 is a view similar to Fig. 3, but showing the tooth set. Fig. 6 is an edge view of a self-planing saw having its teeth thus set. Fig. 7 is a cross-sectional view of part of the said saw. Figs. 8 and 9 are plan and edge views, respectively, of the female die of the said saw-set. Figs. 10 and 11 show a modification.

The form of my improved saw-set thus illustrated is particularly designed for setting the teeth of a self-planing saw the planing edges of which are straight and extend the full length of the tooth, as shown in Figs. 1, 6, and 7, but my invention is adapted also to teeth having curved or partial planing

edges, as illustrated in my prior patents, Nos. 445,239 and 503,552, aforesaid.

In the present instance I have formed the female die of the saw-set with, by preference, two diametrically-crossed grooves  $B B'$  and  $B^2 B^3$  on the upper and lower faces, respectively, each groove having an inclined side  $B^4$ ; and the inclined sides  $B^4$  of the two grooves on each face sloping in opposite directions, and the upper and lower grooves  $B B^2 B' B^3$ , respectively, being placed opposite each other, their inclined sides sloping in opposite directions, all as shown.

I make the reversible female die A by preference in the form of a circular plate, and form it with a central aperture  $A'$  to receive a vertical pivot fixed on the bed C of the saw-set, so that the female die can be turned on said pivot or reversed thereupon to bring either of the die-grooves  $B B' B^2 B^3$  into correspondence with the male die D.

I fix the male die D by preference on a die-holder E, mounted to slide vertically without turning in a rigid frame F and arranged to be depressed by a cam-lever G and elevated by a spring H after a substantially common fashion, and I provide for the adjustment of the downward throw of the male die D by means of a set-screw  $K^4$ , arranged as an adjustable stop on the frame to limit the downward throw of the cam-lever G.

I form the male die D with a transverse groove K, having an inclined side  $K'$  to register and cooperate with the inclined side  $B^4$  of the radial end of either of the female-die grooves  $B B' B^2 B^3$ , and with a transverse shoulder  $K^2$  parallel with the groove  $K'$  to register and cooperate with the shoulder  $B^5$  at the upper edge of each inclined side  $B^4$ . I also by preference form the male die D with a lesser groove L, for a purpose hereinafter described, and I form the die D with a squared shank M, as indicated in dotted lines in Fig. 1, to enter a socket  $M'$ , formed in the die-holder E, and arrange in the die-holder E a set-screw N to enter either of the holes  $N'$  in opposite sides of the shank, so that the die D can be reversed in the holder E to register with either of the reversely-inclined grooves in the female die A.

For locking the female die A in position



with either of its top or bottom grooves in position to cooperate with the male die I prefer to form bolt-holes O in the circular edge of the female die, corresponding with the grooves therein, as shown, to receive a bolt O', mounted on a fixed spring O<sup>2</sup>.

In using this form of my saw-set the male and one of the corresponding female dies are placed in correspondence, as shown in Fig. 4, and the saw-teeth, the edges of alternate ones of which are previously beveled or sharpened on the side opposite to that to which they are to be set, are fed between the male and female dies, the first tooth to be set being placed with its beveled planing edge projecting beyond the shoulder B<sup>5</sup> of the female die and so that its edge will lie directly beneath and parallel with the lesser groove L in the male die D. To stop the tooth exactly in the right position for setting, as described, I may provide a spring-gage P, as shown, secured to and depending from the fixed die-holder guide Q to a position beneath the male die D when elevated, so that it will properly stop the edge of the tooth, as shown, and yet will be forced outward laterally by and out of the way of the descending die D, acting as a cam. I provide for adjusting the gage P by means of a set-screw P' therein working against the die-holder guide Q. The groove L has one side running downwardly at a slight divergence from the vertical, as indicated in Fig. 1 and less clearly in Figs. 3 and 5. This incline or bevel is shown more distinctly in Figs. 10 and 11, in which that portion of the male die beyond the groove L which does not operate to set the saw-teeth is shown extended downward to a greater degree than in Figs. 1 and 3, so as to form a depending beveled finger R. When the male die descends, the beveled side of the finger will come in contact with the edge of the saw-tooth if the latter is out of place, and by reason of the bevel on both the finger and the tooth the latter will be forced back until it registers exactly with the dies.

The male die being depressed, as shown in Fig. 1, the beveled planing edge of the tooth will be set by and between the inclined sides K' and B<sup>4</sup> of the male and female dies, and the lesser groove L in the male die will clear and thus protect the sharpened edge.

Alternate teeth being set on the same side can thus all be set without reversing the dies, and then the intervening teeth set by reversing the saw and the dies, as described, the female die A being unbolted and turned on its pivot until its succeeding groove is in position, when it will be automatically locked by the spring-actuated bolt described. By thus employing a number of grooves in the female die its durability is prolonged, as its constant shifting will bring its various grooves into play successively.

In some cases I make the inclined side of the groove in the male die inclined longitudinally to the horizontal plane, so that the outer part of the planing edge of each tooth will be set outward slightly more than the inner part, and thus marking or grooving of the planed surfaces will be prevented.

I claim—

1. In a saw-set, the combination with a female die having a transverse groove formed with an inclined side, and a bottom parallel with the face of the die on which the saw is supported, of a male die having an inclined face to fit the corresponding side of the female-die groove and a groove L adjacent to the inclined face, substantially as described.

2. In a saw-set, the combination with a female die having a transverse groove formed with an inclined side and a bottom parallel with the face of the die on which the saw is supported, of a male die having an inclined face to fit the corresponding side of the female-die groove, and a groove L adjacent to said inclined face, and a stop to bring the edge of the saw-tooth in line with said groove L, substantially as described.

3. The combination, with the frame of the saw-set, and the female die pivoted thereon, having a plurality of radiating grooves with inclined sides and formed with corresponding bolt-holes, of the male die having an inclined groove to engage either of said female-die grooves, and a pin to engage either of said bolt-holes and secure the corresponding female-die groove in register with the male-die groove.

4. The combination with the female die formed with a plurality of grooves having their sides inclined in opposite directions, of a male-die holder, a male die having an inclined face to engage either of said female-die grooves, and means for reversing and locking said male die in the die-holder to suit either of the oppositely-inclined female-die grooves.

5. In a saw-set, a male die having a depending finger provided with a beveled side adapted to come in contact with the edge of the saw-tooth when the die descends, and operate to force the saw-tooth into proper position to be acted upon by the face of the die, substantially as described.

6. In a saw-set, a pair of dies having inclined faces to bend the saw-tooth away from the plane of the saw, and other faces adapted to bend back the edge of the saw-tooth to a position parallel with said plane, substantially as described.

In testimony whereof I have hereunto set my hand this 7th day of April, 1894.

JOHN BOWLES.

In presence of—

CLARENCE L. BURGER,  
FRED C. EWING.