

No. 706,135.

Patented Aug. 5, 1902.

J. WAGNER.

MEANS FOR SHAPING AND SHARPENING DRILL BITS.

(Application filed Sept. 26, 1901.)

(No Model.)

2 Sheets—Sheet 1.

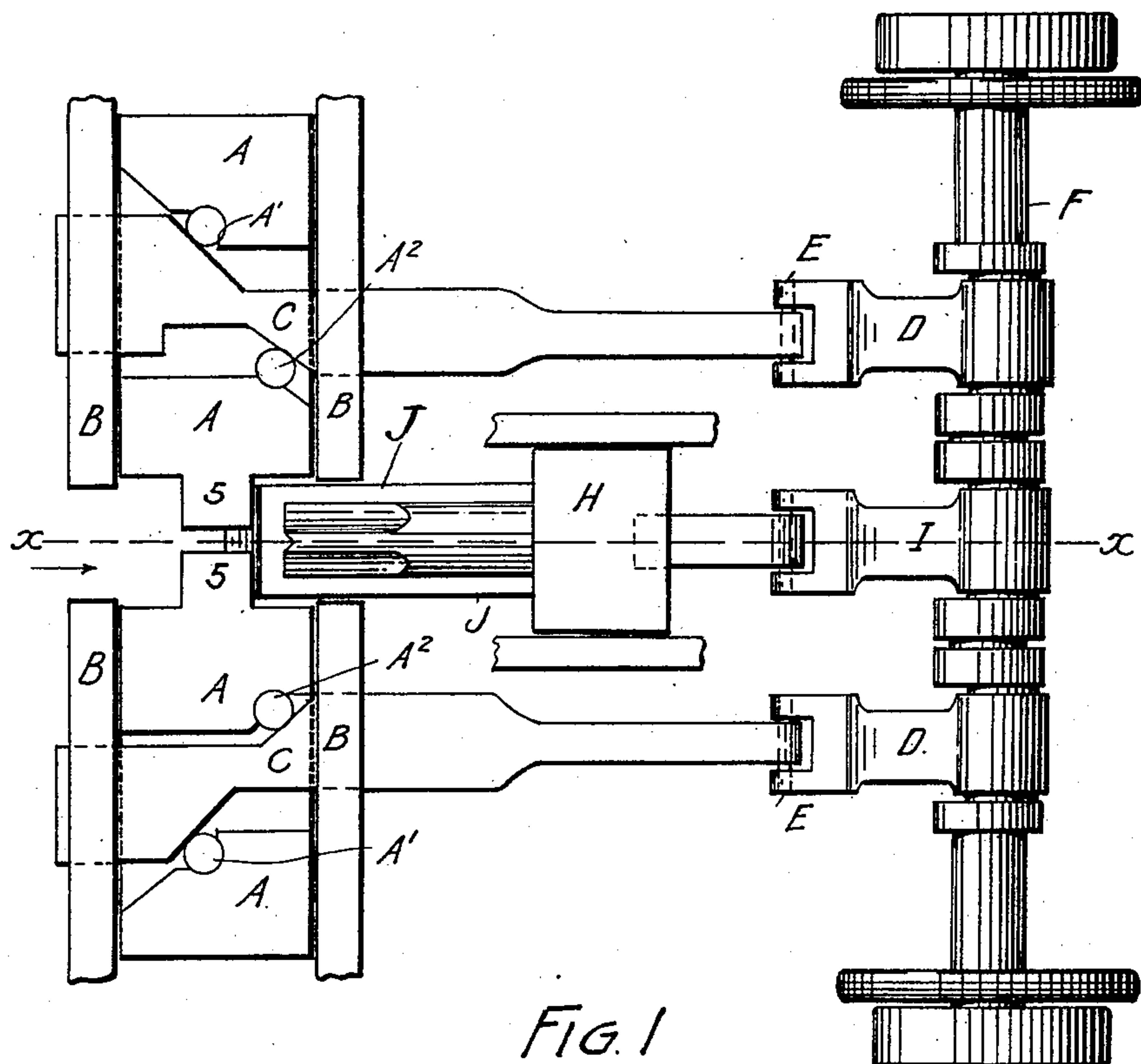


FIG. 1

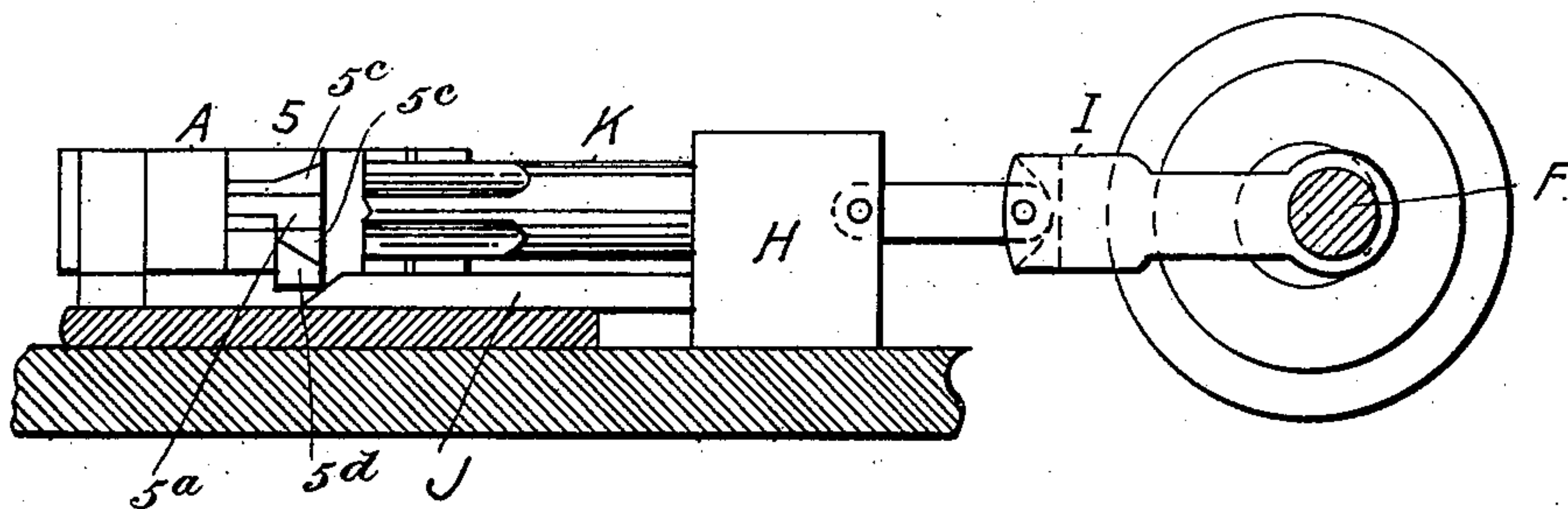


FIG. 2

WITNESSES:

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MEANS FOR SHAPING AND SHARPENING DRILL BITS.

(Application filed Sept. 28, 1901.)

(No Model.)

2 Sheets—Sheet 2.

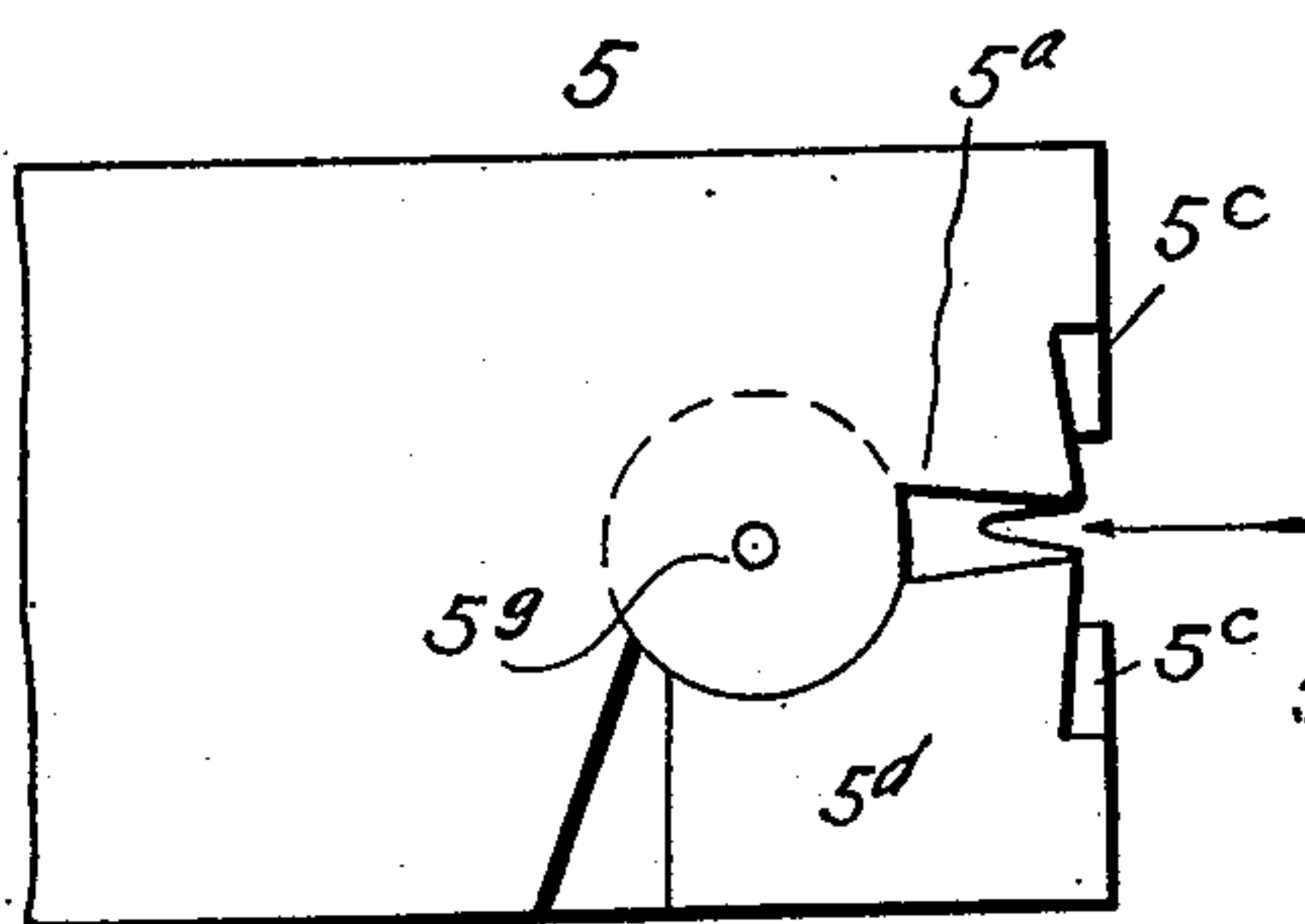


FIG. 3.

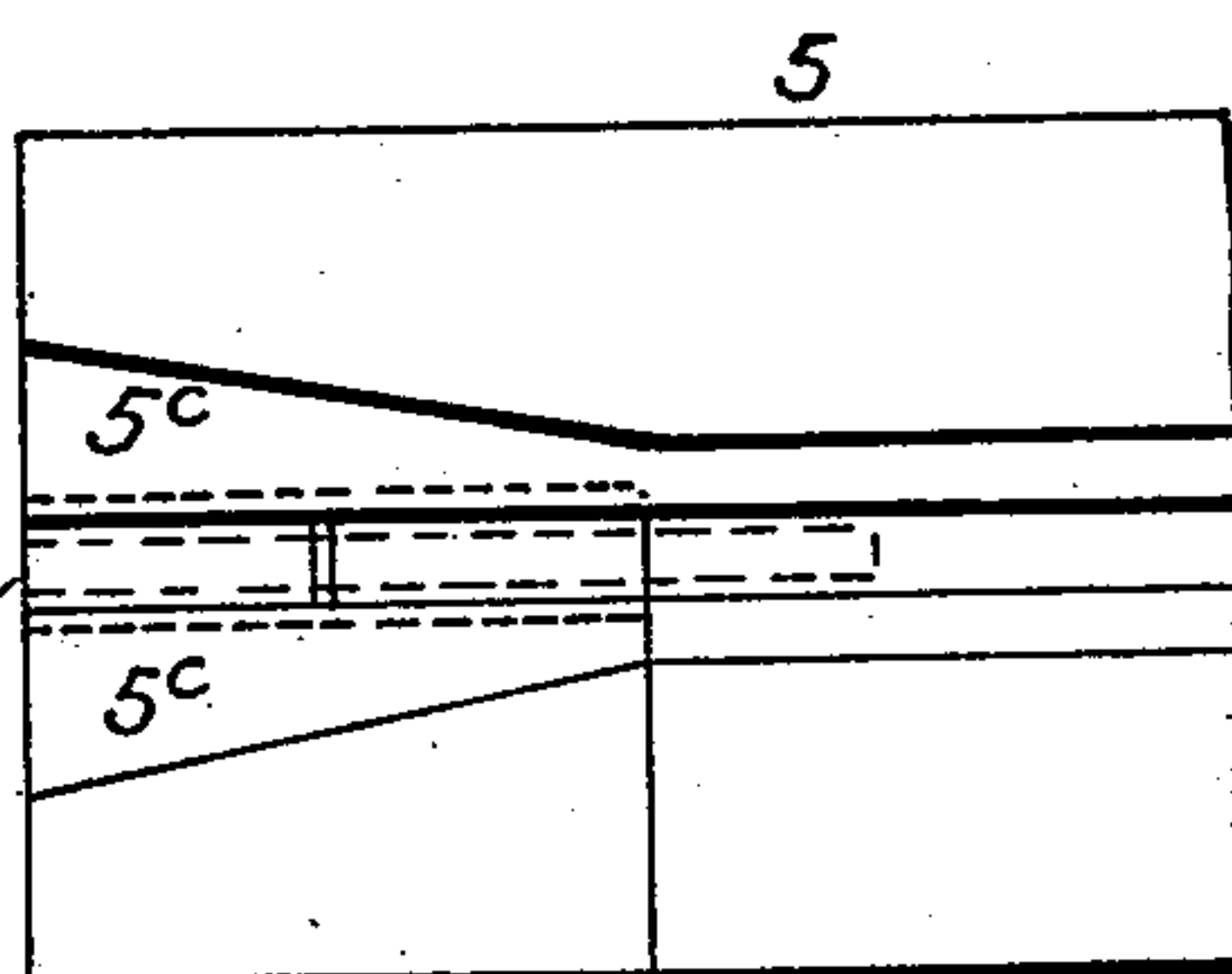


FIG. 5

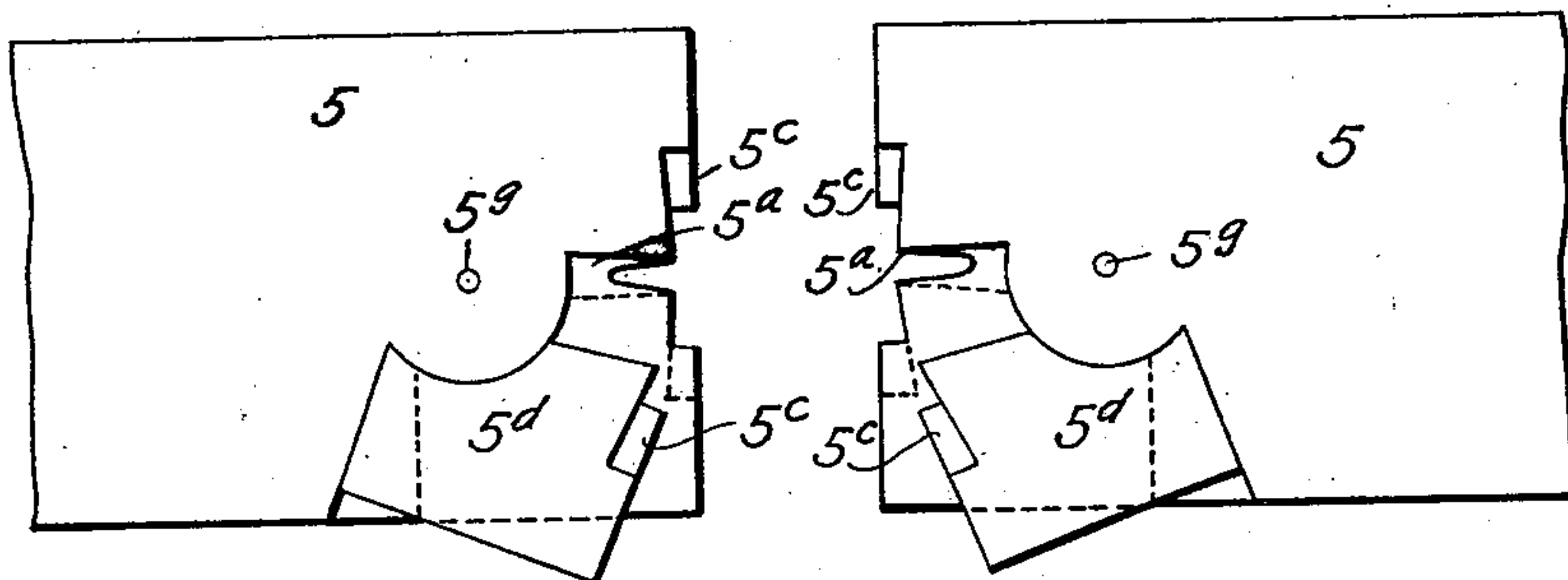


FIG. 4.

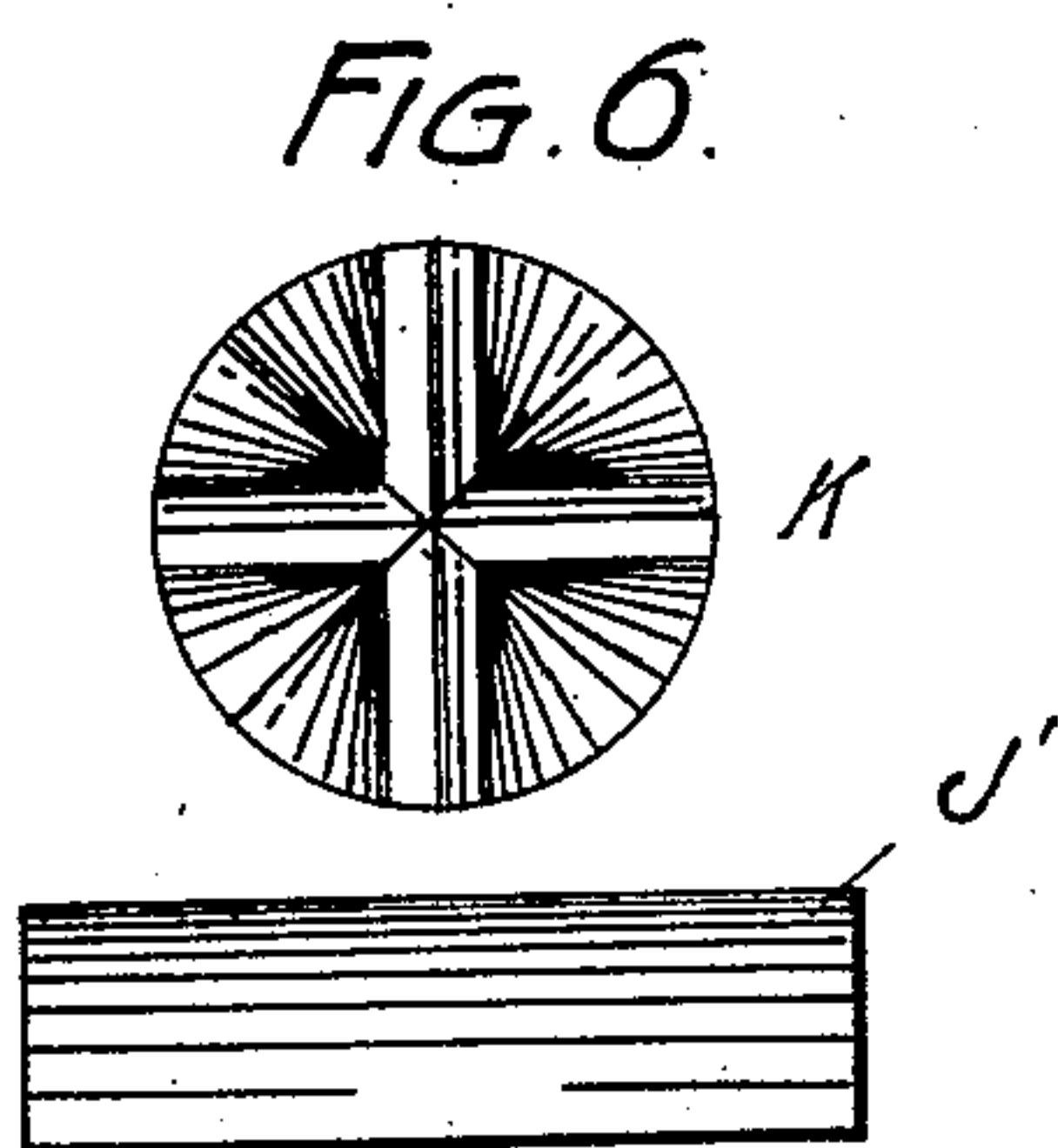


FIG. 11

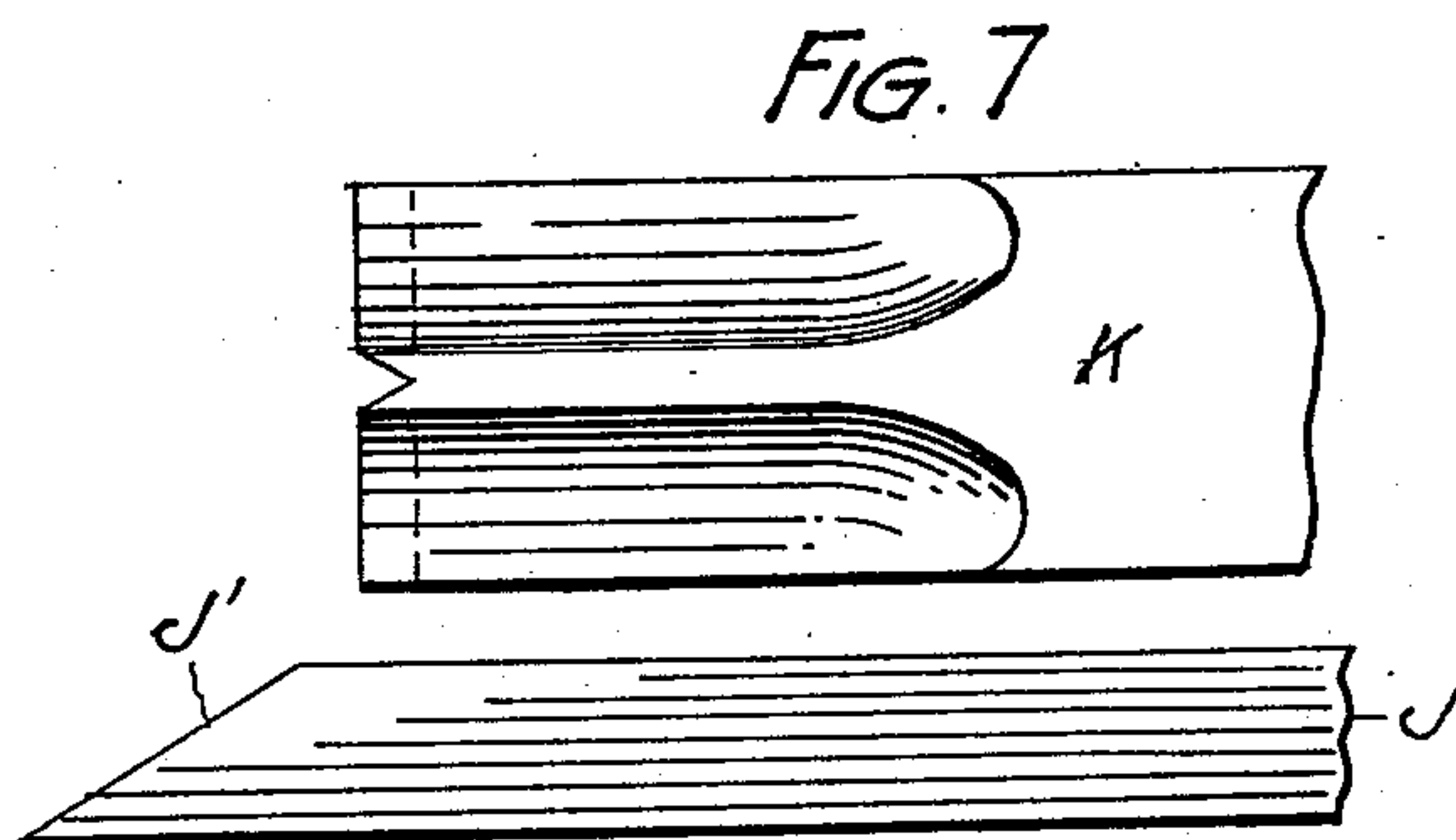


FIG. 7

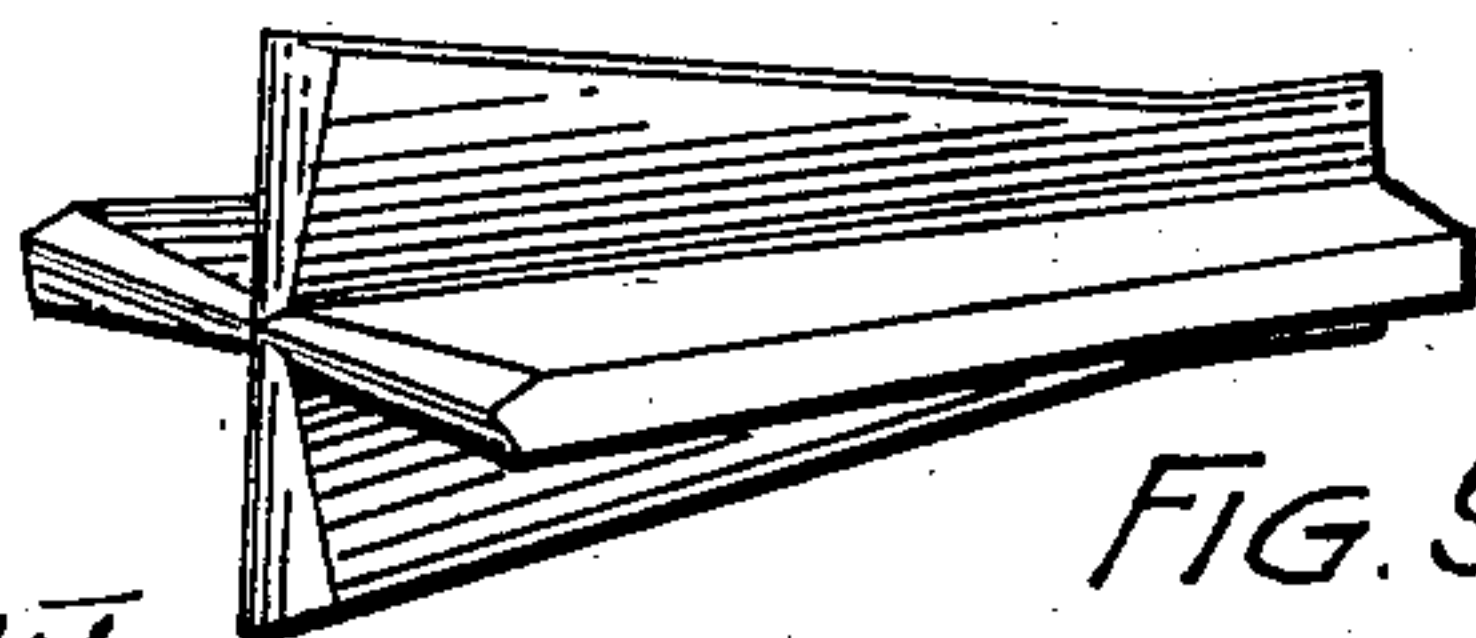


FIG. 9

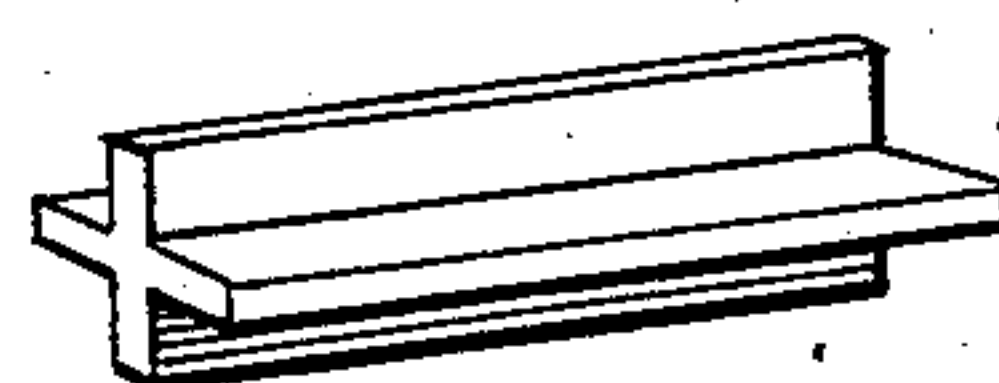


FIG. 10.

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# UNITED STATES PATENT OFFICE.

JOHN WAGNER, OF DENVER, COLORADO.

## MEANS FOR SHAPING AND SHARPENING DRILL-BITS.

SPECIFICATION forming part of Letters Patent No. 706,135, dated August 5, 1902.

Application filed September 26, 1901. Serial No. 76,635. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WAGNER, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Means for Shaping and Sharpening Drill-Bits; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in means for shaping and sharpening the bits of machine rock-drills, my object being to make it practicable to form the wings of the drill-bit thicker at their outer edges than near the center, since the outer edges of the wings have the greater part of the work to perform; and to this end the invention consists of the features hereinafter described and claimed, all of which will be fully understood by reference to the accompanying drawings, in which is illustrated an embodiment thereof.

In the drawings, Figure 1 is a plan view of my improved device shown in connection with suitable operating mechanism. Fig. 2 is a section taken through the same on the line *xx*, Fig. 1. Fig. 3 is a detail view of one of my improved die-blocks viewed in the direction of the arrow in Fig. 1 and shown on a larger scale. Fig. 4 is a view looking in the same direction, showing both die-blocks with their hinged members open. Fig. 5 is a face view of one of the die members looking at Fig. 3 in the direction of the arrow. Fig. 6 is a face view of the sharpening and shaping tool or dolly. Fig. 7 is a side view of the same. Fig. 8 is a detail view of the wedge-shaped or beveled device for closing the hinged members of the die-blocks. Fig. 9 is a detail view of the drill-bit after it has been acted on by my improved device. Fig. 10 is a detail view showing the normal shape of the metal bar before it has been subjected to the action of my improved device. Fig. 11 is an end view of the device shown in Fig. 8.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate each of two co-operating die-blocks, which are so fashioned that when brought together face to face they form a sort of mold or matrix shaped to fit the head or cutting extremity of a drill-bit of the construction shown in Fig. 9. Each of these members is provided with a groove or recess 5<sup>a</sup>, having the shape of one wing of the bit, and two half-grooves 5<sup>c</sup>. The four half-grooves 5<sup>c</sup> of the two members when brought together face to face have the shape of two oppositely-located wings of the bit, while the two oppositely-located grooves 5<sup>a</sup> of the two members have the shape of the other wings of the bit. The recesses or grooves of these dies are shaped to give the cutting extremity of the drill the shape shown in Fig. 9—that is to say, with their edges farthest from the axis or center of the bit thickest, as they have the most work to perform, as aforesaid. If the die-blocks 5 were solid, it is evident that the two wings occupying the grooves or recesses 5<sup>a</sup> could not be removed. I therefore provide each die-block with a member 5<sup>d</sup>, hinged to the body of the block, as shown at 5<sup>e</sup>, and adapted to open to the position shown in full lines in Fig. 4 to allow the release of the drill-bit when the die-blocks are separated. These die-blocks may be operated by any suitable mechanism. A suitable form of operating construction is shown in Figs. 1 and 2, in which die-blocks 5 are shown as formed integral with a larger block A, slidably mounted in the frame B and operated by cam members C, hinged to pitmen D, as shown at E. These cam members are beveled or inclined on opposite sides and engage a recess formed in the top of the block, which projects upwardly on opposite sides of the cam members and carries antifriction-rollers, which are engaged by the inclined faces of the cams during the operation of the latter. The pitmen are operated by eccentrics mounted on a shaft F. A cross-head H is also mounted on the frame and connected with the eccentric-shaft by a pitman I. This cross-head carries a device J, having a beveled extremity J', adapted to engage the hinged members 5<sup>d</sup> and close them and hold them in the closed position until the drill-bit has been shaped and sharpened by a dolly K, also carried by the cross-head.



When the blocks A are separated, the bar, shaped as shown in Fig. 10 of the drawings, is placed in position between the parts 5 of the die-blocks, which as the shaft F is rotated are brought together, the hinged members 5<sup>d</sup> being in the position shown by dotted lines in Fig. 4 by virtue of the action of the part J. The dolly then engages one extremity of the bar and upsets it, spreading it out to fill the recesses 5<sup>a</sup> and 5<sup>c</sup> of the die-blocks and at the same time sharpening the engaged extremity of the bit. As soon as this occurs the device J is withdrawn, and then as the die-blocks are separated by the reverse movement of the cams C, acting on rollers A', carried by the outer extremity of the block, the hinged members 5<sup>d</sup> open and release the drill-bit. The cams C during their forward movement engage rollers A<sup>2</sup>, carried by the blocks A.

Having thus described my invention, what I claim is—

1. In means for shaping and sharpening bits for machine rock-drills, the combination with two coöperating die-blocks, each having a wedge-shaped recess, and two other recesses each forming half of a wedge-shaped recess, each die-block having a hinged member on one side of the wedge-shaped recess, a suitable frame on which one of the die-blocks is movably mounted, means for bringing the faces of the die-blocks together, whereby the bar from which the drill-bit is to be formed is securely held in place, means for holding

the hinged members of the die-blocks closed, and means engaging one end of the drill-bit bar, for shaping the bar to conform to the wedge-shaped recesses of the die-blocks, and means for releasing the hinged members of the die-blocks, whereby they are allowed to open as the die-blocks are separated, substantially as described.

2. The combination with a suitable frame, of two die-blocks of the class described, said blocks being mounted on the frame, each block having a wedge-shaped recess adapted to conform to the shape of a wing of the cutting extremity of a drill-bit as described, the said blocks having hinged members adapted to open to allow the wing of the bit to be removed after it has been shaped to conform to the shape of the recess.

3. The combination of two coöperating die-blocks of the class described, each block having a recess adapted to conform to the shape of a part of a drill-bit or other tool, the said blocks having movable members respectively adapted to open to allow the said parts of the tool held thereby, to be removed after they have been shaped to conform to the shape of the recesses of the said blocks.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN WAGNER.

Witnesses:

DENA NELSON,  
A. J. O'BRIEN.